Good morning Good afternoon Good evening Good night yellow orange green blue red STAR e Match the number with the picture TREE UMBRELLA YAK ZEBRA WATCH XYLOPHONE VAN pen cap tap mat mop pat pin net bet tin rod pod Hen Top piglet cub calf Duckling Chick Where is your house These are my pets You are my friend This is her bag This is his book I want more sugar There is a tree Why are you crying The sun is yellow Rabbit has a ball I like fruits I like vegetables Do you like them carrot radish brinjal cauliflower lemon chilli banana beetroot tomato garlic drumstick potato apple papaya grapes watermelon orange pineapple jack fruit yam onion mango cabbage To the market We are going We are going To the market To the market Come along with big bags Come along with big bags Time to go Time to go What will you buy there What will you buy there A red apple and a green apple What will you do then What will you do then Cut and eat them Cut and eat them That‛s what we will do To the market To the market A red apple and a green apple Note to the teacher Sing the song with actions Encourage children to listen and do the actions firstthen follow the song with the teacher A feast in the jungle We are celebrating forest day Bring your food for the feast I have carrots Let us make halwa I have lemons to make juice I have brinjals to make sambar I have tomatoes to make rasam I have mangoes to make payasam I have green leaves to make soup I have onions to make pachadi We have fruits to make salad Is it ready Add some more onions in pachadi Yummy Wow Oh This is too hot Yum Payasam is very tasty Taste it They had a great feast I am a fruit I am small and round I am yellow and sour Who am I I am a vegetable I am green I am spicy Who am I That is a brinjal This is a papaya That is a tomato mango jackfruit watermelon banana apple orange papaya grapes bug cub tub mug gun bud gum hut but cut bun run mud pup cup nut rub Jug Let children stand in a circle and the teacher in the centre Let the students move clockwise when you say words with u sound like cup mug jug etc use the words in the pumpkin Students will stop moving when you say words without u sound like sit bat pet etc cub tub a cub in the tub pup cup a pup in the cup bug jug a bug in the jug bud mud a bud in the mud Word wall bug cub tub mug gun bud gum hut but cut bun run mud pup cup nut rub jug zebra in the zoo vulture on the van doll with the bell ball on the wall yam in the jam fox in the box but bat cut cat hut fan fin pan pin tan What comes next Appu's delightful day Apputhe farmer waters the plants in the dry field LAND for SALE I cannot continue farming Appu decides to sell the land Appu your decision is not right We shall not have anything to eat What can I do No one supports me Don‛t worry We will help you Look it is raining This is the right time for us to work We can work together All the animals work together in the field Note to the teacher Emphasize the importance of agriculture and farmers Encourage children to work together Will our plans work out Don‛t worry Teamwork never fails Your help has made this happen We will help all farmers Word wall this to that very have all I along shall we the a am with did you few pup cup cub tub mud bug mug jug hut cut nut bud This That is a papaya This That is a mango Learning outcomes Now I can sing rhymes read sight words understand importance of farmers say the sounds of name the fruits and vegetables use the structure This is and That is identify healthy food My journey I like to travel Do you like to helicopter train road traffic signal lorry bus bullock cart bike aeroplane track car van bicycle scooter helmet auto ship Row row row your boat Gently down the stream Merrily merrily merrily merrily Life is but a dream Ride ride ride your bike Slowly down the street Safely safely safely safely Pedal with your feet Fly fly fly your plane Straight into the sky Merrily merrily merrily merrily Zooming up so high A joyful trip Kaviya‛s aunt gave her an aeroplane Kaviya loved to play with it It was with her all the time One night it spoke to her Come Let us fly over the city The aeroplane flew over trains and boats Hurrah Look there It is my friend Kabir Let us take him with us Come Kabir Let us go on a ride What is that That is a zebra crossing What is it It is red green and yellow That is a traffic light Hey Look there is your Amma Aunty Aunty What happened Kaviya Oh Was that a dream bus ship train car aeroplane bicycle These are boats Those are cars These are aeroplanes Those are buses These are lorries Those are bicycles Word wall go round all on you by a that out but from these those this So We ch ick chick ch erry cherry ch eese cheese sh op shop sh ip ship sh eep sheep white white whale whale whip whip Ships sail Whales swim Children walk Trains whistle Cars rush Children cheer chick doll ball top torch pot whistle lorry train fig car wheat shoes book mat fish apple cherry Word wall chin ship shop whip sheep shirt shoe chick chain whale wheat white Wheel We are safe We don‛t play on the road We walk on the platform We hold hands while crossing roads We wait for the train to pass We stand in a line to board the bus We look right and left before crossing the road I will walk on the platform I will wait for my turn I will board a moving train Word wall aeroplane helicopter bicycle auto bike bus lorry train scooter ship boat bullock cart I have wings I can fly I am not a bird Who am I I carry lot of people You find me in seas Who am I Down Across These Those are cars These Those are ships These Those are bicycles sail fly ride drive A ship A shore A ship on the shore A chick A chair A chick on the chair A whip A whistle A whip on the whistle bus car rabbit bike van aeroplane Learning outcomes Now I can follow traffic rules read sight words recite songs use These are and Those are identify the modes of transport name the vehicles say the sounds ch sh wh banana cake biscuit apple ice cream carrot juice grapes tomato milk watermelon sandwich This That is a mango These Those are bicycles This That is a guava This That is a lorry These Those are brinjals These Those are cars lorry auto bike bus Car Boat Train chick chip shed ship chop cut bus tap nib mud hut whip that Come out Binu We shall go to my house That is my house and those are our cows See this is my bicycle and these are my friends Let us join and play My Garden We water the plants Do you Let us sing Little Birdie I am a little birdie Cute and fat I eat worms I don‛t like cats Let us sing Little Birdie When I see a cat Come out to play I spread my wings And fly away Look and say parrot sunflower eagle rose marigold quail tulip lily duck lotus crane sparrow hibiscus pigeon crow woodpecker peacock jasmine aster humming bird daisy Let us learn The cactus Hey look The cactus has thorns Yes She doesn‛t smell sweet Sunflower says Jasmine says The beautiful garden has colourful flowers Daisy says Hibiscus says She is all green Her leaves are so fat Rose says She is not pretty Cactus says I feel so sad It is a sunny day It is very hot I am thirsty Water Water Oh I am tired Are you not thirsty No Tell us your secret Each one of us is good at something My fat leaves always have water Word wall is in under on big with only had no have has Display the words on the word wall Divide the class into two groups Team A and Team B Put a tic-tac-toe grid on the board Example is given below Invite a child from Team A and choose a word to read If he she reads it correctly put an A on the word Repeat for Team B The team that reads three words in a straight line first is the winner Use other words and practise with all children under with had only big have was has on Circle time-Let us talk Display a box and a ball in the class Place the ball on the box Ask Where is the ball Say The ball is on the box Let children repeat it after you Practise the same for in and under by placing the ball appropriately Ask a student to demonstrate Repeat with other students The bun is on the pan The doll is in the box The clock is on the wall The cat is under the table The lemon is in the glass The doll is under the bed Let us do photo thumb ring song gang phonics dolphin thing moth mouth graph phone Display the words on the wall Make one set of flashcards with the words Place the cards at random in three different positions Some on the table some under the chair and some in the box Ask Where is the dolphin Child has to pick the flashcard and say The dolphin is on the table under the chair in the box Repeat with all children Let us practise Read aloud Tick the correct sound What comes next The phone is on the table The ring is in the box The moth is on the leaf Word wall A Get-together A Get-together Make them repeat the sounds of the birds The eagle has a new baby All her friends come to her house to meet the baby eagle Caw Caw Caw Who are you asked the baby eagle I am a crow Keet Keet Keet Who are you asked the baby eagle I am a parrot Coo Coo Coo Who are you asked the baby eagle I am a cuckoo Hoot Hoot Hoot Who are you asked the baby eagle I am an owl Quack Quack Quack Who are you asked the baby eagle I am a duck Cluck Cluck Cluck Who are you asked the baby eagle I am a hen The baby eagle said What a nice party I water my plants daily Yes No I throw stones at birds Yes No I clean my garden Place the pictures of the words on the table Invite a child and whisper a word to him her Let the child find the picture Encourage the child to show the picture and say the word to the class Make other children repeat it Practise it with other words Repeat with all children Word wall rose jasmine daisy sunflower hibiscus cactus parrot crow hen eagle duck cuckoo owl Learning outcomes Recite a poem Name the flowers and birds Describe the characters in the story Say the sounds th ph ng Read phonic words from word wall Identify the sound of birds Read focus words from word wall Describe the flowers in the story Read sight words from word wall Use in on under in sentences Time and Calendar I go to school every day do you Let us sing Months in a Year Twelve months in a year Let‛s learn it my dear The year starts with January And ends with December Now let‛s say them one by one January February March April May June July August September October November and December Isn‛t it easy to remember Look and say DAY sky sun bird clouds shadow sunflower rooster NIGHT star moon bat owl light window Harini‛s Happy Week Sunday I met my friend She lives near my house Her name is Kani Monday My father gave me a puppy She is very cute Tuesday A new teacher came to my class today She told us many stories We had fun Wednesday I saw a new rose in my garden It was pink Thursday Friday Saturday I drew a picture in my book My parents liked it very much Our hen had five chicks All of them were yellow I played with my friend Suddenly it started raining We sat inside and sang songs This was my happy week Wednesday Monday Friday Saturday Sunday Monday I saw a new rose on On Monday my father gave me a The first day of the week is comes after Thursday puppy Sunday Friday Wednesday Display the words on the word wall Make sets of word chits Each child gets a turn to pick a chit and read the word If they read correctly they get to keep the chit If they are not able to read they give the chit back When there are no more chits with the teacher the student with the most chits wins Word wall many when at like down from were our very new was her me Circle time-Let us talk Divide the class into two groups A and B Display some picture cards of actions wake up brush have a bath eat play read sleep etc Show a picture eg sleep and tell the children in group A to ask When do you sleep Let the children in Group B says I sleep at night Encourage children to repeat the structure When do you and I in the morning afternoon evening or at night many times Practise with more actions and change the roles of groups Let us practise I wake up in the morning I brush my teeth in the morning I have lunch in the afternoon I play in the evening I brush my teeth at night I sleep at night Display the words on the word wall Distribute the word chits to children Ask them to read and form groups based on the ending sound The group which is formed first is the winner Make each group read their words one by one Let us do Word wall catch ditch luck pick sell cell miss less moss will yell hatch tuck buck chess Let us practise Read aloud Chick and duck are on the thatch Duck says quack quack quack Chick says cluck cluck cluck Jess and Tess had a bell The bell fell into the well So Jess and Tess were so dull Colour the pencils using the codes Unscramble the letters apt etn uth ibn Word wall batch pick chess shall luck hill moss duck catch toss bell match Let us learn A Day at Home The rooster crows in the morning The grandpa likes to walk in the morning We get water from the well in the morning I read a book in the afternoon I sing songs in the afternoon I have my lunch in the afternoon I play with my friends in the evening I help my parents in the evening I go to the market in the evening I have my dinner at night I brush my teeth at night I go to bed at night Word wall Sunday Monday Tuesday Wednesday Thursday Friday Saturday Display the words on the word wall Whisper one word to a child The child will whisper the word to another child The last child will say the word aloud Show the word card to the class Repeat for all the words Listen to the teacher and tick Yes No We get up early every day Yes No We eat dinner Yes No We watch TV a lot Yes No My friend comes to school on time Yes No Grandpa likes to walk in the afternoon b I sing songs in the morning c I help my parents in the evening d I have my dinner at night i Tick the days of the week in order iii Draw lines to match When do you brush your teeth When do you play When do you have your lunch I can do When do you go to bed Sunday Tuesday Wednesday Thursday Monday Monday Saturday Frid toss wick tick bell fell batch catch loss A lock pitch tell mess less mock ditch sell Jill is on the hill It is a tall hill Jack plays chess Oh what a mess Daff ran for a catch But fell into a ditch vi Listen to the teacher read the story Then circle the words the teacher repeats Jeni has many friends One day when she was playing with her friends she saw a puppy The puppy was just a month old She loved the puppy very much Once a week she took the puppy to the park Jeni‛s friends were also happy Recite a poem Name words related to day and night Name the days of the week Say the sounds tck ck ss ll Read phonic words from word wall Describe my daily routine Read focus words from word wall Sequence the days of the week Read sight words from word wall Use When do you I at Now I can Rain Rain Rain Let us sing Drops of rain I like to play in the rain Do you Drip drip Drip drip drip Pitter patter raindrops Where do you come from Tiny drops of rain Straight from the dark clouds Down to the ground Peacocks dance Children dance Frogs hop It‛s a jolly time Shall we sing a rhyme Drip drip Drip drip drip Pitter patter raindrops Look and say raindrop umbrella raincoat boots paper boat snail lightning wind stream pebbles dragonfly puddle splash frog Let us learn From the Sky to the Sea It is a stormy day The little raindrop falls into a puddle It runs down the waterfall Splash I am a little raindrop I come down down down from the sky I am in the puddle Whoo What a lovely waterfall it is It joins a stream and crosses the woods It bounces over pebbles and joins the river It travels with the river and joins the sea The little raindrop is a part of it Hey Now I swim in the stream I go past trees deer and rabbits too See I leap over pebbles and dive into the river just like the kingfisher Oh The sea is so big puddle sea sea river sea puddle Who comes down from the sky Whom does the raindrop meet in the woods Where does the raindrop see the kingfisher Where does the raindrop go finally Is the raindrop happy puddle sea sea river sea puddle Display the words on the word wall Make four sets of word chits Divide the class into four equal groups Distribute one set of cards to each group Read the word and make each group find the word that you read The group that finds the word first gets a chance to read it out to the class Repeat until all words are practised Let us do Word wall away come down for here not any but do into must say they was what him have where Let us practise I like I don‛t like I like I don‛t like I like I don‛t like Let us say chop rung thud rug gush moth toss luck fun shall shell nib fit lip Bob the cop has a pot Bob the cop fills the pot Dud is a bug and likes her rug Dud likes to hum on her rug The pup fell into the tub The dog got the pup out of the tub The fat cat has a cap The fat cat with a cap sat on a mat It is a big pig with a wig The big pig with a wig is in a pit Jen has a red pen The red pen is on the bed abt bat jgo jog odg dog ipn pna unt Let us practise Read aloud Let us learn A Rainy Day Big dark clouds hide the sun It is going to rain Clouds are made of many tiny drops of water Raindrops grow big and heavy Raindrops fall out of the sky Many raindrops make rain Birds hide in the trees Rabbits hop into holes Rain pours hard Rain makes puddle on the ground Snails and worms come out Frogs hop about We sit outside our home We make paper boats to sail them in the puddle We eat hot snacks We drink tea Oh I love the rain I wish it would come again I plant trees Yes No I clean my cycle with a hose Yes No I wash my clothes in the pond Let us do Word wall raindrop clouds water sky peacock puddle waterfall stream woods river sea Place the picture cards on the table Give one picture card for each child in the class Call out a word All the students with the picture will display the picture to the class and repeat the word Point to the word on the word wall Repeat till all the words are practised lightning wind puddle pebbles frog snail umbrella raincoat sum tub mum hum top cop tip pop fun cub hub rub It is raining It is sunny We make paper boats We make paper hats Tubby was a boy He lived away from home His mom asked him to come home He caught a bus on the road His sister wanted him to buy a toy but he made a toy for her Learning outcomes Recite a poem Name different sources of water Say the sounds of letter a-z Read phonic words from word wall Describe a rainy day Read focus words from word wall Sequence the events of the story Read sight words from word wall Use the structure I like and I don‛t like Name words related Environmental Science Unit Living and Non-living Things The learner should be able to I am Harini I have a puppy I call him Jimmy I give him food to eat He eats it quickly I play with him He jumps on me I love him very much I have a doll I call my doll Ammu I try to feed it It does not eat or drink It moves only when I wind the key I like my doll Living things Living things eat grow move and have young ones They also breathe and feel I am a living being Living things eat Living things grow Living things move from one place to another Living things have young ones Living things feel Living things breathe Non-living things Do not breathe Do not feel Do not have young ones Do not move Do not grow Unit My Wonderful Body Let Us Talk We play walk run hear see smell taste and touch We can see some parts of our body but some others are within us which we cannot see Some parts are in pairs Can you name a few Let us learn names of some parts of our body with this rhyme Rhyme Time Head shoulders knees and toes Knees and toes Eyes and ears Mouth and nose Head shoulders knees and toes Eyes ears mouth and nose Lest us know the parts of the body Head Neck Hand Fingers Knee leg toes Abdomen Ear Eye Nose Teeth Tongue Chin Cheek Chest Shoulder and Face Unit Nature’s Bounty The learner should be able to Selvi went to a garden She saw a yellow flower on the tomato plant She went to pluck it A bee came and said Please leave it for me It is my food She saw a red tomato on the tomato plant She went to pluck it A parrot came and said Please leave it for me It is my food She saw a green leaf on the tomato plant A grasshopper came and said Please don’t pluck the leaf It is my food Watering the plant Selvi said You provide food for all of us Thank you very much Leaves Plants have different kinds of leaves They are of various sizes shapes colours and textures Talk about some leaves that you have seen around you Here are some helping words Banana Vazhai Drumstick Murungai Neem Veppa Ilai Coconut Thennai Basil Tulasi Mint Pudhina Coriander Kothamalli Curry leaves Karuveppilai Flowers These are some flowers that we see around us Let us name them Jasmine Malligai Marigold Samanthi Frangipani Sampangi Fire Cracker Kanakambaram Lotus Tamarai Rose Roja Screw Pine Thazhampoo Shoe Flower Chembaruthi Hari Champa Manoranjitham Vegetables Rhyme Time I went to the market with my bag To buy tomatoes red and round Potatoes big and brown Green chillies long and Fat pumpkins orange and green Purple brinjals big and small And drumsticks green and lengthy my bag became heavy I came back home with my basket full everybody smiled Here are some commonly used vegetables Here are some commonly used vegetables here Onion Ginger Garlic Beetroot Radish Ladies finger Fruits Fruits keep us healthy There are many kinds of fruits Most fruits change their colour when they ripen Mango guava apple orange banana dates watermelon pineapple papaya sapota grapes jackfruit are some of the fruits Unit Animals Around Us About Animals There are many kinds of animals Some animals are big some not so big Lion deer giraffe elephant bear tiger rabbit and cheetah Some animals are small in size Mosquito Ant Housefly and rat are the small animals About Mammals Some animals have hair or fur on their body They give birth to and give milk to their babies They are called mammals Dogs kangaroos and elephants are mammals Some mammals fly Some mammals swim Humans are also mammals Animal Tail Happy dog wags its tail Angry cat stares with its tail up Troubled cow swats flies with its tail About Birds Peacock Parakeet Cock Mynah Duck Eagle Pigeon Woodpecker Owl Kingfisher Sparrow Crow ate some of the birds Birds are animals They have two wings two legs and a beak They eat with the help of their beaks They do not have teeth Their legs help them to walk around and run They have colourful feathers They can fly There are some birds that cannot fly Emu Kiwi Penguin Ostrich Some birds can swim Duck Swan Water hen About Insects Honeybee Leaf insect Beetle Wasp Ant Stick insect Cockroach Grasshopper Head louse are some of the insects Insects are tiny animals with six legs Some insects have wings that help them fly Our delicious food Learning Objectives The learners Realise the importance of food List various food items Know the journey of rice Rhyme time Importance of Food Food food food It keeps me good Grains and vegetables Fruits and nuts Fish and eggs Milk and meat I need them I eat them To grow and become strong I need them I eat them To work and play I need them need them need them all All of us need food to live Food gives us energy to work and play We eat a variety of food items every day Some of them are shown below Let us talk about it Guava Carrot Groundnuts Idly Vada Dosa Meal Some energy-giving foods Ragi ball Rice Chappathi Milk is a healthy drink It keeps our teeth and bones strong Pulses meat fish and egg help us grow Nuts fruits and vegetables keep us healthy and protect us from diseases Our Food Our food is a combination of milk meat fish eggs fruits vegetables flowers grains nuts oils and ghee Fruits Vegetables Egg Milk Meat Butter Ghee Oil Cereals Pulses Fish Groundnuts Nuts Almond Cashewnuts Plantain flower Cauliflower Flowers Milk ghee Fruits Vegetables Egg Milk Meat Butter Ghee Oil Cereals Pulses Fish Groundnuts Nuts Almond Cashewnuts Plantain flower Cauliflower Grains Cereals and Pulses Cereals Rice Wheat Ragi Corn Pulses Pigeon Pea Green Gram Black Gram Whole and split grams Water is essential for our body to be healthy We must drink at least six to eight glasses of water a day A Variety of Dishes Each and every dish we eat is unique in taste The dishes are made up of one or more ingredients Rice Ragi Ragi Porridge Koozh We can prepare many dishes using the same ingredients rice Fry Puttu Curry Salt sugar and spices add taste to food Rice Kozhukattai Vathal Puttu Idly Rice Porridge Appam Wheat Chappathi Poori bread dosa Fish fry puttu curry Salt sugar and spices add taste to food Food for a Day We have breakfast in the morning lunch in the afternoon and dinner at night We should not skip any meal Some people prefer vegetarian food and some non-vegetarian food Cooked Rice soaked over night Pazhaya Soru Full Meal Chicken Biriyani I have my breakfast before going to school Do you Ragi Adai We have snacks in between We should choose healthy food items as snacks Bengal Gram Sundal Puffed Rice Balls Pori Urundai Sesame Balls Ellu Urundai Groundnut Candy Healthy Food Items We all have our favourite dishes Some of them are healthy and can be eaten regularly Idly Wheat Bread Groundnut Candy Sprouted Grains Some should be eaten once in a while in small quantities Gulab Jamun Laddu Murukku Chips Some of the snacks we like are not good for us Say NO to them Biscuits White Bread Maida Noodles Soft Drinks Chocolates Many of us like sweets Sweets can be prepared with jaggery or sugar Sweets made with jaggery are better for health Milk Payasam Rasagulla Rava Laddu Sesame Balls Athirasam Groundnut Balls Paruppu Payasam Steamed food items and sprouted grains are healthy Idly Rice Salt Balls Puttu Idiyappam String Hoppers Sprouted Grains Soak green gram overnight in water Drain the water and tie it in a cloth Observe the changes in the grains on the next day Leaves of some plants are used as food They are called greens We should have greens at least twice a week Drumstick Leaves Murungai keerai Black Nightshade Leaves Manathakkali keerai Dwarf Copper Leaves Ponnankanni keerai Healthy Eating Habits Wash hands before and after eating Chew your food well Sit together to eat Do not spill food while eating Do not talk while eating Avoid watching TV and using mobile phones while eating Do not overeat It can make you ill Always wash fruits and vegetables before eating or cooking Rinse your mouth after every meal Stale food makes you sick Avoid it Do not waste food Avoid uncovered food as it may contain dust and germs Journey of Rice The story of rice begins with the farmer ploughing the field Observe the pictures and see how the food comes to our plates Always respect the food and its producer the farmer Stages in the growth of paddy crop Ploughing Sowing Transplanting the seedlings Harvesting Winnowing Drying Milling Storing Cooking Eating I know the importance of food I can list various food items I know the journey of rice Water We use water for many of our daily activities We drink water to keep ourselves healthy We use water to bathe cook wash clothes and grow plants We cannot live without water Vocabulary Bathe Drink Wash Grow Cook Pour Brush Preparation of lemon juice Cut the lemon into two pieces Squeeze the juice into a glass Add sufficient sugar and a pinch of salt Pour water and stir it well Tub Mug Tap Pot Water Water Everywhere Rain It‛s raining and raining Pouring everywhere I am singing and dancing Playing everywhere The trees are swaying The animals are enjoying Without rain There is no life anywhere Rain is the main source of water for lakes ponds wells and rivers All living beings need water to live Fishes frogs ducks and many plants live in water Steps to prepare clean and safe drinking water Collect water in a vessel Filter Boil Cover it with a lid Cool Fun with Water Keep some pieces of ice in a bowl Leave it for minutes and observe what happens Ice slowly melts into water You can touch and feel it too Prepare water of different colours by using food colours Count the number of tumblers of water necessary to fill the given pot Conservation of Water Close the tap When you brush brush brush Use a bucket When you bathe bathe bathe Repair the tap When it leaks leaks leaks Save water save water Save save save Some More Good Habits to Conserve Water Turn off taps while washing clothes Water the plants in the morning We need to use water sparingly If we do not have enough water our life becomes difficult I know the uses of water I am aware of using water carefully in my daily life I can do simple experiments with water Festivals We celebrate many festivals Some are celebrated to thank Nature and others are local celebrations All festivals are occasions to express our unity Learning Objectives The learners Identify and understand the importance of different festivals Appreciate the different roles of people in society Traditional Festivals Pongal Do you know why we celebrate Pongal Pongal is a harvest festival A good harvest brings happiness to all During Pongal we thank Nature for giving us the food we eat We celebrate Pongal for four days Each day has a unique feature On this day people discard old things and clean their homes First Day Bhogi They also paint the walls with limestone Sunnambu making the houses bright and clean They draw beautiful kolams in front of the house They burn old and damaged items Burning tyres and plastic items makes the air dirty This should be avoided Second Day Thai Pongal On this day people prepare pongal in a new pot with newly harvested rice They worship and thank the Sun Third Day Mattu Pongal It is a celebration to thank cattle which work hard for us Cattle are decorated and worshipped on this day Fourth Day-Kanum Pongal Uzhavar Thirunal It is a day for thanking the farmers People also visit relatives friends temples and scenic spots and have fun together Local Festivals Vanmathi went to see the local village festival with her grandfather Observe the picture and see what happens there Vanmathi rode on the Merry-go-round Rattinam She watched the Karagattam and Puliyattam dances She bought colourful bangles balloons and some toys Festivals of Joy Festivals like Ramzan Diwali and Christmas are days of joy and sharing On these days people wear new dresses and decorate their homes They prepare special food items which they distribute to everyone Special Food Items of Festivals Diwali Murukku Athirasam Ramzan Biriyani Sheer Khurma Christmas cake Rose Cookies Our Friends Vanmathi wanted to send a letter to her friend Let us see whom she met on the way Do you deliver letters No I am a teacher I am fond of children I like to teach lessons and good values Do you deliver letters No I am a policeman I protect public places and keep people safe Do you deliver letters No I am a doctor I help sick people get well Do you deliver letters No I am a nurse I am kind and care for the needs of sick people I tie bandages and give injections Do you deliver letters No I am a shopkeeper I measure and count goods and sell them in my shop Do you deliver letters No I am a vegetable vendor I get fresh vegetables and sell them in the streets using my cart Do you deliver letters No I am a milkman I care for cows and buffaloes I supply milk to people Do you deliver letters Yes I do I am a postman I collect letters from the postbox I sort letters according to the address I deliver the letters to the correct address I understand the importance of different festivals I know the different roles of people in society Materials Around Us Let Us Talk Observe the picture and talk about the different objects and what they are made of All the objects that we use are made of different kinds of materials Books are arranged in the bookshelf Vimal is playing with a doll Grand father is sitting on a chair Learning Objectives The Learners Identify the different materials around them Differentiate between the materials Meera is colouring with a pencil Wood is a material got from the trunk and branches of trees We make many things such as chairs toys pencils ladders cricket bats matchsticks doors and bookshelves from wood Fathima is planting a sapling in the soil Soil is a mixture of clay sand small pieces of rock and dried leaves Clay is sticky It has the ability to absorb water Bricks are made of clay Many more things can be made using clay Pot Clay Stove Lamp Roof Tiles Sandiya and Kaviya are playing with pebbles Pebbles are a type of stone Stone is a hard substance found on earth There are many kinds of stones We use stone in many ways Stones are used to build houses Marble is a kind of stone It is used to make floors and buildings Taj Mahal Small stones called gravel are used to make roads Stones are used to make statues Red stone is also a type of stone used in many buildings We can make jewellery using precious stones called gems Mahabalipuram is well known for its stone sculptures Sand Ravi and Prabu are playing in the sand Do you like playing in the sand Sand is formed from broken pieces of rock over a long period of time Sand is mixed with cement to construct buildings Sand is also used in making glass Beautiful sculptures can be made with the sand This is called sand art Sand clocks were used to measure time in the olden days Join the objects to the materials they are made of Wood Stone Clay Take two similar bottles Make a hole on the lid of both bottles with the help of your teacher Fill one half of one bottle with sand Paste both bottles with tape as shown in the picture Now the sand clock is ready Let us play with a sand clock Find out how many times you can jump by the time the sand moves from one bottle to the other Use the clock to measure the time taken for other activities Metals Surya is riding a bicycle Bicycles are made of metal Metal is a hard and shiny material We use metals in our daily life in many ways Look at the following examples Ring Car Vessel Wire Tap Coin Material Clay Wood Sand Stone Metal Plastic Our Neighbourhood Poonjolai is a beautiful town Cheenu lives there with his parents He stands in the balcony and looks around What does he see Learning Objectives The learners Describe their neighbourhood Know about different habitats Adopt safe practices Observe the picture and discuss Now talk about your own neighbourhood Our neighbourhood is the area around our house People who live in the neighbourhood are our neighbours They are known to us We can get all the things we need from our neighbourhood We must take care of our neighbourhood and keep it clean Trees and animals are part of our neighbourhood Cheenu Where do my cousins Ram Ramya Rekha Ragav and Raghu live Mother They live in different places I will show you the pictures Ram lives in a village This is his house He has cows and hens too The cowshed is by the side of his house Ramya also lives in a village She has a vegetable garden behind her house Rekha lives in a city on the third floor in a tall building She likes her pet dog very much Cheenu Even I want a pet dog Mother Ok Cheenu Mother Ragav lives in a hill station He is fond of flowers He has a beautiful flower garden in front of his house Raghu lives by the side of a river There are many coconut trees around his house Cheenu I like the sound of the river by the side of Our houses should always be kept clean and tidy Houses protect us from heat cold rain storm and wild animals Let us learn to write our address Name Door number Name of the street Name of the village town city Observe the picture and talk about it Connect the dotted lines and name the directions sharpener to sharpen the pencils Do not use a blade Do not jump on desks chairs Form a queue to get into the bus Do not put your hand or head out of the moving bus Do not harm each other Observe the picture and talk about it Connect the dotted lines and name the directions Note for the teacher Ask students to name friends sitting to their right left front and back Use a pencil Safety at Home Never touch switches plugs with your hands with leaves or with twigs Do not play near the stove Do not comb your hair in the kitchen Do not catch any insects Do not play with sharp things knives blades Do not put any object into your nose and ears Never play with fire Do not play on the banister or balcony We can buy vegetables and fruits from a market b We can get money from the ATM c We can play with sharp objects d We should not play on the road UNIT Transport Transport means movement of people and goods from one place to another Today we travel by road using scooters auto rickshaws cars buses vans trains A train can carry many more people than a bus or a van We travel in the air using aeroplanes and helicopters and on water using ships and boats Car Bus Ship Auto rickshaw Aeroplane We can travel long distances in a short time using these modes of transport They need fuel petrol or diesel to move The fire engine and the ambulance are special vehicles A fire engine helps us to put out fires An ambulance helps to take sick people to hospital Fire engine Ambulance Scooter transport They need fuel petrol or diesel to move Van Train Always give way to these vehicles Story of Transport In early times man walked used palanquins or animals like elephants and horses to travel from one place to another Elephants were used to travel across thick forests and were trained to carry loads and people Then man invented the wheel No vehicle on the road can move without the wheel Man used the wheel to make carts He used animals like horses bullocks and donkeys to pull carts with loads and to travel He made chariots and bicycles using the wheel Then came all the vehicles that we see today cars buses trains and auto rickshaws Horse Cart Bullock Cart Donkey Cart Chariot Car Bus Bicycle All of us love to ride this vehicle Can you guess what it is Yes It is the bicycle The bicycle has changed from olden times to the present day Seat Chain Pedal Wheel Handle bar Parts of a Bicycle To be safe on the road we must follow some rules Road Safety Follow the signal Always walk on the footpath Cross the road only at the zebra crossing Cross when the symbol of a person walking turns green Red Stop Yellow Get ready Green Go Never hide behind vehicles Never run or play on the road Think and Answer We should cross the road only at a zebra crossing Why Why is it called a zebra crossing Tick the correct word phrase Go when the yellow green light is on Walk on the footpath road Cross at the zebra crossing any other place Ambulance Ship Bus Aeroplane Bicycle Fire engine Car Bicycle Lorry Ambulance Bike Aeroplane Trains UNIT Day and Night Day Mother Kanmani Kannan wake up Come and see the sunrise The sky looks beautiful Kannan and Kanmani Yes Mother Learning Objectives The Learners Know the differences between day and night Describe the Sun moon stars lightning and thunder What do they see Can you look at the picture and describe it The Sun is a star We get light and heat from the Sun There can be no life on earth without the sun The sunflower buds turn and face the Sun Dawn is the early morning just before sunrise It is good for health to wake up at this time Morning follows the dawn It‛s the time to get ready eat breakfast and go to school Lunch is at noon The time that follows noon is called afternoon Evening is play time Then the Sun sets Twilight is the time after sunset just before the night The time between dawn and sunrise is also called Twilight Night is the time to sleep Birds returning to their nest Cows returning to their shed Children playing outdoors Vocabulary Sun earth light heat dawn morning noon afternoon evening twilight sky day Night Mother It is a lovely cool night Let us have our dinner outside in the moonlight Vocabulary moon star cool night Kannan Why is the moon not as bright as the Sun Kanmani I know why The moon has no light of its own unlike the Sun It gets it‛s light from the Sun Kannan I'll tell you about the stars See there are so many stars in the sky The stars shine at night They have their own light They look small because they are very far away The Owls and Bats are active at night Mother Come it‛s getting late Let us go to bed Early to bed and early to rise is a good habit Rain Thunder and Lightning Vocabulary rain rainclouds lightning thunder rainbow Kannan and Kanmani loved to watch the sky Kanmani Today the sky is full of rainclouds Kannan It has started to rain Suddenly they saw a flash of light in the sky followed by loud sounds Mother It is thunder and lightning Both occur on a rainy day After a while the rain stopped Kannan and Kanmani saw a beautiful rainbow in the sky When there is thunder and lightning Do not stand under the trees and under electrical wires Do not touch cut and hanging wires Do not touch electrical plug points The Sun is a star b The moon shines with its own light c We can count the stars in the sky d A rainbow is seen on a rainy day e The Sun gives us heat and light LIGHT STAR DAY MOON NIGHT SUN UNIT Science In Everyday Life Salim Parveen What are you looking at Parveen I am looking at the dresses Salim Which is your favourite dress Parveen I like skirts What about you Salim I like shirts and shorts Father Come let us look at various kinds of clothes and buy what we want Cloth Clothes Material that is used to make dresses towels and bedsheets is cloth Dresses that we wear either stitched e g shirt skirt or unstitched e g dhoti saree are clothes Shirt Saree Dhoti Skirt Bag Handkerchief Bandage Kitchen towel Bedsheet Bath Towel Curtain Story of Cloth Early man used clothes made of leaves and animal skin Leaves as clothes Animal skin as clothes The clothes we wear nowadays are made of different materials like cotton wool and silk We get cotton from the cotton plant from which we make cotton clothes We get wool from sheep from which we make woollen clothes We get silk from the silkworm from which we make silk clothes Clothes and Seasons Why do we wear clothes We wear clothes to protect our body from heat cold rain dust insects germs and small injuries We wear different types of clothes in different seasons Match the following During summer the days are hot We wear cotton clothes to keep us cool During winter the days are cold We wear woollen clothes to keep us warm Some days of the year are rainy We wear raincoats to keep as dry We also use an umbrella Types of Clothes Father Hi Salim you are looking very smart in this dress Salim Thank you This is my new uniform All students wear uniforms when they go to school Father Good Have you seen any other people wearing uniforms Students Chef Policewoman Nurse Fireman Washing Clothes The clothes we wear should be neat and clean When we dress neatly we look smart Steps of washing Soaking in water Applying soap Washing Rinsing Drying Chef Policewoman Fireman Washing Clothes StudentsSpecial Clothes When people act in a play or give a dance performance they wear special clothes called costumes People in different parts of India wear different kinds of dresses ample wiping wearing it as a dhoti turban etc Punjab Kerala Tamil Nadu You are given a towel How can you use it Show the various actions for example wiping wearing it as a dhoti turban etc SHIRT GLOVE CAP SKIRT SAREE Social Science Unit Our earth Imayan is waiting for his father after returning from school in the evening His father is an employee in a reputed bank Imayan Come Daddy Imayan ran and hugged his father Father Imaya Had your snacks Imayan Yes I had My social teacher is going to teach about earth tomorrow Please tell me about the earth Father Ok I will tell you Imayan How did the Earth form Father Approximately billion years ago Solar System was a cloud of dust and gas known as Solar Nebula Due to an explosion these particles collapsed and began to spin having the sun at centre The bigger particles which revolve around the sun are called planets Thus the planet Earth formed Imayan Will you explain about Universe Daddy Father The Universe is a vast expansion of space The Universe consists of billions of galaxies stars planets dwarf planets comets asteroids meteoroids and natural satellites The exact size of the universe is still unknown Scientists believe that the universe is still expanding outward Imayan What is a galaxy daddy Father A Galaxy is a huge cluster of stars Our galaxy Milky way is one among the countless of galaxies in the Universe Imayan Ok Daddy What is Solar system Father Solar system consists of the sun the eight planets their moons dwarf planets asteroids and comets These objects are gravitationally bound Imayan Very interesting dad Tell me about our Solar System Father There are planets in our solar system They are Mercury Venus Earth Mars Jupiter Saturn Uranus Neptune Imayan Dad Where is our Earth in the Solar System Father The Earth is the third planet from the sun and the fifth largest in solar system Imayan It is said that the earth is rotating itself and at the same time revolving around the sun Is it true Father Yes Earth has two movements They are Rotation Revolution Rotation The movement of the earth on its axis is called rotation of the earth Day and night are caused due to the earth’s rotation Revolution The movement of the Earth around the Sun on it’s axis which is Tilted about is called revolution of the earth Seasons are caused by Earth’s revolution Father Life is possible only on the Earth because of the presence of land air and water Imayan Oh I see What is the distance between the sun and the earth Father The distance between the sun and the earth is nearly million kilometres Imayan Say some more interesting facts about Planets Dad Father Mercury and Venus lie near to the sun Next to Earth is Mars Jupiter Saturn Uranus and Neptune The planets nearer to the sun are very hot The planets away from the sun are very cold Mercury is the smallest planet Jupiter is the largest planet Imayan Wow Amazing Where do we live on the Earth Father We live on the surface of the Earth It is made up of continents and oceans Imayan continents What are they Father Listen They are Asia Africa North America South America Antarctica Europe and Australia Imayan Which is the biggest continent Father The Asia continent where we live is the biggest of all Australia is the smallest one Antarctica is a snow covered landmass Imayan What are the five oceans Daddy Father Pacific Ocean Atlantic Ocean Indian Ocean Southern Ocean and Arctic Ocean of the Earth is covered by water and is covered by landmass About of water is saline of water is fresh and of water is easily accessible Imayan Thank you Daddy Today I have learnt a lot about the earth from you Now I am going to study and do my home work Father Ok Imaya Go and study Unit Towards history Stone Age In the beginning humans were not aware of metals They took several years to discover metals Our lives today are their gifts During this period humans were not aware of scripts The Stone Age is the period in which Stones were used as weapons Nature of Human Evolution Early humans lived in jungles along with animals They used stone tools to protect themselves drive away animals dig out roots shoots etc The most important thing is that they ate everything raw including flesh They did not know the use of fire in the beginning At first dog was their good companion Wild animals ran away when dogs barked Dog was the first pet animal They took it wherever they went Later they started rearing cattle and were very useful to them They observed some grains growing along the river side They ate and found them very tasty They observed that the scattered grains were eaten up by birds They were keen observers They found that the grains grow with the help of sunshine and rainfall Thus they learnt the art of cultivation Humans noticed forest fire At first they were afraid of fire They found some animals died due to fire They ate the flesh of the burnt animals It tasted good They also observed that the spark came out by scratching two stones together Since then they ate cooked food Nomadic Life Early humans did not know to grow crops They wandered in all the landscapes in search of food They ate whatever they got and drank water from natural sources This kind of life was called nomadic life They wore skins of animals leaves and barks of trees to cover their body They lived in caves and holes of big trees Stones were sharpened as tools by them They made it with the help of other stones too These sharp tools were used to hunt animals and tear their flesh They used bones horns stones skin branches of trees and sticks as their tools and weapons This stage of development in history was called New stone age or Neolithic age Stone wheels When the stones rolled from the mountains they acquired a round shape Humans observed them and thus wheel was invented In the beginning it was made of stone and later by wood Wheel is the first scientific invention of man Pottery Pottery was also one of the greatest inventions by humans The baked pot was strong and looked beautiful Stone Age people made all the household artefacts by themselves Stone houses were built The roofs of these houses were thatched with sticks and husks After several inventions humans started to live in a settled life Agriculture Agriculture was an important activity in the history of humans They started cultivating crops They sowed seeds and harvested crops They found it convenient to live along the river as the crops grew well Progress in man’s life There burial pots called urns in which the dead bodies were placed and buried under the ground Chalcolithic Age At the end of New Stone Age copper was invented In this age both stone and copper were used This period was called Chalcolithic Age Bronze was produced when copper zinc and tin were mixed together The period when people made tools from bronze was called Bronze Age Iron Age After this humans discovered iron and started using iron tools and weapons This age was called Iron Age In this age household articles and agricultural tools were made up of iron Archaeological excavations coins potsherds metal objects and so on are dug out from Archaeological sites Such objects are preserved in the museum In Tamilnadu Athichanallur Arikkamedu and Keeladi are such sites where the objects used by the people of the past are excavated Still research is going on in these sites Unit Good Citizen Man is a social animal Human beings are bestowed with senses Human beings think and act using their senses They are born free but bound in the social web They cannot live alone They need social and emotional support To live in the society they need to develop some good values We are born with few values and rights These values are further polished in educational institutions The aim of education is to change a person into a valuable human being Good values Good values are the qualities of a person that keep the society running These qualities can be developed by all The term civic relates to people or civilian or citizen of a country People should live together in unity Despite all the disparities living together in harmony is a significant value Helping others is also an important value There should be no disparity among people and all are one Today’s children are tomorrow’s citizens of the nation Moral and good values have to be inculcated in children So that they may become valuable citizens Personal values Personal value is the basic value for an individual Some personal values are love mercy generosity honesty truth friendship hospitality peace tolerance faith and so on Cultural values Becoming well mannered and cultured is an essence of the society Irrespective of language and religion people live together in harmony This help to maintain cultural values We are all humans We must live together as brothers and sisters Social values How should you behave in public places We should maintain the following good values in public places Maintain good relation with people Respect elders Protect nature Be tolerant and Maintain friendship Disciplinary values Disciplinary values are punctuality involvement treating every one as equal doing work ontime holding morals discharging duties without fail and so on Constitutional values Safeguard public properties Maintain unity and integrity of the nation Develop scientific attitude Protect natural resources Care for the environment Honour national symbols Respect martyrs and their sacrifices Preserve our cultural values and heritage Develop patriotism Unit Atmosphere Biosphere Biosphere is the combination of Lithosphere Hydrosphere and Atmosphere that can support life Atmosphere Atmosphere is the envelope of air around the Earth Weather Weather is a day to day conditions of atmosphere at any place in regard to temperate pressure wind humidity and rainfall Climate Climate is the average weather condition of a vast area over more than years Atmospheric Layers We know that the gravitational force increases near the Earth and decreases as we go higher As a result the density of air also differs and can be found in five layers called Troposphere Stratosphere Mesosphere Thermosphere and Exosphere All weather changes occur in the Troposphere The study of weather is called Meteorology Solar Radiation The sun is the only source of light to all the planets in the solar system The land water and air in our planets receives heat from the sun The Earth receives heat energy from the Sun in the form of radiation It is called solar radiation Sunlight falling on the Earth is reflected CO and other gases in the atmosphere trap heat keeping the earth warm Elements of climate Temperature Pressure Wind Clouds Rainfall Temperature Land Conduction Water Convection and Atmosphere Terrestrial radiation The earth has the capacity to reflect the sun’s rays The temperature is not same every where Latitude altitude distance from the sea position of the mountains are some of the factors that determine the temperature of a place Why does heat vary from morning to evening It is because of the sun’s rays The land is divided into various heat zones according to the fall of sun’s rays on the surface of the Earth The zone between Tropic of Cancer and Tropic of Capricorn is called Tropical or Torrid zone where the sun’s rays fall vertically The zone between ½°N to ½°N latitude and ½°S to ½°S latitude which receives slanting rays of the sun is called Temperate zone The zone which receives the extreme slanting rays of the sun and experiences extremely low temperature is called Frigid zone Pressure When the temperature increases pressure decreases and when the temperature decreases pressure increases Wind The air which moves horizontally from high pressure area to low pressure area is called wind Air never moves in one direction It differs from place to place and time to time This is due to the rotation of the earth Different types of wind Planetary wind This wind blows in the same direction throughout the year and Monsoon wind The word monsoon is derived from the Arabic term mausim which means season Monsoon wind is the seasonal wind Types of Monsoon winds in India are South West monsoon wind and North East monsoon wind Sea breeze Sea breeze blows from sea to land in the evening Land Breeze Land Breeze blows from land to sea in the morning Local wind Local wind affects the weather Warm local wind North West India E g Loo Cool local wind North East India E g Norwesters Jet streams Air currents in the upper layers of atmosphere is known as Jet streams It could determine the arrival and departure of monsoon winds in India Cyclone Hurricane Cyclone changes its position and direction with time to time The speed of wind also changes with time It gives heavy rainfall Clouds Clouds are large collection of very tiny droplets of water These are divided into four types on the basis of appearance and height They are Cirrus cloud Cirrus cloud appears like a silver grey fish at a very high altitude in the sky These may not give rain Stratus cloud Stratus cloud is grey in colour and are spreadout They may give small shower Cumulus cloud Cumulus cloud looks like a Puffy White cotton and gives convectional rainfall These clouds are associated with rainfall lightning and thunder Nimbus cloud Nimbus cloud appears as dark or grey in colour It gives heavy rainfall It is called vertical or rain clouds Rainfall Condensation of the Water vapour causes rainfall Rain water must be saved and not be wasted Convectional Rainfall During summer solar insolation takes place in land and water evaporates from lakes ponds seas oceans and vegetations Due to this a heavy rainfall with lightning and thunder occurs in the evening for a short period Orographic Rainfall When the moisture laden winds from the sea rises as it moves over a mountain range it becomes cool and causes heavy rainfall The opposite side of the mountain is called Leeward side It receives very little rainfall Cyclonic rainfall The warm air from the hot area is heated and moves upwards Hence a low pressure area is developed and it attracts air from high pressure area Owing to Earth’s rotation a circular motion of winds develop It gets cooled and brings heavy rainfall Rain water harvesting Rain water harvesting is a technique of collection and storage of rainwater into natural reservoirs or tanks or the infiltration of surface water into subsurface aquifers before it is lost as surface runoff One method of rainwater harvesting is Rooftop Harvesting Ancient Excavation understand about excavation know about archaeologists know some examples of excavations Rekha It is so hot today I do not think that I can go out to play Grandma Ah very true But when I was young I used to play outdoors all the time Rekha How did you play when it was hot Grandma When I was young our neighbourhood was full of trees and I used to play in the shade of the trees Rekha Wow Really I wonder how people lived in those days Rekha How is that possible Tell me more Grandma Have you ever found a sea shell while digging in the beach Rekha Yes Grandma Similarly there are people who dig the earth at various places to find things that people used before These people are called Archaeologists The process of digging the ground is called Excavation EXCAVATION Excavation is a controlled exploration of what lies under the surface of earth All forms of archaeological excavation require great skills and careful preparation Excavations can be classified based on the purpose like planned accidental or rescue Most excavations are properly pre planned and their purpose is to find buried evidences from the site EXCAVATION Excavation Archaeologist The things that Archaeologists find during excavation are called artefacts Archaeologists can tell a lot about people who lived there by looking at their houses clothes bones and other artefacts The class will get divided in groups of and plant a sapling in the school premises The students will clear the soil dig the soil and plant the sapling Who is an Archaeologist Archaeologists They study the history of humans and places through excavation and analyse the artefacts Excavation gives us a glimpse of the past Some interesting examples from the world Pyramids in Egypt When the Pyramids were excavated it was found that the small pyramids were made for the Queens They found huge tombs with super structures which were built for the burial of the royal family Skeletons found in the pyramid gave information about the average height and age of the people Indus Civilisation Indus Civilisation is also called Harappan Civilisation This was the first site to be excavated in the early th century Baked bricks were found underground The city had a well-planned proper sanitation systems proper well and a way to direct waste water to closed drains There were advanced granaries Great bath and protective walls It was found that the city and its civilisation were very advanced for their time Pyramid Indus Civilisation excavation Some interesting examples from Tamil Nadu There are many places in Tamil Nadu where excavations had happened and many interesting things were found Adichanallur Adichanallur Thoothukudi District Among the artefacts unearthed were Urns pottery of various kinds Red Ware Black Ware iron implements daggers swords spears and arrows some stone beads and a few gold ornaments Bronze objects representing domestic animals and wild animals like tiger antelope and elephant have been unearthed The people were skilful in making pottery and in working stone and wood There are many places in Tamil Nadu where excavations had happened and many interesting things were found Some interesting examples from Tamil Nadu Adichanallur An archaeological site is any place where there are physical remains of past human activities Imagine yourself to be an archaeologist and list down the things that you would collect during an excavation Arikamedu Arikamedu is an archaeological site situated near Pondicherry The excavation revealed that it was a costal village that traded with Rome An archaeologist found Roman lamps glass stone beads gems cutlery and crockery wine containers etc He noted that for the local fishermen of the village the antiques were new Arikamedu Some Dinosaur eggs were discovered at Senthurai in Ariyalur Keezhadi Keezhadi Sivagangai District The Archaeological Survey of India ASI excavated an ancient town dating to Sangam Age in Keezhadi village at Thiruppuvanam taluk Excavations have produced evidence for brick buildings and well laid out drainage system Tamil Brahmi inscription on pottery beads of glass carnelian and quartz pearl gold ornaments and iron objects shell bangles ivory dice have been unearthed The Roman artefacts found at the site add to the evidence of ancient Indo -Roman trade relations Keezhadi Glossary Archaeologist A person who learns about human history through excavation Excavation Digging the earth to find building and tools made long ago Unearthed Find something in the ground by digging Recap  Excavation is the process in which people dig the Earth to find things that were used long ago  Archaeologists study the history of humans and places through excavation and analyse artefacts  Pyramids and Indus Civilisation are excavation sites in the world  Adhichanallur Keezhadi and Arikamedu are important excavation sites in Tamil Nadu Archaeologists b Scientists c Excavationist Prince b King c Queen Egypt b Harappan c American Thoothukudi b Chennai c Pondicherry Modern b Sangam c Middle age Pyramids Adichanallur Baked bricks Keezhadi Pottery Roman lamp Sivagangai Indus civilisation Arikamedu Egypt During excavations many artefacts were found Indus Civilisation is located in Harappa Adichanallur is an archaeological site in Coimbatore district of Tamil Nadu Keezhadi excavation revealed that it was not a developed city Roman lamps glass stone beads gems etc were found in Arikamedu Hydrosphere describe the features of Hydrosphere define each type of water body list the steps to be taken to conserve water explain the steps involved in the water cycle Rani Sundar Our earth is huge isn’t it Sundar Yes Rani It is huge Do you know what does it consist of Rani No can you tell me Sundar Sure The earth consists of Lithosphere Hydrosphere and Atmosphere Rani Oh Such big words What does this mean Sundar This means that the earth consists of land water bodies and air Rani Yes That’s true Sundar When we went to the Marina Beach have you noticed how much water in the sea The water from oceans seas and so on become a part of the hydrosphere Rani Wow Can you tell me more about hydrosphere Sundar Sundar Sure Marina Beach Hydrosphere Hydrosphere is the total amount of water present on a planet The hydrosphere includes water that is present on the surface of the planet underground and in the air Therefore a planet’s hydrosphere can be in the form of liquid vapour or solid in the form of ice Hydrosphere covers about of the planet Earth This includes water in liquid and frozen forms is salt water and rest of the water is found in ground lakes rivers and also frozen as ice in the form of glaciers and icebergs Glacier Iceberg There is no aquatic life in Dead Sea because it is too salty Importance of Hydrosphere We need water to carry out many activities in our daily lives We need water to drink take bath cook food etc Animals and plants also need water for their survival If there is no water it cannot evaporate and form clouds So there will not be any rain Pond Stream River Lake Types of water bodies Oceans Oceans are vast water bodies that usually separate continents from one another The water is salty in nature There are five oceans on earth They are the Pacific Ocean Atlantic Ocean Indian Ocean Southern Ocean and Arctic Ocean Indian ocean Sea Seas are also vast water bodies but smaller than oceans in size They are partly closed by land and opens up to the ocean Sea water is salty in nature Example Arabian Sea Indian Ocean Arabian Sea It is incredible that a wide variety of earth’s living organisms exist within the oceans Some of the longest flowing rivers in India are the Ganges Yamuna Godavari Krishna and Cauvery River lake waterfall sea etc Rivers Rivers are large streams that flow over the land Rivers are fresh water bodies which generally begin at mountainous areas They usually drain in oceans or seas Example Ganga and cauvery Lakes A lake is a water body surrounded by land on all sides Lakes can have salt or fresh water Example Dal Lake Gulf A gulf is a large area of an ocean or a sea that is surrounded by land Example Gulf of kuchch Bay A bay is a body of water which is partially enclosed by land It has a wide mouthed opening of land and is joined to the sea or other large water bodies Example Bay of Bengal Sambhar Salt Lake in Rajasthan is one of the important inland salt water lake in India Lagoon A stretch of salt water separated from the sea by a low sand bank Example Lake Chilika in Odisha Strait A strait is a narrow stretch of water which joins two larger water bodies Example Palk Strait joining the Bay of Bengal and the Indian Ocean Waterfall Water fall forms when a river flows from a great height Example Courtallam Waterfall Courtallam Waterfall We should be very careful about how we use the water We have the choice to conserve water resources or pollute them further Water pollution is a common phenomenon around us We throw garbage join sewage to rivers and so on making river water contaminated and not fit for use This increases the scarcity of water for household use Rani Oh water scarcity Sundar Yes We faced it too Rani The whole of Tamil Nadu faced a huge water crisis Rani You are right I think we should come up with step to use water thoughtfully Children you can easily do these Take water in a bucket for bathing instead of using shower After washing vessels check if the taps are closed Can you help Rani to come up with more steps Do not put plastic garbage when you go near beaches It is very dangerous for the aquatic life Sundar Rani Do you know that water continuously moves on below and above the surface of the earth Rani Really How Sundar There is a water cycle that occurs continuously Water changes its state from solid liquid gas in this cycle The stages involved in a complete water cycle are Stage I Evaporation The heat of the sun falls on the water bodies like oceans seas lakes rivers etc The water slowly evaporates as vapours into the air Stage II Condensation As the vapours rise high the cooler temperatures make them cool down and turn back into liquid This is called condensation Wind moves the liquid around leading to the formation of clouds Stage III Precipitation Wind movements cause the clouds particles to collide They become rain bearing clouds and fall back onto the earth’s surface by the process known as precipitation This may occur in the form of rain hail snow or dew depending upon the temperature conditions Stage IV Runoff and Infiltration The water either runs off into oceans rivers and ground surface or is absorbed into the soil infiltration This cycle continues Glossary Continent Main stretches of land found on earth Evaporate The process by which liquid becomes gas Precipitation Rainfall Recap  Earth is made up of land water and air  Water is necessary for all life forms   of water is found in ground lakes ponds streams and rivers  There are five major oceans in the world The Pacific Atlantic Indian Southern and Artic ocean Waterfall forms when river falls from great height We should use water carefully Air Water Land Plants Ganga Atlantic Arctic Pacific River Gulf Lake Bay First Second Third Fourth Sea Strait Bay Pond Fresh water Sambhar lake A lagoon Palk Strait Joins Indian Ocean and Bay of Bengal Formation of cloud Inland salt water lake Chilika in Odisha Condensation Dal lake About of water on the earth is salt water Water is not necessary for our basic needs Water in the sea is sweet We should keep the tap open throughout while washing utensils We should save water Continents of the world describe the key features of each continent describe some countries in each continent Introduction Where do we all live We all live on the Earth Earth is our home The total land on the earth is formed of seven continents of various sizes Some are connected to each other while others are not Each continent has a different number of countries The seven continents of the world are Asia Africa North America South America Antarctica Europe and Australia Asia Asia is the world's largest continent in size and population The world's two most populous countries China and India are in Asia Asia has the highest point on earth the peak of Mount Everest which is in the Himalayas Asia is the birth of great ancient civilisations Indus civilisation Chinese civilisation and Mesopotamian civilisation Himalayas The Great Wall of China Some other countries in Asian continent are Japan Singapore Malaysia Saudi Arabia Sri Lanka Nepal Pakistan MaldivesPhilippines Afghanistan Thailand and Indonesia Now let us learn more about our country which is the part of Asia The Great Wall of China is the man made structure that can be seen from space Thousands of years ago the seven continents of the world were joined together as a single huge landmass called Pangaea But it slowly broke apart and separated as seven continents Asia Asia is the world's largest continent in size and population The world's two most populous countries China and India are in Asia Asia has the highest point on earth the peak of Mount Everest which is in the Himalayas Asia is the birth of great ancient civilisations Indus civilisation Chinese civilisation and Mesopotamian civilisation Himalayas The Great Wall of China Some other countries in Asian continent are Japan Singapore Malaysia Saudi Arabia Sri Lanka Nepal Pakistan MaldivesPhilippines Afghanistan Thailand and Indonesia Now let us learn more about our country which is the part of Asia India India is our country India is known as the Land of unity in diversity as people from different religions languages cultures live united India has states and union territories New Delhi is the capital of India India has several historical monuments Taj Mahal is one such monument It is situated in Agra on the banks of river Yamuna Taj Mahal is built completely using white marble stones This most beautiful monument is recognised as one of the seven wonders of the world Taj Mahal Sanchi Stupa GangaiKonda Cholapuram St George Fort Some other historic monuments in India include India Gate in Delhi Sanchi Stuba near Bhopal Gateway of India in Mumbai St George Fort and GangaiKonda Cholapuram in Tamil Nadu Gateway of India India Gate Africa Africa is the second largest continent of the seven continents of the world The world's longest river the Nile and the world's largest desert the Sahara both are home in Africa More than of the world's gold and diamonds come from the mineral rich continent of Africa Sahara Nile River Clean River Polluted River The continent was uninhabitable Not fit for habitation and remained unknown for thousands of years earning it the name of Dark Continent Some countries in African continent are Sudan Libya Egypt Kenya Zimbabwe Ethiopia and Guinea North America North America is entirely within the Northern Hemisphere North America is the third largest continent by area following Asia and Africa The largest fresh water lake Lake Superior is located in this continent The Mississippi Missouri is one of the longest river located in North America The United States of America USA is a part of North America New York USA Ottawa Canada North America is the only continent in the world that has all climatic types Some countries in North American continent are Canada Mexico Nicaragua Honduras Cuba Guatemala Panama and Costa Rica South America South America is located mostly in the Southern Hemisphere with a relatively small portion in the Northern Hemisphere The world's largest river which is also the second longest is the Amazon river in South America Brazil a country in South America is one of the largest coffee producer in the world The Andes is one of the longest mountain range in South America Andes is an example of fold mountain Mt Aconcagua is the highest peak in the Andes One of the highest volcanoes of the world Mt Cotopaxi is found in this continent South America The Amazon rainforest covers most of the Amazon Basin in South America Andes Mt Cotopaxi Some countries in South American continent are Argentina Bolivia Brazil Colombia Ecuador Paraguay Peru Uruguay and Venezuela Country Continent Antarctica Antarctica is the coldest continent on Earth It is also called the White Continent or the Frozen Continent Antarctica experiences half a year of sun light and half a year of complete darkness Penguins are found in Antractica There are only permanent research stations from different countries can be found there Penguins in Antractica Europe Europe and Asia are parts of the same major landmass Europe is separated from Asia by the Ural mountains and the Caspian Sea The world's smallest country the Vatican City is in Europe The Volga is one of the longest rivers in Europe Finland in Europe is called the Land of Lakes because melting ice sheets have created a lot of lakes here Some countries in European continent are France Spain United Kingdom Germany Norway Austria Greece Spain Portugal and Italy Vatican City Italy London England Russia the country stretches over a vast expanse of Eastern Europe and Northern Asia Ukraine's Steppe region is called the Bread Basket of Europe because it produces a large amount of wheat Which state is called the Bread Basket of India Australia Australia is an Island continent covered with unique landscapes and natural wonders The Great Barrier Reef the pride and joy of Australia is made up of nearly individual reefs and visible from space Australia includes the islands of Tasmania and numerous small islands The Great Barrier Reef Kangaroo Glossary Civilisation A society in an advanced state of social development Island A piece of land surrounded by water Monument A building that is of historical importance and preserved as public property Recap  Earth has seven continents Each of these seven continents is divided into countries  The names of the seven continents of the world are Asia Africa North America South America Antarctica Europe and Australia Five Seven Nine Africa Asia North America Kaveri Ganga Nile North America Australia Europe Asia Antarctica Africa Asia Vatican city Africa Amazon forest Europe Sahara desert South America Kangaroo Australia Biggest Continent Asia is the third largest continent India has one of the seven wonders of the world Brazil is one of the largest coffee producer in the world The great barrier reef is in India Antarctica has half year of light Unit Forts and palaces Introduction Tamil Nadu has been ruled by several empires especially by the Chera Chola Pandya and Pallava rulers Cholas Pandyas and Nayakkars constructed magnificent forts and palaces in Tamil Nadu The Dutch the British and the French entered our country and they built forts to protect their territories Fort The architectural monuments are now preserved in the form of palaces forts and other historical sites in Tamil Nadu Today only a few palaces and forts are in good condition They are the prime attractions for tourists in Tamil Nadu Vellore Fort Vellore Fort is a th-century fort situated in Vellore Tamil Nadu It was built by the Kings of Vijayanagara Among the forts in Tamil Nadu Vellore fort is considered to be one of the most invincible fort It is surrounded by a deep and wide moat The water of this moat was home to thousands of crocodile It was feared by many raiders of the fort This fort is a good example of military architecture It is studded with double fortifications In Tipu Sultan’s family was detained here by the British The first rebellion against the British broke out at Vellore Fort in Vellore fort Inside the Vellore fort there is a well-known temple called Jalakanteswarar temple a church a mosque a museum and several government offices LET US Vellore Fort has five important Mahals They are Hyder Mahal Tippu Mahal Begam Mahal Candy Mahal Badhusha Mahal Dindigul Fort Dindigul Fort is a th-century hill fort situated in Dindigul Tamil Nadu It is also called Dindigul Malai Kottai In the th century the fort was passed on to the Kingdom of Mysore Dindigul Fort was built by the Nayakkars of Madurai in order to defend their region from the invading Mysore army Presently the fort is maintained by the Archaeological Survey of India The fort was cemented with double walls to withstand heavy artillery Dindigul Fort Fort St George is the first fort built by the British in India Fort St George is located in Chennai State Secretariat is functioning inside the fort Thirumayam Fort is famous for its artistic work and architectural brilliance It is located in Pudukottai Tamil Nadu Thirumayam Fort is popular for its large rock inscriptions It is also known as Oomayan Kottai The magnificent Sadras Fort was built for commercial purposes by the Dutch It is located in Kanchipuram Gingee Fort Gingee Fort is another beautiful fort in Tamil Nadu It is located at Villupuram district Gingee fort is built across three hills The fort walls are km long and the three hills are connected by walls It is built at a height of feet and protected by a feet wide moat It is a huge fort with many attractions like Kalyan Mahal temples Aanaikulam pond granaries and a watch tower Tharangambadi Fort Tharangambadi Fort Tharangambadi fort is locally called Danish fort It is located on the shores of Bay of Bengal in Tharangambadi Tranquebar Tamil Nadu The fort is trapezoidal in shape with three rooms in the left wing The central part of the fort has four domes The central pillar of the hall holds the entire weight of the domes Tamil Nadu has great palaces in many places Some are described here Thirumalai Nayakkar Palace The majestic Thirumalai Nayakkar Palace is a th century architecture of Nayakkar dynasty It is one of the most popular palaces in South India Thirumalai Nayakkar Palace is located in the city of Madurai This is one of the tourist spots of Tamil Nadu Thirumalai Nayakkar Palace is widely known for its giant pillars It has an archaeological museum The major attraction of this palace is the courtyard and the dancing hall LET US Tamukkam Palace was the summer residence of the Queen Rani Mangammal of Nayak dynasty It is located in Madurai Thirumalai Nayakkar Palace ow and Arrow Sword Throne Shield Crown Fernhills Palace in Ooty served as the summer palace for the Kings of Mysore Thanjavur Maratha Palace Thanjavur Maratha Palace is popularly called Thanjavur Aranmanai Thanjavur Maratha palace was originally constructed by the rulers of Thanjavur Nayakkar kingdom After the fall of the Thanjavur Nayakkar kingdom it served as the official residence for Thanjavur Maratha Thanjavur Palace Complex is a tourist attraction which houses three separate venues the palace the art gallery and a manuscript library Saraswathi Mahal LET US Saraswathi Mahal is considered as one of the oldest historical libraries in India Saraswathi Mahal also has a museum The library has more than a million manuscripts in languages like Tamil Sanskrit Marathi Telugu and Manipravalam Thanjavur Maratha Palac Padmanabhapuram Palace Padmanabhapuram Palace is a beautiful historical monument that is situated at Padmanabhapuram Kanyakumari District It is also known as Kalkulam Palace Padmanabhapuram Palace is a wooden palace which is built in Kerala style of architecture It is a fine example of art and craftsmanship The Padmanabhapuram Palace was built by the ruler of Travancore The palace has various sections like Queen Mother Palace Council Chamber Southern Palace and so on Padmanabhapuram Palace Recap Palaces and forts are the prime attractions of Tamil Nadu tourism   Vellore fort is a fine example of military architecture   The major attraction of Thirumalai Nayakkar Palace is the courtyard and the dancing hall Glossary Manuscript a document written by hand Moat A deep wide ditch surrounding a fort Raiders Invaders Gingee fort Pudukottai Danish fort Chennai Tammukkam Palace Villupuram Thirumayam fort Madurai Fort St George Tharangambadi Unit agriculture Introduction Agriculture is the art and science of preparing the soil for cultivation growing crops and raising livestock It has become a necessity for the humans Agriculture led to the development of human civilisation India is an agricultural country One-third of our nationsl income comes from agriculture Agricultural development contributes to the economy of our country Farmers in India A farmer is a person who cultivates crops and rears animals poultry and other livestock India is a land of farmers It is called so because majority of Indians are directly or indirectly involved in agricultural activities Agriculture is the backbone of our economy Farmers who cultivate in an area less than hectare are called micro farmers Types Of Farming There are several types of farming Subsistence farming Commercial farming Plantation farming Mixed farming Subsistence Farming In subsistence farming crops are cultivated and used only for own family consumption Such type of farming is adopted by small and marginal farmers on fragmented land holdings The cultivated crops are usually food crops The method of this farming is generally archaic Commercial farming Unlike subsistence farming here the crops are cultivated for commercial use and is sold in markets This method of farming is done by using modern tools and techniques Plantation Farming Plantation Farming is done in an estate where a single cash crop is cultivated on a large scale Examples Tea Coffee and Rubber Mixed Farming Mixed farming refers to the rearing of animals along with the cultivation This type of farming is economical The Government has set up agencies like the Food Corporation of India to purchase the farm products directly from the farmers at reasonable rates Water Resource for Agriculture There are no perennial rivers in Tamil Nadu Tamil Nadu depends on Northeast and Southwest monsoon Hence agriculture in Tamil Nadu is dependent on ground water Modern Well irrigation Irrigation Irrigation is the supply of water to land or crops for the purpose of agricultural production Types of Irrigation Well Irrigation Canal Irrigation Sprinkler Irrigation Drip Irrigation Well Irrigation Well irrigation has been practised in Tamil Nadu for many generations It is a less expensive type of irrigation Archaic Well irrigation Modern Well irrigation Canal Irrigation Canal irrigation is the most important form of irrigation in India Most of the North Indian canals are perennial The main canal irrigated areas are in the northern plains of India such as Uttar Pradesh Punjab Haryana Rajasthan and Bihar Canal Irrigation Green revolution is a process which brought an increase in crop production by using new varieties of seeds pesticides and new agricultural techniques Dr M S Swaminathan of Tamil Nadu is known as Father of Green Revolution in India Sprinkler Irrigation Sprinkler irrigation is similar to natural rainfall Water is sprayed through pipes in the air through sprinklers Drip Irrigation Drip irrigation is a type of micro-irrigation system that saves water and soil nutrients In this system water drips slowly into the roots of plants through pipes Pipes can be either above the soil surface or buried below the surface The water directly reaches the roots and minimises evaporation Sprinkler Irrigation Drip Irrigation Animal husbandry is the branch of agriculture It is to raise animals for meat fur milk eggs and other products One who produces food for us It is used for ploughing It is used for separating grain from hay Horticulture is the science or art of cultivating fruits vegetables flowers or ornamental plants Important crops in Tamil Nadu Tamil Nadu has different types of soil rainfall and weather across its districts It is suitable for the production of fruits vegetables spices plantation crops flowers medicinal and aromatic plants Horticulture is the fastest growing sector within agriculture in Tamil Nadu Paddy is grown in large areas because rice is the main staple food of the state The principal food crops are rice maize jowar cholam bajra Kambu ragi and pulses bengalgram redgram greengram blackgram and horsegram The cash crops include cotton sugarcane oilseeds coffee tea rubber coconut gingelly and chillies Mango and Banana are the leading fruit crops of Tamil Nadu The main flowers grown in Tamil Nadu are Jasmine Chrysanthemum Marigold and Rose Which State is known as the Rice bowl of India Think Thanjavur is an important agricultural centre located in the Cauvery Delta It is known as the Rice bowl of Tamil Nadu LET US Cropping seasons in Tamil Nadu Navarai Sornavari Kar Kuruvai Samba Thaladi Coimbatore is the largest cotton producing district in Tamil Nadu It is known as the Manchester of South India Glossary Recap Archaic Ancient Minimize Reduce Perennial Everlast India is an agricultural country Indian farmers are the backbone of the Indian economy There are several methods of farming systems in India There are four basic types of irrigation The principal food crops are rice maize jowar bajra ragi and pulses Unit educational rights Introduction Education is important for people as well as the nation Education is the first step for a child‛s development Education improves knowledge skills values and the quality of one‛s life It also helps in overall development of a country Importance of Education Education doesn‛t mean that one should be literate It is more than literacy Education helps to analyse the reason build skills to live know what is right and wrong lead a moral life Literacy in itself is no education Literacy is not the end of education Real education consists in drawing the best out of yourself -Mahatma Gandhi Education helps in broadening one‛s mind It removes superstitious beliefs Education helps in increasing awareness of surroundings social and political issues It develops wisdom Swami Vivekananda is best known for his speech which began with the words Sisters and brothers of America Education is the manifestation of the perfection already in man -Swami Vivekananda Gurukulam is the system of education that was practised in ancient India Guru teacher and the Shishya student lived in Ashram Educational Rights Every child has right to have free and compulsory education The Right to Education Act RTE specifies different responsibilities to the local authorities and government to ensure free and compulsory education Right to Education Act describes the importance of free and compulsory education for children between to years of age Education should be affordable to the common people There should be no discrimination in education It should be based on need of the child and mould the child‛s thoughts The child should be at the centre of an education system The legislative section is divided into three lists Union List State List and Concurrent List Education comes under Concurrent list Important features of RTE Until the completion of elementary education no student is stopped from school Twenty-five percent reservation is given to the economically Underprivileged people in all private schools Improvement in the quality of education School infrastructure should be improved every three years Finances will be shared between the state and the central government National Education Policy NEP In the Government of India has framed the National Education Policy NEP to promote education among the people of India The NPE covers all educational systems from primary to college level Child labour is not allowed in our country All children are entitled to have free and compulsory education Educational Schemes The most important milestone in education is the free mid day meal programme which was implemented by the former Chief Minister of Tamil Nadu K Kamaraj Indian educational system is mainly divided into four stages They are Lower primary Upper primary Secondary Higher secondary The Sarva Shiksha Abhiyan SSA the Right to Education Act RTE Act have improved the educational performance Sarva Shiksha Abhiyan SSA Education for All was launched in the year Objectives of Sarva Shiksha Abhiyan Increasing the enrolment in primary schools Getting access to the free and compulsory education for children up to age Improving the quality of education Samagra Shiksha subsumes the three erstwhile Schemes of Sarva Shiksha Abhiyan SSA Rashtriya Madhyamik Shiksha Abhiyan RMSA and Teacher Education TE Rashtriya Madhyamik Shiksya Abhiyan RMSA was launched in The aim of this programme Raising the minimum level of education to class X Later in the government of India wanted to provide a single scheme for school education starting from pre-school to Class XII This scheme is known as Samagra Shiksha SS Objectives of Samagra Shiksha Providing quality education and improving learning outcomes of students Supporting all state governments in implementing RTE Focusing on girl education Focusing on digital education In the past two decades India has achieved a maximum enrollment of students in schools LET US Perunthalaivar K Kamaraj‛s birth anniversary of July is celebrated as Educational Development Day in recognition of his contribution to the development of education Ensure assure Erstwhile Former Superstitions Irrational religious belief Education is very important for every individual Every child has the right to have free and compulsory education Education should be affordable to common people The Right to Education Act describes the importance of free and compulsory education for children between the to years of age Samagra Shiksha Scheme improves the quality of education and the learning of students

English Unit Our Sweet Home Chittu has grown so tall Have you Let us sing Up and Down Left hand up right hand down And walk round and round Right hand up left hand down And walk round and round Left leg front right leg back And run round and round Right leg front left leg back And run round and round We go up We go down And shake it all around We go up We go down And shake it all around Let us learn Too Big Too Small I cant lift you up Mano says mom You are too big You cant walk to school alone Mano says dad You are too small You cant sleep in the cradle Mano says grandpa You are too big You cant carry the baby to the park Mano says grandma You are too small Mano thinks Too big Too small How can he be too big and too small all at once Too big to wear his old pink shirt Too small to make dosa Too big to climb on grandpas back Too small to carry the baby What am I the right size for Mano wonders Mom smiles and says Why you are Just big enough to go to school And you are just small enough for me to carry you on my shoulders says dad You are just big enough to take me for my morning walks says grandpa And you are just small enough for me to tell stories to says grandma You are always the perfect size for our hug all say and give him a warm wonderful hug Let us read The Fat Dog He is a thin king The thin king has a fat dog The thin king and the fat dog go for a walk The fat dog sees a cat The fat dog runs to catch the cat The king runs to catch the fat dog They run and run and run Now the fat dog is thin Unit Listen to your body Let us sing The Magic Words When we want someone to help What do we say Please please please When someone helps us out What do we say Thank you thank you thank you When we make someone cry What do we say Sorry sorry sorry Please thank you and sorry Please thank you and sorry Say them as you need Say them to make it all good Let us learn Nina Wonders Nina Today I am not going to school It is a holiday I am not going out to play It is too hot anyway What am I going to do Nithin Nina Nina Nina Nina does not reply Nithin goes near her and shakes her head Nithin I called you three times Nina Sorry I didnt hear you Nithin Lets play a game Its called Listen to your body Nina Really How do we play that game Nithin Sit down and do what I do Nithin breathes in and out Nina breathes in and out Nithin Can you hear your breath Nina Yes Nithin I can make my breath louder sssssssssssssssss Nithin places his hand on his chest and so does Nina Nithin Listen do you hear anything Nina Lup tup Lup tup Lup tup Someone is playing a drum Nithin Thats your heart It beats all the time It beats all day It beats all night Nithin claps his hand and so does Nina Nithin I can make a song with my hands Nina stands up and stamps her feet Nina Ha I can make one with my feet Tippity Tappity Toe Stamp Stamp Stamp Nithin places his hand on his tummy and so does Nina Nina I can hear Guddu Guddu Guddu Nithin Ha ha Are you hungry Whoossshhh goes the cooker Nina turns to the sound They both walk to the kitchen Nithin I think food is ready Nina How do you know Nithin My nose says so Nina One for me Father What are you both doing in the kitchen Nina We heard the cooker Nithin We saw the jamuns The jamun is so sweet Father Oh no No more jamuns before lunch Off you go Unit Know your feelings Do you like this flower No I like that one Let us sing How Do I Feel When I am happy I laugh ha ha ha When I am sad I cry boo hoo hoo When I am angry I yell ah ah ah Any way I feel I can show it to you Do you ever feel the same way too When I am hungry I eat chew chew chew When I am thirsty I drink gulp gulp gulp When I am tired I sleep zzz zzz zzz Any way I feel I can show it to you Do you ever feel the same way too Let us learn Not that one It was a holiday Gopi wanted to do SOMETHING Mom what is in that green box said Gopi Mom was reading Gopi put a stool over a chair He climbed up to get the box down No no Not that one All those boxes will fall on our heads Gopi said mom Gopi was angry with his mother Gopi Come lets go to the market I will get you something said mom Yes we will said They went to the market Gopi was still angry I want that one he said pointing to an apple No no not that one The fruits will fall down said the shopkeeper I want that book said Gopi No no not that one said the shopkeeper The books will fall down I want that one shouted Gopi almost pulling out a samosa from a high stack of samosas No no not that one warned the shopkeeper All my samosas will fall down He was now in a very bad mood I want that one said Gopi loudly No no not that one The flowers will fall down said the flower seller By now Gopi was crying loudly Everyone was looking at Gopi I want that one The black one said mom loudly Gopi stopped crying suddenly What was the black one He saw a basket of puppies Mom no no Not that one Lets take this brown one said Gopi Then Gopi gently took the brown puppy It was on top of the pile Mom smiled Gopi was smiling too He was happy Let us learn No No Not Now Shall I hop on this tub No No Not now Shall I sit by that cup No No Not now Shall I jump on your bed No No Not now Shall I get your cap No No Not now Shall I run to the shop No No Not now Shall I have a nap No No Not now But then what shall I do Come Let us go out and play Fun with Music What is it Valli It is my violin I play on it three one two light speaker drums stage guitar tabla mike flute screen veena shakers violin trumpet Five Little Bells Five little bells hanging in a row The first one said Ring me slow The second one said Ring me fast The third one said Ring me soft The fourth one said Ring me loud The fifth one said Ring us together all at once Let us sing Five Little Bells Manis Drum Mani is excited today The teacher has a big surprise Teacher We are going to play in the concert next week Won‛t it be fun Children Yes it will be great fun Teacher Okay we shall start Bring your shakers and drums or whatever you have tomorrow Mani loved to play the drums Mani REALLY wanted to play the drums Mani Mom can you buy me a drum Mom I will try Mani Mom did not have money to buy the drum She gave Mani two nice sticks Mani played with the sticks Mani drummed on anything he found Ch chch chch chch ch Tada Tada Dum dum Dum Tada tada tada dum dum Tum ti tot Tum ti tot Teacher Let us start Mani where is your drum Mani I don‛t have a drum I only have the sticks Abu played the violin Malar followed Abu with her keyboard The heads in the class moved to the tune Soon Lisa played her shakers Mani drummed on anything he found Ch chch chch chch ch But it did not sound right Suddenly they heard Tada Tada Dum dum Dum Tada tada tada dum dum Tum ti tot Tum ti tot It was Mani with his sticks and a few boxes The teacher loved the sound The children clapped to the beat Abu Malar and Lisa followed the beat The entire class danced to the song Everyone clapped Class was ready for the concert It was so much fun Mom can you buy me a drum Everyone claps I only have the sticks The teacher loved the sound We are going to play in the concert Valli and Chittu are looking at some pictures That is Nila She is my sister That is Raju He is my brother That is a belt It is my belt Yes It is your belt What do you say for two girls When we see more than one we say They are girls Word wall live last colour friend eat want year got play both Crows live on trees What colour do you like I eat with my friend We want to run This year I will win I got a pen as a gift We both play with our friends live last colour friend eat want year got play both day last when away come play shut those live are these year let friend what sky colour man eat get into want got There are two pencils There are three drums There are four boys There are five books There are six pens There are six pens There are ten dogs cry fly pie tie kite bike my dry fry shy sky try die lie pie tie fine mine hide line mice rice lime The kite flies in the sky I ride my bike by the side Mike and Nike like pineapples The mice try to bite the pie I like lime rice Draw a fine line g l gl glass g r gr grass s k sk desk Word wall my by try dry fry lie die tried tied driedwide cite file lime pine Example sit site kit bit pin fin rid hid One Bun Runs There is a plate of buns One bun jumps off the plate The pig runs to catch it But the bun runs away The rat runs to catch it But the bun runs away The goat runs to catch it But the bun runs away The pup jumps to catch it But the bun runs away The frog hops to catch it But the bun runs away The fox does not run The bun stops The fox jumps on it And the fox eats the bun pup fox rat goat frog pig The bun jumps off the plate   Yes No The rat eats the bun Yes No The fox eats the bunruns hops jumps Yes No Paste thread on the lines Paste bindis on the circles Paste thin sticks on the drums sticks Paste sand on the drum violin drum tabla guitar flute trumpet shakers veena a is Neena d is Amir b is a box e eats an apple c has a bat f sings a song by site bike dice kite die mice hike Two baby birds live in a nest with their mother At first they both eat small worms Then they both play to have fun Soon both fly away after a month fly sky tie lie side tide shy tail line fine die tape name tide mime lime rice made my by cry fry Learning outcome Now I can name the musical instruments use he she it they in a sentence answer using There are readphonic words understand that everyone has some talent recite the poem Five Little Bells say words with y ie and i e read the story One Bun Runs understand and follow simple instructions read sight words Wonders of the Jungle I am going to see the animals I will come with you run jump hop sing gaur rhino wolf bear hippo cheetah giraffe crocodile deer tiger lion gorilla elephant monkey zebra Fun in the Forest Monkeys can jump And parrots can fly Turtles can swim And Cheetahs can run Giraffes are tall And Hippos are big Zebras are swift And Tigers are strong We see the animals here today They love to play And love to say Would you join us and play Chuttis Tail Chutti was a squirrel A tiny happy squirrel Chutti liked to run and play She jumped over little stones She jumped on big stones She stood on two legs to look around She ran on four legs over the ground Chutti liked to have fun One day Chutti turned her head She looked at her tail It was fluffy It was light But of what use was it Chutti went to Doctor Bear Doctor can you give me a new tail This one is not good Why Chutti It looks very good Does it hurt you Oh these are nice I like that one please That is a monkey‛s tail Chutti You won‛t like it But I want it It is long It can help me climb trees Please change my tail doctor Well all right Chutti got a new tail It was long It was curvy She loved it But she could not run You see Chutti was small and light But the tail was long and heavy So Chutti went back to the doctor I don‛t like this one It doesn‛t move I want that lovely striped tail That is a cat‛s tail You won‛t like it Oh I really like it Please do fix it on me Well all right Chutti was happy with her new tail A dog saw her tail He thought it was a cat He chased her Chutti ran fast and climbed a tree Her heart was going dub dub Oh oh oh This won‛t do Chutti went back to the doctor Doctor please give me my old tail back I don‛t want a new tail at all I told you that Here you go Now your old tail is fixed Chutti was a tiny cat b Chutti did not like her ears c The monkey‛s tail was long and heavy d Doctor Bear gave Chutti a dog‛s tail e Chutti was finally happy with her own tail Hello Chittu and Mittu how are you We are fine Why do you call me Mittu and my sister Chittu Oh It is your name Why do we need names We need names to call people Does everything have a name Yes People places animals and things all have names school crow boy table cow carrot cat Valli pen girl ball Chennai zoo goat fan father shop dog Person Place Animal Thing Word wall found left men bring wish black let use right end found men wish let right left bring black use end apple cake car She a pen They a pet Rani an egg boat road crow grow stone rope load toad foam roam coat goat flow grow show slow snow row cone lone tone pole note vote The crow is on the road The toad is on the snow The goats go in a row The boat is so slow The cone is full of foam The note is on the coat s c sc school s k sk skip m p mp stamp Word wall soak coal foal toad load moan low row blow glow grow throw hole role home bone hose rose hop hope not rod cop con mop nod for rot What do you have What do I have What does she have What does he have What do they have I have a toy You have a book She has an umbrella He has a ball They have kites I found a pen The black cat has come out They are men Open your right and left hands Bring me a book This is the end Wish you a great day Let me use the book Where is My Cup Monty is sad Where is my cup Not here not there Where is my cup Not on the mat Not under the bed Where is my cup Not in the bin Not on the pot Where is my cup Not in the tub Not here not there Oh It is here It is in my bag bin cup tub bag pot I cannot find my black pen I found the red pen on the table My father left it there I found the blue pen on the chair My sister left it there She does not let me use her pen found left wish black What does he have What do they have What do they have What does she have What does it have park hen chair school crow Thara beach pig pen pencil John Kavya cat ball garden Arun Person Place Animal Thing Learning outcome Now I can name wild animals know to use and classify names read new phonic words understand that everyone is special recite the poem Fun in the Forest say the words with oa ow o e understand and follow simple instructions read the story Where is My Cup read sight words use have has in a sentence A Visit to the Farm is eating an apple is writing are playing They He She I will ride a horse All the best Valli Look and say rat hole bee hive pig sty bird nest dog kennel sheep pen spider web horse stable cow shed duck pond Let us sing Wonderful Sea Note to the teacher Sing the song with actions Encourage children to listen and do the actions first then follow the song with the teacher By the deep blue sea what do we see Diving dolphins above the waves Crawling crabs near the rocks Many many rocks like tiny caves What do you see in the deep blue sea Starfish swimming over the reefs Whistling whales in the water Sea horses moving straight and tall What else do we see in the blue sea Moving turtles on the sandy beach Many many waves rolling to the shore We see all these and more in the blue sea Let us learn Donas Song Dona the donkey lives in a village He likes the way his friends bray But he cannot do it the right way There is a singing contest in the car festival What will I do thinks Dona Let me ask my friends Dona goes out to see How do you grunt Piggy Dona asks Piggy the pig Simple Roll right Roll left Then lift your nose Khngrrr Dona cannot do that How do you bleat Shanu Dona asks Shanu the sheep I flick my tail Jump up and down and then shout Baa Baa Dona cannot do that How do you neigh Harry Dona asks Harry the horse I shake my tail keep my ears straight and say Neigh No Dona cannot do that How do you snort Buffy Dona asks Buffy the buffalo I sway my head from side to side open my mouth wide and shout Mrrrrr Oh no Dona cannot do that too What will I do next week Dona is worried He stands in front of the mirror He shakes his ears from left to right He opens his mouth and lets out a cry Heee Haaan Hey I can sing I can sing Donas song is the best Sing a Song in the car festival Let us understand I Match the animals with the sounds grunt bleat neigh bray Dona lives in a How do you Dona shakes his head in front of the I sway my from side to side Listen think and say Why did Dona want to learn a song Whom did Dona ask for help How did the buffalo snort Was Dona able to sing at the car festival Have you heard a donkey bray Can you do it Let us know Look here what is it It is a cat I am Valli You are Chittu Valli and Chittu talk about their friends Do you know Veera and Vasu They are my friends Do you know Ram He is my friend Do you know Mala She is my friend I am He is We are She is You are It is They are This is These are That is Those are Let us practise Choose and write I a tall boy is am We happy is are You my pet are am He thin are is These pens are is That a bus am is She sad am is They good are is It a book is am Those cars are is Draw lines to match p g d nk y b ff l ho s g t Spell check Fill in the missing letters We You He They She I It This That is are am happy tell next please leave hand why better while should never each also y Display the words on the word wall y Say the word once y Let children repeat it y Say the word loudly y Let children say it loudly y Whisper the word y Let children whisper it Let us do Leave my hand Please tell me Never tell lies It is better Each one should come here Circle time Let us talk Make children sit in a circle Ask a child to stand up and tell the class pointing to him her He She is a boy girl His Her name is Encourage him her to point to the next child and say He She is a boy girl His Her name is Continue till every child gets a chance Let us practise She is a girl Her name is Kamala He is a boy His name is Arun She is a girl Her name is Meera He is a boy His name is Ravi Fill in the blanks She is a girl name is Vimala His Her He is a boy name is David His Her Arun is a boy is my friend He She Devi is a girl is my sister He She Let us say goose spoon ue as in blue glue ew as in cashew screw u e as in tube Read aloud boon cool food fool moon soon blue clue cue due glue true chew dew few flew grew new tune dune fuse mule mute cute Listen and circle the words with long u sound He threw the glue The tube is yellow The sky is blue The goose is in the pool The cute bird flew to the zoo Let us do Word wall pool room broom school food zoom roof sew blew grew crew threw drew screw huge duke dude jute rule June rude Display the words on the word wall Distribute the word cards to all the students Show a word with oo Let all the children with the letter combination stand up and say the words they have Practise with ue ew and u e words also Let us practise Let us read The See Saw There are two ants Sam and Tom Sam is a red ant Tom is a black ant They go out and play on a see saw When Sam is up Tom is down When Sam is down Tom is up They go up and down Up and down Sam comes down and sees Tom fly Sam is sad Tom is now on an apple tree The apple falls and so does Tom Sam runs to Tom Then they eat the apple Let us think and do There are two ants b Sam is a black ant c Tom is on an apple tree d Sam and Tom eat the apple They go up and down They eat the apple Tom falls down An apple falls down They go out and play on a see saw Sam falls down We will make an imaginary animal Draw the head of any animal you know Draw the body of any other animal you know Draw the legs of any other animal you know Draw the tail of any other animal you know donkey sheep horse buffalo bird kennel dog web spider stable horse nest The goose is cute b The cube is blue c Give me a few spoons d The glue is new Mom Balu which fruit do you like Son Why mom Mom I will make juice for you while you play Son I like orange juice I am going to play hand ball Bye Mom Bye Dont leave the door open She is a girl Her name is Leena His name is Leena He is a boy His name is Kavin Her name is Kavin Guna is a tall boy His dad is also tall Her dad is also tall Kani is a girl His pet is a dog Her pet is a dog People Who Help UsI will be an astronaut one day Will you take me with you She is a teacher name is Mithra He is a singer name is Bala Look and say Stethoscope Doctor teacher book letters postman Shopkeeper net Van fisherman driver Engineer helmet Hose firefighter saw tailor carpenter baton Cloth pilot policeman aeroplane Let us sing The Farmer in the Field The farmer plants the seeds The sun comes out to shine Hey ho the derry ho The sun comes out to shine The rain begins to fall The seeds begin to grow Hey ho the derry ho The seeds begin to grow The vegetables are here The farmer takes them out Hey ho the derry ho The farmer takes them out Now its time to eat Now its time to thank Hey ho the derry ho Now its time to thank Let us learn Dress Day Class children like Malini teacher a lot Her class is always full of fun Tomorrow we will have a fancy dress show We all have to dress up like people who help us says the teacher The next day The class is colourful Everyone is dressed up Malini teacher is happy Come on kids talk about yourself says the teacher I am Varun I am a farmer I grow food for you I am Abdul I am a pilot I fly up in the sky Zoooom I am Divya I am an engineer I build houses I am Nancy I am a doctor I treat sick people I am David I am a plumber I mend and fix your pipes I am Charu I am a dancer I make you happy with my dance I am Punitha I am a teacher I teach kids I am Ravi I am a chef I love cooking yummy food I am Johny I am a driver I drive people around on a bus Where is Jeni asks the teacher I am here I am the magician I do tricks to make you laugh Oh Thats interesting says the teacher It is a happy day What fun they have Let us know Valli and Chittu talk about the previous night Where were you last night Valli What about Kavin and Geetha They were also with me Mom and dad Was that fun I was in a party Hey He was with me She was at home Yes It was real fun Chittu We were happy seem best name ran read over such way too until y Display the words on the word wall and practise them y Invite a child to the front y Whisper a word to that child y Let the child say the word aloud to the class y Make others repeat it y Practise with all the words They seem tired He is my best friend His name is Kapil The boy ran fast I read a book The kite is over the roof This way is too long Wait until I come Circle time Let us talk Fill in the blanks with My Your I am Kala My father is a farmer Who are you What does your father do I am Balu My father is a tailor A Let children stand in a circle Display pictures of professionals like carpenter farmer etc Point fingers to yourself and say I am name My father is a profession B Ask a child Who are you What does your father do Encourage the child to say I am My father is a Practise the same with children in a chain drill Help children to name the profession of their family members Let us do Word wall y Display the words in the word wall y Draw a circle Make children stand on it y Say the words on the word wall y As they listen to the words with the same sound oy oi they will move in clockwise direction y Say a word with some other sound a i u y They will move in anti clock wise direction Practise with all the words joy soy cloy coy boy toy boil spoil foil join boil toil The boy has a toy Give me a coin The soil is soft Boil the oil now toy joy ploy pot b boil soil pain coil c soy pan boy coy d point joint spoil school Let us read An Egg on the Top There is an egg on the top Who can win the egg I am fast I am the best I can run to the top You cannot win yells the ox I am quick I am the best I can win I can hop to the top yells the rat You can run you can hop But you cannot win I will win as I have a jet yells the hen Yes I got the egg says the hen Oh no The egg cracks What is it Ah A dragon Where is my jet says the hen The egg is yours You have your dragon We will have your jet say the ox and the rat They both fly away I am fast I am quick I have a jet Colour the picture of the farmer Paste woollen thread on the outline of the field Fill the field with sand using glue Paste woollen thread on the outline of the hill Colour the hill brown the clouds blue and the grass green I grow vegetables I treat sick people I fly in the sky driver fisherman teacher doctor farmer tailor My name is Abdul My best friend is Mano His house is too far He rides a bicycle all the way to see me I wait until he comes We run over the hill to play every evening Food We Eat cherry apple onion radish orange tomato crisp bitter sour sweetspicy salty crunchy juicy Pat a cake pat a cake bakers man Bake me a cake as fast as you can Pat it and prick it And mark it with B Put it in the oven for baby and me For baby and me For baby and me And there will be plenty for baby and me Let us sing Note to the teacher Sing the song with actions Encourage children to listen and do the actions first then sing the song with the teacher Pat a Cake The Spider and the turtle One evening Spiky the spider was ready to eat A turtle came to his door Spiky Come in turtle You are just on time for dinner The turtle went to sit near the bowl of yams Spiky You cant sit down to eat with dirty hands Please go wash them Turtle Oh Youre right Spiky Ill be back Turtle slowly crawled off to wash his hands Spiky gulped the food quickly Turtle came back and found the nearly empty plates Turtle Spiky you ate all the food Spiky I had to eat it before it got cold But theres plenty left Turtle reached for the glass of juice Spiky Wait Your hands are still dirty Turtle Yes They are dirty again as I crawled across the dirty floor Ill be right back The turtle went back to the pond to wash his hands The turtle used slippers to keep his hands and feet clean Now Turtle got back to find all the plates empty Spiky I could not wait The food was getting very cold Poor Turtle was still hungry The next day Turtle Spiky come for dinner Spiky Oh That will be nice He reached the pond Turtle Im here Spiky Come down Your dinner is almost ready Spiky jumped into the water but he could not reach the bottom He just floated on the top He filled the pockets of his coat with heavy stones and jumped into the pond He went deep down to turtles house He reached for a bowl of food Turtle Wait You cannot have your dinner with your coat on Please take off your coat Spiky I could not do that Turtle You must take it off before you eat Spiky slowly took off his coat He floated up and saw turtle eat the feast He climbed out of the water and went home sad He is Raju He reads a book We say reads when there is only one person She is Nila She reads a book They are friends They read a book Why do you say read and not reads Let children stand in a circle Prepare masks of two frogs two elephants and a rat Make students wear those masks It can be replaced with placards too Invite the frogs to the front Say We are frogs Our legs are small B Invite the elephants to the front Say They are elephants Their ears are big Invite the rat to the front Say It is a rat Its tail is long Practise with other students Make use of other animals also We are sisters Our hair is long It is an eagle Its wings are big We are boys Our Their school is near They are kids Its Their hands are small It is an owl Its Our eyes are big They are sisters Their pets are small They are brothers Their car is blue We are friends Our houses are near It is a duck Its beak is yellow letter clusters for the same sound Help children relate the sound to the letter clusters Listen to the sound and repeat ou as in hound round pound ground sprout shout down town growl frown howl crown out shout gown town growl howl south boil now how brown crown clown toy found sound mount count south mouth cloud proud sound boon The king has a crown I got this gown in the town The clown is in the crowd The mouse is in the house I found the beans sprout The clown fell on the ground What comes next Tick the correct one tap tape pin pine not note cub AEI CGK MQU cute cube DHL FIL Mouse in a House Make them read the story on their own It makes a loud sound Moooo Moooo The mouse runs out of the house The mouse finds a new house in a new town It is happy in the new house One day there is a loud sound Moooo Moooo Oh no It is the same cow There is a mouse in a house The house is in the town A cow comes to the house Let us read Now the mouse wears ear muffs They both live in the same house Take a cotton ear bud Dip it in ink of any colour Press the coloured portion all over the flower Colour the leaves in green The mouse has a crown The clown has a big mouth The cow makes a sound Our delicious food Learning Objectives The learners Realise the importance of food List various food items Know the journey of rice Rhyme time Importance of Food Food food food It keeps me good Grains and vegetables Fruits and nuts Fish and eggs Milk and meat I need them I eat them To grow and become strong I need them I eat them To work and play I need them need them need them all All of us need food to live Food gives us energy to work and play We eat a variety of food items every day Some of them are shown below Let us talk about it Guava Carrot Groundnuts Idly Vada Dosa Meal Some energy giving foods Ragi ball Rice Chappathi Milk is a healthy drink It keeps our teeth and bones strong Pulses meat fish and egg help us grow Nuts fruits and vegetables keep us healthy and protect us from diseases Our Food Our food is a combination of milk meat fish eggs fruits vegetables flowers grains nuts oils and ghee Fruits Vegetables Egg Milk Meat Butter Ghee Oil Cereals Pulses Fish Groundnuts Nuts Almond Cashewnuts Plantain flower Cauliflower Flowers Milk ghee Fruits Vegetables Egg Milk Meat Butter Ghee Oil Cereals Pulses Fish Groundnuts Nuts Almond Cashewnuts Plantain flower Cauliflower Grains Cereals and Pulses Cereals Rice Wheat Ragi Corn Pulses Pigeon Pea Green Gram Black Gram Whole and split grams Water is essential for our body to be healthy We must drink at least six to eight glasses of water a day A Variety of Dishes Each and every dish we eat is unique in taste The dishes are made up of one or more ingredients Rice Ragi Ragi Porridge Koozh We can prepare many dishes using the same ingredients rice Fry Puttu Curry Salt sugar and spices add taste to food Rice Kozhukattai Vathal Puttu Idly Rice Porridge Appam Wheat Chappathi Poori bread dosa Fish fry puttu curry Salt sugar and spices add taste to food Food for a Day We have breakfast in the morning lunch in the afternoon and dinner at night We should not skip any meal Some people prefer vegetarian food and some non vegetarian food Cooked Rice soaked over night Pazhaya Soru Full Meal Chicken Biriyani I have my breakfast before going to school Do you Ragi Adai We have snacks in between We should choose healthy food items as snacks Bengal Gram Sundal Puffed Rice Balls Pori Urundai Sesame Balls Ellu Urundai Groundnut Candy Healthy Food Items We all have our favourite dishes Some of them are healthy and can be eaten regularly Idly Wheat Bread Groundnut Candy Sprouted Grains Some should be eaten once in a while in small quantities Gulab Jamun Laddu Murukku Chips Some of the snacks we like are not good for us Say NO to them Biscuits White Bread Maida Noodles Soft Drinks Chocolates Many of us like sweets Sweets can be prepared with jaggery or sugar Sweets made with jaggery are better for health Milk Payasam Rasagulla Rava Laddu Sesame Balls Athirasam Groundnut Balls Paruppu Payasam Steamed food items and sprouted grains are healthy Idly Rice Salt Balls Puttu Idiyappam String Hoppers Sprouted Grains Soak green gram overnight in water Drain the water and tie it in a cloth Observe the changes in the grains on the next day Leaves of some plants are used as food They are called greens We should have greens at least twice a week Drumstick Leaves Murungai keerai Black Nightshade Leaves Manathakkali keerai Dwarf Copper Leaves Ponnankanni keerai Healthy Eating Habits Wash hands before and after eating Chew your food well Sit together to eat Do not spill food while eating Do not talk while eating Avoid watching TV and using mobile phones while eating Do not overeat It can make you ill Always wash fruits and vegetables before eating or cooking Rinse your mouth after every meal Stale food makes you sick Avoid it Do not waste food Avoid uncovered food as it may contain dust and germs Journey of Rice The story of rice begins with the farmer ploughing the field Observe the pictures and see how the food comes to our plates Always respect the food and its producer the farmer Stages in the growth of paddy crop Ploughing Sowing Transplanting the seedlings Harvesting Winnowing Drying Milling Storing Cooking Eating I know the importance of food I can list various food items I know the journey of rice Water We use water for many of our daily activities We drink water to keep ourselves healthy We use water to bathe cook wash clothes and grow plants We cannot live without water Vocabulary Bathe Drink Wash Grow Cook Pour Brush Preparation of lemon juice Cut the lemon into two pieces Squeeze the juice into a glass Add sufficient sugar and a pinch of salt Pour water and stir it well Tub Mug Tap Pot Water Water Everywhere Rain It‛s raining and raining Pouring everywhere I am singing and dancing Playing everywhere The trees are swaying The animals are enjoying Without rain There is no life anywhere Rain is the main source of water for lakes ponds wells and rivers All living beings need water to live Fishes frogs ducks and many plants live in water Steps to prepare clean and safe drinking water Collect water in a vessel Filter Boil Cover it with a lid Cool Fun with Water Keep some pieces of ice in a bowl Leave it for minutes and observe what happens Ice slowly melts into water You can touch and feel it too Prepare water of different colours by using food colours Count the number of tumblers of water necessary to fill the given pot Conservation of Water Close the tap When you brush brush brush Use a bucket When you bathe bathe bathe Repair the tap When it leaks leaks leaks Save water save water Save save save Some More Good Habits to Conserve Water Turn off taps while washing clothes Water the plants in the morning We need to use water sparingly If we do not have enough water our life becomes difficult I know the uses of water I am aware of using water carefully in my daily life I can do simple experiments with water Festivals We celebrate many festivals Some are celebrated to thank Nature and others are local celebrations All festivals are occasions to express our unity Learning Objectives The learners Identify and understand the importance of different festivals Appreciate the different roles of people in society Traditional Festivals Pongal Do you know why we celebrate Pongal Pongal is a harvest festival A good harvest brings happiness to all During Pongal we thank Nature for giving us the food we eat We celebrate Pongal for four days Each day has a unique feature On this day people discard old things and clean their homes First Day Bhogi They also paint the walls with limestone Sunnambu making the houses bright and clean They draw beautiful kolams in front of the house They burn old and damaged items Burning tyres and plastic items makes the air dirty This should be avoided Second Day Thai Pongal On this day people prepare pongal in a new pot with newly harvested rice They worship and thank the Sun Third Day Mattu Pongal It is a celebration to thank cattle which work hard for us Cattle are decorated and worshipped on this day Fourth Day Kanum Pongal Uzhavar Thirunal It is a day for thanking the farmers People also visit relatives friends temples and scenic spots and have fun together Local Festivals Vanmathi went to see the local village festival with her grandfather Observe the picture and see what happens there Vanmathi rode on the Merry go round Rattinam She watched the Karagattam and Puliyattam dances She bought colourful bangles balloons and some toys Festivals of Joy Festivals like Ramzan Diwali and Christmas are days of joy and sharing On these days people wear new dresses and decorate their homes They prepare special food items which they distribute to everyone Special Food Items of Festivals Diwali Murukku Athirasam Ramzan Biriyani Sheer Khurma Christmas cake Rose Cookies Our Friends Vanmathi wanted to send a letter to her friend Let us see whom she met on the way Do you deliver letters No I am a teacher I am fond of children I like to teach lessons and good values Do you deliver letters No I am a policeman I protect public places and keep people safe Do you deliver letters No I am a doctor I help sick people get well Do you deliver letters No I am a nurse I am kind and care for the needs of sick people I tie bandages and give injections Do you deliver letters No I am a shopkeeper I measure and count goods and sell them in my shop Do you deliver letters No I am a vegetable vendor I get fresh vegetables and sell them in the streets using my cart Do you deliver letters No I am a milkman I care for cows and buffaloes I supply milk to people Do you deliver letters Yes I do I am a postman I collect letters from the postbox I sort letters according to the address I deliver the letters to the correct address I understand the importance of different festivals I know the different roles of people in society Food and Health Sources of food Differences between Healthy koFood and Junk Food Nila Grandpa How beautiful this place is Are these paddy fields Grandpa Yes we get rice from paddy plants Nila Does all our food come from plants Grandpa Grandpa Yes plants are our major source of food We get some food from animals also Cereals and Pulses We get cereals and pulses from plants Rice and wheat are cereals Millets are also a type of cereal Cereals and pulses lentils make up the major part of our food and they keep us healthy Cereals Rice Arisi Corn Makka cholam Peas Pattani Pearl millet Kambu Finger millet Kezhvaragu Ragi Pulses Red kidney beans Sivappu karamani Cowpeas Karamani Double beans Irattai beans Peas Pattani Oil Coconut oil Groundnut oil Sunflower oil Sesame oil Seeds and nuts give us oil We use oil to cook Coffee and Tea We get coffee from coffee beans and tea from tea leaves Jaggery and Sugar We get sugar and jaggery from both the sugarcane plant and the palm tree Palm jaggery Karupatti Palm tree Panai maram Palm sugar Panang karkandu Jaggery Vellam Sugarcane Karumbu Sugar Sarkkarai Spices Plants give us spices too They add flavour and taste to the food Fenugreek Vendhayam Mustard Kadugu Clove Lavangam Cumin Seeragam Curry leaves Kariveppilai Chillies Milagai Turmeric Manjal Cinnamon Pattai Vegetables Fruits Greens Greens Coffee bean Sugar Peas Tea leaves Ragi Chilli Clove Animals Give Us Milk Products We get meat milk and eggs from animals We get crab prawns and a wide variety of fishes from water bodies like ponds lakes rivers and the sea Crab prawn fishes We get honey from the honey bee Milk Products We get curd butter ghee paneer and cheese from milk Having milk or milk products every day keeps us healthy Milk Curd Butter Ghee Paneer Milk Meat Eggs Ghee Curd Healthy Food and Junk Food Nila Grandpa shall I eat this pizza Grandpa Come let me take you to the Healthy and Junk Food Race After seeing the race you can decide if you want to eat it or not Nila Raccceeeeeeeeee Grandpa Healthy Food and Junk Food had a quarrel on who gave better health and strength They planned to have a running race to decide on it Race between Healthy Food and Junk Food Grandpa Nila some food items taste nice but do not keep us healthy They make us put on weight and cause harm to our body They are called Junk Food Some food items help us grow and keep us fit and strong They are called Healthy Food So eat healthy stay energetic Nila Grandpa Now I understand Henceforth I will eat healthy food The race starts Both teams run fast The Junk Food team gets tired and slows down The Healthy Food team wins the cup Grandpa Nila some food items taste nice but do not keep us healthy They make us put on weight and cause harm to our body They are called Junk Food Some food items help us grow and keep us fit and strong They are called Healthy Food So eat healthy stay energetic Nila Grandpa Now I understand Henceforth I will eat healthy food Eating carrots improves our eyesight and prevents night blindness Athirasam Nuts Eggs Murukku Banana Chocolate biscuit maida noodles Healthy Food items Junk Food items Milk Group Fruit Group Meat Group vegetable group cow paddy honey bee hen I know the sources of the food that I eat I understand the ill effects of Junk Food and I make Healthy Food choices Water You will learn about The journey of rain The sources of water Journey of rain Rain Drops Drip drop drip drop they drop from the sky One by one they multiply Drip drop drip drop they fall on the ground Everywhere with a lovely sound Drip drop drip drop they seep into the ground To grow healthy saplings all around On hot sunny days they go back to the sky To come again on another cloudy day Drip drop drip drop they drop all the way To keep all of us happy Rain is the main source of water Cloud Rain River Sea Sun pond rainy Sun play bucket water happy plants Water from Glaciers Glaciers A glacier is a slow moving block of ice Melting Glaciers I am a water drop from the snowy mountains I flow from the glacier when the weather becomes warm Stream From the glacier many of us join together to form small streams River Many mountain streams join together to form a river Waterfall Sometimes rivers or streams flow down as waterfalls River Sea As a river I continue my journey across forests villages and cities Farmers use me for farming and people use me for drinking cooking and for other needs I finally reach the sea This is what I do with the water left in my water bottle Cloud Lake River Sun Pond Sea Underground water Rain drops Well Borewell Hand pump I am a raindrop I fall on the earth and fill ponds lakes and rivers Rivers flow while lakes and ponds do not Lakes are bigger than ponds I fall on the ground and seep underground too People dig wells and borewells to reach me They also use pumps to lift me up from the ground People use me for their needs Water From the River to the House River Lake Dam Large pipes Over head tank Sump House water tank Tap River Waterfall Lake Pond Glacier Sea Stream Well Hand pump sea rain hand pump glacier waterfall RAIN POND WELL STREAM LAKE HAND PUMP RIVER SEA I know about the journey of rain I know about the various sources of water I can identify the sources that supply water to my neighbourhood Our Society Religious and National festivals Folk arts Our helpers Science exhibitions Festivals are days of celebration and sharing Festivals can be religious or national Religious Festivals Karthigai Deepam is a festival of light celebrated in the Tamil month of Karthigai mid November to mid December on the full moon day Light removes darkness It brings brightness and cheer to our lives Rangoli or kolams are drawn and houses are decorated with lamps Eid ul Adha is commonly called Bakrid It is a festival of thanksgiving The spirit of sacrifice is honoured so it is called a festival of sacrifice On that day people prepare special meat dishes and sweets and share them with all Easter is celebrated on the Sunday following Good Friday in March April It follows a period of days of fasting and prayer called Lent It is a festival of hope Decorated eggs and sweets are shared as gifts Mahaveer Jayanthi Onam Guru Nanak Jayanthi Diwali Christmas Ramadhan Mahaveer Jayanthi Buddha Purnima Onam and Guru Nanak Jayanthi are some of the other religious festivals celebrated by us Religious festivals are days of prayer and are happy occasions to bond with the people around us and enjoy the special dishes that are made National Festivals National festivals give us a feeling of oneness These festivals are celebrated by people all over India On these days we hoist our National Flag with due respect in all public buildings and schools We are proud to be Indians Some of the national festivals are Independence Day Gandhi Jayanthi Republic Day India got its freedom on this day th August Birthday of Mahatma Gandhi nd October Indian Constitution laws came into force th January Folk arts Karagattam Oyilattam Poikkal Silambattam kuthirai attam Folk arts include folk songs Nattupurapadalgal dances stories puppets and more People have developed and followed these art forms over many years There are many kinds of dances in Tamil Nadu The special costumes worn by the dancers are colourful Artists make their own costumes and ornaments from locally available natural materials They are handmade We dance Kummi during festivals and in the harvest season Kummi dance rhythmic clapping with Kummi songs Lullaby Tha le lo Tha le lo Sleep little one As mother sings and swings Forward and backward Goes the cradle Sleep without fear Smiling all the way Sleep little one Tha le lo Tha le lo Our Friends Malar‛s father is a retired soldier who worked hard to protect our country Her family is shifting to a new house They are travelling by bus to see their new home Malar What a smooth and enjoyable drive Father Yes Let us thank the driver for a safe journey Mother Let us also thank the conductor who gave everybody their tickets with a smiling face Malar and her family go around their new house Amma the house is looking beautiful All the taps and fans are working That‛s good The mason plumber and electrician have done their jobs well Amma this window is damaged Okay let us call a carpenter to repair it Father We also need to find a tailor to stitch some curtains for the doors and windows Malar Amma where can we buy fruits and vegetables Mother Since it is a village we can buy fruits and vegetables from the farmers directly They grow them in their fields The mason driver conductor plumber carpenter electrician soldier tailor and farmer are our friends They help us to make our life comfortable and happy The Science Exhibition Mason Electrician Soldier Teacher Every year we celebrate February th as National Science Day As you know there will be a Science Exihibition on this day in our school We have been preparing for it Can all of you explain your projects This is a plant It has shoot and root systems I have prepared a chart of different kinds of leaves I have made a chart to explain the role of the internal organs Good work children You all have done well Objects Sink Float Leaf Plastic ball Pencil Eraser Stone Chalk Paper Coin Key Silambattam Karagattam Poikkalkuthirai Oyilattam Diwali Independence day Onam Mahaveer Jayanthi Republic Day Pongal Gandhi Jayanthi Bakrid Religious Festivals National Festivals I make things out of wood b I repair a leaking tap c I stitch your dresses d I guard the nation e I issue tickets in a bus Plumber Soldier Conductor Carpenter Tailor I know the differences between religious and national festivals I appreciate our folk arts I value our helpers I realise that science is related to my everyday life The Pancha Bhutas Earth Water Fire Air Space One day loud sounds were heard near the huge banyan tree Earth water fire air and space the Pancha Bhutas were quarrelling there about who was the most important of them all Let us hear what they had to say Earth Without me where can plants grow Where can people build their housesand live So I am superior Water No I am the best I occupy a major part of the earth I am also a part of all living beings Life is not possible without me Fire No no I am the superior one because plants and people make food using me I also provide heat and light to support life Air I am the air All living beings breathe me Nobody can live without me So I am superior Space I provide a place for all of you The earth the Sun the moon and the stars are all in me So I am the most important On hearing all of them the banyan tree said No life is possible without any one of you So none of you is superior to the other The Pancha Bhutas realised that all of them were necessary for life on earth They stopped quarrelling and greeted each other happily The potter is making a pot water clay air fire wheel There is a heap of clay His helper pours water over it The potter mixes both the water and clay He asked pot using wheel After that he leaves them to dry in the air Then he bakes them in the fire Now the pots are ready Earth The earth is the home for plants animals and for all of us We grow our food on the land We move from place to place on the land and play on it The land gives us all we need to make the different things that we use Avoid using plastic Water Water occupies a major part of the earth All living things in the world need water to live We get water from the rain Water is used to drink cook clean things bathe swim and grow crops Can you swim Learn to swim with the support of your elders Many kinds of plants and animals live in water Starfish Seahorse Lily Lotus Think zone Every drop of water is precious Do not waste it road tracks field play ground Air Air is everywhere around us We cannot see the air because it has no shape or colour but we can feel it Without air living things cannot breathe We can smell things and hear sounds because of air To dry our wet clothes Birds and aeroplanes move in the air Moving air helps us in many ways To dry our wet clothes To get electricity from windmills During storms and cyclones the wind speed is very high Cyclones damage our buildings and trees Fire Early man discovered that he could make fire He used it to get heat and light for his daily needs Using fire lamps to give light Making fire using stones Cooking the hunted animals using fire Today we also use fire to make a variety of things Laundry welding shop tea shop Space Space is that within which everything exists water and soil fire and water water and air I realise the importance of the Pancha Bhutas earth water air fire and space and their role in my everyday life Materials Around Us You will learn about Natural sources man made materials and things Matter definition and properties We are oranges We grow on orange trees I am a basket I am made of wood Wood is got from trees We use many kinds of materials in our life Nature is the source of all of them e g tree From these natural sources man makes many materials e g wooden planks which are used to make many other things e g wooden basket Sources of Natural Materials The sources of natural materials are plants animals rocks and soil Plants Animals Rocks and Soil From Plants Logs Leather Cotton Coconut Frond Wool From Animals From Rocks and Soil We get metal ores from rocks and soil Think For today‛s need you are cutting me but for tomorrow‛s need plant more trees like me Wood Let Us Discuss Why do we make windows and cupboards from wood Wood is a strong material So furniture can be made from it It is long lasting It can be cut into pieces and can be given different shapes Wooden pieces can be joined together to make many useful things Wood Tree Natural source Man made materials Man made things Natural source Man made materials Using some tools tree trunks are cut into wooden logs and planks Man made things Toys Shelf Door Cart Chair Swing Paper is made from wood pulp Rubber Do you know from what material your eraser is made Rubber is made from the sap a milky substance of the rubber tree Rubber is elastic so rubber bands are made from it It is also waterproof so hand gloves are made from it Elastic Comes back to its original shape after being stretched Waterproof Does not allow water to enter inside Slipper Eraser Mat Tyre Ball Shelf Spoon Chair Rubber Band Cycle Tube Mat Write the names of the man made things from wood Fibre Do you know how clothes and ropes are made Fibre is a material obtained from both plants and animals Cotton and jute are the fibres got from plants Wool and silk are fibres obtained from animals Plant Fibres Silk thread is a strong material and is used in making parachutes Animal Fibres Cotton Jute Silk Wool Fibre from the coconut tree is called coir Many things are made from it Silk thread is a strong material and is used in making parachutes The jute fibre is long shiny and strong Silk is the strongest natural fibre We make many things like bags mats and sarees from these fibres Wool keeps us warm so sweaters caps and socks are knitted using it Leather is flexible so belts watch straps and bags are made from it Clay Metals are materials got from metal ores e g Gold Silver Iron and Copper Since metals are strong and hard vehicles gates and cooking vessels can be made from it Metals are shiny When heated metals can be shaped into any form small paper clips or a huge aeroplane Metals Steel vessels Paper clips Gold bangles Aluminium vessels Aeroplane Copper vessels I give you cool water without using electricity Clay is a natural material It is a type of soil When it is mixed with water it becomes soft It hardens as it dries so pots and other things can be made from it A potter uses his tool the potter‛s wheel to make clay pots and other things Matter Anything natural or man made that occupies space is called matter Matter has properties like taste smell size and shape Orange is a natural thing It occupies space A wooden basket is a man made thing It occupies space too Many materials are used in making an object Choose and write the correct pair of materials found in the given objects Materials found in motor bikes are a metals and clay b rubber and clay c metals and rubber are found in these pots a Clay and rubber b Metals and clay c Metals and rubber This belt is made of a fibre and rubber b metals and clay c metals and leather This chair is made of a metals and wood b fibre and rubber c metals and clay These yellow laddus occupy the space in the bowl They are small round in shape and are sweet to taste Number the natural sources as and the man made materials as a Most metals are strong b Wood cannot be cut c Rubber is not elastic d Wool keeps us warm Write the names of the materials that the given objects are made of Leather Rubber Metal Clay objects tube shoe chain Wood b Rubber c Leather d Metal Beloved Motherland Unit You will learn about National days National leaders National and State symbols Caring for public property National Days and National Leaders For many years our country India was ruled by another country called Britain We became free from their rule on August th India celebrates this day as Independence Day every year Our own laws Constitution of India came into force on th January It is celebrated as Republic Day Dr Rajendra Prasad was the first President of free India January Many leaders worked hard to make India independent Two important leaders among them were Mahatma Gandhi and Jawaharlal Nehru Mahatma Gandhi is affectionately remembered by all of us as Bapu or the Father of our Nation He followed the path of non violence He led a simple life and always spoke the truth His birth day nd October is celebrated as Gandhi Jayanthi Pandit Jawaharlal Nehru was the first Prime Minister of India He was very fond of children He was lovingly known as Chacha Nehru His birth day th November is celebrated as Children‛s Day First President of India Dr Rajendra Prasad Father of our Nation Mahatma Gandhi First Prime Minister of India Pandit Jawaharlal Nehru National Flag The Tricolour Saffron Sacrifice White Green Truth and Peace Prosperity Our National Flag called the Tricolour is rectangular in shape It has three equal bands of different colours The navy blue wheel in the centre of the white band is called the Ashoka Chakra It has spokes which stand for progress and values We respect our National Flag Tamil Nadu State Emblem Srivilliputhur Temple National Emblem National and State Emblems National Symbols of India Bengal Tiger Banyan Tree Ganges Lotus Peacock Mango National Animal National Tree National River National Flower National Bird Nilgiri Tahr Palm Tree Gloriosa Lily Kabaddi Emerald Dove Jackfruit State Animal State Tree State Flower State Game State Bird State Fruit Write N for the National symbols and S for the State symbols in the box given Name the pictures Nilgiri Tahr Lotus Banyan Tree Mango Ganges Emerald Dove Our Responsibility Some places and things like public toilets roads street taps parks hospitals schools and classrooms are used by all of us It is our responsibility to keep them neat and clean Do not spit in public places Form a queue Maintain silence in the public library Do not tear or scribble in the books Use the public toilet Do not use the road open spaces Do not scribble on walls Do not throw waste in public places Evaluation Independence Day Gandhi Jayanthi Children‛s Day Republic Day Mango Bengal Tiger Banyan tree Jackfruit b Palm tree Nilgiri Tahr Lotus Emerald Dove c Saffron Green Red White d January August October November Bengal Tiger Lion Elephant b Duck Peacock Dove c Ganges Cauvery Vaigai d Mango Tree Banyan Tree Neem Tree e Jackfruit Banana Apple Draw a line connecting the symbol with its name Emerald Dove Lotus Gloriosa Lily Mango Palm Tree Kabaddi Dr Rajendra Prasad Pandit Jawaharlal Nehru State fruit Mahatma Gandhi Nilgiri Tahr y Unit Shakthi‛s Journey Different modes of transport Road safety Roadways Shakthi his father mother and sisters Kayal and Kavitha lived in Trichy They planned to go on a tour of Chennai for their holidays They had to reach the railway station to board the train Shakthi How are we going to the station Needs fuel Carries people Needs fuel Five people can travel Needs fuel Two three people can travel Bus Car Auto rickshaw Vehicles on the Roadways Lorry Carries goods Ambulance Takes sick people to hospital Fire and Rescue Vehicle Puts out fires Scooter Two people can ride Bullock cart Bicycle Does not need fuel to move eco friendly The simplest form of transport Eco friendly Cycling keeps us fit Which vehicle should Shakthi‛s family choose to reach the railway station Discuss the answer and write it here We know that smoke from vehicles makes the air dirty Can you name some vehicles that do not give out smoke Railways Kinds of Trains Trains that carry people Tick the slowest vehicle 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around Chennai They visited the harbour Shakthi There are so many boats Some trains use coal or diesel as fuel to move therefore they give out smoke Electric trains are smokeless Trains move on tracks Shakthi and his family took a tour around Chennai They visited the harbour Shakthi There are so many boats Mother The smaller ones are called boats and the bigger ones are the ships Ships carry a large number of people and goods from one country to another Do vehicles that move on water have any wheels How do they move Vehicles on the Waterways Catamaran Kattumaram Uses oars to move Used for fishing Motor boat Uses fuel to move Used for fishing and for pleasure rides Sails help it move Used for travel and sport Sailing boat Uses fuel to move Carries goods and people over long distances The coracle is used to travel on lakes and rivers for short distances It can carry five to six people The children played on the sea shore Kavitha What a lovely visit Airways The vacation was coming to an end The family reached the Chennai Airport as they were flying back to Trichy Shakthi Kavitha and Kayal were really excited to see the aeroplanes Kayal Look at the planes landing and taking off I want to be a pilot Appa Father Sure you can Observe the speed at which the aeroplanes are moving They are the fastest means of transport Shakthi Does the aeroplane use fuel too Father Yes a special kind of fuel Kinds of Aircraft This is a helicopter It can carry a few people It is used by the army to save lives and bring supplies during floods and other difficulties This is an aeroplane People use aeroplanes to go from one city or country to another It also carries goods These are hot air balloons They are used to tell us about the weather for advertisements and as a sport Always use the foot path for walking If there is no foot path make sure that the road is to your right While riding a motor cycle wear a helmet While driving a car use the seat belt Do not run across the road Never go alone on the road Always go with an elder Use the foot over bridge or subway to cross the road If there are none use the pedestrian crossing Zebra crossing Cross when the traffic symbol of a person walking turns green School Zone Drive slow Pedestrian Crossing Cross here only Do Not Horn Do not horn here Level Crossing Check before you cross Unmanned Level Crossing Be careful when crossing U Turn Allowed to turn Bus Stop Bus stops here Level Crossing Check before you cross No Parking Do not park your vehicle here Choose and write the correct answer The road sign shown here means that a is nearby a hospital zone b school zone c bus stop This road sign indicates a a bus stop b no parking c level crossing Evaluation Who am I Tick the right answer Connect the words with the related pictures a I can run without fuel Car Bicycle b I stop at all stations Passenger train Superfast express c I fly in the sky with a few people Aeroplane Helicopter d I can travel both on a lake and a river Boat Ship Sea Air Lake Road Track Signal Choose and write the correct answer Identify the incorrect pair based on the mode of transport and put a mark Write two actions that you should not do on the road Tick the vehicles that move using fuel a Ship Sail boat b Helicopter Aeroplane c Bicycle Lorry d Car Coracle a Fishermen use me to fish i Catamaran Bus Train b I am used by the army to save people i Scooter Aeroplane Helicopter c Electric trains i are smokeless produce smoke use diesel I can identify the different modes of transport I follow road safety rules Unit Day and Night You will learn about The sky during the day and night Rhythms of the day and night Directions Day Sky The sun The Sun gives us light and heat It helps plants grow The Sun is much bigger than the earth where we live The Sun looks small because it is far away from the earth There will be no life on earth if there is no Sun When an object does not allow light to pass through it a dark area is formed This is called a shadow The sunlight takes around minutes to reach the earth Stand with your back to Sun Look at the ground in front of you What you see is your shadow Find out if your shadow moves with you Observe the things around you that make shadows and share it with your friends Have you noticed that the size of your shadow changes Observe your shadow in the morning afternoon and evening and find out its size Night Sky Can we see in the dark We need light to see things Observe the pictures How is the night sky different from the day sky Let Us Discuss Shadow Morning Afternoon Evening Long Short Night Sky Can we see in the dark We need light to see things Observe the pictures How is the night sky different from the day sky Let Us Discuss The Moon In the night sky we can see the moon many stars and clouds too As you know the moon does not have light of its own It gets its light from the Sun Let Us Discuss Does the moon look the same every day Observe the moon in the sky every night for fifteen days and find out Neil Armstrong was the first man to step on the moon The position of the pattern of stars helped people to know when to sow and harvest crops They also helped to people find directions during travel There are countless stars in the sky The Sun is the nearest star The stars shine during the day too but we cannot see their light because the Sun is much brighter than the other stars We see that a group of stars appears to form a pattern in the sky Have you seen any star patterns a Sun a dark area that travels with me b Stars does not have its own light c Moon form patterns d Shadow helps plants grow Observe the example given below The moon appears to change shape every night On the night when we see it in its complete form it is called the full moon Pournami On the night when we cannot see the moon at all even when the sky is clear it is called the new moon Amavasai Many festivals are celebrated based on the phases of the moon e g Eid Mahalaya Amavasai Phases of the Moon Rhythms of Day and Night They are active at night to They have Day and night follow each other in a rhythmic way Most animals and plants are active during the day and sleep at night Some plants close their leaves by evening e g Rain tree Thoongu Moonji Maram However some animals are active at night The bat owl wild big cat mouse wolf cockroach and firefly are examples of animals that are active at night Catch other animals wandering at night for their food Avoid animals that eat them during the day Avoid the heat of the day Big eyes owl cat A sharp sense of smell mouse dog Good hearing bat Bat Mouse Wild Cat Wolf Cockroach Firefly Owl Bats use sound waves to fly and hunt Owls can see what is behind them by rotating their heads almost fully Most flowers bloom in the morning However some flowers bloom at night Examples are Jasmine Water lilies Tuberose Cactus flower Datura flower Many of them have a lovely fragrance Many are white in colour though some have attractive colours Jasmine Malligai Cactus flower Chappathi kalli Water lily Alli Datura Oomatham poo Tuberose Sampangi The Bethlehem Lily Nishagandhi is called the Queen of the flowers that bloom at night Front back right and left tell us where things are based on a reference point North South East and West tell us where places and things are based on the position of the Sun They are called directions Directions help us reach a place without getting lost The Sun appears to rise in the East and set in the West Now stand facing the Sun in the morning East Behind you is West To your right is South To your left is North Observe the picture given below In the centre is Meera To her South are the flower pots to her North are the rocks to her East is the flower cart and to her West is the tree trunk In your school identify the eastern direction by finding out where the Sun rises Ask your teacher to help you Then find the direction in which the following are situated water tank flag post playground toilet kitchen gate and water tap Tabulate your answer Evaluation Label the pictures Moon Earth Stars Sun Write the names of the animals that are active at night cow wolf deer cockroach monkey firefly rabbit squirrel rat Write T if True and F if False a The Sun gives us light and heat b The shape of the moon changes every night c Groups of stars appear in many patterns d The Jasmine blooms during the day e When you stand facing East to your right is West Unit Wonders of Nature Wonders of Nature Plants Nature is full of wonders Shall we explore some of them Lily The leaf of a lily has a waxy coat on the upper surface It has a notch too Water does not stay on the leaf because of the notch and the waxy coating The Kurinji or Neelakurinji shrub is found in the Nilgiri mountains in Tamil Nadu The flowers of the Neelakurinji bloom only once in years They are purple blue in colour Nilgiri the Blue Mountain gets its name from these flowers Nuts under the soil Kurinji Notch Usually nuts are seen on the stem part of the plant In groundnut plants the nuts are under the soil Nuts are also called seeds Why does water not stay on the leaf of the lily Touch Me Not Plant Have you seen this plant It is found in many places It is a small herb When you touch the leaves of this plant they close So it is called the Touch Me Not plant The leaves open a few minutes later Calotropis Erukku Calotropis is a shrub It has a group of waxy flowers Its flowers are either white or lavender in colour It is also known as the Crown Flower since it looks like a crown Colour and Fragrance of Flowers Butterfly Pea Sangu Poo Jungle Flame Vetchi Poo Periwinkle Nithiyakalyani Night Flowering Jasmine Pavazhamalli Spanish Cherry Magizhampoo Jasmine Malligai Many of the flowers that bloom at night are white in colour and they have a wonderful fragrance Flowers have beautiful colours and many have fragrance Insects are friends of the flowers They are attracted by the colour and smell of flowers Flowers have nectar Insects and birds come to suck the nectar from the flowers Wonders of Nature Animals Chameleon Have you seen this animal It is called a chameleon It is a type of lizard It changes its skin colour to merge with the surroundings This helps it to escape from its enemies Lizard Have you seen a lizard clinging upside down on the ceiling Lizards have toe pads that help them stick on to the wall If the tail of the lizard is cut it grows back in one or two months Do you remember that insects have only six legs Spiders are not insects because they have eight legs Spiders make threads called spider silk with which they create spider webs The threads in the web are very strong and sticky The webs help the spider catch insects like flies for its food Dogs can smell much better than us They can even hear very soft sounds and sounds from far away They are trained and used by the police to identify thieves These dogs are called sniffer dogs They are also used to search for people during natural disasters like earth quakes Toe pads of the lizard Dog Spider The rat is a small animal that lives in houses and fields Rats can live without water for even longer periods of time than camels They can bite hard wood with their teeth Some of their teeth keep growing Rats grind their teeth to prevent them from becoming too big Feelers Eye Rat The snail has two pairs of feelers on its head One pair is long and the other is short The eyes are on the longer pair If we touch the snail it pulls its body back into its shell like a tortoise The rat is a small animal that lives in houses and fields Rats can live without water for even longer periods of time than camels They can bite hard wood with their teeth Some of their teeth keep growing Rats grind their teeth to prevent them from becoming too big Feelers Eye Rat Snail Cotton Jute Silk Wool Fibre from the coconut tree is called coir Many things are made from it Silk thread is a strong material and is used in making parachutes The jute fibre is long shiny and strong Silk is the strongest natural fibre We make many things like bags mats and sarees from these fibres Wool keeps us warm so sweaters caps and socks are knitted using it Leather is flexible so belts watch straps and bags are made from it From Jute Put a tick for the correct pair and a cross for the wrong one From Silk From Leather From Wool Clay Clay is a natural material It is a type of soil When it is mixed with water it becomes soft It hardens as it dries so pots and other things can be made from it A potter uses his tool the potter‛s wheel to make clay pots and other things Have you seen the different vessels in your kitchen Metals are materials got from metal ores e g Gold Silver Iron and Copper Since metals are strong and hard vehicles gates and cooking vessels can be made from it Metals are shiny When heated metals can be shaped into any form small paper clips or a huge aeroplane Metals Steel vessels Paper clips Gold bangles Aluminium vessels Aeroplane Copper vessels I give you cool water without using electricity Do you like playing with clay Matter Anything natural or man made that occupies space is called matter Matter has properties like taste smell size and shape Orange is a natural thing It occupies space A wooden basket is a man made thing It occupies space too Many materials are used in making an object Choose and write the correct pair of materials found in the given objects Materials found in motor bikes are a metals and clay b rubber and clay c metals and rubber are found in these pots a Clay and rubber b Metals and clay c Metals and rubber This belt is made of a fibre and rubber b metals and clay c metals and leather This chair is made of a metals and wood b fibre and rubber c metals and clay These yellow laddus occupy the space in the bowl They are small round in shape and are sweet to taste Most metals are strong b Wood cannot be cut c Rubber is not elastic d Wool keeps us warm Leather Rubber Metal Clay I can identify natural sources man made materials and the things made from them I know some properties of matter My Beloved Motherland Unit National Days and National Leaders For many years our country India was ruled by another country called Britain We became free from their rule on August th India celebrates this day as Independence Day every year National days National leaders National and State symbols Caring for public property For many years our country India was ruled by another country called Britain We became free from their rule on August th India celebrates this day as Independence Day every year Our own laws Constitution of India came into force on th January It is celebrated as Republic Day Dr Rajendra Prasad was the first President of free India January Many leaders worked hard to make India independent Two important leaders among them were Mahatma Gandhi and Jawaharlal Nehru Mahatma Gandhi is affectionately remembered by all of us as Bapu or the Father of our Nation He followed the path of non violence 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Flower National Bird National Fruit The Dolphin of the Ganges river is the National Aquatic Animal of India Nilgiri Tahr Palm Tree Gloriosa Lily Kabaddi Emerald Dove Jackfruit State Animal State Tree State Flower State Game State Bird State Fruit Nilgiri Tahr Lotus Banyan Tree Mango Ganges Emerald Dove Our Responsibility Some places and things like public toilets roads street taps parks hospitals schools and classrooms are used by all of us It is our responsibility to keep them neat and clean Do not spit in public places Form a queue Maintain silence in the public library Do not tear or scribble in the books Use the public toilet Do not use the road open spaces Do not scribble on walls Do not throw waste in public places Mango Bengal Tiger Banyan tree Jackfruit b Palm tree Nilgiri Tahr Lotus Emerald Dove c Saffron Green Red White d January August October November Bengal Tiger Lion Elephant b Duck Peacock Dove c Ganges Cauvery Vaigai d Mango Tree Banyan Tree Neem Tree e Jackfruit Banana 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pedestrian crossing Zebra crossing Cross when the traffic symbol of a person walking turns green At some places the road and the train track meet It is called a level crossing Never try to cross it when the gates are closed Common and Important Road Signs School Zone Drive slow Pedestrian Crossing Cross here only Do Not Horn Do not horn here Level Crossing Check before you cross Unmanned Level Crossing Be careful when crossing U Turn Allowed to turn Bus Stop Bus stops here No Parking Do not park your vehicle here Hospital Zone Do not horn Sea Air Lake Road Track Signal Unit Day and Night The Sun gives us light and heat It helps plants grow The Sun is much bigger than the earth where we live The Sun looks small because it is far away from the earth There will be no life on earth if there is no Sun Shadow When an object does not allow light to pass through it a dark area is formed This is called a shadow Stand with your back to Sun Look at the ground in front of you What you see is your 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are based on the position of the Sun They are called directions Directions help us reach a place without getting lost The Sun appears to rise in the East and set in the West Now stand facing the Sun in the morning East Behind you is West To your right is South To your left is North Observe the picture given below In the centre is Meera To her South are the flower pots to her North are the rocks to her East is the flower cart and to her West is the tree trunk In your school identify the eastern direction by finding out where the Sun rises Ask your teacher to help you Then find the direction in which the following are situated water tank flag post playground toilet kitchen gate and water tap Tabulate your answer Moon Earth Stars Sun cow wolf deer cockroach monkey firefly rabbit squirrel rat tree flowers pond dog Unit Wonders of Nature Wonders of Nature Plants Nature is full of wonders Shall we explore some of them Lily The leaf of a lily has a waxy coat on the upper surface It has a notch too Water does not stay on the leaf because of the notch and the waxy coating The Kurinji or Neelakurinji shrub is found in the Nilgiri mountains in Tamil Nadu The flowers of the Neelakurinji bloom only once in years They are purple blue in colour Nilgiri the Blue Mountain gets its name from these flowers Nuts under the soil Kurinji Notch Usually nuts are seen on the stem part of the plant In groundnut plants the nuts are under the soil Nuts are also called seeds Why does water not stay on the leaf of the lily Touch Me Not Plant Have you seen this plant It is found in many places It is a small herb When you touch the leaves of this plant they close So it is called the Touch Me Not plant The leaves open a few minutes later Leaves open Leaves closed Calotropis Erukku Calotropis is a shrub It has a group of waxy flowers Its flowers are either white or lavender in colour It is also known as the Crown Flower since it looks like a crown Colour and Fragrance of FlowersFlowers have beautiful colours and many have fragrance Insects are friends of the flowers They are attracted by the colour and smell of flowers Flowers have nectar Insects and birds come to suck the nectar from the flowers Many of the flowers that bloom at night are white in colour and they have a wonderful fragrance Night Flowering Jasmine Pavazhamalli Spanish Cherry Magizhampoo Jasmine Malligai Many of the flowers that bloom during the day have attractive colours and are less fragrant Butterfly Pea Sangu Poo Jungle Flame Vetchi Poo Periwinkle Nithiyakalyani Wonders of Nature Animals Chameleon Have you seen this animal It is called a chameleon It is a type of lizard It changes its skin colour to merge with the surroundings This helps it to escape from its enemies Lizard Have you seen a lizard clinging upside down on the ceiling Lizards have toe pads that help them stick on to the wall If the tail of the lizard is cut it grows back in one or two months Do you remember that insects have only six legs Spiders are not insects because they have eight legs Spiders make threads called spider silk with which they create spider webs The threads in the web are very strong and sticky The webs help the spider catch insects like flies for its food Dogs can smell much better than us They can even hear very soft sounds and sounds from far away They are trained and used by the police to identify thieves These dogs are called sniffer dogs They are also used to search for people during natural disasters like earth quakes Toe pads of the lizard The snail has two pairs of feelers on its head One pair is long and the other is short The eyes are on the longer pair If we touch the snail it pulls its body back into its shell like a tortoise The rat is a small animal that lives in houses and fields Rats can live without water for even longer periods of time than camels They can bite hard wood with their teeth Some of their teeth keep growing Rats grind their teeth to prevent them from becoming too big Feelers Eye English Unit My kitchen Hi I am Nila I help in the kitchen Do you Let us sing BENDER THE BLENDER There once was a blender His name was Bender When no one was home He would come alive and roam All his friends would be there soon The knife the fork and the spoon They would gather around And run all over the ground Soon everyone is glum Hearing the car Vroom Vroom They have to draw the line And wait until next time Let us learn The big offer Ramu runs a small restaurant that makes very tasty food One day he gets an order to cook dinner for the biggest party in his town However he cannot cook because he is very sick I feel terrible I am not able to get out of the bed But if I don’t cook who will I will help you I will work with my friends and get the food ready for the party I am big enough to prepare rice for the party I am the fastest I make food in minutes I mix fruits and milk together Then add a little sugar That will be a very tasty milkshake Just switch on the burner Look at me fry and roast the food Here I am Look at me slice and dice Get ready my dear tomatoes onions and chillies Here I come My goodness I can't believe my eyes The food for the party is ready Who helped you all Thank you all for the delicious food The recipe book was our chef for the day Let us read There are two pots Mud and Brass Mud and Brass go to the driver to play Brass said I will swim in the river but you cannot Mud said Why Brass said If you hit on a rock you will break Mud said Let me try Mud and Brass start to swim in the river Brass said Let us swim deeper Mud said No let us go back to the river bank Mud went back to the river bank But Brass went on Soon the river was deep and Brass was not able to swim Help Help said Brass Mud used a stick from the river bank to help After that Mud and Brass do not play in the river They only play by the river Unit Small creatures Keep away from the insects Do you Let us sing Incy Wincy Spider Let us sing Incy wincy spider Climbed up the water spout Down came the rain And washed poor Incy out Out came the sunshine And dried up all the rain And Incy wincy spider Climbed up the spout again Let us learn The proud dragon dragonfly A blue dragonfly lives near a pond with his friends He is a proud insect One morning as he was enjoying the sun sitting on a lotus leaf a butterfly comes by Hello Butterfly You look sad Is it because my wings shine in the sun What Why should I feel sad I know that I am a very beautiful and colourful insect An ant speaks as he is on his way to his anthill carrying food for the winter Surely you can find some work to do can’t you All that you do all day is to sit there and feel so proud of yourself Ah Ant You Poor little fellow You have to walk Around on your Thin legs all day You don’t have Beautiful shiny wings like mine How sad A ladybug flies low near the pond Hey ladybug Don’t you wish you were as slim as me Ha Ha I am happy as I am A bumblebee buzzes by happily Bumblebee you must be so bored with your yellow and black colour body My wings change colour during day You better stop boasting about your looks Dragonfly My wings are good enough for me Beetle squeaks as it comes by Ah Beetle you scared me Please do not come near me like that again We are all wonderful in our own way just as you are A hungry chameleon walks in quietly Wow What a colourful dragonfly He is so foolish to sit near the rock and talk to his friends He is my lunch for the day The Chameleon catches the proud dragonfly with his sticky tongue It munches and eats the dragonfly Chomp Chomp Chomp Let us read The boy and the Butterfly Sam is a good boy He likes to help One day Sam sees a butterfly in a cover Sam said I will cut the cover to help the butterfly Sam’s grandpa said No let the butterfly come out on its own But Sam cuts the cover to help the fly The fly comes out But it is not able to fly away The next day Sam sees it on the same rock Sam asked Why is the butterfly on the rock Grandpa said Only if it cuts the cover on its own it will fly Sam said Sorry grandpa I will never do this again Unit The world around us My house is located near the mountain Where is yours Let us sing Beauty of nature Mountains are the highest Valleys are the lowest Plains are flat like a mat Don’t we all know that Islands have water all around Thousands of these can be found Deserts have sand and palm trees Oceans have waters from many seas Beautiful is the planet that I live in There is no other place that is akin Let us learn The right place Ma the elephants have short legs with five toes but why do I have long legs with two toes My child we live in the desert The desert has a lot of sand and rocks Our legs help us to walk in the loose desert sand Our toes protect us from the hot sand Ma why do I have these long eyelashes My child in the desert there are strong winds These winds carry sand with them Our eyelashes keep our eyes safe from these winds Do you know why we have humps on our back In the desert it’s hard to find food and water Our humps store food so that we can use the food in the hump if we cannot find it in the desert Ma can you tell me why we have hard skin It saves us from thorny cactus plants as well as from the hot sun and cold nights in the desert Ma but why are we in the zoo Why are we not in the desert Let us read The river and the hill The river feels I have to run all the time I want to be like the hill Then one day the river asks the hill Why do I run all the time The hill says Ha Ha Ha Can you tell me why I stand all the time The river says I think you like to stand all the time The hill says No I have to see the same trees every day I wish to see new hills and trees The river says I get to see new hills and trees every day Do you want to come with me The hill says No I help many lives here Just as you help many lives on your way The river says Thank you for your help The river runs and the hill stands Both the river and the hill are happy Seasons Story Hi It is chilly during the winter Do you feel chilly came main case wait bray sway sun rises in east ball is red sunglasses kite hat shovel tender coconut sun watermelon buttermilk ball Juice toy Welcoming spring Out of the cave Out of the hole Came the rabbit and the foal Hatch from egg in the nest The birds too join the fest The leaves green and flowers swing Do you know that it is spring The bugs are back And little spiders in black Bears rabbits and bees Near flowers grass and trees Just like me they hum That spring has come Raincoat On Sunday Nalan’s parents got him a red raincoat Ma may I wear it now asked Nalan No my dear now the sky is clear said Ma Will it rain today Mummy asked Nalan on Monday No Nalan not today It is bright and sunny If you wear it will be funny said Ma On Tuesday Ma when will my wish come true asked Nalan Not today my dear there is just one white cloud in the sky said Ma On Wednesday Ma why doesn’t it rain asked Nalan Son I think it is hot It will rain before noon said Ma On Thursday during picnic Ma what if it rains Shall I take the raincoat with me for picnic asked Nalan No my dear it will not rain The little white clouds are too high said Ma Ma will it rain today asked Nalan loudly on Friday It might my dear there are some dark clouds low down in the sky said Ma Saturday begins with a bang Dadum Dadum Dadum I hear thunder Will it rain very soon asked Nalan Finally it starts to rain Oh it’s raining it’s raining sang Nalan running out But Nalan you forgot your raincoat said Ma running after him cap coat cloudy sunny hot cool Sunday rain Wednesday clear sky Saturday hot chilly sunny rainy cloudy Word wall Cut if low seven eight after again every buy cold does fast gave goes pull sing horse port ball fall all prawn saw shore store lord fawn law ball bore born lawn paw fall shore short yawn raw call score storm dawn jaw hall store horse pawn flaw small snore The storm hits the shore The fawn runs in the lawn The prawn is sold in the store The horse stands in the big hall Word wall nor fawn flaw ball bore cork hawk raw fall core born yawn jaw call more lord dawn law hall store short lawn saw mall snore horse pawn claw tall score storm prawn shawl small shore Meet my friend Nice to meet you Nice to meet you too Nice to meet you too It is a flower It is a pink flower Mandria is a girl Mandria is a clever girl Rithik is a boy Rithik is a tall boy The word pink tells us more about the flower The word clever tells us more about the girl Mandria The word tall tells us more about the boy Rithik The words that tell more about the naming words are called describing words How is the light How is the man How is the rock bright dull fat thin hard smooth The light is bright cloudy windy snowy green little barren angry sad funny a Prithinga has a green bag b Prithinga has a yellow bag C Prithinga has a blue bag a He is a weak and lazy man b He is a strong and bold man c He is a dull and lazy man a Millet porridge is a junk food b Millet porridge is a nutritious food C Millet porridge is a modern food A Winter Morning The sun rises The birds sing The girls are ready to play Brr it is cold Yes so cold Let me wear my warm hat as it is cold The hat is not on the table Where did the hat go It was here Where has it gone now I can’t find my warm socks Where are my warm socks My feet are numb with cold Mine too The girls shiver due to the cold I can’t find my hat and you can’t find your socks Banu finds a small hole in the wall Janu look here Look into the hole Our hat and socks are here Banu and Janu take their hat and socks Now they are ready to play They leave to play Then two rats come out and take their warm coat into the hole hot cold hole cupboard teeth feet Take a white chart Draw three trees with a pencil on a sheet Paint the first tree brown with no leaves Paint the second tree green with a lot of leaves Paint the third tree yellow leaves and full of pink flowers Cut the coloured trees one by one Stick it and name the seasons summer rainy winter Malar and friends sing songs everynight Usually Malar goes there at six Today it is very cold So Malar doesn’t joint even after seven She runs fast and atlast joins with them horse dance storm born jaw flaw plow law fall hill call ball north store shore score red green big small He is an active boy He is a lazy boy He is a naughty boy It is a black dog It is a white dog It is a brown dog Learning Outcome Now I can name the words that describe the seasons use the structure Nice to meet you ask and answer questions with How identify and use the describing words name the seasons say and read the words with or ore aw and all read the story A Winter Morning recite the poem Welcoming Spring Read words from the wall Trip to the store I can name ten groceries Can you roundflat bluegreen yawn born fall bore jaw small snore Ghee Milk Honey oil Rice Bengal gram Wheat Blackgram Garlic Chickpeas Onion Ginger Sugar Cardamom Greengram Ragi Dates Salt Cashew nuts Red Chilly Tamarind Pepper Cumin Turmeric Ground nuts Mint Curry leaves Coriander leaves At the Grocery store At the grocery store find everything you need and more Saffron and cinnamon are not very common Grains and sprout eat them without a doubt Almonds and dates share them with mates Milk and oil can’t pack them with a foil Now get these to your door from the grocery store Varun’s day out It was a warm sunny day perfect for a picnic Amma I am bored at home said Varun His mother said that they could go out for a picnic in the park A picnic Sounds exciting said Varun They sat down and made a list of things to do and a list of things to eat Then they took an auto to the market to buy groceries At the vegetable shop Varun asked Can we buy fresh carrots We can make a tasty salad Amma smiled Sure Varun was curious at two similar looking vegetables and asked What are they called Amma smiled The one that is white inside is called ash gourd and the other is called pumpkin Then Varun and Amma crossed the fruit shop Varun said Amma I think we need some fruits for the picnic Varun had already decided which fruit he wanted He wanted the big green and juicy watermelon Not just that he also wanted the reddish yellow ripe mango from the stalls Amma there are so many types of rice and cereals here Should we buy some Amma then bought some maida rice and black gram After coming back home Varun helped Amma to store the vegetables fruits and cereals in their place She then washed the rice and black gram to clean it She then mixed and soaked them in water for some time Amma can I grind them with you Amma and Varun made the batter together for making delicious dosas for lunch They also packed coriander chutney and tomato chutney to eat with them They packed the dosas in a round tiffin box and the chutneys in two small square boxes They grated the carrots squeezed lemon and added salt to make a salad that they can eat as a snack Amma Can I taste some salad now asked Varun Amma gave Varun some salad Yummm said Varun Now they started to cut the watermelon and mango to pack them Varun could not resist He took a big bite of the mango and the juice of the mango dripped and fell on his shirt Amma saw Varun and burst into laughter Varun joined his mother Now that all the food was ready and packed both left to the park Varun played on the swing and slide After some time Amma and Varun spread a cloth on the grass and laid out all the food they had packed Thank you Amma I had a wonderful day said Varun and hugged his mother coriander ash gourd blackgram break spread sprinkle saute peel Word wall six small nine ten fly going once some stop thank always around sleep wash write dollar sugar mirror doctor collar caterpillar sugar polar sonar visitor sailor actor tractor donor This is a green caterpillar Actor donates in dollars The sailor travels in ship Sugar is carried by tractor Word wall major solar tailor sugar author collar creator polar collector popular Let me play Yes you can John cried loudly How did John cry loudly Shyam will meet his friend tomorrow When will Shyam meet his friend Tomorrow How happily really gently slowly when tomorrow today now yesterday sadly angrily happily roughly carefully peacefully He came yesterday She speaks gently beautifully softly fast loudly dance speak THE GREAT COOKING CONTEST Gayathri was a cute girl She liked to cook and make crafts She helped in the kitchen but she is not allowed near the stove One day her school posted a note with the name THE GREAT COOKING CONTEST It said that children must cook without fire All in Gayathri’s class took part in the contest She told her mom about the contest and asked her help Gayathri said A fruit salad will not make me win Mom said Why don’t you try AVAL LADDU It is easy and tasty She learned to make AVAL LADDU She was ready for the contest On the day all were busy with peeling and cutting Gayathri did not panic and took her time to start She took a cup of AVAL and soaked it in water Then she added nuts and honey She mixed them well and rolled them into eight LADDUS Gayathri’s name was called She took the AVAL LADDUS and ran CRASH She fell down and her LADDUS got crushed She was sad She took it to the school head The head tasted the crushed LADDUS and said Your AVAL BOONDHI is really tasty The time had come to name the winner The school head on the mike said Gayathri of class is the winner Gayathri was very happy nuts water sugar honey Paste mustard seeds in box no Paste black gram in box Paste fenugreek seeds in box Paste black pepper in box Paste cumin seeds in box Paste cardamom in box Paste clove in box ragi pepper bengalgram regular sailor sugar tractor polar visitor dollar mirror sugar polar doctor regular I am six years old I fly a small kite My sister is ten years old I write her name in the kite Always I love her happily silently The boy goes to school happily The boy goes to school angrily The boy goes to school sadly They quietly celebrate their function They cheerfully celebrate their function They sadly celebrate their function Learning Outcome Now I can name actions related to the groceries use the structure Let me Yes you can No you cannot identify and use the words that help us know more about the action ask and answer questions with which name the groceries say and read the words with or and ar read the story The Great Cooking Contest recite the poem At the grocery store read words from the wordwall Our leafy friends I like to eat fruits from the tree do you Look and say Coconut tree Jack tree Peepal tree Fig tree Tamarind tree Palm tree Banyan tree Neem tree Mango tree Plantain tree Wonderful tree Let us sing I am a wonderful tree In the heart of seed Buried deep so deep My mighty plant lay asleep Wake up said the sun Rise and shine Wake up said the rain So we may sustain My little plant heard And rose to see How wonderful The outside world might be The Coconut Grove Iniya was a little girl with big brown eyes She lived with her parents in a beautiful coconut grove next to a small blue lake She helped her parents by the lake went to school and then spent time with them only to wake up the next day Each day she balanced a big empty basket on her head as she walked down to the lake Her mother followed with the laundry and her father brought The big fishing net Her mother washed the clothes on a stone next to the lake while her Father went fishing net to the shore and they collected The fish in a big basket Sometimes a turtle got stuck in the net but Iniya always hurried to Save it One sunny moring while fishing with her father Iniya said Appa If we catch so many fish what if one day there is no fish left laughed and sent her off to school Under the shade of the trees Iniyas mother fell into an uneasy sleep She dreamt of a lake with no fish In her dream every day the father Returned from the lake with no fish and the family could not support itself The wind then said The water and the land have always taken care of your family so you have to take care of them in return She woke up with tears in her In eyes she woke up with tears in her eyes She didn't know how to bring up iniya without selling enough fish All afternoon she sat weaving coconut mats and thinking about her dream That night Iniya heard her parents whisper as the oil lamp burned deep into the night The next morning her father gave her a smaller basket how can we carry all the fish as will fit inside this basket he replied Iniya was puzzled How will this Be enough for us iniya wondered When she came back from school She was happy to find her mother making soap and oil from the coconuts Iniya swiftly climbed up a tree to get more coconuts but her mother said Dont pluck them we must only use what the tree gives us Her father said We have taken only fallen coconuts for making these Things Look we have even made this soap with a jasmine flower inside Iniya learnt a lot about gardening and arts at school When Iniya grew Older she made coconut fibre packs that could be used to pot plants She also loved to carve coconuts She made many toys and idols with fallen coconuts Her favourite was to carve tiny turtles out of coconut shells She always wore one around her neck Tools we use The plumber helps Me fix broken pipes Do you know anyone else who helps you Look and say Drill Hammer Screwdriver Plier Saw Nail Wrench Scissors Axe Spanner Bolt Tape Nut Spade Toolbox Let us sing The little doctor I am a doctor Holding a stethoscope Thud thud says your chest Your heart is never at rest I am a doctor Holding a stethoscope ́thud thud let me hear all is well no need to fear Let us learn A stitch in time Oh no wails Shyam The seams of his favourite shirt have come apart I can't wear this shirt anymore Thathal Of course you can silly his grandfather says We can fix it Thatha takes a needle and some blue thread He shows Shyam how to stitch Shyam's friend Veni has come home Let's go cycling Veni says In a minute says Shyam Let me iron my shirt first He switches on the iron box But the light doesn't glow and the iron remains cold Ufff I'll just wear the crumpled shirt grumbles Shyam I was at the Repair Shop last week soys Veni George Uncle was repairing on iron box I watched what he was doing closely Let's try to make it world Do you have a screwdriver Shyam hunts in the cupboard and gets a screwdriver Veni unscrews the back of the iron She scans the inside of the iron What's wrong asks Shyam I don't think I can repair it says Veni Oh nol Appa and Amma will scold us when they see what we have done to the iron box We'll take it to the Repair Shop They'll help us says Shyam Shyam and Veni take it and sneak out on their cycles to the Repair Shop Aunty can you help us repair this iron box Ven asks Daisy Aunty What's wrong with it It wont switch on says veni Daisy Aunty takes out a little box with wires and knobs This is a multimeter she says it checks if all part of the iron are allowing electric current to flow She tests all the parts until she comes to a small wire See this wire next to the plug It's broken there's your problem She cuts out the old wire and plug and fixes a new wire and plug to the iron box Let's test it She switches it on and the light glows The iron is fixed Veni and Shyam ride back home It is a day well spent Note to the teacher Read the story to the children Encourage them to know the name of the tools and its uses Amazing Ammachi Ammachil Could we make coconut barfi Sabari asked Please he asked Ha ha hal Only if you help me make it replied Ammachi YAY said Sabari excitedly Ready shouted Sabari Ready said Ammachi after sitting on the seat tied to the pulley We will only pick ripe coconuts okay The ones that are brown all over Pull me up Up Up And Up Now watch out Here they come WHOOSH THUD Now let us take the husk off CRANK The lever of the machine rang GRRRRRR This was Sabari's tummy not the lever Ammachi giggled Then we crack the shell with the cleaver Like THIS KHATAK And grate the fruit KRRRRRR dobe Reader Such Toss it into the pan with sugar and all the other things said Ammachi It smells SO good Ammachi said Sabari Then we pour it all out on to a tray Let us wait for it to cool Now cut it into neat little pieces YAY Our coconut barfi is ready to eat YUM Thank you Ammachi TICKET Places in my Town I am here to book my ticket Can you tell where I am Look and say Post office School Library Hospital Police Station Market Bus stop Park Zoo Railway Station Let us sing Breezy Beach Breezy wind in the morning Dark clouds keep growing For it could start raining Daya and his father go horse riding The sea is so vast and blue The waves come running to you He built a castle on the sand And decorated it with the shells in his hand dr louch Let us learn A Cloud of Trash Charu was a smart and bright girl She always was kind to all but she was the unhappiest girl among her friends She was certainly the unhappiest girl in her entire class She was perhaps the unhappiest girl in the world or at least that's what she felt What about her friends Charu had no friends any more No one wanted to play with Charu because she had a cloud hanging over her head The cloud had orange peels and biscuit packets broken toys and pencil shavings twisted plastic bottles and colourful plastic bags All surrounded by a swarm of buzzing flies Nobody wanted to play with a girl who had a cloud of trash hanging over her What if a rotten banana peel fell on your head YUCK Charu couldn't even play hide and seek any more The cloud would always give her away Let's walk to school together she said to Sona Sona ran off in the opposite direction She asked May I borrow your pencil Jancy made a face and changed her seat to go sit with Asha Charu even had to eat her lunch alone Charu knew that she should have listened to her Amma Amma always told her not to litter Don't throw the banana peel on the road Throw the empty biscuit packet in the dustbin But Charu never listened She only laughed and kept littering She did not care about her surroundings Then one day Amma became very angry and said Soon all this trash will start following you Charu just laughed The next morning Charu woke up to a foul smell and the sound of buzzing flies A cloud of trash was hanging over her head Amma's words had come true Charu tried to run away but the trash cloud followed her everywhere She tried to sweep the cloud down with a broom only to find the cloud over her head Charu tried EVERYTHING She screamed and asked the cloud to leave her alone She even tried to throw it into the dustbin but it just wouldn't go So Charu became very unhappy Then something happened Charu saw Bala throwing a banana peel on the road near the park Charu was annoyed Could he not see the cloud over her head She yelled Don't throw the peel on the road Someone will slip Bala scared of the trash cloud threw the peel in the dustbin The next day the trash cloud had become smaller How did that happen Charu wondered Then Charu saw Amutha Aunty throwing away plastic bags near the hospital Aunty Charu said Please pick up these bags I am sure you can reuse them ed up the bags and left The next day when Charu woke up the cloud was much smaller Charu smiled She knew what she had to do When someone threw away a biscuit packet or pencil shavings in the school Charu stopped them She picked up every twisted plastic bottle near the hotel and put it in the dustbin The village became cleaner and cleaner and Charu's cloud became smaller and smaller Until one day it had gone COMPLETELY GONE Charu was now perhaps the happiest girl in the world haru never littered again Secretly she liked having the village clean But she was also scared that the trash cloud would come back some day Who knew Do you litter things in your village A Day in the Park Let's play on the slide My friends and I take turns on the slide Let's go to the park I love to play with my friends in the park Let's swing How high can we fly We are high up in the air Let's play with the ball My friends and I love to play with the ball I kick the ball far We run very fast to get it Let's rest now as we are tired My friend and I lie down on the grass Now we are ready to play again Let's play hide and seek I look for my friends as they hide Let's eat some snacks We share biscuits I fruits and some water Let's do one last thing We are really tired now We sit down and watch other kids play I want to go on the monkey bars I can swing really fast Let's say goodbye to friends It's time to go home It was fun today Let's come back soon SCIENCE Unit My body Cleanliness Mithra is watching TV with her parents An advertisement in the TV shows a toilet with germs Mithra asks her dad what they are He explains to her about germs Do you know about germs Germs are microorganisms that affects our body They are found in all the places If we do not maintain cleanliness the germs will infect us and cause many diseases to us Hand Washing Dialogue between Shruthi and her mother After playing outside Shruthi returns home Shruthi Mom I am so hungry Give me l something to eat Mother Shruthi go and wash your hands Shruthi No Mom I want to eat first Then I wash my hands Mother No you must wash your hands Shruthi Mom is it necessary to wash hands before eating Mother Yes look at your hands Is it clean or dirty Shruthi My hands are too dirty Mom Mother Where does the dirt stick in your hands Shruthi Under the nails in the ridges Mother Yes these are the places where the germs are hiding Shruthi Is it so Mother Yes it is important to wash your hands It is a simple habit that keeps you healthy Steps of Hand Washing Wet your hands Apply enough soap Rub the palms Rub the back of each hand together Rub both hands holding all fingers interlocked Rub the back of the fingers Rub the tip of the fingers Rub the thumbs and the ends of the wrists Rinse both hands properly with enough water Benefits of Hand Washing Kills or removes germs Lowers the risk of diseases like Diarrhea Prevents eye infections Reduces the risk of respiratory infections Using Toilets In the world nearly one billion people have no access to toilet at all and they are forced to do open defecation Open defecation spreads diseases such as cholera and diarrhoea Groundwater is polluted by toilets and it also causes diseases Children also get affected by intestinal worms which causes anaemia So it is necessary to use toilets World Toilet Day is observed on November Having a toilet prevents diseases like cholera offers privacy is convenient is safe We should use toilet and avoid open defecation We should wash our hands after using the toilet These will help us to have a healthy life National De worming Day is observed on February Bathing Importance of bathing are Cleanses the body Removes dirt and odour Protects oneself from infection and Improves blood circulation World Health Day is observed on April Do not play with water or run around in the bathroom You may get hurt Do not touch the sharp objects such as blades razors and scissors kept in the bathroom Use hot water under the supervision of an adult only Do not leave soap bar on the floor Someone may slip due to it Do not leave the bathroom floor wet Dry the floor using a wiper before you leave Do not touch electric switches with wet hands You may get hurt with an electric shock Protecting Sense organs Sense organs help us to observe and understand the world around us There are five main ways we can do this through sight with our eyes touch with our skin smell with our nose taste with our tongue and hearing with our ears The ways by which we can take care of our sense organs are given below By nature all the sense organs have some ways to protect themselves For example the eyelids and lashes protect the eyes from dust and other foreign particles Ears Avoid loud noise Do not listen to music at higher volume while using Earphones or Headphones Do not clean ears with ear buds Dry your ears after taking bath Cover your ears while swimming and bathing Use earplugs or ear muffs when you are exposed to loud sound Consult a doctor if you have pain in ear Hearing loss can not be prevented always But hearing loss due to exposure to loud noises can be avoided Noise levels are measured in decibels dB Any sound over dB can be harmful to us Nose Not clean your nose by inserting any object into it If the nose is blocked due to cold it is better to use steam to clear it Do not pick your nose We should clean our tongue daily with the tongue cleaner while brushing our teeth A dirty tongue causes bad breath Always use a mild soap Keep your skin dry and clean Dry your skin by rubbing gently with a clean cloth Consult a doctor when you have itching skin injury or infection Good touch bad touch and don’t touch In the park Janani plays with the puppy She runs after a butterfly to catch it Mother Janani did you notice what happens when you touch the butterfly Janani Yes mom it flew away Mother Now tell me why do you think it flew Janani I think it did not like my touch Mother Maybe it did not But it wanted to be safe Now I am going to tell you three rules to keep yourself safe Janani Okay Mom Mother There are body parts that you and others can see and touch like our arms and hands But there are also some body parts that no one should see or touch like our chest between our legs and our bottom These parts are called private parts What are they called Janani Mother So now let me tell you the rule number It is never right for anyone to look at touch or talk about your private parts And it is never right for someone older than you to ask you to look touch or talk about their private parts Janani But mom don‛t you give me bath daily Mother Very good question Who else knows that I give you a bath Janani Dad Grandpa Grandma and Jagan know that you give me bath Mother Correct when we are small our mom or dad might touch us to help us to be clean It is never a secret and it is okay to tell someone about it Janani I got it mom It is never right for anyone to or about my private parts But it is never a Mother Very good Some touches are good or safe like when we shake hands But some touches are bad or unsafe like when we hit someone Can we hit someone Janani Mother Bad touches might make you feel sad angry scared or confused If you do not like any touch or if it makes you sad angry or scared tell them to STOP Scream STOP and run away This is rule number Janani Okay mom If I do not like any touch I scream and Mother Very good Now let me tell you the rule number Tell an adult you trust about the bad touch Keep telling until you get the help you need Janani I should adults I trust till I get Mother Janani remember no matter who tells you It is never your fault Janani But mom would people I know also do bad touch Mother Anyone would do So it is important that you keep all the three rules in mind even if you know the person Can you say the rules Physical or sensory challenge Ramu went for shopping with his father On the way they saw a visually challenged person who tries to cross the road Ramu‛s father went to him and asked May I help you sir And the differently abled person replied Yes I want to cross the road Ramu‛s father joyfully helped him to cross the road By seeing this Ramu felt proud of his father and he also wanted to help the needy So Ramu asked his father to teach him how to help differently abled persons Differently abled persons Not everybody can use all five senses Some lack the ability to use any one or more of them such people are called Differently abled Helping people is very honourable and there are plenty of ways by which we can help differently abled people Ask first if they need any help from you and follow their lead Speak clearly and listen to their words well Use direct words Never tease them by calling with specific names Be aware of their personal aids do not cause any damage to the aids Your simple acts can be helpful to them opening doors for the disabled making way for them bring them to cross the road treat them as normal people By doing these you can exhibit that you want to help the differently abled Importance of physical exercise Parents teachers meet is going on in Sheela‛s school As her parents are out of the town her grandfather attends the meeting He is a retired army person and even at the age of he does all his work by himself Everyone in the meeting wonders What is the secret behind his good health and they asked him for his secret Grandpa replied that he avoids junk food and takes healthy and fresh food He does physical exercises like walking running jogging and yoga He advises all parents and children to do exercises regularly Protects us from diseases Balances our body weight Strengthens our muscles and bones Improves digestion Improves sleep quality Increases our energy level Improves skin health Boosts brain functions and memory Unit States of matter Teacher Leela look at the picture and list out the things you see in it Leela Yes madam Sun river boat house tree car birds Teacher Very good There are many things in this picture Some of them are natural and some are man made You can see a number of things around you Everything you can see and touch is made up of matter Anything that occupies space and has mass is called matter is a measure of how much matter is in an object The air we breathe the food we take and the water we drink all have matter in them Do you know that even you are made up of matter The space occupied by an object is called its volume Matter can exist as solid liquid or gas Solids are things that have a definite shape and volume They occupy a fixed space The particles in solids are packed very tightly So they cannot move freely Their shape can be changed only when we break or cut them Liquids are the things that do not have a definite shape but space They have a definite volume They take the shape of the container in which they are filled The water moves from one place to another This is because the matter in liquid are loosely packed So liquids can flow freely Different types of liquids are placed in separate containers Students are allowed to touch and feel every type of liquid They are asked to tell the type of the liquids on the basis of their stickiness concentration When a perfume is sprayed or an agarbatti is lighted the fragrance spreads all around the room How The matter in gases are very loosely packed So they can move around freely in all directions Hence gases do not have a definite shape and do not occupy a definite space or volume Most of the gases are colourless But when they are mixed with solid particles they show distinct colours Matters change their state as the temperature changes Solid changes into liquid and liquid changes into gas on heating Gas becomes liquid and liquid becomes solid on cooling Melting Change of solid into liquid on heating is called melting For example if ice solid is heated it will change into water liquid Change of liquid into vapour on heating is called Evaporation For example if water is heated it will change into steam Change of liquid into solid on cooling is known as freezing For example water liquid poured ice tray and placed in the freezer fridge gets cooled and becomes ice solid Paper firewood dried leaves and charcoal can be burnt Liquids like kerosene petrol and diesel also burn on heating Domestic gas burns and helps in cooking Substances when burnt give out heat But in some substances the heat released is very low Thus these are not used for heating purpose Substances that give out more heat while burning are used for heating purpose These substances are called fuels Unit Force Simple movements and actions In our daily life we do different actions such as pushing pulling twisting and turning By doing these actions we move or change the shape of an object Change in position of an object is called movement Action is the motion which gives the required result When an object or a thing moves from one place to another It is said to be in motion Force Force is a push or a pull on an object which make it move changes its shape or stops it from moving Force involves an interaction between two or more objects Force can lift or drop an object Without force we can‛t move any object When a force is applied in the direction of an object it is called push When a force is applied in the direction opposite to the direction of an object it is called pull Effects of forces Energy is needed to apply force Force helps us to do the following things Force can change the direction Force can change the speed Force can stop a moving object Force can change the shape Force changes direction Force changes motion The cycle moves forward because force is applied on the cycle by pedaling When we stop pedaling and apply the break the cycle comes to rest Force can change the speed of a body which is already in motion by providing more force on it Ram and his brother are playing with a toy car Ram tries to move the toy car and his brother stops it from the opposite direction to slow down the toy car Thus force changes the speed of an object An object stops moving when we apply force in the opposite direction Have you played football game How will you stop the ball The goal keeper applies force and stops the ball Force can change the shape When an inflated balloon or water balloon is pressed some force is applied on both sides of the balloon Thus it changes its shape While squeezing a plastic water bottle force is applied on all sides of the bottle Thus the shape and size of the bottle is changed Types of force When a force is applied by touching the object it is called contact force Eg Lighting a match stick Contact force is classified into three Muscular The force applied by using the parts of our body is called muscular force Mechanical force The force applied by a machine is called mechanical force The Earth pulls all the objects towards itself Frictional force When a force is applied without touching an object it is called non contact force Eg Vaccum cleaner Magnet Non contact force is classified into two Gravitational force The force applied by the Earth to pull objects towards itself is called gravitational force Magnetic force A magnet is a material that attracts things made of iron The force that attracts things is called magnetic force When we roll down a ball on grass ground it slows down and finally stops We know that an object cannot stop without force The force that stopped the ball is frictional force Force exerted by the surface when an object moves over it is called Frictional force Friction When we use eraser on a paper the shape of the eraser changes Why It is because of the friction between the eraser and the paper Friction is a force of actions between two surfaces in contact or when they slide over one another Unit Science in everyday life Do you think science is separable from our day to day life Science is the study of the natural world around us We learn science by observing experimenting and describing Science is all around us Examples of science can be observed from the time we wake up till we go to sleep and even while one is sleeping Science influences most aspects of everyday life including food energy medicine transportation and leisure activities How science is involved in daily life Even in our sleep our body is working continuously We dream while we sleep When we eat food our digestive system is at work Medicine vessels and furniture we use are the products of science Kitchen Science If one wants to explore science in everyday life then kitchen is the right place to start To understand how water boils or how idlis are cooked we must know science Heating a liquid until it becomes gas is called boiling Boiling the water means to heat the water until it becomes gas and mixes with the air The boiling point of a substance is the temperature at which the liquid boils At this temperature the liquid changes into gas Benefits of boiling water Destroys germs Improves digestion Prevents us from the infection of waterborne diseases Idli is a common and usual breakfast of Tamil Nadu What process is involved in the preparation of idli batter What type of cooking process is involved in making idli Soaking rice and blackgram in water grinding Allowing it to ferment Steaming in idli cooker Steaming is Easy cooking method Steamed food is easily digested Steamed food retains Vitamin C and E Things like electric bulb and fan are called home appliances It is not easy to run our life these days without home appliances Home appliances are machines that make life easier and convenient Cooking food using water in a sealed vessel cooker is called pressure cooking A Refrigerator Fridge is a popular home appliance for preserving food It works on the principle of cooling The fridge has a pump that transfers heat from the inside of the fridge to its outside This helps it to keep things cold The cold temperature inside the fridge slows down the bacterial growth in food and thus preserves the food for a longer time Medicine in the kitchen In the past times kitchen medicine was practiced in every house People knew how to treat some of the ailments of the family members and manage emergencies with what was available in the kitchen Is it not amazing to know that we have a pharmacy in our kitchen Let us learn a few useful things we can use from the kitchen as medicines Garlic is called the poor man‛s antibiotic It helps to balance blood pressure and reduces symptoms of common cold Asafoetida improves digestion It is used as a remedy for diarrhoea and dysentery Ginger helps to improve digestion It also reduces nausea Turmeric is a common anti infectant and it helps to heal wounds Black pepper is a great remedy for colds coughs Cloves helps to relieve toothache Coriander juice is made from the coriander leaves It helps to reduce chest congestion It is rich in iron and vitamins A B and C Coriander tea is made from coriander seed powder One tablespoon of powder is mixed to two or three cups of water Jaggery is added and they are boiled for minutes It improves digestion Simple Scientific investigations in Daily Life The curiosity of science starts from home It is promoted by simple scientific investigations of the things that the children see around them or use daily like why the leaves are green in colour What is the difference between the sun and the moon How does the television work Shall we learn about few simple investigations Real and Shadow Make the classroom dark Light a candle Place a toy near the candle What do you see Move the toy away from the candle What do you see Move the toy closer to the candle What do you look at Experiment and see what happens to the shadow if the light source is dim Measuring Temperature of Water and Milk using Thermometer Usually our body temperature is lower in the morning it increases during the day and is highest in the evening Other than this a rise in body temperature is usually caused by an infection Using a thermometer to check our temperature can help us manage any illness What is a thermometer Thermometer is an instrument used for measuring body temperature It consists of a narrow sealed glass tube marked like a scale The markings show the temperature Boiling point of water is °C Heat the water Measure the initial temperature when the water starts to boil Allow it to boil for few more minutes measure the temperature The temperature remains the same when the boiling point reaches °C and continues to boil for some more time Similarly the boiling point of milk can also be measured using thermometer Food classify different nutrients in food describe balanced diet distinguish between various meals in a day understand the different food habits based on the places and age groups identify traditional food and explain the advantages of a home garden Food Nutrients Every day we feel hungry and then eat something Our body is telling us that it needs food Why do we need food Food gives us energy to work and play Food builds our body Food keeps us healthy We eat different food items some are raw and some are cooked Each of these food items contains different nutrients There are five main nutrients that our body requires They are carbohydrates proteins fats vitamins and minerals World Food Day is observed on October Carbohydrates Our body needs energy to do work play and do other activities Carbohydrates are energy giving food Food that contains carbohydrate are rice wheat potato sugar cubes and bread Proteins Proteins build maintain and replace the tissues in our body They are also known as body building foods E g Fish Milk Egg Nuts and Sprouted seeds Fats Fats provide energy to us They act as the body‛s energy reservoir Fats also help to keep the body warm during very cold weather Too much fat in the body may lead to obesity or overweight Some food items that contain fat are cheese butter ghee meat oil and nuts Vitamins Our body needs vitamins to work properly They protect our body from deficiency diseases E g Carrot Orange Gooseberry Papaya and Greens Minerals Minerals help in formation of blood bone teeth etc They regulate the body functions E g Fig Pear Garlic Banana and Apple Energy Giving Food Items Body Protecting Food Items Body Building Food Items Rice contains Coconut oil contains Egg contains Fig contains Carrot contains Carbohydrates They give us energy to work and play Vitamins Carrot They help to build our body Fats Reservoir of energy Minerals Balanced diet Diet refers to the food we eat A balanced diet contains all nutrients in the right amounts It also includes fibre and water It helps in the growth and development of our body The quantity of nutrients required by our body and their sources can be shown by a food pyramid The food item that should be eaten in the least amount is kept at the the pyramid Roughage also known as fibre is an indigestible food that your body cannot absorb It is present in food such as legumes whole grains and vegetables Milk is a complete balanced diet Carrot contains Vitamin A Bran contains Vitamin B Gooseberry contains Vitamin C Milk contains Vitamin D Sunflower oil contains Vitamin E Cabbage contains Vitamin K Proteins Carbohydrates Vitamins and Minerals Fats Friends‛ Name Breakfast Lunch Dinner Meals in a day A meal is what we eat during a particular time of the day Breakfast lunch and dinner are the three main meals we eat every day Kaviya and Suriya are studying III standard They leave home at am to go to school and they have their breakfast before going to school Their mother usually makes food items like idly dosa bread with egg ragi koozh idiyappam poori aappam and pongal Think What do you usually eat for breakfast At pm the school bell rings to announce lunch break Kaviya and Suriya both wash their hands and sit down to eat lunch with their friends All of them place their lunch towel on the floor and start eating Kaviya Suriya and their friends share their lunch which include lemon rice fruit salad greens rice along with sambar biriyani tomato rice vegetable salad curd rice tamarind rice and cereals The amount of time you should spend for washing your hands each time before eating is at least seconds That is about as long as it takes you to sing the happy birthday‛ song twice Try it when you wash your hands next time Food Habits in Different Places Food habit of people at a place depends on the climate culture and availability of food For example in coastal areas people eat a lot of sea food India is a big country with different climate and culture South Indians depend on rice dhal coconut jaggery for their food Hence they make food like Idly Sambar Kozhukkattai and Payasam North Indians depend on wheat onions milk and curd Hence they make foods like Chappathi Paratha and Lassi Food habits in Different Age Groups The amount of food a person needs depends on his age These needs change with age groups and level of physical activity Athletes may need more amount of energy during training Young children should eat a wide variety of food The following food items can be eaten by the people of different age groups in order to maintain good health Children Milk honey fruits vegetables whole grains egg sprouted seeds and fish Young adults All vegetables and fruits sea food greens milk and milk products Old adults Fibrous food low fat dairy products food with less salt ragi thinai and millet kambu Name of the festivals Food items prepared Traditional Food Our ancestors ate food that were easily available from nature which lead to healthy lives Few natural foods are Ragi Thinai Samai Kuthiraivaali Varagu and Kambu Different Varities of Ragi Food Ragi ball Dosa Adai Vermicelli and Biscuits Of all the cereals we eat ragi is the best body builder and the disease fighter Ragi Koozh Pizza Thinai Ragi Ball Samai Rice Kambu parata noodles ragi Adai burger biriyani chips fats carbohydrate protein roughage A balanced diet contains Carbohydrates and vitamins Proteins fats and minerals Fibre and water The Vitamin present in carrot Vitamin K Vitamin A Vitamin D Vitamin E Eating green vegetables Washing vegetables before cutting them Eating lot of fat food items Eating lot of pulses Breakfast Lunch Dinner halwa murukku jackfruit spices kadalai mittai mango tea Carbohydrates and fats Supports body growth Vitamins Regulates body functions Protein Energy giving food Minerals Fights diseases Home Garden Cultivation of crops in a small available place in house holds is known a Home garden or Kitchen garden or Nutrition garden E g Vegetables like tomatoes brinjal snake gourd snap beans lady‛s finger and fruits like banana lemon and also herbs Advantage of Home Garden It is the easiest method Waste water can be reused It saves our money We get vegetables which are fresh and high in nutritive value Water understand the importance water list the sources of water understand the methods of preventing wastage of water explain the methods to conserve water bodies know about Problems caused due to stagnant water Water Water A thirsty bird from far away Looked for water on its way Empty ponds and lakes dry Everywhere did it try Suddenly it spotted a dripping tap A boy carelessly leaving it open Was walking away The bird flew down and drank To the little boy it said Water is precious do not waste it Close the tap after you drink The boy realised and said sorry He closed the tap and went satisfied The bird flew on singing a happy song Water A primary source of life Water is one of the most important resources on Earth All living things like small organisms plants and animals need water to survive People use water for various purposes Rain is one of the main sources of water A camel can drink to litres of water at a time and live without water for several days World Water Day is observed on nd March To play To grow plant To row a boat To sing To write To knead dough To run a fan To paint pictures To wash dress Wild animals need water Hence they come to water bodies in the forests Just like us animals too drink water when they are thirsty Potable Water Drinking water is known as potable water Potable water is water that is good to drink and useful for food preparation Potable Water should be free from dangerous chemicals transparent odourless and colourless free from bacteria which cause diseases Different Sources of Drinking Water Water is available in many natural sources but not all the water sources are suitable for drinking Water should be boiled to kill the germs in it and only then it is suitable for drinking A few sources of water are rain well river lake and stream Rain I freeze when I am cold and I fall softly as snow I melt in the Sun and down the mountain I flow Who am I assemble a Simple Pump Materials needed Any hollow tube PVC metal or even a long papaya stem Procedure Hold the tube with your left hand and move it up and down into a bucket of water Keep the palm of your right hand on the top of the tube and open and close it with each up and down reciprocation Soon water will start squirting out Here the up down motion of the left hand does the pumping while the right palm acts like a valve Each person on the Earth requires at least to litres of clean and safe water per day for drinking and other activities Why should we save water Only of the water in the entire Earth is freshwater Water is precious So we should never waste water Some methods to prevent wastage of water Never allow water to overflow from buckets Wash fruits and vegetables in a bowl of water and not under running tap water Always close the taps while brushing the teeth Use left over water in your water bottle to water a potted plant Turn off the tap after each use Use a sprinkler to water the garden In olden days people stored water in different ways Few methods are well water tanks in forts draw well reservoirs rivers and bunds tanks dams and bore wells Let us Complete Save every water Conservation of Water Bodies All the water that we get comes from rain When it rains some water flows over the ground giving rise to streams and rivers Some water gets collected in low lying areas such as ponds and lakes The flow of the river is blocked by building a dam across it Some rainwater seeps into the ground as underground water Lake It is a large area filled with water surrounded by land It is usuall Pond A pond is a body of stagnant water either natural or artificial it is smaller than a lake Reservoirs These are built in areas of low rainfall or in areas where there is no major river Most of reservoirs are built using stones Sathiyamoorthy reservoir located at Tiruvallur district in Poondi village Tanks A water tank is a container for storing water for our daily use Methods to Conserve Water Bodies Deepening of ponds and lakes Plant trees at the bank of the lake and pond Reduce water pollution Avoid digging too many wells in a region The trees in the forests need water to grow From where do they get the water Problems caused due to Stagnation of Water Stagnant water can become a breeding ground for the mosquitoes that transmit diseases Malaria and Dengue Fever are the main dangers of stagnant water Waterborne diseases such as cholera dysentery typhoid are caused by drinking unclean water Symptoms of Dengue Fever Severe headache Rashes on the arms and the legs Extreme tiredness Sudden onset of fever that lasts days We should wash our vehicles everyday Planting more trees leads to rain fall We can bathe in shower to save water It is necessary to collect rain water Uses of Water River Pond Sea Stream Hand Pump Well Tap Cooking Drinking Bathing Gardening Washing Clothes Washing Vessels Washing Domestic Animals Always remember everyone should take care and keep the public resources of water clean It is each one‛s responsibility to do so Plants and animals need water too We should always waste water We should use water carefully Water is precious Seeps into the ground Plants absorb the water Mingles with sea and ocean Mixes with lake and pond Lake Hill Pond Sea Lily Lotus Rose Water Hyacinth Fish Horse Tiger Cow Bathing Combing Swimming Washing Living things do not need water Saving water is our duty Always close the water tap while brushing teeth A tank is a large area to store water compared to reservoirs Plants identify the parts of a plant understand the functions of different parts of a plant classify plants based on their habitat Plants are nature‛s gift A plant has many parts Each part has a set of function to do The basic parts of a plant are root stem leaf flower fruit and seed Let us learn about various parts of the plant their structure and function Root The root is a part of the plant that usually grows under the soil Roots can be of different shapes and sizes It grows away from sunlight into the soil They are of two main types tap root and fibrous root Taproot Taproot has one main thick root It grows from the radicle and goes deep into the soil Many small thin roots grow out from the main root Plants such as carrot beetroot turnip mango and neem have taproots Fibrous Root A fibrous root consists of many thin roots of different sizes They grow from the base of the stem and all of them are bunched together They do not go deep into the soil Plants such as grass paddy wheat and onion have fibrous roots Functions of Root A plant has many parts Each part has a set of function to do The basic parts of a plant are root stem leaf flower fruit and seed Let us learn about various parts of the plant their structure and function Root The root is a part of the plant that usually grows under the soil Roots can be of different shapes and sizes It grows away from sunlight into the soil They are of two main types tap root and fibrous root Taproot Taproot has one main thick root It grows from the radicle and goes deep into the soil Many small thin roots grow out from the main root Plants such as carrot beetroot turnip mango and neem have taproots Fibrous Root A fibrous root consists of many thin roots of different sizes They grow from the base of the stem and all of them are bunched together They do not go deep into the soil Plants such as grass paddy wheat and onion have fibrous roots Avecinnia plants have roots above the ground Fixation Root fixes the plant firmly to the soil Without the roots a plant would fall on the ground Absorption Roots absorb water and minerals required for the plant from the soil Storage of food In some plants roots store food E g Carrot Radish Beetroot Difference between taproot and fibrous root Taproot Thick main root that goes deep into the soil Side roots are developed from the main root Looks like a long tap E g Tamarind Guava Fibrous root No main root and the roots do not go deep into the soil Roots are developed from the base of the stem Looks like a bunch E g Corn Sugarcane Take two small potted plants Cut the root of one of the plants and fix it in the pot Now water the plants for two to three days You will observe that the plant without roots will wilt and die In the absence of roots plants die Take two coconut shells Fill them with soil Sow green gram in one and paddy in another Keep them under sunlight and water them After a week observe the features of roots The roots grow into the soil Fibrous root has a main root Root absorbs water from soil Potato stores food in its root Grass has fibrous roots Stem The stem is the main part of the shoot system It grows towards the sunlight It looks green when it is young Branches leaves buds flowers and fruits grow from the stem Coriander Banyan Tree Herbs such as coriander and mint have a thin and weak stem Trees such as peepal and banyan have very strong and thick stem called trunk As trees grow older their trunks grow wider Functions of the Stem It supports the whole plant It transports food from leaf and water from root to various parts of the plant Some stems store excess food in them E g Potato Onion Leaves Leaves originate from the surface of the stem It is flat thin and green Leaves of different plants have different shapes sizes and colours Some leaves have even a specific smell Apex Midrib Lamina Petiole Functions of Leaf Herbs such as coriander and mint have a thin and weak stem Trees such as peepal and banyan have very strong and thick stem called trunk As trees grow older their trunks grow wider It supports the whole plant It transports food from leaf and water from root to various parts of the plant Some stems store excess food in them E g Potato Onion Leaves Leaves originate from the surface of the stem It is flat thin and green Leaves of different plants have different shapes sizes and colours Some leaves have even a specific smell Functions of leaves Leaf prepares food for the plant with the help of water carbon dioxide and in the presence of sunlight and chlorophyll This process is called photo synthesis Hence it is called the food factory of the plant The loss of water in the form of gas water vapour happens through the tiny pores in the leaves This process is called transpiration It gives cooling effect to the plant Leaves of some plants are edible and rich in nutrients E g Greens Cabbage Collect the leaves of coriander mint eucalyptus tamarind amla neem and tulsi Select two students and cover their eyes with a handkerchief Give one leaf to each of them and ask them to identify the leaf by touching or and the other by smelling it Find out who identifies more leaves Arrange the leaves from small to big Group the leaves based on its colour Flowers Flowers are the most beautiful part of the plant They are of different shapes size colours and fragrance A flower develops from the bud The soft and brightly colored part of a flower is called petal The green part that lies under the petal and supports it is called sepal The middle of the flower has two parts called the stamen and pistil Stamen Pistil Petal Sepal Functions of the flower It develops into fruit It helps plant to reproduce Fruits and Seeds Fruit is the fleshy part of the plant The fruits are developed from the flowers Most fruits have seeds Some fruits have only one seed E g Apricot Mango Coconut and Peach Some fruits have many seeds E g Papaya Watermelon and Orange Some are seedless E g Pineapple and Banana Apricot Papaya Pineapple New plants are grown from seeds Plants and their habitat Plants grow almost everywhere on Earth i e on land terrestrial plants and in water aquatic plants The plants adapt to their surroundings and hence have special characteristics based on their habitat The natural home of a plant is called its habitat Plants make suitable adjustment with their surroundings to meet their requirements This is known as adaptation Terrestrial or Land Plants The plants that grow on the land are of different habitats such as deserts plains mountains and forests Let us learn about the adaptation of different land plants Plants in Desert These plants grow in hot dry and sandy places Deserts get very less rainfall and experience high temperature Hence there is scarcity of water Let us see how these plants have adapted to this habitat Leaves are changed to spines to reduce the loss of water The stem is green and fleshy They store water and produce food These plants have a long root that goes deep into the soil E g Opuntia Date Palm and Aloe vera Plants on Mountain These plants grow in cold and freezing places There is a cool weather in mountain Let us see how these plants have adapted to this habitat These trees are conical in shape This shape allows snow to slide from the trees easily Needle like leaves help them to survive in cold conditions like snow These trees do not shed leaves They have cones instead of flowers These cones protect the seeds during harsh winter E g Pine tree Plants in Plains Plants in plains need to adapt to both dry conditions and extreme temperatures They grow in warmer climate and usually shed their leaves in winter to protect themselves from cold They have flat and broad leaves They have thick and woody stem E g Mango Banyan Teak Banyan Peepal and Tamarind trees live more than hundred years Plants in Coastal Areas They are tall and mostly straight The leaves are called frond The frond look like feathers meant for protection from wind These plants tolerant to saline salt water E g Coconut tree Deserts Mountains Plains Coastal areas Desert plants grow in hot dry and sandy places Plants in coastal areas tolerant to saline water Teak Tamarind Mango Opuntia Opuntia Aloe vera Pine Date palm Forest Pond Tree Ocean Mountain Desert Cave River Mountain plants have needle like leaves Teak is an example of desert plant Plants in Water The plants that grow in water bodies like ponds and lakes are called water plants or aquatic plants They are classified into following types Free floating plants Fixed rooted plants Submerged plants Free Floating Plants These are found on the surface of the water They freely float with the help of spongy body filled with air They have poorly developed roots E g Water hyacinth Agaya thamarai Pistia Fixed Rooted Plants These plants have root that are fixed in the bottom of the water bodies These plants have air tubes in their stem to help them float Their leaves are broad and coated with wax to make them water proof E g Water lily Lotus Submerged Plants These plants are completely submerged in the water Their stem is thin and leaves are very small There is no opening on the leaf surface They breathe through stem E g Vallisneria Hydrilla Neem tree Lotus Opuntia Vallisneriya Water hyacinth Date palm Hydrilla Lily Fixed rooted plants are present in water bodies Leaves of lotus are submerged in the water Lotus plants are found in many ponds Water hyacinth freely float with the help of spongy body filled with air Give Support Fix the plant firmly Produce food agaya thamarai neem teak date palm pomegranate mango apricot peach Carrot Radish Tomato Beetroot Cabbage Greens Turmeric Spinach Neem Aloe vera Datepalm Opuntia Coconut Mango Apricot Orange Hydrilla Opuntia Water hyacinth Vallisneria Name of the friend Name of the vegetable cooked Our Environment I Environment Introduction Yazhini and her friends are going to school with her father Yazhini Hey Look at the parrots Where are they going daddy Father They are flying towards the pond Now they will settle on the trees Fathima Uncle Uncle Can you please take us there Stephen Yes uncle Shall we go and have a look at them Father Oh Yes They are walking towards the pond Yazhini We should be quiet while walking as there are not only parrots on the trees but also ant spider squirrel myna and monkey Fathima Oh Oh Look at the fish and frog in the pond I can see a turtle too Father Yes See how they live in the same place depending on one another Stephen See there goat and cow are grazing near the pond Father Children we are getting late We shall go to school Children Yes uncle Thank you very much for showing us this beautiful place Source Product Uses Wind energy Minerals Wood Wool and leather Crop planting Jewellery Furniture Electricity Food Clothes II Environmental Factors Our environment consists of everything around us It has living and non living things We are surrounded by living things such as plants and animals and non living things such as water bodies sunlight air and land II Environmental Factors Environmentalist A person who protects the environment As an environmentalist you can volunteer to protect plants and animals More to know The living and non living things in our environment interact with one another Our environment is a wonderful gift to us given by the nature Our environment has two main factors Biotic factors Abiotic factors Biotic Factors Living organisms in our environment are called biotic factors E g Lion Plantain Dove Human beings etc Abiotic Factors Non living things in our environment are called abiotic factors E g Air Soil Water Sunlight Temperature etc Difference between biotic and abiotic factors Biotic Factors Living things They can breathe and grow They need food to live They can feel They give birth to young ones Abiotic Factors Non living things They cannot breathe and grow They do not need food to live They cannot feel They do not give birth to young ones Plants cannot move around like animals But they grow and their shoots show movements towards the sun So the plants are also biotic factor More to know Amoeba is an unicellular organism It has the ability to alter its shape It was discovered in Let Us Try Classify the following as Biotic Abiotic factors Factors Biotic Abiotic Plants Chair Fish Elephant Washing machine Peacock Book Glass Chalk piece Cat Rain Frog Watch Man Pen Lion Water Try to Answer Which of the non living things can float a Iron rod b Stone c Air filled ball d Coin Let Us Try Try to Answer Which of the non living things can float a Iron rod b Stone c Air filled ball d Coin Look at the picture and answer the question The following statements describe some of the characteristics of living things Identify and write the characteristic features using the given hints Characteristics Hints Move Breathe Feel Needs Food Grow Reproduce Statements Characteristics features Touch me not plant closes its leaves when it is touched A papaya seed becomes a papaya tree A dove flies in the sky A cow eats grass A cat gives birth to kittens Human beings and animals breathe in and breathe out air Look at the picture and answer the question III Interaction between biotic and abiotic factors All biotic factors depend upon abiotic factors for their living Biotic and abiotic factors are linked to each other by the flow of energy through food Plants are the most important among all the living organisms Because they only can make food from abiotic factors like air soil water and sunlight A few examples for interaction between biotic and abiotic factors are given below More to know Ecology is the science that deals with the relationship between living things and their environment Let Us Try There is a large banyan tree in a park Monkeys and birds have made the tree their home Humans too spend time under the tree Discuss with your friends how the tree monkeys birds and humans are interdependent Why is plant the most important living thing Discuss in a group and create an interlink of living and non living factors Write the abiotic factors needed for the following biotic factors to survive Air Water Sunlight Soil Land Wheat Fruits Grass Hen a Animals b Plants c Human beings An animal that a flies in the air is b lives in water is c moves on the ground is d eats only plants is IV Balanced Ecosystem It is important for the food chain to exist in any ecosystem to make sure that the energy flows between the biotic and abiotic factors A balanced ecosystem supports animals plants and microorganisms to grow in their environment An ecosystem is balanced when the biotic and abiotic factors are able to cycle the energy and food as per their need The biotic factors in an ecosystem includes producers consumers and decomposers Producers The living things that can prepare their own food are called producers Green plants are the producers They make their own food by the process of photosynthesis Hence they are called primary producers Humans and animals depend on plants for their food IV Balanced Ecosystem A few plants do not produce their food and they depend on other plants They are called parasitic plants E g Cuscuta More to know A few plants do not produce their food and they depend on other plants They are called parasitic plants E g Cuscuta Consumers The living things that eat the food prepared by the producers are called consumers Most of the living things depend directly or indirectly on producers for their food Consumers can be divided into three types based on their food as herbivores plant eating animal carnivores flesh eating animal omnivores both plant and flesh eating animal Decomposers Organisms that feed on the wastes dead plants and animals are called decomposers They return the nutrients to the soil E g Bacteria Fungi Let Us Try Let Us Discuss Classify the following biotic factors Tulsi Fungi Mango tree Rabbit Eagle Cat Dog Cucumber plant Human Grass Crocodile Crow Bacteria Producers Consume Decomposers Let us Connect Link the animals as herbivores carnivores and omnivores V Plant Sapling A young plant with a thin stem is known as a sapling Survival of living things is impossible without plants Planting and taking care of plants lead to a good environment Benefits of plants Provide oxygen for breathing Give wood for making furniture Help in bringing rainfall Absorb harmful gases and smoke from the surroundings Provide oxygen for breathing Give wood for making furniture Help in bringing rainfall Offer a good environment to live Provide food and shelter to living things Omnivore Carnivore Herbivore Cow Bear Tiger Lion Elephant Crow VAN MAHOTSAV Van Mahotsav means Festival of forests It is an annual tree planting movement This movement began in India in July This festival is organised during the first week of July every year To create awareness among the people we can give saplings during celebrations family functions and national festivals We can also plant saplings on our birthday A Write any two uses of trees B Conduct an awareness campaign on Save Our Environment C Plant saplings in your school campus D Preparation of seed ball Take some clay humus add water and mix well After mixing place the available seeds inside them and make a seed ball Then dry and keep it safe Distribute the seed balls to public on special occasions of your school E Write some slogans on Save Plants and paste them on the tree in your school campusroad sides E g Take care of the Earth and it will take care of you It’s not yours nor mine it’s ours The nature of our future depends on the future of our nature Some important initiatives to protect our environment The Chipko Movement The Environment Protection Act National Green Tribunal Appiko Movement Which of these is an example for biotic factor a Water b Goat c Air Our environment is surrounded by a biotic factors b abiotic factors c both biotic and abiotic factors Human beings depend on for their food a plants b soil c wood are the primary producers a Non green plants b Green plants c Dry leaves Which is an example for decomposer a Mango tree b Bacteria c Deer Which of these living things would die if there were no green plants on earth a a and c only b b and d only c d and a only d a b c and d is a consumer Cow Soil A young plant is known as tree sapling Planting of sapling provides oxygen land World Environment Day is June th June th get food from dead plants and animals Decomposers Producers Stone Consumer Bacteria Abiotic factor Plants Decomposer Buffalo Producers Abiotic factors are important for biotic factors River is an example for biotic factor Van Mahotsav is organised during the first week of July every year Plants are the consumers Plants provide food and shelter to living things Vijay placed two things P and R one living and one non living in separate cages with food and water Number of weeks Weight of P Weight of R Week kg kg Week kg kg Week kg kg Week kg kg a Which thing is likely to be a living thing Give reason for your answer b What will be the weight of living thing in week Write two examples for biotic and abiotic factors Write any three differences between living and non living things List the abiotic factors needed for insects What are the biotic factors of a balanced ecosystem Why plants are called primary producers Write any four benefits of plants Make an album by collecting pictures of different kinds of biotic and abiotic UNIT ANIMAL LIFE Animals in Different Environment Our Earth provides place for lakhs and lakhs of animals to live The living place of an animal or a plant is called habitat The basic needs such as food water shelter and place to breed are found in a habitat Habitat can be as big as a forest or as small as a leaf Animals live in different conditions For example whales live in sea water and foxes live in forest land Land Terrestrial Habitat Animals that live on land are called terrestrial animals E g Ants Cats and Lion Some of the land habitats are Plains Forests Forests are the habitat of animals such as deer fox bear bison etc Plains are the habitat of animals such as rat cow camel hen etc Plain Forest Water Aquatic Habitat Animals that live in water are called aquatic animals E g Fish Dolphin and Crab Water habitat is divided into two types Freshwater Marine Sea water Pond lake and river are freshwater habitats Many animals such as tortoise mussel fish and crab live here Seas and oceans are salt water habitats They inhabit animals such as shark jelly fish sea snake star fish etc Freshwater Sea Water Pond lake and river are freshwater habitats Many animals such as tortoise mussel fish and crab live here Seas and oceans are salt water habitats They inhabit animals such as shark jelly fish sea snake star fish etc Freshwater Sea Seas and oceans are salt water habitats They inhabit animals such as shark jelly fish sea snake star fish etc Pig Monkey Horse Lion Cow Frog Tiger Crab Camel Elephant Mussel Deer Starfish Dog Seahorse Whale Do you know World animal day is observed on th OctoberLink the animals that live in water and live on land There is a zoo near your town Due to some reasons they have to take the animals back to their habitat Where will they take each of the following animals Tiger Crab Turkey Giraffe Cat Fish Bear Donkey Camel Crow Zebra Duck Elephant Tortoise Pig Peacock Lion A Circle the odd one based on habitat a Lion Elephant Monkey Whale b Shark Dog Jelly fish Star fish B Write the names of the animal with the help of the clues given Penguin Whale Octopus Duck Let Us Find Let Us Help Plains Forests Ponds There is a zoo near your town Due to some reasons they have to take the animals back to their habitat Where will they take each of the following animals Tiger Crab Turkey Giraffe Cat Fish Bear Donkey Camel Crow Zebra Duck Elephant Tortoise Pig Peacock Lion has eight arms It lives in the ocean cannot fly but it swims very well is the largest animal in the sea is a common water bird rd Science Unit Animal indd PM www tntextbooks in Let Us Do Colour the animals that live in water rd Science Unit Animal indd PM www tntextbooks in Let Us Connect Match the animals with their living place Forest Polar region Salt water Fresh water Desert Animals that need both land and water to live are called amphibians E g Toad Frog Animals that can fly most of the time are called aerial animals E g Crow Dove Animals that live on trees are called arboreal animals E g Monkey Squirrel Aerial animals Amphibious animals Match these animals with their homes Honeybee Spider Lion Fish Bird Earthworm Write the foods of given animals using the following words Carrot Deer Milk Grass Grains II How do animals get their foods Think and share Why should animals get food Animals cannot make their own food They depend on plants or other plant eating animals for their food They move in search of food rd Science Unit Animal indd PM www tntextbooks in Let us discuss the following and complete the sentence earthworm butterfly mosquito spider elephant lion hen I am a I am the king of the forest I eat animals like deer zebra and giraffe by hunting them I am a female I suck blood from animals But males of my family feed on plant juices I am a I eat small insects that fall in my web I am a I eat cereals small insects earthworms etc I am an I feed on coconut leaves plants sugarcane banana etc I use my trunk to take my food I am a I suck nectar from flowers I am an I ingest soil with organic wastes and microbes Classification of animals based on their eating habits Do all animals eat the same type of food Have you ever seen a lion eating grass or a goat eating meat Why do not animals eat all types of food It is because different animals have different food habits Herbivores Animals that eat only plants are called herbivorous animals or herbivores Plant eaters E g Deer Giraffe Cow Goat and Elephant They have sharp straight edged flat front teeth called incisors to bite the grass and leaves Let us think Elephant is a herbivore But its front teeth are not flat How can we call them Carnivores Omnivores Flesh eating animals are called carnivorous animals or carnivores E g Hyena Tiger Lion Cheetah and Seal They have sharp pointed teeth called canines Canines are used to tear the flesh of animals Omnivores Some animals eat both plants and the flesh of other animals These animals are called omnivorous animals or omnivores E g Bear Man Crow Hen and Fox These animals have a combination of tearing biting and grinding teeth Think and Answer You tell your friend that you are an omnivore But he tells that he is an herbivore It is right or wrong How Forest A natural home for wildlife An adult elephant can eat upto kg of food in a day z Some of us have colourful fishes in our homes as pets We keep them in small water tank known as aquariums More to know Animals that hunt other animals are called predators Animals that are hunted are called prey Herbivore jar Carnivore jar Omnivore Jar Do you know z An adult elephant can eat upto kg of food in a day z Some of us have colourful fishes in our homes as pets We keep them in small water tank known as aquariums Play in pairs Think of a wild animal Give three hints to your friend about the animal and let him or her guess its name Take turns A B C Eats only plants Eats only flesh Let us play V Mouth parts of animals Conversation between teacher and students Teacher Do you know the parts in your mouth Pandiyan Lips teeth tongue Teacher Good Do you know the use of teeth Vennila They cut and chew the foodstuff Teacher Fine Are all the teeth have same size and shape Vasu No Madam Teacher Yes The teeth have different shape and size based on their functions Today we will learn more about these mouth parts Mouth parts are different parts of the mouth that are adapted based on the nature of food that the animal eats The butterfly has a tube like structure proboscis to suck nectar from flowers The mosquito has a needle like structure to suck blood The lizards and frogs have a sticky tongue to catch insects Dogs and cats lick liquids with the help of their tongue The elephant uses its trunk for picking up food and sucking water Think and Answer Have you ever wondered why birds have beaks of different shapes and sizes Eagle Eagle has strong sharp curved beak to catch prey and tear its flesh Beaks of Birds Kingfisher Fish eating birds have spear like beaks designed for stabbing fish Parrot The hooked sharp beak of parrot helps to collect and eat the grains Woodpecker Strong chisel beak of woodpecker is used to make hole in the trees and catch small insects Sparrow Sparrow has short conical beak which helps to crack open the shells and extract the inner nut or seed Duck Duck has flat beak that helps to grip plant and insect from water FOOD CHAIN The grass is food for deer and deer is food for tiger Plants are food for grasshoppers and grasshoppers are food for bird From these examples we observe that plants are food for many animals which in turn become food for other animals This is a food chain It gives us information on how living things are related with one another by the food they eat Here the grass is eaten by deer The deer is eaten by the tiger A food chain usually starts with plants and ends with carnivores or omnivores Other example for food chain Leaves Caterpillar Hen Hawk Grass Grasshopper Rat Owl FOOD WEB Every organism can feed on different kinds of food So a single organism will be a part of many food chains These food chains are interconnected to form a web Hence a Food web is an interconnection of multiple food chains Transfer of energy between organisms of different energy sources occurs through food web Example of food web Eagle Snake Rabbit Carrot Grass Grains Rat Fox Frog Select the food chain that can exist in nature A Grass Wheat Grasshopper Frog Snake B Grass Rabbit Fox Lion C Wheat Grasshopper Snake Frog Form any two food chains using the following Grass Tiger Deer Dolphin Fish Insect Snail Plant Kingfisher Food chain Food chain Mosquito sucks its food Which of the animals given below suck their food a Cockroach b Parrot c Butterfly Bear sometimes eats pumpkin and sometimes eats fish So it is an a Carnivore b Omnivore c Herbivore A bird that has beak which helps it to crack open shells and eat the seed inside is a Sparrow b Owl c Kingfisher Flesh eating animals have well developed a Molars b Tusks c Canines Elephant is a a Herbivore b Carnivore c Omnivore Choose the carnivore a Deer b Lion c Giraffe In a food chain a can be placed immediately before a snake a Eagle b Frog c Grass Select the animal that has similar eating habit like a bear a Camel b Deer c Hen Find the odd one based on the habitat a Deer b Fish c Fox Which of the following has different eating habits compared to the others a Elephant b Cow c Dog A small habitat is forest leaf Butterflies suck nectar water from flowers Chisel beak is present in sparrow woodpecker The parrot eats rats nuts A food chain always begins with plants animals Land and water are common habitats What is a habitat Give two examples for each a Terrestrial Animal b Aquatic Animal Why animals move from place to place Nectar is the food of butterfly Then what is the food of earthworm Differentiate a herbivore from a carnivore Is human an omnivore or carnivore Give an example of a food chain Choose the correct food chain from the following a Leaves Bird Insect b Insect Leaves Bird c Leave Insect Bird Collect and paste the pictures of plant eating animals and flesh eating animals AIR Properties of Air Air is a natural resource We cannot live without it It is present around us It has no definite shape and colour Air has weight and it occupies space We cannot see air but it can be felt Air can flow everywhere Tie a balloon to the mouth of a bottle as shown in the picture Let the mouth of the bottle be narrow Keep the bottle in a vessel containing hot water Observe it for some time The balloon expands Why Due to the heat of the water in the vessel air inside the bottle becomes hot Hot air fills the balloon Therefore the balloon expands Procedure Take two balloons Fill air in one balloon and keep the other balloon as it is Make a measuring tool using a stick and tie the balloons on both the ends as shown in the pictures Which balloon comes down and why Do and find Air occupies space Hot air rises up Air has weight Air Water Materials required A tumbler a bowl and water Procedure This experiment proves that air What do you understand from this experiment Hot air rises Through this experiment we can understand that air occupies Place a tumbler on the surface of the water kept in a bowl see picture Push the tumbler straight into the water Now tilt it slightly and push it into the water Do you observe any difference Yes air bubbles come out of water a Write true or false for the following statements Air occupies space but has no weight Air is colourless Air has definite shape b If we fill air in the it will change its shape jar jug ball c Which of the following is required for good health Dust Clean air Smoke d Colour the hot air balloon II Air moves and pushes things Light an incense stick in the corner of the classroom and observe The smoke of the incense stick moves everywhere The air pushes the smoke See the clouds in the sky that moves everywhere Clouds move because of the movement of air Electricity is generated from wind with the help of the windmills rd Science Unit Air indd PM www tntextbooks in Can you remove a small plastic ball from a glass vessel without physically touching it Yes you can If you blow towards one wall of the glass very hard and the ball will be ejected out of the glass Take a plastic bottle and fit a soggy newspaper pellet tightly in its mouth On pressing the bottle the pellet will come out with a loud POP sound Light a candle and place it on a table Now cover the lightning candle with a glass jar Observe what happens When you drink fresh juice you suck it through straw We do this with the help of air How does a straw work Mix a few drops of ink in half a glass of water Place a transparent straw inside the glass containing coloured water Then place your finger on the top of the straw and pull the straw out of the liquid What happens Make a paper plane with waste paper and fly it in the air Let Us Do Let Us Do Let Us Try These activities conclude that air the things is required for burning things Air is required for burning Air exerts pressure rd Science Unit Air indd PM www tntextbooks in Let Us Do Then remove your finger from the straw What happens While your finger covers top of the straw the liquid remains in the straw When you remove the finger the water flows out When you keep your finger on the straw you are lessening the pressure of air over the straw The greater pressure of air under the straw can hold the liquid inside the straw Materials required Empty plastic milk cover a piece of thick string and an old pen body or pipe Procedure Tie an old pen body or a pipe to the mouth of the milk cover with a string Place or thin note books up on the plastic milk cover and slowly blow air into it with your mouth As the cover gets inflated the books get raised How does that work The pressure that you exert with your mouth is limited But the large area of the milk cover magnifies this pressure and lifts the books Keep your finger near your nose and breathe Do you feel air on your fingers Try to count how many times you breathe in a minute Now jump times Is your breathing rate the same or is it faster Run meters and stop Observe your breathing All living things need air for their survival Plants breathe through leaves and fish breathe through gills Humans breathe in and breathe out through lungs Air Jack The above activity shows that Air rises up on getting warm Air is needed for burning Air has pressure III Breathing Inhalation and Exhalation Let Us Do and Discuss rd Science Unit Air indd PM www tntextbooks in When we breathe in our chest raises up and when we breathe out it lowers down Inhalation is the process of taking the air inside and exhalation is the process of releasing the air outside This cyclical process of inhalation and exhalation is called breathing We take oxygen and release carbon dioxide gas while breathing Breathe in Breathe out Tick the one which breathes and cross X the one that does not breathe Choose and write the correct answer for the following actions Let Us Write Let Us Do S No Actions Inhalation Exhalation Air moves out of the lungs Air goes into the lungs Chest raises up Chest lowers down Think zone Why the doctor checks your pulse when you are sick and ask you to breathe in and breathe out Left Lung Right Lung Trachea Nose rd Science Unit Air indd PM www tntextbooks in The effect of exercise on breathing Mathi and Mozhi practised various exercises like walking skipping and running They counted the number of times they breathed in one minute after each exercise and recorded their results in the bar diagram Look at the bar diagram a Which activity raised the breathing rate the most b Which activity do you think exercises the heart muscle the least c Write T if True and F if False They breathed more number of times when they were walking They breathed less number of times when they were sitting They took breaths per minute when they were running The more vigorous active the exercise the greater the number of breaths Sitting Walking Skipping Activity Running Breaths per minute Bar diagram IV Moving Air Speed of the wind is measured using an instrument called Anemometer Let us Do Take some sand in your hand and release the sand It falls in the direction of the wind Try to Answer Moving air is called wind It moves across the surface of the Earth Based on the speed of air wind can be classified as breeze storm and gale BREEZE A gentle wind is called breeze Sea breeze and land breeze are the two types of breeze Sea breeze The breeze that blows from the sea towards the land during day time is known as sea breeze As the warm air from the land rises up and the cold air from the sea occupies the space over the land Land breeze The breeze that blows from the sea towards the land during day time is known as sea breeze As the warm air from the land rises up and the cold air from the sea occupies the space over the land The breeze that blows from the land towards the sea Storm Strong wind is called storm Sometimes storm can uproot trees and can destroy the crops Gale A very strong wind is called gale Gale is stronger than storm It damages trees and buildings a lot Draw the movement of air for land breeze and sea breeze breeze breeze Gentle air is called We get electricity from wind using The air that flows from the land towards the sea is Sea breeze is the air moving from towards Take two cups Fill one with sand and the other with water Leave them in the sunlight for about an hour Keep one hand in the cup with sand and other hand in the cup with water Which one is hotter Sand Water Now keep both the cups in the shade for a while Now put your fingers in both the cups once again Which cup is cooled faster Sand Water a watch TV when it rains heavily b follow the warnings c stand under a tree when heavy wind blows air weight raises lungs inhale Air has Things need for burning The process by which we breathe in air is known as The organ that helps us to breathe is When we breathe in air the chest up Air is nowhere Air fills the empty space Clouds move because of the movement of air A very strong wind is called gale We release oxygen during breathing Balloon Cycle tube Football Cricket ball Why is it different from the rest Kite Balloon Stone Feather Why differs from the rest What are the properties of air Write the use of windmill What is breathing Write the processes involved in breathing Write the types of wind based on the speed of air Differentiate between land breeze and sea breeze Try to Answer What will you do during disaster I will I will not Social Science Unit Family Madhi and Kabir are friends Both the friends meet in the market Madhi Hi Kabir It has been so long since we met How are you Kabir Yeah I am fine Thanks I am so happy to see you How are you Madhi Yeah I‛m fine too Do you know I went on a tour to Nilgiri jungle Masinagudi with my uncle Kabir Really I don‛t know Tell me more Madhi It is a wonderful place to visit We saw many birds and animals living in the jungle Kabir Oh I see Madhi Yes I can‛t express my experience in words It was wonder to see animals living as a family Kabir Families Do the animals live in families like us Madhi Yes its true If you get a chance please go and see Kabir Sure I will tell my daddy to take me there during this holiday Madhi Mmm good Shall we play a word game now I will ask you questions and you should answer Kabir I am always ready for a challenge Ask me any questions Madhi Where do lions live Kabir Very simple Lions live in jungle Madhi Correct But Lions live together as a family in caves Kabir Ok Ask me the next question Madhi Where do birds live Kabir Birds live in the nests built on trees or in high places Madhi Good What do we call a group of elephants Kabir Herd Am I right Madhi Exactly you are right Kabir We learnt that animals live together Madhi Yes it is true I‛m happy to share my experience with you Kabir Okay It‛s time to move Madhi Yes Let us also join our families Dear friends Let us know about our families Our family Father mother children and other close relations live together is called a family Individuals together make a family and families together make a society People with diversity in language culture and habits live all over the world in families Relations through our mother are called maternal relations Relations through our father are called paternal relations Types of families are small family large family and joint family Special values of the family are Family fulfill our basic needs like food clothing and shelter Family is the first school for the development of physical and moral growth of a person There are several values that bind the family members together Such values are Love and Affection Respect Protection Sharing Unity of the family It is better to work together than to do it alone In this way work load will be reduced and relationship will be strengthened This will help for the unity of the family Our relations Apart from our family members distant relatives also come to our house All the family members meet during family festivals When they come to our house we should welcome them We should talk with them and help them to fulfill their needs This is the way to respect them Hospitality towards guests is the best value among tamilians This strengthens our relationship Outsiders from our relatives other people come to our house Many outsiders like milkman vegetable vendors and cylinder supplier also come We must behave carefully with them too Neighbours Many families live near our home We call them neighbours It is good to keep cordial relationship with them When needed we must help each other This value ensures our safety Some families are rearing pet animals like their family members Budget of the family Income and Expenditure is important for any family We must spend according to our income Basic needs should be fulfilled first We must act according to the budget system Economic crisis occur when expenditure exceeds income Simplicity is the best policy Unit Our friends A seven years old girl named Samudra goes to the market to buy some groceries along with her mother Vennila While walking they come across so many people working Mother Vennila Dear Samudra keep yourself right and don‛t go to the centre of road As we go deep into the market the crowd will increase Don‛t run away Samudra Okay Ma What sound is that Is that a bell Mother It‛s the sound of a fire engine I think a fire accident has occurred somewhere Samudra Is it Oh my god Mother The bell is a warning to the people on the road So that they can give way to the fire engine Samudra Why should one give way to it Mother It‛s an emergency It has to go fast and reach the spot to save people and their properties Samudra How can the vehicle save people Mother I am proud to see that you are curious The vehicle has many trained firefighters who save people and properties with the help of water foam ladder and other fire extinguishing objects and devices This vehicle is not only used during fire accidents but can be used in other emergencies and disasters too Samudra Ma Tell me more about the firefighters It‛s amazing Are they not afraid of fire Mother The firefighters are well trained to carry out their duties They wear protective jackets They pump and send water on the affected part of the building They shift people and property to a safer place Samudra How do they save the people who are trapped In fire Mother People with burns are sent in an ambulance to the government hospital This vehicle contains all the facilities for first aid The victims are admitted in the hospital and given treatment Samudra Can everyone go in this vehicle Mother This vehicle is meant only for those who are in need of emergency treatment Samudra Emergency treatment Mother It is needed by people whose lives are in danger Like People who suffer from heart attack faint unable to walk fall victim to accidents and so on Samudra How does one get treatment in this vehicle Mother We do not get treatment But we can get first aid Samudra First aid Mother First aid is a life saving treatment that is given before the actual treatment of a victim This ambulance contains a doctor a nurse and all the first aid devices and medicines Samudra What building is this Mother This building is built to extend the market Samudra What is the building built for Mother It is built so as to protect people and traders from sunshine and rainfall Samudra Who built this building Mother A civil engineer built it He gave structure and design to the building Samudra Does a civil engineer design a house Mother Yes of course he designs houses schools colleges bridges multi storey buildings temples settlements shops factories and so on Buildings are constructed using a plan made by a civil engineer Samudra Oh I see Ma Why are we going through this mud path This is not our regular route Mother Repair work is going on in our usual tar road Samudra Are these roads laid for us Mother Yes of course for us The roads are laid by road workers to make travel easy for the pedestrians and vehicles Ok Samudra Look at the either side of this way Samudra Why ma What is special Mother Don‛t you think the green fields are beautiful Samudra Yes they are Who are the people working here Mother They are farmers Because of them we get ood and live happily Samudra Ma Can you see that bus Mother Yes Bus is one of our transport services Like firefighters farmers engineers the service of drivers and conductors are also very valuable They are the people who carry out the transport service efficiently Samudra Ma Can you hear an unusual alarm somewhere near Mother Yes That is the siren of the police Samudra Why police Is something wrong Mother This is an usual visit of the police during the evening in the market They come here to discipline as it‛s over crowded at this hour They protect people their properties and make sure all the rules and regulations are followed by all Samudra Ma Mother What Samudra You once said that our neighbourhood anna elder brother is serving in the border What does it mean Mother He serves in the Indian border as a soldier fighting to protect the people of our country from enemies There are many soldiers who defend the country sacrificing their own lives and families These soldiers together form the Army of the defence force Samudra Now I remember Our teacher told us about the army yesterday in the class Mother Samudra Do you know The service of a teacher is a noble one that enlightens us with knowledge values and helps people to become good citizens Dear we have come to the main road hold my hand Samudra Ma Who is standing in the middle of the road Mother Oh He is the traffic police man Samudra Why is he standing there Mother His work is very important because he controls the vehicles coming from all sides Thus he directs the vehicles and protect the pedestrians Samudra Ma Look at the gigantic building over there What building is that Mother That is the Court Samudra Court What‛s that Mother Here all the problems are solved as per the laws rules of our country Judges treat all men with justice in various cases They protect our rights Samudra Ma Now I understand that all these people whom we came across today are working for us I feel very proud of them Mother Samudra Do you have any wish What would you like to do in your life Samudra Yes I have a wish I want to study well and seek a good job At the same time I would like to look after our garden and field with care Mother At last we have reached our home Dear please open the door Unit Panchayat Dandora Announcement A special Gram Sabha meeting will be held on Independence day All the villagers are requested to participate After hearing the announcement Iniyan rushed towards his home Iniyan Dad what did the dandora announcer say Dad He announced that a special Gram Sabha meeting would be held on Independence Day Iniyan What is Gram Sabha meeting What will they do in the meeting Dad People of our village assemble together and discuss the roles of the Panchayat board Iniyan Oh I see What is meant by Panchayat board Dad Dad I‛m so glad about your questioning Let me tell you about the Panchayat Our country is a vast country has towns and villages Therefore many Panchayats must exist Village Panchayat is the root of Panchayat System It provides the basic facilities to the village people The rd Constitutional Amendment Act came into force in April The salient feature of rd Constitutional Amendment Act is the three tier system of Panchayat Raj Panchayat have been setup in every village with people and above Iniyan Dad Who are all there in a Village Panchayat Dad There is a President head of the Panchayat and a Vice President along with ward members Iniyan How do the Panchayat members are selected Dad Village people select the President and members through the election The tenure of the members of Panchayat is five years The Vice president is levted by the ward members Iniyan Dad What are the duties of these members Dad Their duty is to provide basic needs of the villagers The obligatory functions of the Panchayat are Providing electricity and maintaining the street lights Drilling and maintaining of village wells Providing drinking water Constructing of roads and maintaining them Setting up sewage channels Constructing small bridges Repairing Primary School buildings Providing sanitation facilities Iniyan Dad What are the duties of these members Iniyan Oh They are doing so many works But to do the works they need a lot of money What will they do for the money Dad Their duty is to provide basic needs of the villagers Iniyan Dad Will you go to the Gram Sabha meeting which will be held tomorrow Dad Sure I will go It is important to participate in the Gram sabha meeting to discuss the village developmental plans and to take remedial measures Unit Safety Our life is very precious and important Accidents may occur at home school on the road and at other places We have to be cautious to protect ourselves from dangers We can be safe by knowing the safety measures and following them Reasons for the danger or accident are Haste urgency CarelessnessNegligence Lack of awareness Indifference contempt Violation of rules Lack of formal Training Not following safety measures In our lives there are accidents caused by fire water electricity vehicles toxic organisms sharp weapons and glassware pesticides and so on Fire safety Fire is the man‛s marvelous creation Fire can create and destroy the things Fire is used in many ways in our everyday life We should handle it carefully Precautions to avoid fire accidents We should handle the highly inflammable things carefully The person who cooks can wear cotton clothes Some types of clothes can easily catch fire We should close the cylinder valve after cooking If we detect leakage in gas cylinders we will open the doors and windows to ventilate our house Don‛t play with fire We should be cautious and careful while firing crackers and elders should be with us when we fire crackers Water Safety Water is the elixir of life Water is very important in our daily life If we violate the safety rules while bathing in lake river waterfalls and sea accidents will occur Electrical Safety Electricity has become a necessity for our lives Times have changed these days that things don‛t function without electricity It is used in houses factories and other work places Accidents occur when we use it carelessly Road safety We must be very careful while travelling on any road The number of vehicles going on the road is increasing Most of the accidents are caused by carelessness Red Yellow Green Stop Get ready Go To avoid accidents Follow traffic rules We must obey the traffic signals Do not rush on the road We should wear seat belt when we travel in a car We should wear helmet while riding a two wheeler Traffic signals for vehicles Historical Places Learning Objectives Childern will be able to list the historical places in Tamil Nadu recognise the picture and name the place in Tamil Nadu understand that every historical place has a history story Chandru a school boy goes to stationery shop to buy picture charts and sketch pens for his project Let us see the conversation he had with the shop keeper STATIONERY SHOP Chandru Uncle do you have sketch pens Shopkeeper Yes Chandru looks around the shop and he finds maps and different picture charts Chandru Uncle what does this chart have Shopkeeper This chart has pictures of historical places in Tamil Nadu Chandru What are historical places Shopkeeper These are the places where buildings idols and arts were made long ago The government keeps them safe So that we can learn about them Chandru points to a picture on the chart Sea shore temple Pandava Rathas Chandru I have gone to Mahabalipuram with my parents It is near Chennai Shopkeeper Yes It has four different styles of architectures Chandru Is it Who built it Shopkeeper Yes It was built by Pallavas Chandru My mother told me that most of the monuments were made out of just one stone Shopkeeper Yes correct Shopkeeper Do you know something Why the Shore temple is called so Chandru No Shopkeeper The Sea Shore Temple is so named because it overlooks the shore of the Bay of Bengal Chandru Oh Is it great Temples at Mahabalipuram were built by three generations of the Pallava Kings and it took nearly years to plan and create the site Chandru points to another picture on the chart Fort St George Museum Chandru Where is fort St George Shopkeeper It is also in Chennai It is the first English fort in India Chandru What else is there inside the fort Shopkeeper The fort has a museum and a church The Secretariat of Tamil Nadu is also inside the fort Chandru I like to go to museums I am surely going to visit the fort Shopkeeper Yes you should Shopkeeper points to another picture on the chart Thiruvalluvar statue Vivekanandha Rock Shopkeeper Look at this picture Do you know whose statue is this Chandru Of course He is Thiruvalluvar who wrote the famous Thirukural Shopkeeper Yes good Chandru Where is this statue Shopkeeper This is in Kanyakumari Chandru The statue is so tall Shopkeeper Yes it is feet tall Does remind you of anything Chandru Thirukural has adhikarams or chapters Shopkeeper Well done That statue‛s height denotes the number of chapters in Thirukural Chandru What is the name of the sea that surrounds the statue Shopkeeper The statue is built on the rock which is surrounded by Arabian Sea Indian Ocean and Bay of Bengal Chandru Wow The statue looks majestic Chandru points to a picture on the chart Thanjavur Periya Kovil Nandhi Chandru What is the name of this temple Shopkeeper This is the very famous Thanjavur PeriyaKovil also known as Brihadeeshwara Temple Chandru Who built it Shopkeeper It was built by Raja Raja Cholan Do you know that the Nandi inside the temple was built using a single stone Chandru Is it Shopkeeper Yes Another interesting fact about the temple is that the shadow of the main temple does not fall on the ground Chandru How wonderful It is so interesting to see them I would like to go there Shopkeeper Yes you must visit I have gone there when I was a child and I would like to go there again Think Have you seen the carvings at monument or temple Gingee fort Chandru This is the last picture on the chart and it looks like a fort Shopkeeper Yes you are correct This is Gingee fort in Villupuram district Chandru Wow is it Shopkeeper Yes this is one of the oldest forts in Tamil Nadu Chandru I can also see hills I would like to see the Gingee fort Gingee King fort Gingee Queen fort Shopkeeper All of us must visit these places as they have so much history behind and we must take pride in them Shopkeeper That is nice Please take Tamil Nadu monument chart and sketch pens Chandru Yes I will hang it in my house and talk about it to all my friends Thank you Uncle Glossary Architecture The art of making buildings is called Architecture Monuments A building structure or site that is of historical importance Museum Place of exhibition Recap There is a history story behind every monument Monuments in Mahabalipuram were built by Pallavas Fort St George is the first English fort in India Thiruvalluvar statue is situated in Kanyakumari Thanjavur Periya Kovil was built by Raja Raja Cholan Gingee fort in Villupuram district Vivekananda rock St George fort Museum Villupuram Gingee fort Pallavas Mahabalipuram Cholas Periya kovil Kanyakumari Name of the place List of things Sanctuaries Learning Objectives Childern will be able to name different sanctuaries and where they are situated in India define the sanctuaries understand the importance of biosphere reserves A small girl named Anu is at home with her grandfather Anu is reading a book and her grandfather is reading a newspaper Anu S A N C T U A R Y Sanctuary What does this word mean Grandfather Sanctuary is a place where animals and birds are protected from hunting and other human activities Anu Are there any other places like sanctuaries that protects animals and birds Grandfather Yes Anu National Parks are places where wild animals are protected In Biosphere Reserves animals birds and plants are protected Anu Interesting Grandfather I will tell you about some of the most popular sanctuaries and reserves in India Anu Sure I would love to know about them Grandfather Corbett National Park is the oldest park It is in Uttarakhand Anu Which animals are protected there Grandfather The majestic Bengal Tigers are protected there Anu Is there any other sanctuary that protects Bengal Tigers Grandfather Yes there is Sunderbans National Park in West Bengal Due to the successful conservation efforts of Project Tiger the number of tigers have been increased in India Sanctuary National park Biosphere reserve Anu Grandpa you know I love elephants Is there any sanctuary that protects Elephants Grandfather Yes The Nilgiri Biosphere Reserve not only has elephants but also has Indian leopard Black panther and Nilgiri tahr Anu Grandpa you said biosphere reserves also protect plants What kinds of plants can be found here Grandfather There are different species of flowering plants One among them is Kurinchi flower which blossoms only once in twelve years Anu It must be so beautiful Anu What about birds Grandfather If you want to see different types of birds then we must visit Vedanthangal Bird Sanctuary Anu Where is it Grandfather It is kms from chengalpattu Anu I am sure there are some really unique and colourful birds Grandfather Yes Anu birds that migrate from different parts of the world can be found here You can find pelicans night herons and many more birds Migrate A bird or and animal moves from one place to another due to change in seasons Anu Can we find peacocks there Grandfather No Anu Peacocks can be found in their natural habitat at Viralimalai in Trichy Anu I would love to visit this place Grandfather Sure Do I tell you about the one horned rhinoceros Anu Are there one horned rhinoceros Grandfather Yes Anu Very rare species of rhinoceros are protected in Kaziranga National Park Anu Where is it Grandfather It is in Assam Vedanthangal Bird Sanctuary is the oldest water birds sanctuary in India Kaziranga National Park is the home of one horned rhinoceros It has around two thirds of all rhinoceros in the world Due to the successful conservation efforts the number of one horned rhinoceros have been increased Viralimalai Sanctaury Nilgiri Biosphere Reserve Kaziranga National Park Corbett National Park The three Biosphere Reserves in Tamil Nadu are Nilgiri Biosphere Reserve Gulf of Mannar Biosphere Reserve Agasthyamalai Biosphere Reserve Asiatic lion Anu Grandpa you did not tell me about lions Grandfather Oh yes Gir National Park in Gujarat has Asiatic Lions Anu Very interesting Grandfather Animals birds and different types of plants are important part of our environment Anu Yes Grandpa we must never harm them It is our duty to protect them Glossary Environment The natural place where the plant or animal live Sanctuary A place where animals and birds are protected Species A particular type of plant or animal Recap Sanctuaries or National Parks are places where animals and birds are protected from hunting and other human activities Biosphere reserves are the places where plants animals and birds are protected Royal Bengal Tigers can be seen in Corbett National Park Uttarakhand and Sunderbans National Park West Bengal Some Biosphere Reserves in Tamil Nadu include Nilgiri Biosphere reserve Gulf of Mannar Biosphere Reserve and Agasthyamalai Biosphere Reserve Kaziranga National Park in Assam is the home of one horned rhinoceros Sunderbans National Park Gir National Park Anna National Park Tiger Nilgiris Lion West Bengal Elephant Assam Birds Gujarat One horned rhinoceros Vedanthangal Vedanthangal Bird Sanctaury Gir National Park Nilgiri Biosphere Reserve Kaziranga National Park Corbett National Park District Administration Learning Objectives Childern will be able to understand how a district functions know about different departments working in the district know the responsibility of district collectors A small girl named Kaveri and her Father are at home They are watching news on the television Father Kaveri the district collector has given order that the schools will be remain closed from tomorrow till further notice because of heavy rain Kaveri Ahaaaaa Dancing No school District Collector Who is district collector dad Father District collector is the Administrative head of a district District Collector is responsible for proper and smooth functioning of the district Kaveri One person takes care of everything Father No Kaveri there are more subordinates in district administration to assist the district collector like District Medical officer Superintendent of police District Forest officer Chief Educational Officer Revenue Divisional Officer RDO and other Officers These heads take care of their own departments They all are a part of the district administration system However district collector is responsible for proper working of all departments to make sure that people are benefited by the government Health officers are responsible for government hospitals in the district The person in charge advises on health and sanitation of the district Superintendent of Police Superintendent is responsible for the police force in the district Law and order is maintained in the district with the assistance from all police officers like inspectors and constables Call ‛ to reach out to police in case of emergency Administrative head of the district Maintains law in and order Advises on health Teaches morality Kaveri Dad how is a district collector selected Father I A S officers are recruited by U P S C Union Public Service Commission These I A S officers are appointed as district collectors District Educational Office monitors Educational and Administrative activities in the district The Tamil Nadu Public Service Commission TNPSC is recruited the State's public service personnel Kaveri Dad can you tell me more about them Father District Collector is the head of the revenue department District collector seeks assistance from the police force to maintain law and order in the district Superintendent of Police follows the order of the district collector They inform district collector time to time about the law and order of the district District collector also supervises local bodies like district board village panchayat and municipal committees Prompt actions during natural disaster are taken by the district collector District collector has a major role in the development of the goverment District collector makes sure that the policies should reach the people Kaveri Ok dad I will share all this in my class and learn more details about our district with my friends and teachers Glossary Natural disaster A natural event that results in huge damage Personnel People working in a particular department Recap District collector is the Administrative head of the district District collector is responsible for the proper and smooth functioning of the district District administration system is constituted of different department of the district such as police department medical department forest department and educational department District collector seeks assistance from the police force to maintain law and order in the district Prompt actions during natural disaster are taken by the district collector District collector takes actions during natural disaster District collector does not supervise local bodies The Superintendent of police does not make sure that policy reaches the people District collector works along with different department heads for the smooth functioning of the district District collectors are appointed through exams conducted by U P S C Teacher gives order to make sure different policies reach people in the district Chief Educational Officer takes care of the education department Police officers are responsible for the government hospitals Forest officer takes care of the forest department Forest Officer Chief Educational officer Health OfficerDistrict collector Judge Superintendent of Police Grade term social science UNIT FREEDOM FIGHTERS OF TAMIL NADU A little girl dressed up as Bharathiyar comes to her mother with a certificate in her hand LET US Independence Day is celebrated on th August every year in India It is to commemorate the nation's independence from the British rule on th August Mother Very good I am proud of you Meena Mother How was the Independence Day celebrated in your school Meena It went very well My teachers appreciated me for my speech as Bharathiyar Meena Don‛t worry I will enact again rd Std Social Science Term III EM Unit indd PM www tntextbooks in Meena enacts Meena I am Subramaniya Bharathi I am a poet and a freedom fighter of Tamil Nadu I was born in a village called Ettayapuram in Tirunelveli District I started writing poems at the age of seven My poems are patriotic and it is all about gender equality and women empowerment I worked as a teacher Then I became the Assistant editor of the Swadesamitran newspaper in I also met Mahatma Gandhi in I worked with many Tamil leaders like V O Chidambaram and Subramanya Siva My poems Vande Matharam Acham Illai Enthaiyum Thaayum and Jaya Bharatham motivated people to join the freedom struggle movement Thank you The title Bharati a name of the Goddess of Knowledge was conferred upon him at the age of eleven by the court of Ettayapuram for his ability to compose poems on any subject at any moment Subramaniya Bharathi Mother Excellent Meena You spoke very well Bharathi was indeed a great freedom fighter and one can‛t forget his contribution for the freedom struggle Mother Oh is it Tell me what you learnt Meena True I also learnt about other freedom fighters of Tamil Nadu today ACTIVITY Let us colour Colour our National Flag V O Chidambaram Mother V O Chidambaram was also called Kappalottiya Tamilan Mother Meena did you know that V O Chidambaram started the first Indian shipping company It was called Swadeshi Shipping Company Meena One of my friends dressed up as V O Chidambaram Meena Yes mom V O Chidambaram gained popularity Many people started to follow him which worried the British people Hence the British sent V O Chidambaram to jail Meena Yes He was born in Tuticorin He was a lawyer and was also a good orator He took part in the Indian Independence movement Chempakaraman LET US Vallinayagan Ulaganathan Chidambaram known as V O Chidambaram started the Swadeshi Steam Shipping between Tuticorin and Colombo against British ships Mother You are right Though he was in the jail he continued to fight for India‛s Independence His patriotism inspires many people even today Meena Yes mom Then I learnt about Chempakaraman He was born in Tuticorin Mother Yes During his school days he met a British biologist Sir Walter Strickland who took him to Austria Chempakaraman completed his schooling in Austria Mother That‛s right Champakaraman established an organization called International Pro India Committee at Zurich before the outbreak of the World War I During the war Champakaraman intensified his revolutionary ideologies He also joined the Indian Independence Committee in Berlin Meena Though he grew up in a foreign land he was still very patriotic Meena My teacher told that he coined the slogan Jai Hind‛ which is used till today Mother Yes Match Name the freedom fighters of Tamil Nadu Meena Then I learnt about Subramania Siva Meena Yes mom He was born in Dindigul and was very passionate about Tamil Mother Subramania Siva started a monthly newspaper called Gnanabanu He wrote many books namely Ramanuja Vijayam Sankara Vijayam and so on Mother Even though he was in the jail he continued his work for the freedom movement Meena He inspired many young people to join the freedom movement This angered the British and they sent him to jail Meena Oh Really Subramania Siva closely worked with V O Chidambaram and Subramanya Bharathy in freedom movement The collector office of Dindugal district is named as Thiagi Subramania Siva Maaligai Mother Did you learn about Tiruppur Kumaran Mother You are right Mother Yes Meena He started Desa Bandhu Youth Association It inspired many young people of Tamil Nadu to take part in the freedom struggle Meena Of course He was born in Tiruppur During his young age he actively involved himself in the freedom movement Meena During the protest against the British he died holding the National flag of India So he is called Kodikaththa Kumaran Meena I am very much inspired after knowing all these freedom fighters of Tamil Nadu Mother Yes Their patriotism towards India and the contribution to Independence can never be forgotten Meena They inspire and motivate us to be better citizens and serve our country Mother You are right Glossary Commemorate Celebrate Contribution Join or take part Patriotism Love and respect towards one's country Recap Many freedom fighters from Tamil Nadu made their contributions to India's freedom Subramaniya Bharathi was a poet and a freedom fighter of Tamil Nadu V O Chidambaram is also called Kappalottiya Tamilan Chempakaraman coined the slogan Jai Hind Tiruppur Kumaran is also called Kodikaththa Kumaran Where was Bharathiyar born a Ettayapuram b Madurai c Dindugal was not composed by Bharathiyar a Vande Matharam b Acham Illai c Kaththiyindri is known as Kappalottaiya Tamilan a Subramania Siva b Bharatiyar c V O Chidambaran Who coined the slogan Jai Hind a Bharatiyar b Chempakaraman c Kumaran Who started a monthly newspaper Gnanabhanu a Subramania Siva b Bharatiyar c V O Chidambaram Desa Bandhu Youth Association Bharatiyar Dindugal Tiruppur Kumaran International Pro India Committee Subramania Siva Swadesamitran V O Chidambaran Lawyer Chempakaraman EVALUATION Name the freedom fighters of Tamil Nadu Name some poems written by Bharatiyar Write about the Swadeshi Steam Shipping Company What is the contribution of Chempakaraman in freedom struggle Write a short note on Tiruppur Kumaran UNIT MINERAL RESOURCES Learning object Childern will be able to list the minerals found in Tamil Nadu describe the uses of the minerals A conversation between a father and son in their new house where some electrical work is going on The son picks up an insulated copper wire from the ground Son What is this daddy Son This is blue thick wire and there are many thin metal wires inside this Son Copper Father That is a wire We are using it to give electrical connection in our house Father The thin metal wires are made up of copper Son Is it Father You are right Copper is very good conductor of electricity Father Yes Copper is used in all electrical appliances including computers televisions mobile phones and other electronic devices Father Copper is one of the most used mineral in today‛s world Son I have read about minerals in school They are very useful and are found naturally on the Earth Natural resources are important to us because they satisfy the daily needs of man such as food clothing and shelter Fill in the blanks Gold Iron Copper rod bowl bangles Son Wow I did not know that Tell me about other useful minerals Son What are the uses of Iron Iron ores are found at Kanjamalai in Tamil Nadu ee types They are Metallic resources Non metallic resources Fossil fuel resources Coal Petroleum and Natural Gas are called Fossil fuels Iron Copper Bauxite Gold Silver and others ae called Mineral resources Think Father Iron is used to make vehicles engines railway tracks ships buildings furniture paper clips tools bicycles and thousands of other items Think Father Yes it is Gold is extracted from Gold Ore It is considered as one of the most precious mineral Father You are right Gold is also a very good conductor of electricity and it is found in small amounts in electronic devices including mobile phones televisions and so on Son Oh is it Son Interesting Is Gold Ore a mineral Son That‛s why it is used in making jewels Are there any minerals available in your district What are they Father Bauxite is used to make aluminium Aluminium is used in electronics construction vehicles and even in utensils Son Bauxite I have never heard of it Son Tell me more about bauxite Dad Father Another very useful mineral is Bauxite LET US The bauxite deposits are mainly found in the Shervaroy hills of Salem district Tamil Nadu Son Interesting Son This is very informative Dad Father Bauxite is used in Aircraft making industry electrical industry and is also used in making machines Father Bauxite is used to make paper purify water and refine petroleum It is also used to manufacture rubber and cosmetics Son No Dad Tell me about Zinc Father Have you heard about Zinc Father Have you heard about Zinc Son No Dad Tell me about Zinc ACTIVITY Let us do Find the missing piece of the Aircraft Father Zinc is called the essential trace element because very small amount of zinc is necessary for human health Our body does not store excess zinc it must be consumed regularly as part of the diet Common food sources of zinc include red meat white meat and sea food Father Zinc oxide is widely used in the manufacture of many products such as paints rubbers cosmetics medicines inks batteries textiles and electrical equipments Son What are the other uses of zinc Son Oh Really Son What are the uses of Potash Son Thank you Dad This has been very useful I am going to share this with my friends Father The another most useful mineral is Potash Father of Potash is used for making fertilizers If the soil does not have enough potassium potash fertilizers are used to improve the quality of soil The remaining potash is used in commercial and industrial products such as soap Father That‛s a good idea Son Minerals are very useful and found naturally on the Earth Copper is used in all electrical appliances Iron ore is mainly used to produce iron Gold is considered as one of the most precious metal Bauxite is used to make aluminium Zinc is called the essential trace element Potash is used for making fertilizer Recap Minerals are very useful and found naturally on the Earth Copper is used in all electrical appliances Iron ore is mainly used to produce iron Gold is considered as one of the most precious metal Bauxite is used to make aluminium Zinc is called the essential trace element Potash is used for making fertilizer Glossary Conductor A substance that quickly conducts electricity heat and so on Precious Valuable Manufacture Make Conductor A substance that quickly conducts electricity heat and so on Precious Valuable Manufacture Make The metal inside the wires are made up of a Iron b Zinc c Copper is used for making jewels a Zinc b Bauxite c Gold Which mineral is used as fertilizer a Zinc Oxide b Potash c Iron ore Zinc is found in a Milk b Biscuit c Fish Which mineral is used in Aircraft making industry a Zinc b Bauxite c Potash Bauxite Railway tracks Iron Ore Copper Zinc oxide Aluminium Metal Wires Soap Potash Rubber products EVALUATION Name some minerals found on the earth Name some minerals that are conductors of electricty Write few uses of Copper Give a short note on Iron ore Why Zinc is called the essential trace element FUN WITH ACTIVITY PROJECT There are a lot of mining projects running in Tamil Nadu to get resources like Bauxite Lignite Granite Graphite Limestone Titanium and Magnesite UNIT CHILD SAFETY Learning Objectives Childern will be able to describe the importance of Childline understand child safety distinguish between safe touch and un safe touch Father is reading the newspaper While the son and daughter peeps into the paper and finds an advertisement of Childline Son Dad What does this Childline number mean Father Childline number is a helpline number for children under the age of eigtheen Daughter Oh Do they help children in doing their homework Son I didn‛t know about this Father Ha ha No dear It helps children who are in need of help and care Father Childline service was first established as a project in the year Later between Childline was established all across India under the Ministry of Women and Child development Son It has been there for a very long time then Son How do they exactly know where and how children need help Daughter Oh Is it Father Childline helps children who are work as labourers are abandoned by their parents are differently abled are live in streets Father Yes In May Childline in Ahmedabad rescued around children who were working in various parts of the city Child Labour is an offence in India LET US Integrated Child Development Services ICDS is a centrally sponsored scheme of government of India for early childhood care and development Father Childline number is One can call on this number and ask for help or inform if they find children who need help The National Child Labour Projects NCLPs have been set up to rehabilitate child labour The children identified by the NCLP are to be withdrawn from the dangerous occupations and put into special schools Son Oh I understand now A child‛s safety is very important Father Well said son There are many laws to protect children Daughter What are they Father We have helplines and laws to support and protect children But it is very important to teach children of how to be safe and aware of what‛s happening around them Son Oh good to know Daughter What are you going to teach us Dad Father I will teach you about Safe touch and unsafe touch Son Tell me more about it Father Hugs from family or high fives with your friends are all safe touch Daughter What is unsafe touch dad Father It is unsafe when someone touches your chest between your legs or lips or asks you to touch theirs Son What about when I am not well and go for a check up to a doctor Daughter Okay dad Father That‛s a very good question dear Doctors may touch these parts while they are doing a check up and either me or your mother are in the same room Father If someone touches you unsafely they might scare you to keep it as a secret They might get you gifts that you don‛t tell anyone But remember dear you must always inform me or your mother about it Son Yes I will definitely inform you or mom Son and Sure Dad We will definitely inform if something like this happens Thank you for talking to us about this Father If you are ever touched on any of these parts of your body by someone you know or someone in the family then you must inform your teacher or another family member Daughter Father Don‛t thank me because it is every parents‛ and teachers‛ duty to talk to children about this It will help you be safe and happy LET US The Indian Penal Code punishes people who involve in child trafficking There is also The Prohibition of Child Marriage Act that prevents child marriages The Ministry of Women and Child Development has placed the draft National Policy on Child Protection It aims at providing a safe environment for all children Glossary Labour Heavy physical work Prohibition Refusal to approve Rescue Save from danger recap Childline helps children who are in need of care and protection Childline was first established as a project in the year Childline helps children under the age of eigtheen who work as labourers Hugs from family or high fives with friends are all safe touch If someone touches chest between your legs or lips What is the Childline number a b c Childline helps children under the age of a twenty b nineteen c eighteen Childline helps children who a work as labourers b needs help with homework c both a and b A doctor touching a child‛s private part of the body while check up while the child‛s father or mother is in the same room is touch a unsafe b safe c none of the above If someone gives you a unsafe touch what will you do a inform parents b keep it as a secret c both a and b Child labour is not an offence If someone is asking to touch the private parts of their body it is unsafe touch If someone gives us an unsafe touch we must tell our parents or teacher Indian Penal Code punishes people involved in child trafficking The Childline helps children who work as labourers Write a short note on Childline When was Childline established Which ministry does it fall under What is safe touch What is unsafe touch What should you do if someone touches you unsafely GRADE TERM SOCIAL SCIENCE Unit Tamils Around the World Learning Objectives list the countries that Tamils live in describe the culture of Tamils in different countries name the countries that have Tamil in their official language or currencies list the various Tamils found around the world Children will be able to Tamils Around the World INTRODUCTION Ancient Tamil Nadu shared its boundary with the sea on three sides We had trade and cultural relations with many countries like Egypt China Myanmar Japan Rome and many more We have trade contacts with the west from century Many ships that sailed to China and Southeast Asia used our ports Rajendra Chola's naval expedition helped to expand our trade and cultural relations to the East World Map SRI LANKA Sri Lanka is home to many Tamils There are two groups of Tamils living there The first group is of people living in Sri Lanka These people are called Sri Lankan Tamils The other is group of Tamils who moved from India to Sri Lanka They are called Indian Tamils They moved during century to work in tea plantations Tamil is also an official language of Sri Lanka Koneswaram temple has thousand pillars It is considered one of the richest and most visited temples in Asia Do You Know Tamil is an official language in three countries namely India Sri Lanka and Singapore Koneswaram Temple Sri Lanka Currency Do You Know The World Tamil Conferences were held to discuss the growth of the Tamil language three times in Malaysia MALAYSIA Malaysia is a peninsula located in Southeast Asia The relations between Tamil Nadu and Malaysia have existed for more than years In ancient times Tamils‛ ships reached the modern Malaysian state of Kedah Kadaaram in Tamil Tamils influenced the cultural and political nature of Malaysia at the time of Pallava and Cholas Chinese traveller I ching records that there was regular transport from Nagapattinam to Kedah An inscription dated has been found in Ligor Malay Peninsula This refers to the trade relationship that the Tamil country had with the peninsula Today Tamils form the third largest group in Malaysia after the Malays and the Chinese One of the biggest Hindu festivals in Malaysia is Thaipusam Tamil is one of the educational languages in Malaysia Batu Caves is a limestone hill which has a series of caves and cave temple located at Gombak district in Malaysia The Lord Murugan statue at the foot of Batu Caves is the second tallest Hindu deity statue in the world Murugan Temple SINGAPORE Modern Singapore was founded in by a British statesman and Lieutenant Governor Sir Thomas Stamford Raffles The real history of Singapore starts from here But the Tamils had maintained connection with this island much before that When British ruled Singapore Tamils came here as workers and traders The hard work of Tamils is one of the reasons behind the development and modernisation of Singapore Do You Know In a Mariamman temple was built in Singapore It was built in Dravidian style by the Tamils This is gazetted as a National Monument of Singapore During the early years of Singapore in the century the Singapore British government and Christian missionary schools selected only Tamils as teachers Now the Tamil community consists of lawyers lecturers doctors engineers government officials and even politicians Construction of Johor bridge Sembawang shipyard Kallang airport and St Andrew‛s cathedral are symbols of Tamils hard work Kallang Airport MYANMAR Fiji is a group of volcanic islands in the South Pacific The Tamils were sent to Fiji by British as labourers between and The Tamils in Fiji have always voiced their need for equal rights As a part of this a women's wing was formed in called the Indian Sanmarga Maathar Sangam The purpose of this wing was to set aside one handful of rice each day before cooking so that poor and hungry Tamils can be fed The book named Thirukurali was launched by Ratu Joni the Vice president of Fiji He said that the book will help to promote peace and multiculturalism in Fiji This book was a Fijian version of the ancient Tamil book Thirukkural The Siva Subramaniya temple is a Hindu temple located in Nadi Fiji Myanmar is our neighbouring country Most people here follow Buddhism The cultural and trade relations between Tamil Nadu and Myanmar was mostly through the sea King Anawrahta Minsaw was the founder of the Empire He is considered the father of the nation in Myanmar Hence he is one of the most famous King His son King Kyansittha had good relations with the Chola kingdom of Tamil Nadu Siva Subramaniya Temple Tamils Around the World In people from Tamil Nadu moved here and worked in the agricultural fields The fights between Indians and Burmese led to riots in the country This forced a large number of Tamils to leave Myanmar There are many temples in Myanmar for Hindu Gods like Mariamman Murugan and Thirumal Do You Know An inscription in Tamil belongs to century was found in Bagang a city in Myanmar It says Kulasekara Nambi a merchant from Chera country donated gifts to Thirumal temple in Myanmar Do You Know Ananda temple is famous in Myanmar This temple‛s tower is made in Dravidian style The upper part of the tower being made in North Indian style of architecture Ananda Temple France was the first country to strive for the development of Mauritius during the early years French brought many Indians to this island in the year as they were skilled workers Many Tamils were brought from in and around Puducherry from Generally slaves who lived here were mere labourers but Tamils went there as skilled labourers and artisans The Tamils helped the French make this island suitable to live and to construct many buildings MAURITIUS Do You Know In Mauritius was captured by English and they brought more Indians to this island Now Tamils are of the total population Mauritius Currency This is a beautiful rock building of the century and classified as historic monument The building is in Port Louis and was built by Tamils Postal Museum REUNION Reunion is an island located in the Indian Ocean near Mauritius It is a part of the French Overseas Department The French brought Tamils to this island from Puducherry and Karaikal In the early days Tamils worked in tea and sugarcane plantations Tamils were more than one fourth of the total population of this island There are no differences among Tamils based on caste and religion there Still many Tamils work in the agricultural sector The educated Tamils also hold high positions in both government and private offices The interest of Tamils to learn Tamil and its culture are still strong in the island Angkor Wat Combodia Do You Know Magical Angkor Wat remains one of the most famous mountain temple King Suryavarman began its year construction in the Century Do You Know Tamil Heritage Month in Canada A decision was made by the government of Canada on October to declare the month of January as Tamil Heritage Month This recognizes the contributions that Tamil Canadians have made to the Canadian Society CONCLUSION In ancient times Tamils sailed to many nations as traders and warriors Tamils are noted for their hard work It elevated the living standard of the Tamils Tamils in abroad feel proud to be a Tamil Glossary Expedition a journey for the purpose of war Peninsula an area of land surrounded by water on three sides Slave a person who is forced to obey his her owner Island a small piece of land surrounded by water on all sides Multiculturalism the different cultural groups in a society Riot a violent crowd of people that disturb peace Strive try hard Mere unimportant Trader a person whose business is buying and selling Warrior a soldier Elevate to lift up Do You Know Tamil finds place not only in Indian currency notes but also in the currencies of other three countries as follows Sri Lanka Mauritius Singapore Evaluation Recap Tamils travelled to many countries like Sri Lanka Malaysia Singapore Fiji Mauritius and Reunion Tamil language is used in the currencies of Sri Lanka Mauritius and Singapore Sri Lanka is home to many Tamils There are two types of Tamils Sri Lankan Tamils and Indian Tamils Reunion is an island that has many Tamils who are eager to learn language and its culture One of the official languages of Sri Lanka is a Mandarin Hindi Tamil Sanskrit Modern Singapore was founded in a In ancient times Kedah state in Malaysia connected with of Tamil Nadu by sea route a Visakhapatnam Nagapattinam Madurai Chennai Principal religion of Myanmar is a Hinduism Jainism Buddhism sikhism In the year British captured Mauritius a Ananda temple Sir Thomas Stamford Raffles Lieutenant Governor Ratu Joni Thirukurali Nagapattinam Postal Museum Myanmar Ancient port Mauritius Pallava and Cholas influenced Malaysia Fiji is a group of volcanic islands in the South Pacific King Kyansittha is the son of King Anawrahta Minsaw The Reunion island is a part of the French Overseas Department Tamils are living only in Tamil Nadu Describe the past relations between Tamil Nadu and Malaysia Write a note on Reunion island Name the countries in which Tamil is one of the official languages What were the contributions of Tamils in constructing the country Mauritius Which is one of the biggest Hindu festivals in Malaysia Who is the father of nation in Myanmar Who is the father of nation in Myanmar Project Stick picture of World Map Stick pictures of Tamil architecture found around the world in a chart Unit The Story of Madras Presidency Learning Objectives Children will able to list today's states and districts that were a part of Madras Presidency describe the history of Madras Presidency recognize the districts of Madras Presidency name the tourist places in Tamil Nadu Madras Presidency Madras Presidency was formed in It was an important province of British India It was also known as Madras Province and officially known as the Presidency of Fort St George It included areas of southern India such as the states of Tamil Nadu Kerala Andhra Pradesh Karnataka parts of Odisha and the Union Territory of Lakshadweep Guntur Kistna Nellore Ganjam Godivari East Godivari West GULF OF MANAR Indian Palk bay Karikal Pondicherry Madras Madras Presidency Central Provinces Tinnevelly Ramnad Madura Trichinopoly Coimbatore North Arcot Salem Nilgiris Chingleput Chittoor Cuddapah Kurnool Bellary Sandur State Presidency Anantapur South Kanara British cochin Anjengo Taugasseri Vizagapatanam West East North South Map not to Scale South Arcot Tanjore Laccadive Islands Pudukkottai State Banganapalle State The city of Madras now known as Chennai was the capital of the Presidency In the province was divided into districts Then it was divided into districts Later in the province was further divided into districts including North Arcot South Arcot Chingleput Madras Salem Coimbatore Trichinopoly Tanjore Madura Ramnad Tinnevelly and Nilgiris in Tamil Nadu It was under British rule until Do You Know The first British Governor of Madras Presidency was Edward Clive and the last Governor was Archibald Edward Nye Archibald Edward Nye After Independence After years of its formation the Madras Presidency was renamed as Madras State in as India gained independence In the Madras State consisted of four regions comprising of districts namely Madras Chengalpattu North Arcot South Arcot Salem Tiruchirapalli Thanjavur Coimbatore The Nilgiris Madurai Tirunelveli Ramanathapuram and Kanniyakumari It was officially renamed as Tamil Nadu in Let us learn more about the four regions of Tamil Nadu REGION I Madras The modern districts of Chennai Tiruvallur and Kancheepuram constituted the Madras district British bought a part of the land from the Nayak rulers in They built Fort St George and named the area Madrasapattinam Gudiyam Caves are rock shelters in South India and are known for their prehistoric stone tools and evidence of humans living there near by two lakh years ago Fort St George Mamallapuram was created by the Pallava Dynasty It has many rock sculptures and is declared by UNESCO as a World Heritage site Uthiramerur an ancient Chola village is located in Kancheepuram district The temple inscriptions of Uthiramerur are notable for their historical descriptions of rural self governance North Arcot The modern districts of Vellore and Tiruvannamalai constituted the North Arcot district Vellore Fort is an ancient fort built in by Chinna Bommi Nayak and Thimma Reddy Nayak The Vainu Bappu Observatory is an astronomical observatory It is located at Kavalur This is the biggest observatory in Asia South Arcot The modern districts of Villupuram and Cuddalore constituted the South Arcot district Auroville is an experimental township in Villupuram district near Puducherry It is a place where people from all over the world come and live together to build a culture of unity Gingee Fort also called as Senji Fort is one of the beautiful forts in Tamil Nadu This fortress is built across three hillocks in Villupuram district The British called this fort as Troy of the East Vainu Bappu Observatory Auroville Gingee Fort Mamallapuram Porto Novo also called as Parangipettai is situated in Cuddalore district The first iron and steel industry of India was located at Porto Novo in REGION Salem The modern districts of Salem Dharmapuri Krishnagiri and Namakkal constituted the Salem district The name Salem is derived from the word SAILAM It means an area surrounded by Mountains Mettur Dam also called as Stanely Reservoir was constructed across the river Cauvery in Hogenakkal is one of the waterfalls located in Dharmapuri district Boat riding on Coracle made of bamboo is an attraction here Hosur is an industrial city located in Krishnagiri district Coimbatore During British India the Coimbatore district comprised the modern districts of Coimbatore Erode Tiruppur The Nilgiris and a part of Dindigul Coimbatore is called as The Manchester of South India Anaimalai Wildlife Sanctuary is located in the Coimbatore district It is now called as Indira Gandhi Wildlife Sanctuary and National Park Erode district is famous for the production of handloom power loom and readymade garments The Nilgiris The Nilgiris was a place of special attraction for the Europeans because of its natural charm and pleasant climate Doddabetta is the highest peak in the Nilgiris and it is the fourth highest peak in South India Hogenakkal waterfall Anaimalai Wildlife Sanctuary Queen of Hill Stations The 'Queen of Hill Stations' Udhagamandalam better known as Ooty is the most popular hill station in South India Ooty was the summer capital of the Madras Presidency John Sullivan the district Collector of Coimbatore is credited for developing the beautiful hill station of Ooty REGION Tiruchirapalli The modern districts of Tiruchirapalli Karur Pudukkottai Perambalur and Ariyalur formed the Trichinopoly district Tiruchirappalli Rockfort is a temple built on an ancient rock It is constructed on a rock that is meters tall There are two Hindu temples inside the fort Ranjankudi Fort is located in Perambalur This fort was constructed by Nawab of the Carnatic Gangaikonda Cholapuram is located in Ariyalur district UNESCO declared this temple as one of the world famous heritage monuments Ariyalur district is also known for its rich prehistoric fossils Thanjavur The modern districts of Thanjavur Nagapattinam and Tiruvarur formed the Tanjore District Thanjavur is popularly known as the Delta area and the Rice Bowl of Tamil Nadu Manora Fort is located in the district of Tanjore It is known for the eight storied miniature fortress built by Rajah Serfoji Kallanai is an ancient dam built across the River Cauvery in South India This dam was constructed in nd century by the Chola King Karikalan Brihadeeswara temple is popularly known as Thanjai Periya Koil Rock Fort Brihadeeswara Temple REGION Madurai The modern districts of Madurai Ramanathapuram Theni and parts of Sivagangai Virudhunagar and Dindigul formed the Madurai district Thirumalai Nayakkar Palace built by Thirumalai Nayakkar located in the district of Madurai It is classic fusion of Dravidian and Islamic architecture Bodinayakkanur is at the foothills of the Western Ghats It is popularly known as Cardamom City It is located in the district of Theni Keeladi is located in Sivagangai district According to Tamil Nadu Archaeological Department report Keeladi is an urban settlement of Sangam Age This cultural finding belongs to the century Tirunelveli The modern districts of Tirunelveli Kanniyakumari and Thoothukudi along with a part of Virudhunagar formed the Tinnevely district Tirunelveli is located on the banks of the river Tamiraparani Courtallam is located on the Western Ghats It is called as the Spa of the South India Kattabomman Memorial Fort was constructed by the Government of Tamil Nadu It is located in Panchalankurichi km from Thoothukudi Thoothukudi is called as the Pearl City because pearl fishing is one of the chief occupations carried out in the town Conclusion Tamil Nadu possesses many glorious sculptures paintings murals adorning walls and pillars In addition to that giant temple towers gopurams were constructed by Tamil Kings These have preserved the arts and culture of Tamil Nadu This attracts the tourists all around the world Thirumalai Nayakkar Palace Courtallam waterfall West East North South Map not to Scale The Nilgiris Erode Coimbatore Tiruppur Karur Dindigul Theni Madurai Sivagangai Pudukkottai Tiruchirappalli Namakkal Salem Cuddalore Thiruvannamalai Vellore Kancheepuram Chennai Thiruvallur Villupuram Dharmapuri Krishnagiri Nagapattinam Nagapattinam Thiruvarur Thanjavur Ariyalur Perambalur Virudhunagar Ramnathapuram Thoothukudi Tirunelveli Kanyakumari SRILANKA Did you know In government of Tamil Nadu has created five new districts namely Kallakurichi Tenkasi Chengalpattu Tirupathur and Ranipettai Therefore the boundries of these districts are not defined Region I S No Districts Tourist Places Major Industries Chennai Marina Beach Automobiles Cuddalore Thillai Nataraja Temple Chidambaram Handicraft Kancheepuram Mahabalipuram Silk Tiruvallur Pulicat Lake Agriculture Tiruvannamalai Arunachaleswarar Temple Silk reeling Vellore Vellore Fort Leather Viluppuram Gingee Fort Sugar Region Coimbatore Valparai Cotton Pump manufacturing Dharmapuri Hogenakkal Waterfalls Horticulture and Coir Erode Bhavanisagar Dam Cotton textile Krishnagiri Krishnagiri Reservoir Project KRP Dam Automobile Namakkal Kolli Hills Poultry Salem Yercaud Steel and Sago The Nilgiris Botanical Garden Flower exporting Tiruppur Amaravathi Dam Readymade garments Region Ariyalur Gangaikonda Cholapuram Cement Karur Pasupatheeswarar Temple Paper and Textile Nagapattinam Poompuhar Fishering Perambalur Mayil Ootru Waterfalls Sugar Pudukkottai Chithannavasal Coir Thanjavur Brihadeeswara Temple Handicraft Tiruchirapalli Rock Fort Gem cutting Tiruvarur Thyagaraja Temple Food products and Packed water Region Dindigul Kodaikanal Locks and Steel safes Kanniyakumari Vivekananda Rock Memorial Wooden furniture and Rubber Madurai Meenakshi Amman Temple Agricultural implements manufacturing Ramanathapuram Pamban Island Rameswaram Preserved sea food Handicraft made in palm leaf Sivagangai Vettangudi Bird Sanctuary Sugar Theni Suruli Falls Vaigai Dam Spices Thoothukudi Thiruchendur Murugan Temple Fertilizer Tirunelveli Courtallam Cottage Virudhunagar Ayyanar Falls Cotton and Cement Glossary Province an administrative division or unit of a country Reorganisation to arrange something again to improve it Geologist a scientist who studies all things related to the Earth Inscription anything written on things made of metal or rock Observatory a building with a large telescope from which scientists study the universe Delta a triangular area where a major river divides into smaller parts Monument a structure or building that is built to honour a special person or event Mural a painting or other work of art drawn on a wall Adorn to decorate with ornaments World Heritage Monument Sites of great cultural and historical importance Do You Know The districts of Madras Chingleput North Arcot South Arcot Salem Trichinopoly Tanjore Ramnad Tinnevelly Madura Coimbatore and the Nilgiris are included in modern state of Tamil Nadu The district of Malabar is included in modern state of Kerala The districts of Chittoor Nellore Cuddapah a part of Anantapur Guntur Kurnool Kistna Godivari East Godivari West and Vizagapatanam are included in modern state of Andhra Pradesh The district of Ganjam is included in modern Odisha The district of Bellary South Kanara and a part of Anantapur is included in modern Karnataka Activity In the state map colour your native district and mark its neighbouring districts Madras Presidency was formed in a Madras Presidency was officially renamed as Tamil Nadu in a Mamallapuram was created by the a Nayak dynasty Pallava dynasty Cholas British Which is called as the Spa of the South India a Bodinayakanur Hogenakkal Courtallam Gingee Fort Manora is known for the eight storied miniature fortress built by a Rajah Serfoji Chinna Bommi Nayak Thimma Reddy Nayak Thirumalai Nayakkar II Write true or false The city of Madras was the capital of the Madras Presidency Uthiramerur an ancient Chola village is located in Salem District The Story of Madras Presidency Thirumalai Nayakkar Palace was built by Thirumalai Nayakkar Coimbatore is called as The Manchester of South India Gangaikonda Cholapuram temple is popularly known as Thanjai Periya Koil Kavalur Troy of the East Gingee Fort Ooty Bodinayakkanur Vainu Bappu Observatory Pearl City Cardamom City John Sullivan Thoothukudi What is the significance of the Gingee Fort What were the main features of the Thirumalai Nayakkar Palace Name some of the tourist places in Salem district Write a short note on Kallanai Write a short note on Rock fort Name some of the tourist places in Tamil Nadu Stick pictures of famous monuments historical places in your district Unit Rights and Duties of Children Learning Objectives Children will able to define citizen of a country list the rights of children describe right to survival explain right to development give details about right to protection and participation INTRODUCTION Today my class teacher has given us a list of rules that we all have to follow Amma We should not change our seats in the middle of the class time in school as it would disturb others Like this there are so many rules Amma I think that is very important Rules are made so that the class can work together properly without disturbing others That‛s good I understand Our teacher said the same In school today Ramesh had an interesting day He learnt many rules that he must follow in class Let us listen to him talking to his mother about his class Do You Know Did you know the number of years it takes for a foreigner to get Indian citizenship If a foreigner stays in India for years they can get Indian citizenship Citizen is a person who is a member of a country A citizen enjoys the rights given to him her by the country Do you know There are rules that all citizens of the country have to follow Citizen What does that mean Amma Ok Who sets these rules for citizens The constitution of India sets these rules The set of rules of a country is known as constitution The constitution lays down certain rules to help the country work together smoothly Do You Know The Indian constitution is the lengthiest constitution of the world The original document was handwritten So that my teacher said if we follow these rules we will become responsible Does constitution make citizens responsible Yes Kavya All over the world there are many countries which have agreed to make some basic rights for children Our country is one of them Appa Do children have any rights Really Appa can you tell me more Yes It helps all people to be a responsible citizen of our country All over the world there are different policies and rights Children have certain rights to ensure that every child is treated the same These are practiced to create a healthy environment for the children to live in Let us see what Kavya and her father talk about child rights CHILD RIGHTS Sure The four major child rights are Right to survival Right to development Right to protection Right to participation It is to ensure every child has access to minimum standards of food This helps in healthy growth in all children There are different rights for children below the age of and between the age of years This is because both the age groups have different needs for their growth and development Very interesting What else is a part of right to survival WASH What happens in that program Appa Appa can you explain about right to survival The WASH programme is also a part of it Have you heard of it RIGHT TO SURVIVAL Yes Appa Even my teacher told us to wash our hands before and after food Yes Kavya That was Polio drops There are many vaccines and drops which are given to children to protect them from certain diseases Very good Spreading awareness to washing hands with soap is also a part of the WASH programme Last week I saw Muthu who is the child of opposite house getting some drops of medicine Is this a part of right to survival Appa So nice Appa Every child has the right to go to school and develop life skills Today Vijaya teacher is teaching about right to development WA S H stands for Water Sanitation and Hygiene It means there should be access to clean water for drinking and other needs There are many diseases that spread through water To avoid these having access to safe water is very important RIGHT TO DEVELOPMENT Mithra do you know that coming to school is your right Do you know that no one can stop you from getting admission in a government school Yes you can see But all children below years have the right to go to school The government is responsible to providing free education to all That's great Mithra Really Near my house I see some children not going to school Is it so I will convey this to their parents May be I can bring them to school tomorrow Think and Write If you see children not going to school what will you do Child Labour What do you see in the picture This is called Child Labour It is illegal to force children below the age of to work Call the Childline number Ten Nine Eight and inform Really What should we do if we see children working as child labour around us Children are involved in different works at different places You can call at any time and it is free of cost If you see a child labour talk to him her first If they are forced to do the job you can call the number and inform They will come and help the child Okay teacher Can I call this number at any time How much does it cost Activity Children have the right to be protected in all circumstances Indian government has set laws for the same Raman and Kavitha's mother is talking to them about their right to protect themselves Let us hear their conversation RIGHT TO PROTECTION Identify a child in your neighbourhood who is not going to school and fill this questionnaire Name of the child Age of the child Has the child gone to school ever Yes No Reason for not going to school How will you guide her him Note The survey can be for parents and the child In pairs the children of the class will visit one family or child for an interview The teacher along with students will discuss the solutions for each case Can you tell me what are the different parts of your body that no one should touch Lips chest and between my legs Yes To whom will you say if someone touches you in these parts Will you be scared if someone touches you in any or all of these parts or any other part and make you feel uncomfortable Yes and I will shout at the top of my voice for help Are there any other rules to protect us We will tell to an elder we trust like you There are laws to punish people who touch children inappropriately All you need to do is keep on eye out for danger and be confident No Amma I will not be scared Really Yes There is another rule no person should hit or harm children It is wrong to hit children as it affects their well being Yes all elders should help to create a safe environment for children to live After some time Yes teacher Our school is going to be renovated We need your suggestions to improve the school Can you all discuss and make a list Children have the right to participate in matters related to them This includes asking questions giving suggestions and making decisions in things that affect them Let us listen to the discussion in Vani teacher's class RIGHT TO PARTICIPATE Do You Know Children have the right to participate in discussions and implementation of all things related to them We have the following suggestions for the school Our school should have toilets at every floor Drinking water facility for every four classrooms The sports room needs more carrom boards chess boards balls and badminton racquets So that everyone can play Thank you teacher Wonderful ideas I will send this to the headmistress It was great for all of you to participate Each one of you has the right to express and share your opinion Glossary Renovate to repair and improve something Survival the state or fact of continuing to live Development the process in which someone or something grows and becomes more advanced Vaccine substance that helps to protect against certain diseases Recap Every citizen of the country can enjoy the rights and do duties Children also have special rights Children have the right to have healthy food for growth and development Children have the right to go to school and have good education Children have the right to be protected against danger Children have the right to participate in the matters related to them I Choose the correct answer This is against Indian law Children studying in school Children below years working in industries Children participating in school activities Children getting nutritious food Polio drops are given to men women children senior citizens A set of rules of a country is known as the story book rule book constitution textbook Which of the following is not a right of children Getting driving license Getting education Getting adequate food Living in a healthy manner Evaluation Protect keep safe from harm or injury Inappropriately not correct Scared feeling fear Project Work in groups of and make a small play focusing on the need of any of the child rights discussed in this lesson The child has the basic right to get polio drops There are same rights for all age groups of children All children of age years should be employed Hitting children is wrong Children should be aware of bad touch Childline number member of a country Vaccines sanitation WASH illegal Citizen protects from diseases Child labour What are the three parts on your body where no one should touch What are the different rights you have as a child Write short note on right to survival Have you ever used your right to participate Describe Why are rights important English Unit A world with robots Hi I am Nila I like making robots Do you Let us learn The Trick Robot Vicky was a lazy boy He never did his homework on time He never kept his things back in the right place He pleaded with his father to buy him a robot to do his work Vicky’s father wanted him to become an active boy So he bought him a trick robot Vicky did not know that it was a trick robot He was glad to have a robot to do all his work Vicky I have bought you a robot This intelligent robot will do all your work Enjoy Vicky is excited to test his new robot I am hungry prepare some salad for me I do not eat salad So I cannot make it Do you want me to strain my back I cannot do that What You are a robot You cannot refuse me Clean my room now Really I cannot believe this At least charge my phone Why don’t you do that yourself I must make some calls Aah I have a headache now Get me a cup of hot tea My battery is draining by listening to you First you charge my battery I am tired of you Play me a pleasant song I want to relax That’s a great idea Why don’t you play me one Oh no Dad Please sell this robot It is totally useless Yes This time please sell me to an active master I don’t want to work for lazy people Oh no Dad Please sell this robot He is totally useless Really Is that why you did not help me No more robots for me I will do all the work myself Let us sing The Robot I have a robot big and strong big and strong big and strong watch now how it walks along with a nice rhyming song I have a robot smart and tall smart and tall smart and tall watch now how it welcomes all with a nice greeting call It has wheels go front and back front and back front and back watch now how it keeps the sack in every little rack Never it takes food and rest food and rest food and rest watch now how it works its best with all same zest Let us read Anitha meets her friends and shares her experience of a robot expo Friends Hi you look excited Anything special Anitha   Yes I went to the ‘ROBOT EXPO’ yesterday I was so excited seeing all the robots Friends Tell us more Anitha A humanoid welcomed me into the hall Friends What is that Anitha A robot that looks like a human It even knew my name I was so surprised and shocked that I stood there frozen Friends Wow Anitha I am just getting started A robot just looked at me and named the things I had with me Friends Amazing it must have scanned you with its eyes Anitha The next robot danced for the songs played by the visitors I suddenly found a butterfly sitting on my shoulder To my surprise it was a robot There were robots of ants and fish too Friends An ant robot Wow Anitha I saw a robot cooking dishes and serving all It served me an omelette Friends   Don’t we all wish for a COOK ROBOT at home Anitha Adding to my excitement a robot collected and dropped an empty water bottle into the dustbin Then it advised all of us to use dustbin Anitha Then there was a robot that asked me Do you want to make a robot I eagerly nodded my head and said Yes But I don’t know how to make it It replied Don’t worry I will help you Then it said Let us make a robot that can run There are three main parts in this robot First is the controller it acts as the brain Second is the mechanical parts that will help the robot move Third is the sensors that will help the robot sense walls and other things on its way so that it does not crash into these objects All these parts work together to make the robot run Then I put these parts together with the robot and made a robot myself This expo has made me really interested in robots I am planning to make more robots Will you all join me Friends We would love to Unit My hobbles Gardening is my hobby What is yours Let us learn Do it yourself Hi I am Vinoth When I was young my parents and other elders did everything for me Now I wash my own clothes I fold all clothes neatly I love to do my work on my own I am a DIY kid Okay Let me introduce my friends and their hobbies Hi I am Rosy I learnt to ride a bicycle when I was years old I ride my bicycle every day I enjoy cycling Do It Yourself Hi I am Megalai I swim with elders in a well I compete with them I am fond of swimming Hi I am James I have my own garden I water it every day I love gardening Hi I am Raju I help by cleaning grains and cereals I am good at ccooking I like slicing cutting or chopping fruits and vegetables I prepare a few simple dishes Hi I am Aliya I sew my torn clothes I hem the border I am always keen to stitch Let us sing Treasure Trove Read when you are happy Read when you are sad Learn about space land on Mars Picture an auto race zoom with cars A glance at history go back in time To discover a mystery solve a crime Read about the lost bicycle where can it be Visit a lovely mermaid under the sea Read when you are happy Read when you are sad Let us read Anbu and the fish Anbu was talented in catching fish He always went to catch fish with Madhan They usually used dhoti as a net to catch the fish Anbu also made fishing rods using sticks and thorns at home Then they shared the fish equally Unlike their friends Anbu and Madhan were always careful while fishing They never went deep into the pond or river Every Sunday they would go in search of earthworms to use them as bait They enjoyed searching for earthworms Once the bait was ready they would go fishing On Sunday Anbu was not happy They were able to catch only three fish The fish were very small to cook so they decided to grow the fish at home Anbu filled the jar with water and let the three fish into it The fish exerted and swam in different directions Anbu thought the fish was hungry and dropped earthworms into the jar But to his surprise the fish did not eat He saw their eyes and could feel their fear Next morning he went straight to the fish jar from his bed He saw only two fish in the jar He searched for the fish everywhere Then he saw one fish on the floor Anbu was very sad and his father consoled him In the evening his father got a new fish tank Anbu changed the fish to the new tank The next day Anbu rushed back from school to the tank He saw that one more fish was dead and floating on the top He started crying His father said These fish live in the river and lake Nature is their home It is best to let them be free He saw the last fish swimming alone and he felt bad He took the fish to the same pond and set it free From then on Anbu and Madhan bought a packet of puffed rice and fed the fish Feeding fish was their new hobby Unit Time for a journey Hi I enjoy trekking What do you enjoy Let us learn ROBINSON CRUSOE Robinson Crusoe was a brave young man He loved adventures When he was nineteen years old he left his home and took travel in the sea One day his ship started to sink because of a great storm Robinson managed to swim to an island When he reached the island he was so tired that he just slept on the sand When he woke up he found a little dog next to him They both were all alone in that place Robinson explored the island and he found the broken ship He took some food guns clothing and tools from it He made a tent and lived in it He counted days on a wooden cross From then on he was able to keep a calendar On the island he found many kinds of goats and hares which he shot and ate Then he made a small boat One day Robinson found a footprint of a human on the other side of the island He was frightened For two years he lived in fear Then one day he saw some tribal men chasing a young fellow Robinson took out his gun and shot twice The tribal men got scared and ran away He saved the tribe and named him Friday as he met him on Friday At last he had a human friend in the island Robinson taught Friday to speak in English to shoot and eat like a human One day they both saved some people from the cannibals Among them they found Friday’s father and his friends They stayed with Robinson and Friday for a few days and left the island Another day Friday informed Robinson about a ship They both hid and watched the ship Robinson learnt that the ship’s men had rebelled against the captain After killing some of the rebels Robinson Friday and the captain retook the ship At last Robinson sailed from the island to England with Friday after twenty eight years two months and nineteen days Let us sing A Voyage The Horse and the Tiger The Ape and the Goat Decided one morning To hire a boat To leave their own country And find a new one Very much in the manner Columbus had done The boat went a sailing Away and away It sailed and they sailed For a night and a day When all of a sudden There blew a great gale The Horse was a tremble The Tiger grew pale The Ape and the Goat Nearly fainted together But the boat went a sailing In spite of bad weather A sailing a sailing A sailing it goes To a wonderful country Which nobody knows The Horse and the Tiger The Ape and the Goat Has found a new one As Columbus had done Let us read Bujju's Brave Adventure On a nice winter morning Bujju's family set out on a trip to the nearby hill Bujju's cousins Appu Bala Surya and Janani accompanied him The kids were so excited to explore the place Hey Appu What are you eating Nothing Surya Appu swallowed and got hiccups So Surya and Appu returned to parent Look kids Be around us Never go anywhere alone Yes ma Ma see Water fall Ma See the waterfall First have your breakfast Then we will go there Run Run Run Oh I feel Where did you go What about others Don't worry pa They are playing nearby Look at that naughty monkey Let us act like it and have fun I feel very hungry Let's go Oh No I am alone Surya Appu Janani Bala Where are you guys Is that a ROAR of a lion Mummy Without noticing the other three kept running towards the waterfall There Bala and Janani got diverted on seeing a naughty monkey As Bala and Janani felt hungry they returned to parents But Bujju sped towards the waterfall He was shocked to see that no one was there I shouldn't be afraid Let me find a way I think these footprints will help me Yes ma I have found you all at last Bujju where were you I was so worried I think these should be Appu's footprints Now Bujju realised his mistake that he should not go alone without informing parents On his way he finds big footprints Affection I love everyone as my family Do you MY LITTLE PICTIONARY Whirled to spin or rotate rapidly Wipe clean or dry something by rubbing with a cloth a piece of paper or one's hand Tumbled to fall Scream to speak loudly with strong emotions Wipe clean or dry something by rubbing with a cloth a piece of paper or one's hand grab hold or catch LET US LEARN Appa Keeraikuppam was a small coastal village near Nagapatinam Even though the people in the village toiled in the seas every day they lived happily It was a pleasant Sunday morning in December Just like any other day the villagers had started their routine A few of them had already left to the sea and the others were preparing to go to sea Meena‛s family was also at the shore to see off her father going to the sea After the men sailed into the sea the women would return to other tasks that need their attention The children would play under the many coconut trees in the village The village bell was about to strike eight times The bell caretaker was ready to ring the bell Just then he saw that the sea water had receded a few hundred metres Soon many in the village noticed the same All the children and the villagers started running towards the sea Meena and her mother were also with them The seawater continued to recede All had gathered along the shore to see it The bell hit eight times People now saw a wave far away in the sea Excitedly they pointed to the wave that was raising high in the sea It was common for people to be excited by big waves in Keeraikuppam Everyone was getting ready to brace the big wave that was coming towards them Little did they know that the wave was increasing in height and would seem to touch the sky as it neared them It was now getting closer to the shore with a roar Gazing at the wave far away Meena‛s mother felt a sudden fear gripping her She felt that something was wrong She caught Meena by her hand and started running towards their home The wave came closer to the shore had crushed the fishing boats Before they reached their home the powerful wave had hit the village Meena and her mother could hear their friends and family screaming all around them The seawater entered the village and washed out the huts and boats The water hit their hut too Meena and her mother were separated and thrown off Then slowly the water receded again into the sea Meena‛s mother gathered herself and searched for Meena It was then that the second massive wave hit the village Meena’s mother was washed away by the wave Meena whirled through the water struggling to breathe One moment she was inside the water and all was dark around her In the next she could see the sky The wave banged her to the trunk of a coconut tree She wrestled the wave and firmly hugged the tree Soon she fainted When she woke up she was in the hospital After she recovered they transferred her to a rehabilitation centre The centre housed nearly boys and girls A kind hearted official of the centre was always very kind to the children He often used to visit them with his family Meena was the youngest of all and soon was loved by all The incharge and his wife often carried Meena while they played with other children All children used to call them Amma and Appa After three years the official was transferred He and his family continued to visit the centre once a year for the next five years Meena now opened her eyes Her cheeks were moist All this seemed like it happened yesterday The school bell rang and Meena wiped her cheeks to get ready for her English class Meena was good at studies and now was in the twelfth standard The teacher was teaching and Meena was writing her notes She then heard a familiar voice calling her Meenu She raised her head to see She was surprised to see her father the official standing at the entrance He was smiling at her She stared at him blankly for a few seconds with tears rolling down her cheeks She jumped out of her bench and dashed towards him calling Appa Glossary receded go or move back massive large or heavy whirled to move rapidly round and round banged to strike forcefully and noisily fainted to lose consciousness rehabilitation the action of restoring someone after a damage blankly without expression Meena’s father was a fisher man People ran off when the seawater receded Three waves hit the village The official visited the rehabilitation center daily The official was transferred to another district LET US BUILD PUNCTUATION Let us look at the picture below Can we eat grandpa Ramu Hey are you going to eat grandpa Somu Haha No I am asking if we can eat Ramu Then you should add the correct punctuation It should be Can we eat grandpa PUNCTUATION Somu Thank you Ramu Punctuation plays an important role to help us understand the sentences Let us learn some punctuations I am the capital letter Let's see when and where to use me You must use me in the beginning of a sentence Book is our best friend Children are playing cricket The train runs fast We have bull in our house Cow gives us milk My uncle came by train I come in the beginning of proper noun and in the abbreviations Bharathi is a Tamil poet We take money from ATM I met Kumar at the market He completed his MBBS last year We live in India I am an NCC cadet I am a full stop I look like a dot You must use me at the end of a sentence I fly my kite The bird is beautiful Monkeys live on the tree Take your book I play with Jason Let us all go to the hotel I am a comma I look like a dot with tail You must use me to separate words in a list of three or more things Car bus and bike are vechicles Eat bun nuts and rice I invited Ragu Stephen and Fathima We grow mango banana and papaya I have a ball bat balloon and a toy We have pen pencil and eraser I am a question mark I am little crooked in other words known as interrogation mark I come at the end of interrogative sentences Is he a doctor Do you have a book When will the train come Who won the match What are you doing What is your name where is my cat my favourite colour is blue jain ate an appleleema is a good singer the book is on the table do you like pet animals ravi wants book pen and pencil he likes shirt pants and shorts do you play football how are you The real wealth Parent brings us to this soil and will never let us get spoilt They earn our daily bread and wish to see us shoot ahead Brother always fights for his share but if someone hurts us he can’t bear Sister's words you never dare she is next to parents in care A good friend is with you in all deeds and stays last for all your needs Relationships are the real wealth nurture them like your health Show care and affection with all your zest It will take care of the rest Glossary spoilt destroy the value or quality of bear to withstand deeds an action performed intentionally zest happiness or energy nurture care for and protect share dare bread rest care needs deeds ahead zest bear The dog is in front of the house The dog is behind the house The dog is between the houses The words in front of behind and between tell us where the dog is Such words are called prepositions of place behind between behind in front of in front of between Before After The yellow toy is before blue toy The blue toy is after yellow toy Here before indicates a position preceding After indicates a position following Hello sir Give me ticket to Trichy We will reach Trichy by p m How many tickets do you need It costs rupees The bus leaves in minutes Yes we will stop in Alathur for breakfast Here is your ticket and the change Only one ticket sir Here it is What time does the bus leave Will you stop the bus for breakfast When will we reach Trichy Thank you sir Give me rupees We are leaving in minutes We are about to leave A TRUE FRIEND Nandhini and Pandi were good friends since childhood They lived in the same street so they were always together Every day Pandi would stop at her home on the way to school Both would walk to school chatting and playing Sometimes they would race home from school They always took part in school activities together They helped each other in their lessons One day as usual Pandi came to Nandhini‛s home She looked upset and sad Pandi asked her Why are you sad she did not answer Instead she shook her head Did your parents scold you asked Pandi She did not answer him He grabbed her bag and said excitedly Catch me if you can But she did not respond Pandi stopped and gave the bag back They walked silently to the school Nandhini walked into the classroom slowly Her eyes glued to the ground She looked sad Did someone scold you asked one of her friends in class Nandhini shook her head She sat down with her head bowed down The teacher entered the classroom and started calling out the names for attendance Nandhini did not answer when the teacher called her name The teacher was annoyed This time she called her name louder Nandhini and then she raised her hand but did not answer The teacher went near Nandhini She touched her forehead and asked Are you feeling okay Nandhini shook her head Her cheeks were red and it looked like she had a fever Do you have a fever Shall I call your parents asked the teacher She shook her head but she still did not look at anyone Her head was still bowed down Why does Nandhini look so sad exclaimed her friends Her friends pestered her with a hundred questions The questions were about everything that you think about they asked her family her house her shoes and even about her street pets Each question that she was asked Nandhini only answered by shaking her head Pandi had enough of Nandhini's silence He had never seen her so dull He wanted an idea to make her smile He thought thought and thought for many hours Finally he had an idea He took out something from his bag and ran to show it to her He tumbled and it slipped from his hands It was flying straight to Nandhini She saw something flying towards her and screamed with fear She closed her eyes and tried to catch it THUD She caught it It was a big green frog Everyone ran away as they were scared of the frog Nandhini's eyes were wide open with surprise Then she burst into laughter It was a rubber frog As soon as she laughed her friends and teacher knew why she did not smile or talk to anyone all day Two of her front teeth were missing Nandhini and Pandi are friends Friends pestered her why she was upset Nandhini looked terribly upset one day She did not respond to Pandi's play Pandi threw a rubber frog on her She did not respond to the attendance She burst into laughter and all knows the reason WATCH CLICK OFFER Get a CAMERA FREE Kamarajar Place of birth born in Virudhunagar Tamilnadu Birth July Position held chief minister of tamil nadu Honour Bharat Ratna Known as King maker Karma veerar Achievements Midday Meal Scheme Reforms in Education Death October i play kabadi daily kaviya bought onion tomato and cucumber who took care of meena deeds wealth health care bare needs infront of between behind Learning Outcome Now I can listen and understand a conversation recite the poem and identify the rhyming words speak while boarding a bus use the punctuation marks effectively understand the prose and supplementary Read an advertisement and understand the content write a narrative Identify and use preposition Savings I always save my pocket money Do you MY LITTLE PICTIONARY Fungus spongy living things that live on other living things Larder a room or large cupboard for storing food Granary place where grains are stored Piggy Bank a money box shaped like a pig Larder a room or large cupboard for storing food Granary stored place where grains are Burrow a hole or tunnel dug by a small animal A Lesson to save On the way to the playground in the fields Amir saw dirt thrown out of a pit on the ground He went near it and saw a small rat like creature He called out Hey Who are you What are you doing in there The creature came out and took a glance at the boy and said I am a mole I am digging a burrow to catch the earthworms and save them for the winter Interesting how do you catch and save them The mole replied I dig ‘worm traps’ along the tunnels when the earthworms cross it they fall into it I will bite and paralyze them and store in the tunnel to eat later The boy asked How many earthworms will you store The mole replied As many worms as I can get I don‛t eat all of them I save them for using later Now I don‛t have any time to waste I must build a lot of worm traps See you later The mole went inside the burrow Just then near the mole's burrow Amir saw a leaf moving He went near it and saw a small ant The ant was carrying a big leaf The ant yelled Get out of my way It will take too long to go around your feet He asked the ant Hey Why are you carrying this big leaf Isn't it easy to eat it and then go home The ant dropped the leaf and replied I am a leafcutter ant I am collecting leaves for my colony I can carry leaves that weigh nearly twenty times my weight Amir was surprised He asked Do you eat leaves The ant replied No we don’t eat leaves We drink the leaf sap We also use the leaves to grow fungus We need the fungus to feed our babies We also store the leaves for the winter The ant asked By the way do you the humans save the food that you need Amir replied Yes we also save food in granaries but we need money to buy it so we usually give importance to save money What else do we have to save Don‛t you have anything other than money to save asked the ant After taking some time to think Amir answered My mom asks me to save water food electricity forest and fuel We have a lot of things to save to make sure that future generations can use these This interaction with the mole and the ant changed the way Amir thought about the things around him Earlier he let the fan run as he left the room He let the water drip as he never closed the tap tightly Now he always care and save the resources around him Glossary digging break up and move earth traps enclosure designed to catch and retain animals Paralyze incapable of movement sap plant fluid Amir left the tap opened earlier Amir switched off the fan when he walked out Moles trap worms and store them Leafcutter ants grow fungus Amir realised his mistakes friends I am here to show my magic tricks Now I take the word re and the word arrange to make a new word rearrange Let us see how to use un re dis and pre when we add the prefix un it gives opposite meaning when we add the prefix dis it gives opposite meaning when we add the prefix re it gives the meaning of again when we add the prefix before it gives the meaning of before unwanted unfortunate rewrite repaint dislike dispose prepaid preschool pre continue dis familiar un open review word lucky check view approve What do humans save Ants pile food in the anthill They eat it during the winter's chill Moles dig long and winding tunnels And save worms in the channels Crocodiles are found in many countries They store food in their pantries Squirrels reserve food in a larder They store a seven course meal with starter Leopards keep their prey on a tree And eat them when they are free Farmers store the harvest in a granary Soon to be packed in the cannery What do you save everything that nature gave Glossary pile to collect pantries a storage room prey an animal that is hunted and killed by another for food granary a storehouse for threshed grain cannery a place where the food is packed in cans or tins anthill tunnels larder tree Simple past tense is used to describe an action that has happened You already know the verb forms they are Present Past Past Participle Present Participle write writes wrote written writing The past form is used in simple past tense Come let us use it I wrote the test You went home He ran to the class room She played chess We played football It flew away They visited him I boiled the water We saw simple past tense for action verb Now let us see the simple past tense for be form verbs state of being Present Past Past Participle Present Participle am is are was were been being I was an engineer We were young He was a pilot You were a patient She was a soldier They were students It was a computer An action that has happened What happened A monkey came down from the tree It grabed the banana from the boy He shouted in fear The monkey ate the banana Simple future tense refers to an action or event that has not yet happened Present Past Past Participle Present Participle come came come coming The present form is used in simple future tense with the auxillaries shall or will Come let us use it I shall will meet him tomorrow We shall will meet him tomorrow He will meet him tomorrow You will meet him tomorrow She will meet him tomorrow They will meet him tomorrow It will reach him tomorrow In the above example you can see the verb is in the present form The word shall and will are used for I and we Will is used for you they he she it We use the simple future tense for actions that yet to happen The bus will reach Arcot by the evening They washed the van Kamal will meet you at the shop My dad helps me read It will rain tomorrow He ate many mangoes Public Provident Fund Selvamagal Postal Life Insurance How can I help you Ok let me fill the form for you Let me check your pay in slip Good you have filled it correctly You can deposit your money in counter Good Here is your pay in slip I am here to deposit money Thanks sir But I can fill it myself Which counter should I go to Here it is sir Thank you sir Save Wisely Every year Kamali and her cousins would visit their grandparents in their native village for the car festival that lasted for three days The entire village will be in a festive mood The children were the most excited The family members and relatives would give the children money to buy sweets and toys The children would buy toys chocolates sweets or packed food items They would spend all the money and never saved the money at all Their grandfather felt that the children should learn to save and use their money wisely So this year he announced that the children should save the money they get over the course of a year and spend it purposefully The children were not at all excited by the announcement Rajan and Mala were the youngest of the kids They did not take the grandfather seriously They spent their money on sweets and toys The other siblings Jayan and Kavery decided to enjoy the festival to the fullest They bought every single type of food available across the shops On the second day Jayan got sick due to food poisoning So he decided to spend the money only on toys The eldest of the kids were Kamali and Senthil They were determined to save the money and use it purposefully So they controlled their desires and saved every rupee they got By the end of the festival they managed to save around three hundred rupees Grandfather was so happy to see their effort Senthil when he went home took his father to the nearest post office and opened a savings account He saved all his pocket money and found new ways to save money like he started to walk instead of taking the bus He kept his stationeries safely so that he did not have to keep buying them He re used his old books to save money Soon his father made him understand that savings is done after using the money for basic needs So Senthil bought new books to take notes in his class Senthil's dream was to buy a camera At the end of the year his father checked his savings and bought him the latest camera with his savings Kamali had a clear plan She had a friend named Anandhi Anandhi‛s father was a flutist They lived in the same street so the girls used to visit each other often On many of these occasions Anandhi used to teach her to play the flute Kamali always wanted to buy a flute At the end of one year she managed to save some amount At that time her father needed money urgently and asked if he could use her savings He promised to return the money soon Kamali gave her savings to her father Although she was proud of helping her father she still wanted to buy the flute She was disappointed Soon it was time to visit the village Everyone was happy to meet each other after one year On the day of the car festival the whole family gathered in the village Everyone in the family shared about the year gone one by one After dinner Senthil brought his new camera and told grandpa how he had saved and bought the camera Grandpa was very proud and happy He congratulated him Meanwhile Kamali‛s father gave grandpa a gift and said something in his ears Grandpa smiled and called Kamali He gave her the gift Her savings were used to buy the gift Kamali eagerly opened the box and found a brand new flute Her eyes were moist with tears The whole family asked her to play the flute Kamali played a song that her friend had taught her Senthil started clicking pictures of the event with his camera Piggy bank is a coin box used by children The real use of a piggy bank is to store coins Piggy banks look like pigs They come in many shapes and sizes In Tamil they are known as Hundial It is a red mud pot We can drop the coins into the pot Once the pot is full we must break the pot and use the coins Start saving with your hundial today This month you have managed to save Rs from your pocket money Fill out the challan to deposit it in your Savings Account at the post office POST OFFICE SAVINGS BANK PO of Account Date Received for credit into year Account No Name Rupees in words by cash Cheque No Dated On Bank for the month s Rs less rebate plus interest on default s Date stamp SB Assistant POST OFFICE SAVINGS BANK PO of Account Date Paid into year Account No of Name Rupees in words by cash cheque No Dated On Bank for the month s Rs less rebate plus interest on default s Balance after deposite Rs to be filled by the SB clerk SB Assistant Date stamp Fill up the withdrawal form to withdraw Rs from your Savings Account WITHDRAWAL FORM PASSBOOK MUST ACCOMPANY THIS FORM IF ACCOUNT STAND AT BO APPLICATION SIDE To be filled by depositor Name of Post Office Date Type of account SB TD MIS NSS etc Account No NATURE OF WITHDRAWAL please Tick Interest Half withdrawal Any other Please specify Please pay to self messenger whose name and signature are given below the sum of Rs In figure Rs In words Balance after withdrawal Rs In figures Signature or thumb impression of depositor Name of Messenger Signature or thumb impression of depositor Required only if payment is required through messenger Initial of PA Initial of APM PAYMENT ORDER For office use only Date Pay Rs In figure In words Signature of Postmaster Date stamp Acquittance For office use only Received Rs both in words and figures Signature of Postmaster Date paid send able continue un dis re pre save countries larder run eat swim Learning Outcome Now I can listen and understand an advertisement fill a pay in slip and withdrawal slip understand the prose and supplementary use prefix to make new words identify and use simple past tense and simple future tense recite poem and identify the rhyming words speak in a bank to deposit money read a passage and understand and it The Best Policy I give the missing thing to the owner or to the police Do you MY LITTLE PICTIONARY foothill a low hill at the base of a mountain throne the chair of the ruler nurture care for and protect something while they grow prison a place where people who do not follow the law are locked up brass a metal made by mixture of copper and zinc The Seven Seeds Long ago there was a kingdom at the foothills of Anaimalai The kingdom flourished in trade and arts under the rule of their king's rule He was respected and revered by all It has been thirty years under his rule now One day the ageing king woke up worried He was getting very old and had no heir to take his place He decided to adopt and raise a child as the heir but he knew that the adopted child must be honest To find the child he held a competition in his kingdom that was open to all The competition had many levels and spanned for nearly six months At the end of it five boys and five girls made it to the very last round There seemed little to separate them; each one of them was intelligent strong and capable The king said I have one last test for you all The one who passes this test will be the winner As you all know the winner will be the heir to my throne He continued Our kingdom depends on agriculture so the new leader must know how to grow plants Here are seven seeds of wheat for each of you Take them home Plant and nurture them for six weeks At the end of the sixth week we shall see who has done the best job of nurturing them That person will be the heir to the throne Can you guess how the king would find the honest kid using the seeds The children took their seeds and hurried home They all got a pot prepared some soil and sowed their seeds The entire kingdom was excited They were all anxious to see who the next king would be One of the finalists was Ani The days stretched into weeks but the seeds failed to sprout Ani didn't know what had gone wrong Ani and her parents were heartbroken She had selected the soil with care put the right manure and very dutifully watered it She had even prayed over it day and night and yet her seeds hadn't grown at all Some of her friends advised her to go and buy new seeds from the market and plant After all they said How can anyone tell if they were the same seeds Ani's parents had always taught her the value of honesty They reminded her that if the king wanted them to plant just any wheat he would have asked them to get their seed If you use anything different from what the king gave that would be dishonest Maybe you're not destined for the throne If so let it be but it would be wrong to cheat the king they told her Ani agreed It had been six weeks now The much awaited day had come The children returned to the palace each of them proudly carrying a pot of healthy seedlings It was obvious that the other nine had great success with their seeds The king arrived He was beaming looking at the children and their pot of healthy seedlings He began walking along the line of pots the children had kept He asked each of them Is this what grew from the seeds I gave you And each of them responded Yes your majesty And the king would nod and move down the line The king finally got to the last one Ani The girl was shaking She feared that the king might have thrown her into prison for wasting his precious seeds What did you do with the seeds I gave you the king asked Your majesty I planted them and cared for them every day I am sorry but they failed to sprout Ani said She hung her head in shame Boo jeered the crowd But the king raised his hands and signalled for silence Then he said Dear people behold my heir The next leader of our kingdom The people were confused Why that girl How can she be the right choice The king took his place on his throne with Ani by his side and said I gave each of them seven seeds This test was not for growing wheat It was a test of character a test of honesty If a leader must have one quality it must be that he or she should be honest People should be able to trust the leader Only this girl passed the test I gave boiled seeds and boiled seeds cannot grow Glossary kingdom a region ruled by a king flourished developed in a healthy way revered respected ageing getting old adopt legally take and bring up leader head nurture care protect and grow anxious eager destiny fate behold see LET US BUILD What sound does the parrot make Kee Kee Kee Did you know that sound is called talk Like that the sounds made by animals have names Come let us learn them Hi i talk beautifully I too will talk Both of us talk let us see what our friend do I chatter I trumpet I roar I moo I hiss i bleat Let us learn some more sounds dogs bark horses neigh donkeys bray rabbits squeak pigs grunt cats mew bees hum ducks quack owls hood frogs croak sparrows chirp cocks crow bray croak bark hum neigh mew Be Honest Amma will often say Be honest all day Still troubles make me fall I want to be truthful to all Amma will often say Be honest every day To say truth when I am wrong I may have to be eighteen To Amma I often say Don’t you hear them lie She says many may lie and go But honesty will help us grow At last I have this to say I don’t lie to this day The trick is the rhyme Let’s try this one day at a time Glossary often frequently troubles difficulty or problem lie a false statement grow improve trick technique LET US KNOW We have already learnt to use a an and the Can you try to fill the blanks below with a an and the These words are known as articles Let us learn how to use them again We use an before words that begin with the sounds of a e i o and u We use a when the words begin with any other sound Why we use an for hour and a for university This is because hour sounds like ox and orange in the beginning so we use an Similarly the word university even though starts with the letter u’has the same sound as yellow or yak in the beginning so we use Write a or an book ant chair egg pot inn flag unicorn We already know that the is used when we talk of a particular thing The article the is also used before the names of unique things like mountains rivers lakes seas oceans famous books and directions Fill in the blanks using a an and the Mountains the Himalayas Rivers lakes waterfalls the Vaigai Seas Oceans the Indian ocean Famous Books the Thirukural Islands the Directions the East The Why don't we use an for home and not a for umbrella Andaman Nicobar LET US LISTEN Eat a complete breakfast Comb your hair Wear your clothes Exercise Greet the day Breathe Shave your face LET US SPEAK Verbs are action words they tell us what action is happening or going to happen What is the doubt An action is anything we do Like now I am standing you are sitting We eat during the lunch All such words are action words Okay miss Welcome Miss I have a doubt What is an action miss Got it miss Thank you In today’s class we are going to learn about verbs LET US READ The Mistaken Plate Once upon a time there lived a merchant who sold things made of brass and tin He used to travel across the rivers and mountains to sell He usually travelled with another merchant who also sold things made of brass and tin They also used to buy things made of different metals to melt and use The second merchant was always greedy as he tried to pay as less as possible One day when they went to a town they divided the streets of the town They did not want to disturb each other while selling They moved through the streets they had chosen and called Utensils made of brass and tin for sale In an old house there lived a woman and her granddaughter They were once a wealthy family but now lived in poverty They only had one plate left as a memory of their wealth The grandmother had kept the plate in memory of her husband The greedy merchant passed this house saying Utensils made of brass and tin for sale The granddaughter heard him and said to her grand mother Ammama please buy something for me She replied Kanna we do not have money to buy anything We do not have anything to trade with The granddaughter said We have that one old plate that we don't use Let’s see what the merchant will offer for it We can get something we can use Ammama called the merchant and showed him the plate She asked Will you take this plate and give any of your utensils The man took the plate and scratched it with a needle He found that it was a golden plate He said What is it worth Not even one rupee He threw the plate on the ground and walked away Both the merchants completed their streets They had decided that either of them could go to any house that the other did not sell in The first merchant passed the same old house and called Utensils made of brass and tin for sale The little girl again asked her Ammama to check She said Kanna the first merchant threw the plate and went away I have nothing else to offer The girl replied Grandma that merchant was angry This merchant looks nice Maybe we will get something Ammama asked the girl to call the merchant and show the plate The merchant took the plate in his hands and found that it was made of gold He said I am not rich enough to buy this plate This is a gold plate Ammama said Are you sure This is gold The other merchant threw this on the ground and went away The merchant said I do not know why he did that If you wish to sell it take all the dishes you want The little girl took some dishes of her choice but the merchant was not happy So he gave all his money his donkey his cart and his wares to Ammama He only kept eight rupees for the ferry home He quickly went towards the river He paid the eight rupees to the boatman to take him across the river Soon the greedy merchant went back to the old house He called the girl and said I've changed my mind I will give you ten rupees for it Ammama said You considered the plate worthless but another merchant has paid a huge price for it and took it LET US READ ALOUD Read the passage and colour one bag each time you read There lived a poor but an honest farmer in a village He supported himself his wife and seven children using his small piece of land One day while he was walking in his field he found a bag of gold He took it home and showed it to his wife His wife told him to keep some of the gold He told his wife that honesty is the best policy He tried to find the person who lost it At last he found that the owner of the bag and gave it back The rich man took the bag and thanked him LET US WRITE Miss Meena has asked the class to write a story as a project Let us see what the children in her class are doing Hi How are you I am good And you I am fine Is your project ready Yes it is What about yours I have not done it yet Can you give me some ideas for it will learn to write dialogues Step Look at the question and understand the topic Step Read the dialogues and understand what they are talking Step Think what you will say if you were talking Step Write it Learning Outcome understand the prose and supplementary identify and use the sounds of creatures in sentence use the articles a an and the complete a dialogue by writing listen and respond to the audio recite the poem and identify the rhyming words read a passage and understand the main idea clarify my doubts in class Creativity Around Me I love to paint Do you MY LITTLE PICTIONARY handloom a manually operated loom skeins a lengthy thread loosely coiled and knotted yarn spun thread used for weaving or sewing canvas a cloth used for painting carved cut in order to make an object or design LET US LEARN It was a hot afternoon in the quiet village of Periya Negamam near Pollachi The village has tiled roof houses Bala and his family lived in one such house He sat under a tree waiting for his father He was going with Appa on a long journey A fly buzzed near his ear The pleasant shade of the tree along with the steady click clack of the handlooms from the huts nearby made him feel sleepy He wondered if he could catch some sleep before Appa arrived Bala like most of the children in his village went to school but always wanted to learn more about things related to their family profession weaving Veera thatha had made math easy for Bala by using skeins of yarn in bunches sometimes adding all the blue skeins and subtracting the yellow skeins and then doubling the reds and taking away the greens Bala thought This was a fun way to learn Math Bala Spins Magic Bala’s family came from a long line of handloom weavers They had perfected the art of drawing dying warping and weaving the yarn But it was a hard work Unless Bala his mother father sisters and cousins helped with the work Appa could never weave the lengths he needed Bala would often see Appa and Amma weave bundles of cotton into beautiful sarees with checks or patterns He hoped to weave someday He would also help Amma and sisters roll press and pack the sarees Bala wondered Amma why you never wear the beautiful sarees we make Amma said I can do that only if we become a very rich family Bala woke up suddenly as he felt someone tap his head Are you ready to go asked Appa Yes Appa said Bala and started counting the bags around him Bala was going with Appa to Chennai to help him carry the sarees Appa said We will get a better price for the sarees if we sell directly to ladies in Chennai than to traders in Pollachi or Coimbatore They walked to the bus stop and had to wait for nearly one hour for the bus It took them to Coimbatore junction and from there they left in a train to Chennai The train journey was not very comfortable Don’t worry Bala Our return will be more comfortable as we will be able to reserve tickets said Appa They reached Chennai and went to Purasaiwalkam where Appa’s friend lived The next morning Appa was ready with places to visit to sell the sarees Bala could not read the big instructions in the sign board and hence held his father tightly Soon they reached a big house after what seemed like many hours The guard at the door let them in They sat in a big hall and unpacked the sarees A young boy saw them and called out saying Mom There’s a man with two bundles to meet you Appa was showing the saree to the aunty and trying to sell it to her He made each saree sound special and unique He even draped the saree over him to show the design Soon the other boy asked Mom can I ask the boy to come and play with me What is your name asked the boy Periya Negamam Balakumaran said Bala What’s yours Nithin said the boy Nithin’s room was full of toys Nithin let Bala play with all the toys Most toys had some electrical control Since Bala’s home does not have electricity he did not know to play with most of the toys In one corner Bala saw a spinning wheel Now this was a toy he knew to play with Do you know what to do with it I don’t know to play with it said Nithin This is Rattai Do you have some cotton asked Bala Nithin did not have Bala dug Appa’s bag to get some cotton Bala took the cotton fluff and attached it to the spinning wheel and turned the wheel all the while You can do magic shouted Nithin Can you teach me Not like that Do it this way Here hold this Spin this said Bala Bala had a wide smile across his face Nithin struggled but soon learnt to spin Soon they stepped out Appa had sold many sarees to the aunty Mom Mom He taught me magic said Nithin Aunty laughed and said Well naturally his father is a magician too A weaving magician Yes I will tell all my friends in school that a magician from Periya Negamam taught me this magic Glossary weave form by interlacing long threads substract take away from another to calculate difference warp twist out of shape uncomfortable causing physical pain drape arrange loosely LET US BUILD Hey look A truck is crossing I think both words can be used Oh But this is not a truck This is a lorry taxi chocolate biscuits football cab candy cookies soccer eraser rubber movie film dust bin trash can torch flashlight post mail flat apartment purse wallet game match motorbike motorcycle elevator lift sink washbasin queue line subway closetpantschips holiday trousers curtains fries underground vacation LET US SING The Painter Sitting on the cold mud floor She paints the valley and hill Giving life to the canvas shore Sees the brush bend to her will Her canvas used to be colourless Until she learnt that her brush’s strokes Are not always aimless The flow of paint never chokes She dips her brush To draw the big black panther Her legs never in a rush She moves them like a dancer Glossary bend shape into a curve strokes gentle movement of hand chokes stops dip put something in liquid LET US KNOW The rabbit has long ears The word long tells what kind of ears the rabbit has Long describes the rabbit’s ears The house is green The word green tells us the colour of the house Green describes the house’s colour Kasthuri has three colourful balloons Three and colourful tells us more about noun baloon Three describes number and colourful describes quality Words that describe noun are called adjectives The adjectives give more detail about the noun's size shape colour and count brave shady spicy long sweet fast long soft round small short blue yellow three tall hungry Clever stormy beautiful dusty good hot bright cloudless honest lovely fat tall boy a wind a flower a friend a sun A brown and white puppy is having fun Wild animals are in the thick forest A cute boy is painting with green colour A naughty boy is riding horse with his sleepy dog LET US LISTEN It is a breakable pencil True False It has double spring mechanism True False It absorbs the pressure True False You can’t hold the pencil hard True False It gives confident and peace of mind True False LET US SPEAK How can I help you I couldn't find the book I was looking for Did you search the correct shelf Yes It should have been there but it isn't Will you be getting another copy anytime soon Would you be able to reserve it for me Thank you very much Someone may have taken it I'm sure we will I will reserve it How are you doing today I need help with something I can't find the book I want I need to return a book I want to check these books out I am looking for Can you show me the shelf Thank you I know the section See you That will be all I know the due date I will return the books within the due date LET US READ The Wooden Toy Once there was a village circled by mountains and many big trees It was the home to many wild animals especially wild dogs They used to hunt not only the animals in the forest but also the domestic animals in the village This affected the farmer who lived near the edge of the forest with his son the most Mugund was the son of the farmer He was good at creating many things Every day he went into the forest to collect dry wood He used to make dolls using the dry wood Mugund’s art was very famous in the town Children used to play with his dolls mostly known as marapachi bommai Long ago the wild animals hunted Mugund's mother That incident made Mugund hate wild animals In memory of his mother he carved a wooden statue of his mother and prayed every day One night he woke to hear his mother's words Do your part in eradicating the use of plastics through your art because plastic is a great risk to the environment So he started selling wooden toys at a cheap rate He was also clever at making handicrafts He learnt the art from his grandfather In the beginning he made dolls for children using dry wood Then he was making statues of any photo that was show to him His father owned nothing but a flock of sheep and a piece of land Also he worked hard to keep the farm running He was rearing some animals like goat cow and hen His father took all the cattle to pasture every day When he returned home he would always count all the animals One day when his father returned he saw that some animals were missing His father was unable to sleep because the losses of the animals kept increasing Mohan was worried about his father He had to do something He had an idea He made a wooden drum because the massive noise from the drum would help his father to drive out the wild animals Mugund's father was happy because the drum threatened the animals But the animals came as soon as someone stopped drumming His father couldnot be awake all night Soon the wild animals started attacking only at night The restlessness and worry made the father ill The next day Mugund went into the forest to find a hollow log of cedar But he could not find it His friend told him to cut the raw wood But he refused Mugund felt that his mother was still living in each tree At last they found some wood and brought it home Mugund went to bed a little early His father was beating the drums to drive all the animals away Suddenly the sounds of the drum stopped Mugund's father was tired and he slept Nearly twenty five animals got attacked that night Then Mugund Think why it is a good decision not to cut and use the living tree thought of designing some wooden tigers and some wooden people to place on the farm So the animals would be afraid as the people were still awake From that day onwards the farmer and his son had a good sleep Most of the landowners ordered wooden animals from Mugund They wanted to save their crops and farms Soon Mugund started selling toys to all corners of the land This led to a demand for wooden dolls over plastic ones He was happy that he was able to take part in saving the world through his art LET US READ ALOUD Trees help us in many ways The colour green is calming and heals your worries By planting and caring for trees we help improve our surroundings as they give fresh air When air is dirty the people of Delhi suffered a lot But people of Madhubani district in Bihar have shown how art can be used to make our air clean So that people made paintings on trees to stop people from cutting the trees Peacock is a beautiful bird It has long colorful feathers The male bird dances beautifully Peacock is our national bird I like Peacock as it has colourful feathers Learning Outcome I will never give up until I basket the ball Will you MY LITTLE PICTIONARY award a prize given to recognize an achievement technologist an expert in any technology shock cause someone to feel surprised and upset magic tricks such as making things disappear and reappear performed as entertainment rub move one object against another LET US LEARN Farhan and his father are reading the newspaper the favourite part of his morning He gets up brushes his teeth drinks his milk and sits with his father to read the news every day Abbu what is this y o u g leaders award It is young leaders award It is given to only people from around the world every year It recognises the effort they have taken to make the world a better place Wow Only I am so proud that an Indian has got this award Do you know why he got it No can you please tell me I am happy that you asked It is very important to not only be proud when we see or hear such news We should also Learn from it Yes Abbu I remember this Very good Kartik is a technologist who has not let his disability stop him from learning Not only that he has empowered other people with disabilities to be successful IT engineers What disability The Struggling Star Kartik is blind Let me tell you the story of his childhood Kartik studied in Delhi Public School in New Delhi He was a smart and bright student Kartik did well in all subjects but he liked science the most Everything was good for Kartik till his standard After scoring full marks in standard public exam Kartik wanted to study Science in and standard Farhan I am sure he got it He got full marks in exams Father No Actually the government rule in Delhi did not allow blind children to study science after standard Farhan I do not think that’s fair Everyone should be able to study what they like Father This is what Kartik also felt He loved Science and he wanted to study that He refused to let his disability come in the way He challenged the government and held campaigns to get permission Finally after nine months he got permission to study Science Not only that he made sure that all blind students have permission to study Science if they want Farhan Wow months is so long I am sure I would have given up Father Change takes time Farhan We should take work hard and be patient if we want to see change happen around us Like Kartik was the first blind student in India to study Science What did Kartik do after that Kartik’s dream and passion were never limited His love for Science helped him get more than in his board exam His dream was to study in an IIT IIT is one of the best colleges in our country I want to study in IIT too Father Good But only if you want to study Science Every subject has different best colleges We will talk about that some other day So as I was saying he wanted to study in the IIT But none of the sixteen IITs in India enrolled him Farhan What Again Father Yes Kartik was sincere and learnt well He was also very good at Science But our colleges did not recognise his talent and treated him unfairly Farhan Then Did he change their mind too Father Yes he did After many months he made the colleges open their doors to blind students This helped nearly blind students to study engineering in these colleges Farhan He must be a strong person Father Yes he is strong He is strong in his beliefs and learnings He is strong in the effort he puts What do you think he did after that Farhan He must have studied in the IIT Father No he did not He got an admission to study at Stanford University in the USA It is one of the best colleges in the world He went there and studied computers Farhan Amazing Father He also started two more companies that aim at helping children with disabilities reach their full potential He believes that education and technology are important to ensure children learn and sustain themselves He says that he will try for many more months and years to come to make sure that all the crore people reach their full potential Farhan He is inspiring I will also work hard and achieve my dreams even if I don’t always have the support I need Father Very good If we work hard there will always be support for us Sometimes the support comes from outside but many times it comes from within us Now go get ready It is time to go to school Farhan Yes Abbu Glossary recognize to know accept someone or something empowered to give the authority or power campaigns activities for some specific purpose potential talent ability sustain keep going inspiring to influence attract LET US BUILD It is actually a bull and a cow grazing in the fields It is like a boy and girl Two cows are grazing in the fields Bull Cow Gender of a noun indicates whether a person or animal is male or female Masculine nouns are words used for men boys and male animals Feminine nouns are words used for women girls and female animals As Ranjani introduces her family members to us we can identify the masculine and feminine nouns in the family Hi friends Meet my Grandfather This is my Grandmother LET US SING Never give up The fisher who draws his net soon Won’t have any fish to earn The child who shuts up his ears soon Won’t have the chance to learn One who tackles the huddles to fend May win the world at the end Don’t feel down when you are slow Keep moving and let your life glow Let us persevere at work or play And never give up all day Glossary chance opportunity fend to defend persevere put effort continuously sincere truthful tackle to solve earn glow fend day slow learn play end LET US KNOW Present continuous tense is used to describe the actions that are happening at moment of speaking or unfinished actions Present Past Past Participle Present Participle play plays played Played playing The present participle form is used in present continuous tense with auxiliaries am is and are Come let us use it I am playing cricket We are playing cricket He is playing cricket You are playing cricket She is playing cricket They are playing cricket It is playing cricket She is speaking over phone now They are watching tv She is going to Trichy on Saturday Mary is going to a new school I read the story She plays the piano next term Pinku works in a power plant Ananthi helps her friend Janu They draw picture of a boy LET US SPEAK Hey there is no school from tomorrow Wow How will you go What will you play We will go by train Next we will visit our temple there and come back I am waiting to meet all my relatives there I will come back and do it in morning Sure will See you after the holidays I will first finish my homework then I will play with my friends all day I am sure we will race with our cycles and play kabaddi What are you going to do First we will go to our village Note to the teacher Make the children know how to express their holiday plan and experience What else will you do What about your LET US READ The Magic Pencil Chris was a little boy who enjoyed going to school and doing all sorts of things except art and writing Using brushes and pencils was not easy for him So his artwork was never a happy ending and he would give up quickly But one day Chris found a pencil of such lovely colours that he could not resist and he tried to draw a circle As always it did not go well he was about to throw the pencil away Just then his drawing began to speak to him Hey Are you going to leave me like this At least draw me a pair of eyes said the drawing Chris was shocked but he managed to draw two little spots inside the circle Much better now I can see myself said the circle looking around at itself Ahh What have you done to me I don’t draw very well said Chris trying to make excuses OK No problem said the drawing I am sure that if you try again you’ll do better Go on rub me out So Chris erased the circle and drew another one Like the first one it was not very round Hey You forgot my eyes again Oh yeah Hmm I think I’m going to have to teach you how to draw until you can do me well said the circle with its quick squeaky little voice Chris who was still shocked thought that this was a good idea He immediately found himself drawing and erasing circles The circle would not stop saying Rub this out but carefully; it hurts or Draw me some hair quickly I look like a lollipop and other funny remarks After spending the whole afternoon together Chris could now draw the little figure much better than most of his classmates He was enjoying it so much that he did not want to stop drawing with this crazy new teacher of his Before going to bed that night Chris gave his new teacher a hearty thank you for teaching him to draw But I didn’t do anything answered the little drawing Don’t you see that you’ve been practising a lot and enjoying it all the while I bet that’s the first time you’ve done that Chris stopped to think The truth was that he had drawn so badly because he had never practised more than ten minutes at a time He had always done it angrily So what the little drawing had said was correct You are correct but thank you he said He carefully kept the pencil in his school bag before going to sleep The next morning Chris jumped out of bed and went running to find his pencil but it was not there He searched everywhere but there was no sign of it The sheet of paper on which he had drawn the little figure although still full of rubbing out marks was completely blank Chris was worried and he did not know if he had spent the previous afternoon talking with the little man or whether he was dreaming all of it So to settle the matter he took a pencil and paper and tried to draw a little man Say whether he can draw well now If yes why It turned out not bad at all except for a couple of rough lines He imagined his little teacher telling him to rub and fix them Chris gladly rubbed out those bits and redrew them He realised that the crazy little teacher had been right it made no difference whether you had the magic pencil or not To learn to do things you only needed to keep trying and to enjoy while doing so From that day on whenever Chris tried to draw or paint or do anything else he always had fun imagining his drawing telling him Come on my friend do me a bit better than that I can’t go out looking like this LET US READ ALOUD The school was decorated for the Annual Sports Day The children came to the running track to cheer the runners The next event was meters running Megala was in the race She wanted to win the race but the other runners were district and divisional winners The race started All had to finish two laps At the end of the first lap Megala was in the fifth place Suddenly she fell on the ground Everyone ran to help her But before that she got up and started to run All children and teachers cheered her She had come last but the headmaster gave her a special prize homework See you Okay Make sure you have time to finish it LET US WRITE Once a cap seller slept under the tree They wore the hats and started making fun of him by imitating him The monkeys came down and took all the caps He threw his cap down and the monkeys also did so Finally he collected his caps and went away happily Listening Passages Unit Emmet Morning apartment Emmet Good morning doorway Emmet Morning ceiling Emmet Good morning floor Emmet Ready to start the day Emmet Ah here it is Instructions to fit in and have everybody like you and always be happy Emmet Step Breathe Okay got that one down Step Greet the day smile and say Good morning city Step Exercise Jumping jacks hit them one two three I am so pumped up Step Shower Step Shave your face Step Brush your teeth with the rough little food comb Step Comb your hair Step Wear your clothes and that's it Check Step Eat a complete breakfast with all the special people in your life Hey plant what do you want to do this morning Watch TV Me too Unit Sometimes harmony can be disrupted by the simplest things like the breaking of your lead Introducing DelGuard a cleverly designed unbreakable mechanical pencil from the visionaries at Zebra pen DelGuard features a patented double spring mechanism that absorbs the pressure no matter how you hold it or how hard you press With strength comes confidence and peace of mind Find zen in your pen Zebra pen Unit Marty Thank you for tuning into maple leafs worldwide weather report we'll be checking on the weather all over the world with Tim Tiger First Canada how's the weather Tim Tiger It's snowy It's snowy in Canada Marty Thank you Tim Next Mexico Tim how's the weather Tim Tiger It's sunny It's sunny in Mexico Marty Thank you Tim Next England Tim how's the weather Tim Tiger It's foggy It's foggy in England Marty Thank you Tim Next France Tim how's the weather Tim Tiger It's rainy It's rainy in France Marty Thank you Tim Next Russia Tim how's the weather Tim Tiger It's cold It's cold in Russia Marty Thank you Tim Next Australia Tim how's the weather Tim Tiger Hold on I'm coming It's hot It's hot in Australia Marty Are you okay Tim Tim Tiger I'm good Marty What's next Marty Next is Japan Tim Tiger Japan Alright Marty Next is Japan Tim how's the weather in Japan Tim Tim Tiger I'm coming Marty Tim Tim Tiger Now I'm on my way Oh I'm almost there It's cloudy It's cloudy in Japan Marty Thank you Tim Next is Mars Tim Tiger Mars Marty Yes Mars Tim Tiger No Marty I quit Well thank you for tuning in to maple leafs worldwide weather See you next time Science Unit My body Internal organs There are some body parts we can see such as eyes nose ears hands and legs Such parts are called external organs There are some body parts such as stomach lungs and heart that are inside our body We are unable to see them These body parts are called internal organs Brain is an important organ of our body and it is protected by the skull It has three main parts namely Fore Brain Mid brain and Hind Brain Brain is the commanding centre of our body and it helps us to think and perform various actions Every action that we do like moving our hands sitting or walking is possible only because of our brain The human brain weighs about kg Lungs are a pair of spongy sac like organs located in the chest They help us to breath When we breath in we take in oxygen from air through the nose and pass it to the lungs The lungs expands becomes big in the position When we breath out we give out carbon dioxide from the lungs through the nose into the air The lungs contract becomes small in the position Stomach is a ‘J’ shaped bag found below the lungs It breaks down food items and gives us energy It contains special juice to breakdown food into energy Our heart is the pumping organ It Pumps blood to all parts of the body It lies in between the lungs almost in the centre of the chest It is made up of muscles We have two kidneys They are bean shaped organs The kidneys purify blood by filtering excess water and toxins Our body is made up of bones and muscles Press your upper arms The portion that feel hard to touch is the bone The portion that feels soft to touch is the muscle The bones give us shape They are the frame for our body and allow us to jump run or just lie down Bones also protect the internal parts of the body Muscles are the soft parts that cover our bones They help us to move different parts of our body by contracting or relaxing like a rubber band In order to maintain healthy bones we need to have healthy food such as milk cheese and eggs For strong muscles we need to exercise and stay active Teeth The teeth are the hardest parts in our body They are helpful for cutting and chewing the food The teeth are found inside our mouth We develop two sets of teeth in our lifetime Milk teeth The first set of teeth starts to develop from the age of six months They are called milk teeth and they are in number At the age of or the second set of teeth grow after milk teeth fall Permanent Teeth Second set of teeth are called permanent teeth There are four types of teeth Incisors Canines Premolars and Molars If permanent teeth fall we cannot grow one more set of teeth So it is important to take care of our teeth There are permanent teeth As we learnt it is important to take care of our teeth and also our mouth If you do not care of your mouth and teeth you will have problems with eating and speaking It is important to take care of our teeth and mouth Brushing teeth eating healthy food and regular dental checkup keep us healthy We should brush our teeth twice a day Take plenty of fruits vegetables and dairy products Drink water or milk instead of sugary juices Eat candy cake and ice cream as less as possible Change toothbrush once in every three months Avoid sticky food Brush twice a day After getting up and before going to bed Rinse your mouth with water every time after you eat Researchers believe that use of neem toothbrushes is the reason behind the bright smiles and healthy teeth of Indian villagers Indians traditionally chew neem twigs to keep their gums and teeth healthy Good Touch Bad Touch and Don’t Touch Good touch and Bad touch are the words most commonly used to explain what touch is okay and what is not okay This helps us to understand when to tell a safe person about bad touch and ask for help Good touch is a touch that cares for us or makes us feel safe Bad touch is any touch that we don’t want or makes us feel scare Let us learn how to keep ourself safe MY BODY IS MY OWN I never allow others to Misuse it Never be afraid to shout and say Don’t touch me It is never your fault Unit Matter and materials Materials Everything in the universe is made up of matter We need to explore many different materials to make sense of our world The matter from which a thing is made of is called Material For example Chair is made of wood Eraser is made of rubber Candle is made of wax Properties of materials We can measure see or feel the materials Different types of material have different properties that make them useful for various purposes Most materials have more than one property They can be hard or soft shiny or dull smooth or rough and flexible or rigid Hard and Soft Materials Materials which cannot be easily compressed cut bent or scratched are called hard materials Example Brick bone and steel Materials which can be easily compressed cut bent or scratched are called soft materials Example Foam clay and skin Shiny and Dull Materials Materials which reflect the light well are called shiny materials Example Stainless steel gold and diamond Materials which do not reflect the light well are called dull materials Example Candle paper and jute bag Rough and Smooth Materials Materials which have ups and downs on their surface are called rough materials Example Brick rock and tyre Materials which do not have ups and downs on their surface are called smooth materials Example Mirror Silk cloth and tiles Flexible and Rigid Materials Materials which can be bent or stretched easily are known as flexible materials Example Rubber band electric wire and cycle tube Materials which cannot be bent or stretched easily are known as rigid materials Example A stick wooden scale and stone Waterproof materials Materials that do not allow water to pass through them are called Waterproof Materials Example Raincoat and aluminium foil of tablet strip Transparent Translucent and Opaque objects Some objects allow light to pass through them This helps us to see through them as the window of a bus Let us see how different objects behave with light Transparent objects Transparent objects allow the light to pass through them So we can see other objects clearly through Transparent objects Examples Air glass and pure water Translucent objects Translucent objects allow some light to pass through them So we cannot see objects clearly but we see them as blurred images through them Examples Paper soaked in oil snow and vegetable oil Opaque objects Opaque objects do not allow light to pass through them So we cannot see through these objects Examples Wood stone and metals Reflection of light We sea the world around us with the help of light Where do we get light from Light may come either from the Sun or from other sources like an electric lamp or a bulb The objects that give off light are called light sources When light falls on a transparent material it passes through it However when light falls on a polished surface of an opaque material it does not pass through it It bounces back The bouncing of light by any smooth or polished surface is called reflection When you look into the mirror you can see your own face on the mirror What you see is a reflection of your face in the mirror We also see reflections of other objects that are in front of the mirror These reflections are formed by light and they are called images Unit Work and energy Students you have studied about force in your lower class What is Force A force is a push or pull that moves an object at rest or stops an object in motion There are different kinds of force What are they Frictional force Gravitational force Muscular force and Magnetic force A force can cause an object to change its shape speed or direction Work An action in which one exerts a force to move an object is known as work Two main conditions are needed for work to be done A force should act on an object and Object should move from one place to another When the force acting on the object makes it move work is said to be done Energy A man pulls a luggage To do so he needs some energy What is the source Food gives energy to humans The car moves by the obtained from the burning of fuel The escalator moves by using electricity as energy Energy is defined as capacity of doing work Energy must be transferred to an object in order to do work Types of energy are Mechanical Energy Chemical Energy Thermal Energy Light Energy Electrical Energy and Solar energy Renewable sources of energy are replaced naturally over a period of time We can keep using these sources for a long period of time Since the beginning of human life we have been using these resources We use these resources for light transport cooking heating Eg Sun Wind and Water The resources which are not easily replaced once used are called the non renewable resources Eg Petrol Coal and Natural gas Simple machines In our daily life our effort is saved with the help of some simple machines We draw water from the well with the help of a wheel and a rope Observe the picture and discuss Is lifting a box is easier than rolling it on a ramp Simple machines are tools which are used to make our work easier Some examples for simple machines are pulley wedge inclined plane screw lever wheel and axle Pulley A pulley is a machine made up of a wheel with a cut around it A rope or chain passes around the pulley It rotates in the direction with more force Eg crane An inclined plane An inclined plane is a flat sloping surface with one end higher than another Eg ramp slide and slope for wheel chair Wedge A wedge is a tool with a sharp edge which can be used to split materials It is used to break wooden logs into two pieces Eg knife scissors and axe Screw The screw is used to raise weights and to hold objects together Eg pencil sharpener screw jack bottle cap and windmill Wheel and Axle Wheel and axle consist of a wheel attached to a small rod so that these two parts rotate together Eg bicycle wheel door knob grinder axle wheel Lever A lever is used to multiply the force we give on an object Eg see saw nut cracker and plier Types of lever To understand the lever we must know the following terms Load is the object on which the force is applied Effort is the force we apply on the lever Fulcrum is the point on which the lever rotates Lever is classified into three types according to where the load and effort are located with respect to fulcrum Class I Lever When the fulcrum is between the effort and the load it is known as Class I lever Eg scissors pliers seesaw Class lever When the load is between the effort and the fulcrum it is known as Class lever Eg wheel barrow lemon squeezer nut cracker Class lever In this lever the effort is between the load and the fulcrum Eg stapler tongs broom stick hockey stick Unit Science in everyday life Milk Milk is produced by Mammals for nourishing their young ones Milk from many animals is Milk is primarily obtained from mammals It is also obtained from other sources too Examples Soya milk nut and seed based milk Milk contains water sugar protein fat vitamins and minerals People all over the world get their milk from mammals like sheep goat camel donkey horse yak water buffalo reindeer and even moose Based on the amount of fat present in the milk it can be classified as Whole milk Low fat milk and Fat free milk Sugar Milk has sweet taste because it has a special sugar called lactose Protein It helps to build muscles Fat Fat present in the milk is called butter Butter is more delicious than any other fat Vitamins Vitamin in milk helps to maintain the bones Minerals Calcium is a mineral It helps to build healthy bones and teeth Benefits of milk It strengthens bones and teeth It maintains blood pressure It reduces the risk of heart disease and It is a source of energy Food materials Food is one of the basic needs of our life Food provides energy It is usually made by cooking plants or animals It contains essential nutrients to keep our body healthy Needs of food Gives energy Promotes growth Improves immunity and Helps our body repair itself Food can be classified into two types Raw Food Raw food is the food that does not have to be cooked to eat Examples Fruits carrot ground nut seeds Cooked food Cooked food is the food that has been cooked to eat Examples Rice vegetable curry bread Cooking Do you know how many food items are there that you will not be able to eat without cooking Cooking is important It makes food suitable for consumption Cooking causes many useful changes in food It makes nutrients ready for digestion It helps to make food in the desired texture flavour and taste and It destroys harmful microbes Baking of Bread Biscuit and Cake Bread Bread is a common food item prepared by baking the dough It is an important source of energy for sick people It is also one of the ancient foods made by humans Bread is a low fat food Bread has the nutrients required for normal development and good health To make bread we need wheat flour yeast water sugar and salt Bread spoils six times faster when kept in fridge than at room temperature Biscuit Biscuit is a small flour based baked food It is generally made of wheat flour or oats and sweetened with sugar The main ingredients of biscuit are flour sugar butter water milk baking powder and flavours Biscuits are salty or sweet Some biscuits have cream in between Biscuits are made with baking powder to make it airy Cake Cake is a baked dessert It is like a sweet bread There are many varieties of cake with specific ingredients We use cake during celebrations The common ingredients of the cake are flour sugar eggs oil baking powder and flavouring agent Gadgets Think of the electronic devices we use everyday The phone that we use the camera that comes with us on every vacation the TV that we watch for fun all these devices that we use are called gadgets A gadget is a small electronic machine or device which does something useful Number of gadgets have changed our lives They make our life enjoyable Examples Laptop Phone Camera Pen drive and Speaker Smart phones Apart from communication smart phones have the ability to access the internet and store files take photos track location and much more Portable music player It stores and plays thousands of songs We can listen to songs anywhere anytime Tablets People use tablets to read books play games and watch videos Pen drive It is a small gadget used for storing and transferring any type of file in from a computer Electric torch Portable hand held electric light Torch is used to provide light in the dark places when it is switched on Grade term science book SCIENCE TERM GREEN ENVIRONMENT Learning Objectives After the completion of this unit students will be able to understand the importance of waste management understand the role of Rs in waste management learn how to conserve the environment by practising good habits recognise eco friendly materials Introduction Nature provides us a lot of useful things But human beings exploit the natural resources and create more trash These unwanted materials thrown away are called wastes They can be solid liquid and gas They are produced from households industries hospitals etc These unwanted materials pollute our environment Waste Management Sristhika Madam I see a lot of waste things in our surrounding Is there any way we can reduce wasting things Teacher Yes There are many ways to reduce waste Reducing the waste is the first and most important step in waste management Vimal What is waste management Madam Teacher It is the step we take to handle our waste and to make sure our environment does not get dirty and polluted Waste management deals with both biodegradable and non biodegradable waste Janani Can you please explain the steps in waste management Madam Teacher Yes sure There are four steps in waste management They are Separation of Waste Waste collection and transportation Waste recycling and composting Waste disposal Waste collection and transportation Once we separate our waste in our homes and schools it is important to keep it ready to be picked up by our municipality or corporation Picking up the waste is called Waste collection Moving the waste from one place to another is called Transportation Waste recycling and composting Biodegradable waste is taken to a place where it can be converted into compost Compost makes the soil fertile Non biodegradable waste that can be turned into something new recyclable waste and valuable is taken to recycling factory Separation of Waste This is a very important step in waste management It means to sort or divide the waste into different waste bins Each bin should have different type of wastes It is good to separate waste in three different bins Green for biodegradable waste Blue for recyclable waste and Red for non recyclable waste Non biodegradable waste can be classified as recyclable and non recyclable Biodegradable Recyclable Non recyclable Waste disposal The waste that cannot be recycled non recyclable waste needs to be sent for final disposal This waste is sent to an open dump or landfill Collection Sorting Recycling Transportation Rahul How can we manage waste at home Teacher There are many things we and our family can do to manage waste at home Three R’s help to manage waste Gomathi What are the three R‛s Madam Teacher The three R’s stand for REDUCE REUSE RECYCLE We must first reduce then reuse and finally recycle THE R‛s Reduce is to make or use less materials This is to make buy and use things that create less waste It is the best thing to do first and it is easy to ask yourself How can I make less waste Some examples are given below You can buy a refill pen and change the refill only when the ink is used up While shopping with your parents you can carry a cloth bag In this way you can avoid buying plastic carry bags Turn off lights and fans when you leave a room Close the tap while you are brushing your teeth ACTIVITY List out four things that you can reduce reuse and recycle at home or school Reduce Reuse Recycle Reuse is using a thing repeatedly for the same or for another purpose By reusing we throw away less waste and do not dispose it in a dump Reuse saves money energy and time Here are some examples of how you can reuse materials at home You can reuse old clothes as a rag to clean your home or even wash your cycle You can reuse jam and pickle jars to store things You can donate old clothes that still look good to poor and needy children You can reuse waste and make something new You can reuse a plastic bottle as a pen stand or a bird feeder Recycle is to take materials from things you throw away and make new products by using them Recycling takes energy and time but saves the amount of ‘new‛ resources we need to make things water minerals wood ACTIVITY Using old water bottles make different things such as Bird feeder Flower vase Pen holder and Wall hanging as shown below Here are some examples of how certain materials are recycled Old newspapers note books and magazines are separated and sold to a scrap dealer They will be made into new papers PET bottles are recycled into plastic threads and then used to make sports T shirts Old glass bottles and broken glass pieces are melted to make new glass Broken metal items like tiffin boxes and plates are melted and made into new metal products like toys Conserve our Environment Rahul What is meant by conservation of environment Madam Teacher Conservation of environment means to protect all things found in nature It means that we have to use our Earth‛s natural resources like water soil minerals wildlife and forests carefully Vimal How can I conserve the environment Teacher Everyone can conserve the environment by following good waste management habits What is the first ‘R‛ in the three R‛s Kanimozhi Reduce Teacher Correct We should first try to reduce the waste we make Thus we can easily conserve the environment We can also separate our waste at home to keep our place litter free and clean Waste Separation Waste at home should be separated into biodegradable recyclable and non recyclable waste Waste like left over food vegetable waste which are broken down naturally should be collected in a separate litter box Materials which cannot be decomposed should be placed in separate dustbin Paper waste glass waste and aluminium waste which can be recycled into new useful products should be kept in separate box Glass containers for food and beverages are recyclable and can be recycled endlessly without loss in quality or purity ACTIVITY Biodegradable Recyclable items Non recyclable items Biodegradable Recyclable Non recyclable Study the images below and write down three items you have at home in each category of waste Sristhika I have heard the news that plastic is harmful to our environment Is it true Mam Teacher Plastic itself is not bad but we are using too much of it Over use of plastic causes pollution Plastics that are used only one time causes pollution It is good to avoid or reduce one time usable plastics The best way to start is to ask yourself this question Is this plastic item going to be used one time or many times If you can use it only once then try to avoid buying such plastic items Plastics in Tamil Nadu Tamil Nadu is leading the way in India by banning some one time use plastic items List of items banned in Tamil Nadu are given below Animals eat plastic bags by accident and their food passage is choked Plastic plates stay in the environment for over years Water pouches litter the land and are difficult to recycle Plastic straws are difficult to recycle and end up polluting the ocean Chemicals from plastic sheets leak into food Environment friendly materials Things that can be decomposed or broken down by microorganisms are biodegradable They can return to the soil and enrich the soil Materials which are beneficial to the environment and do not cause harm are called eco friendly materials For example banana leaves are used as plates They are fully biodegradable and do not contain chemicals like thermocol plastic or coated paper plates Bamboo is used to make many things such as bags dustbins and even toothbrushes Ekalaivan What are the things that can be used instead of plastic Madam Teacher We can use things that are harmless for the environment These are called environment friendly or eco friendly materials and can be either biodegradable or reusable Eco friendly Activities Reduce your paper use by writing on both sides of every sheet Stop using plastic straws Use reusable bag Give up chewing gum Buy stainless steel bottles instead of plastic water bottles Reuse containers for storing left overs Teacher Some environment friendly materials are not biodegradable but very strong and can be used for many years Reuse is the second R in three R‛s By reusing something again and again we reduce waste and conserve the environment Rahul Can you please give us some examples Teacher Yes sure The first fully synthetic plastic was invented by Leo Baekeland in ACTIVITY Form small groups and start collecting plastic litter from school grounds or from the local area around your house Stainless steel water bottle and snack box are some examples of eco friendly materials Stainless steel does not leak chemicals into your food or water So it is safer than plastic These can be reused for a longer period of time ACTIVITY Write any five non recyclable items that you use or have seen in shop Litter Free Environment Litter in our environment is unsightly and spoils our experience of nature It is also dangerous to animals that ingest it Cleaning up loose waste is one of the best ways to keep our community and the environment green By removing litter from environment we are ensuring that it does not end up in our oceans National Green Corps NGC It is a national programme initiated by the Government of India The motto of NGC is Where there is Green there is Prosperity It involves NGC school students in protecting and promoting the conservation of natural resources They participate in activities like biodiversity conservation and waste management Make sure you put litter in a bag or in a dustbin When others pass you as you pick up litter smile and say hello It shows pride in community and encourages others to do their part What is the first step in waste management a Waste disposal Waste separation Waste collection Which is an example for non biodegradable waste a Paper cup Plastic plate Coconut shell Picking up the waste is called a Composting Waste collection Recycling is the first ‘R‛ in the Three R‛s a Reuse Reduce Recycle is an example of reusing waste Using old jars for pickle Saying no to a plastic bag is used to make bags dustbins and tooth brushes Rose Bamboo is a big threat to our environment Plastic Light is a non recyclable item Glass Multilayer plastic Plastic waste Three R‛s Waste separation Eco friendly material Reduce Reuse and Recycle Threat to environment Stainless steel Biodegradable recyclable and non recyclable R method reduces the amount of waste that goes to landfills Eco friendly material is harmful to the environment Plastic bag thermocol and multilayer plastics are recyclable We should not separate our waste What are the Three R‛s What is biodegradable waste Write the different steps in waste management Name any five items which are recyclable How will you manage the household waste What are the plastic items that have been banned in Tamil Nadu Write the benefits of recycling What is meant by eco friendly material LIFE OF ANIMALS Learning Objectives After the completion of this unit students will be able to understand group behaviour in animals know adaptation in animals explain the structure of insects list out special senses in some animals know about animals active at night understand parental care in animals Introduction Have you ever wondered why a dog drools on seeing food Why cuckoo sings only during summer Why baby birds open their mouths when the mother returns to the nest Each animal has some unique behaviour Animal behaviour includes the activities of an animal and its interaction with other organisms Blinking eating walking and flying Group Behaviour in Animals ACTIVITY Match the animals with their group behaviour Lives alone Lives as part of a group Animals gain a lot of benefits from spending time together with other members of the same species This is called group behaviour Animals like tiger bear etc live in solitary alone Some animals live in small groups Pride of a few lions and some live as larger herd Herd of thousands of wilde beest Some animals such as elephants squirrels rats and bats do dream during sleep But cats dogs and monkeys have longer dream time Group behaviour is also called social behaviour Members of the group work together to find food defend themselves and look after the young ones All the fish in a school move together following their leader in the front Staying in a group helps the small fish appear big The main purpose of group behaviour is to help animals survive in nature Group behaviour in Bees When insects live together they often follow a hierarchy Bees have one queen bee in every hive There are a few male bees called drones There are hundreds of female bees which are the worker bees Nesting Behaviour in Birds Birds are very different from each other They live in different places eat different foods and have different life styles Some birds permanently live in groups while others come together only during the breeding season Birds also live in groups and each bird‛s group has a different name Flock of parrots Stare of cranes Not all the bird species build nests Some of them lay their eggs on the ground or in gap between rocks Most of the birds build their own nests carefully like engineers They build nests for their young ones Some weave leaves some use twigs some build with thorns then pad it with soft materials Though green heron cannot swim it stills eats fish from the water How It drops colourful leaves and fruits into the water When the fishes pop out to investigate the heron catches them Group behaviour in Elephants Elephant group is called Herd or Parade For each group there is a female head which leads the group towards the availability of food water and safety The leader fights for their group All animals in a group obey the command of their leader Older animals teach manners and life skills to young ones Animals and their Group Names Animal Group name Animal Group name Animal Group name Lion Pride Fish School Ant Colony Wolf Pack Sheep Flock Owl Parliament Social weavers do not build individual nests All males work together and build a common nest in which birds can be housed Advantages of Group behaviour in animals S No Group behaviour Example Procuring food Hunting and sharing in tigers Taking care of young ones Female elephant takes care of its calf Protection from predators Wilde beests make sounds to alert their group Division of labour Honey bees collect nectar build comb and clean hive etc Energy conservation Birds fly in shape to reduce wind resistance Sea otters hold hands while they are sleeping so they do not drift apart Adaptations in Animals Adaptation is the most essential factor of all living beings The changes in an animal‛s behaviour to adjust with its habitat is called adaptation If an organism fails to adapt to the particular environment its survival is difficult All animals have special body parts to live in a particular place at a particular time Giraffes have developed very long necks because of their environmental demands ACTIVITY Observe any animal in your surrounding and write a creative short story about it Some more examples of adaptations are given below Elephants have long and large trunk to get their food in the forest Tigers and Zebras have lines so they can hide themselves Camels have broad feet to walk in the desert Fish have gills to breathe in the water and fins to swim There are three basic types of adaptations seen in animals They are Structural adaptations Changes in the physical features of the animal are called structural adaptations Polar bears living in cold climate have physical adaptations such as thick fur and short ears to reduce heat loss Physiological adaptations Changes in the functions of the animal‛s body are called physiological adaptations Dog shivers to generate more heat when it is cold and pants when it is hot Behavioural adaptations Changes in the activities of the animal are behavioural adaptations Birds migrate to avoid adverse conditions Porcupines have thorns on their body to fight against their enemies Alligators have sensitive skin which can feel even small vibrations in the water Who am I Am I a herbivore Yes Yes Yes Yes Yes No No No No No Do I have shell Am I a mammal Do I have legs Do I have more than legs Hawk Earthworm Caterpillar Squirrel Snail Wolf ACTIVITY Yes Yes No No Do I have legs Do I have more than legs Hawk Earthworm Caterpillar Squirrel Snail Wolf The compound eyes of insects are made up of small units called ommatidia Structure of Insects Insects have three main body regions They are; Head thorax and the abdomen All parts of the insect are inside an exoskeleton Head The main visible parts on the head are the large compound eyes the antennae feelers and the mouth parts Thorax The thorax is the middle region of the body It bears three pairs of legs and two pairs of wings Abdomen The abdomen is the last part of the insect body Abdomen of most of the insects have clear segmentation Insects have differences in structures like wings legs antennae and mouthparts The legs are modified for walking jumping digging or swimming Most of the insects have wings which can be folded flat over their body Bug There are some insects which cannot fold their wings Dragonfly Some insects are wingless Silverfish Butterfly has three body parts like all other insects the the chest and the bottom The butterfly has four and six legs attached to the throax Butterfly uses its two to smell ACTIVITY Fill in the missing words Special Senses in Ants and Bats Some animals have well developed special senses These special senses help the animals experience the world around them Ants Ants have sense of sight smell taste and touch Ants have organs of smell and taste in their antennae They feel the vibrations in the ground through their feet Ants have a good sense of smell ACTIVITY Place a few sugar cubes in a plate After sometime you can see some ants visiting the plate Adding sugar to your cat‛s food is of no use because cats cannot taste sweetness Most snakes have poor eyesight Snakes use their tongue to smell their surrounding Bats Bats have a good sense of hearing They use sound navigation They produce ultrasonic sound which helps the bats find their way at night and find out the objects on their path This is called Echolocation Vampire bat Vampire bats feed on the blood of their prey Vampire bats have heat detecting noses which allow them to find their prey Animals Active at Night When do you wake up When do you sleep When do you play Some animals sleep in the day time and are very active at night A good example is cat at your home Not only small animals but also some birds are active at night Such animals are called Nocturnal animals Owl Animals that are active during day time are known as Diurnal animals Hen horse camel etc Lions are active both during day and night Nocturnal creatures generally have highly developed senses of hearing smell and specially adapted eyesight Some examples of nocturnal animals are given below Cat Bat Moth Mouse Firefly Owl Parental Care Efforts taken by the adult to take care of their young ones is called Parental care Parental care increases the survival rate and improves the quality of young one It also increases the reproductive success of animals Kangaroo Kangaroo is best known for parental care Female kangaroo carries its baby in its pouch The pouch provides a safe place for the young ones to stay until they grow large enough to survive outside on their own Cow Cow gives milk and protects its calf from the enemies Mother and calf communicate with each other through a sound Calves respond to the calls from their own mother by calling back Human beings Humans promote and support the physical emotional social and intellectual development of their child The human infant or baby is completely helpless at birth Mother takes good care of the baby by feeding helping to sleep and making comfortable with clothes etc Through proper parenting the child is taught whatever needed to live successfully in the society Name of the animal What is the adult doing What is the young one doing ACTIVITY Animal observation I Who am I My group is called colony Our home is nest My feet are broad to help me walk in the sand I use sound navigation to find the objects in my path I am active during day time as well as night time The animals which are active at night are called is best known for parental care The group of owls are called lives in hives bites us and sucks our blood Wingless insect Smell Elephant Gills Giraffe Herd Ants Long neck Fish Silver fish Why do birds build nests What is meant by structural adaptation Define echolocation How do ants feel the vibration List out any three animals that live in groups Why do birds fly in ‘V‛ shape Why do animals live in groups Explain the three main body regions of insect What are nocturnal animals AIR WE BREATHE Unit Learning Objectives After the completion of this unit students will be able to know that air is a mixture understand the composition and components of air explain air pollution and its effects Our earth is made of land water and air All three components are very much important for the survival of all living creatures Air is present all around us and is very important for our lives It is very important to cause rain and for the growth of crops It is needed for the respiration of plants and animals Take a squeezable bottle Make a hole on the lid and close the bottle tightly Bring the bottle near your face and press the bottle What do you feel ACTIVITY Importance of Air in Our Daily Life Oxygen present in air is needed for respiration We can speak and hear the sound only when there is air around Air helps in the dispersal of seeds for plant reproduction Monsoon and rain occurs due to the wind action Air regulates the atmospheric temperature Introduction Let us do Tick the objects which has air in it Air is a Mixture The air we breathe consists of a mixture of gases It contains solid and liquid particles too Air can be separated into its constituents such as oxygen nitrogen etc Water vapour mixes with air and becomes a part of it Air also contains dust and smoke Air shows the properties of all the gases present in it Air supports combustion because of oxygen present in it While cooking using firewood fanning air helps in burning of fire wood How do we get cool water from a clay water pot on hot sunny days Clay pot has thousands of tiny pores through which water seeps out This causes cooling effect Tick the object which gives out water vapour The composition of air is not constant It varies from place to place and over time Air is not a single element; it is made up of different substances Nitrogen Carbon dioxide Argon and other gases Oxygen The nathaswaram and the flute are some of the examples for wind instrument Let us do Composition and components of air Activity Nitrogen Oxygen Carbon dioxide Water vapour AIR Other Gases Write the percentage of the gases present in air Nitrogen The amount of Nitrogen present in air is about It is used to fill up food packages to extend their shelf life Liquid nitrogen is used to store living cells Plants need nitrogen for their growth We can see root nodules containing nitrogen in some plants Nowadays people use nitrogen gas to fill the tyres of their vehicles Some compounds of nitrogen are used as explosives also In the Scottish chemist Daniel Rutherford reported noxious air which now we call Nitrogen Activity You might have seen some huge colourful balloons flying high in malls Those balloons are filled with nitrogen gas Write the reason for filling nitrogen gas in balloons Oxygen It is one of the main components of air The amount of Oxygen present in air is about All the creatures cannot live without oxygen It can be tested with a piece of glowing splint which relights in oxygen Uses of oxygen All living things use oxygen for breathing Oxygen is essential for burning Oxygen cylinders are used in hospitals to enable the patients to breathe when they cannot breathe normally Oxygen is used in gas welding Mountaineers carry oxygen cylinders at high altitudes Deep sea divers also carry oxygen cylinders along with them while diving deep into the sea Carbon dioxide The amount of carbon dioxide present in air is only Though it is less in percentage its uses are more and essential It can be tested with lime water The lime water changes from colourless to milky Uses of carbon dioxide Carbon dioxide helps plants in photosynthesis It is used in fire extinguishers It is used in refrigerators as dry ice for cooling purposes It is used to make plastics and polymers The Scottish chemist Joseph Black discovered that carbon dioxide is present in air Air has other gases like hydrogen helium argon etc in small proportion Air also contains water vapour which varies according to the environment When we breathe we take oxygen from air and release carbon dioxide and water vapour to air Dog cat coconut tree monkey brinjal plant papaya plant Things which give out oxygen Things which give out carbon dioxide ACTIVITY Classify the following A grown up tree intakes of carbon dioxide exhaled by one person and it gives out the same amount of oxygen required by a person Hence three trees are needed to fulfill the required oxygen for a man to survive Air pollution The atmospheric balance is disturbed by human activities This leads to environmental problems like air contamination and global warming The air carries soot smoke and other particles from car exhaust and power plants These are the major contributors to air pollution Activity Look at the path of light rays entering through window of your home school You can see lot of tiny particles suspended and moving in the air These are dust particles You can also test the same with the help of a torch light in darkness Covering our mouth and nose while sneezing or coughing prevents spreading of germs through air to people around us Adverse effects of air pollution Global warming This changes the climatic conditions of different regions of the world It also causes disturbances in agriculture and food production Melting of snow caps and increase in sea levels are the consequences of global warming Formation of smog When dust particles and smoke combine with fog in the presence of sunlight smog is formed It reduces the visibility It also causes many respiratory disorders and allergies Formation of acid rain Sulphur dioxide and nitrogen oxides react with water in the atmosphere producing sulphuric acid and nitric acid These acids come down along with the rain This is called acid rain Acid rain causes respiratory and skin disorders damages the leaves and affects the productivity of plants enters the ground and river waters causing harm to the aquatic life erodes marble and damages monuments like Taj Mahal Aerosol formation When liquid or solid particles are dispersed in air it is called aerosol Aerosols are deposited on the leaves affecting photosynthesis Depletion of Ozone The hydrocarbons such as the Chloro Fluoro Carbons CFCs destroy the ozone layer Ozone holes allow the UV rays to reach the earth‛s surface UV radiation harms wildlife damages plants and causes skin cancer in humans Activity Tick the causes of global warming Effects of air pollution on human beings Air pollution has bad impact on human health When the pollutants increase in air they cause irritation in the eyes nose and throat Air pollution can also produce wheezing coughing and breathing problems in humans Some of the major effects of air pollution on human beings are Respiratory diseases Flu Tuberculosis Cardiovascular damage Fatigue headaches and anxiety Nervous system damage Activity Go by walk or use a bicycle to nearby places Plant more trees Steps to check air pollution Air pollution can be reduced by the following steps Alternative source of energy Solar energy should be used Air filters should be used to prevent harmful gases mixing with air Smoke emission test and certification of motor vehicles must be enforced More trees should be planted to absorb carbon dioxide Alternative source of energy are Solar Power Nuclear Power Hydroelectric Energy Wave Energy Biofuels Natural Gas Geothermal Power Wind Energy Biomass Energy Tidal Energy and Hydrogen Gas Activity Write slogans on harmful effects of air pollution in a chart and stick it on the display board If you pollute air today; It will pollute your lungs tomorrow Air is a a Mixture Compound Complex Percentage of Oxygen in air is about a Root nodules of some plants contain a Oxygen Nitrogen Neon The major cause of air pollution is a Waste Smoke Water vapour I am a mixture of gases I give you oxygen I am not the supporter of burning You can help me to decrease pollution by riding on me Plants need nitrogen for their growth Air is made up of oxygen only The gas used for burning things is Argon Carbonated drinks are bad to health Nitrogen Air pollution Balloon Smoke and fog Smog Lung cancer Air Air is a mixture of many Amount of carbon dioxide in the air is We inhale gas is used in fire extinguishers What are the importance of air in our daily life What are the components of air What are the adverse effects of air pollution List uses of oxygen How can we reduce air pollution What are the diseases caused due to air pollution List out the uses of carbon dioxide Social Science Unit Kingdom of rivers In the ancient period people settled and started living along the river banks They produced agricultural crops They reared cattle in the pasture lands In this way the kingdoms of early Chera Chola Pandya and other kingdoms emerged along the rivers Kingdoms River Banks Cheras Poigai; Cholas Cauvery; Pandyas Vaigai; Pallavas Palar Cheras Cheras were the forerunners of the Moovendhargal who ruled on the banks of river Poigai and their capital city was Vanji The Chera country comprised of the present western districts of Erode Tirupur Coimbatore and Nilgiris Kerala was also a part of it The Chera country was called Cheranadu The major part of the Cheranadu was surrounded by high mountains The greatest rulers among the kings of Cheranadu were Imayavaramban Neduncheralathan and his son Senguttuvan The Chera King Neduncheralathan conquered upto the Himalayas and hoisted the flag with the symbol of Bow and Arrow Therefore he was hailed with the title Imayavaramban Neduncheralathan The able ruler Cheran Senguttuvan the son of Neduncheralathan erected the statue of Kannagi This temple of Kannagi was built by the stones brought from the Himalayas after defeating king Kanaka Vijaya It is also said that these stones were brought to Cheranadu on the heads of the captive soldiers This can be understood from the epic Silappathikaram written by Senguttuvan's brother Ilangovadigal Pathitrupathu helps to know about the Chera kings during Sangam period River Poigai; Capital Vanji; Port Thondi Musiri and flag Bow and Arrow Cholas The early Cholas kept Uraiyur as their capital located along the river Cauvery and ruled it Uruthirangkannanar of Kadiyalur in his Pattinappalai describes that Cholanadu is famous for rice Cholanadu Sorudaithu The Chola kingdom comprised the districts of Trichirapalli Tanjavur Pudukkottai Nagapattinam Tiruvarur Perambalur Ariyalur and Cuddalore The land of Cholas was fertile due to the river Cauvery The kings ruled by providing justice to their subjects The greatest ruler among the Cholas was Karikala Cholan who was also called 'Karikala Peruvalathan' Karikala Cholan took the responsibility of kingship at a very early age and ruled efficiently When he was very young he was captured by his enemies and imprisoned The room in which he was arrested was set on fire In this fire accident his feet burnt Due to his charred leg he was called as Karikalan At a very young age he disguised as an old man and tactfully justified a case The Cheras and Pandyas together attacked Karikalan at Venni Vahaipparanthalai Finally Karikala Cholan defeated the two rulers there and was victorious He invaded Srilanka and brought the captives from there to build the dam Kallanai across the river Cauvery The dam still stands strong even after years of its construction River Cauvery; Capital Uraiyur; Port Kaveri poompattinam and Flag Tiger Pandyas Pandyas established their rule on the bank of Vaigai with Madurai as their capital The ancient Pandya country comprised of Madurai Theni Dindigul Virudunagar Tirunelveli Tuticorin Sivagangai and Ramanathapuram districts Madurai remained as the most popular city of Sangam period Pandya country was famous for pearls Muthamizh sangams were held in madurai under the patronage of pandyas The third Tamil Sangam was held in Madurai Muthamizh flourished during the reign of Pandyas The most famous kings were Thalaiyalanganathu Seruvendra Pandya Nedunchezhian and Pandya Nedunchezhian of Silapathikaram When Pandya Nedunchezhian was a young boy he fought a battle at Thalaiyalanganam against Chera Chola and feudal lords Kurunila Mannargal He defeated the combined force Therefore he got the title Thalaiyalanganathu Seruvendra Pandya Nedunchezhian Silappathikaram During the rule of Pandya Nedunchezhian he happened to prosecute Kovalan for theft and gave death sentence Kovalan’s wife Kannagi advocated to prove her husband’s innocence When the king realized the truth he said Yano Arasan Yanae kalvan Kedugaven ayul and died by falling down from his throne Immediately his wife Kopperundevi also sacrificed her life out of shock The administrative system of the Pandyas was depicted by Mangudi Maruthanar of Madurai Kanchi Madurai Meenakshi Amman Temple River Vaigai; Capital Madurai; Port Korkai and Flag Fish Pallavas he early Pallavas ruled on the banks of river Palar with Kancheepuram as their capital The regions ruled by them was called Thondaimandalam It is located in the North Eastern part of Tamil Nadu The kingdom of early Pallavas was founded by Sivaskanthavarma Pallavan He integrated Thondaimandalam and ruled over there The greatest kings among the early Pallavas were Sivaskanthavarman and Vishnugopan The later Pallava period was started from the reign of Simhavishnu The greatest kings of this period were Mahendravarman and Narasimhavarman The greatest achievements of the Pallavas were Cave temples and Monolithic rathas River palar; capital kancheepuram; port mahabalipuram; flag nandi Feudal Lords Kurunila Mannargal Apart from the Mooventhargal several Feudal lords or Kurunila mannargal also ruled over smaller lands The most important among them were Pehan Pari Nedumudi kari Aai Athiyaman Nalli and Valvil Ori These kings were known for their generosity Therefore they were popularly called as Kadai ezhu vallalgal Administrative System of Sangam Age Arasan was specially called as Ko Kon Venthan Kotravan Irai by his people Each dynasty had their own flag symbol scepter sword drum and venkotrakudai The kings were not only efficient warriors but they were scholars too Kingship became hereditary The first son became the ruler The kings greatly cared for the people of their country Hospitality virumthombal Hospitality occupied a significant place in Sangam period Even though it is Amritam Nectar it was considered to be a sin if the guest is kept outside home Kakkai Padiniyar a poet got the name for praising a crow for informing the arrival of a guest Purananuru describes hospitality as one of the important duties of the Tamils Economic conditions Various arts and crafts flourished during the Sangam Age People lived happily due to the development in economy Paddy and Sugarcane were the most important crops cultivated Besides these Varagu Millets Thinai Millets and Samai were also cultivated From the below poet Avvai tries to convey that the prosperity of the king lies in the development of agriculture Conditions of women Women were respected in the society Monogamy was prevalent Women were equal to men in bravery It is said in 'Purananuru' that in the first day of battle a woman lost her father the second day she lost her husband In spite of these heavy loses the third day she prepared and sent her son to the battle field by applying 'the Thilagam' It is also said a woman in the Sangam Age drove away a ferocious tiger with Muram Winnow in her hand Festivals People of Sangam Age celebrated various festivals Karthikai Thiruvathirai and Harvest festivals were the most celebrated ones Uruthirankannanar of 'Pattinappalai' said that the most popular festival of Indira Vizha was celebrated in Puhar Unit Five landforms We see fields houses trees stones and dry lands around our house We see more features like these on our Earth Hill Forest Field Sea shore and Dry land Five elements of Nature Land Water Air Fire and Sky Where would you see more hills on the Earth Mountains Where would you see wild animals with more trees Forest Where does the paddy grow Agricultural land Where would you see the Sea shore Sea Beach What is the name of useless lands Fallow land The places we see on the surface of the Earth is called landforms Now let us see how the land was divided into different types in ancient Tamil Nadu according to its fertility and people's activities Physical Features Landforms of Tamil Nadu In the Solar family Earth is the third planet It has oxygen and temperature to live Therefore we call the Earth as Biosphere The Earth is surrounded by three spheres such as land water and air Landforms of tamilnadu The five types of landforms in Sangam Age were divided on the basis of the work done by the people Out of the five thinais only four types were permanent They were Kurinji Mullai Marutham and Neithal The fifth land Palai was formed when Kurinji and Mullai dried up Mountains A mountain is a large geographical area that rises above the surrounding land with peaks The mountain and its surroundings are known as Kurinji land The Theme Karupporul deals with the god people occupation plant flower animal bird and musical instrument God Murugan; People Kuravar Kurathiyar; Occupation Hunting Gathering Roots and Honey; Plant Flower Bamboo Vengai Kurinji flower; Animal Bird Monkey Deer Peacock Parrot; Musical Instrument Kurinji yazh The People and their Occupations Poruppan Soldier; Verpan Leader of the tribe Weaponists; Silamban Master of martial arts The arts of fighting ; Kuravar Hunter and the Gatherer; Kanavar People of the mountainous forest The Soil of Kurinji Land The land of Kurinji was composed of red and black soils with stones and pebbles Forests Mullai land A large area covered by trees is called forest The forest region is referred as Mullai land This region is also called 'Sembulam' due to the presence of red soil God Thirumal; People Idaiyar Idaichiyar Aayar Aaichiyar; Occupation Cattle rearing Gathering fruits Sowing Millets; Plant Flower Guava Mullai flower; Animal Bird Bear Rabbit Parrot; Musical Instrument Mullai yazh The People and their Occupations Idaiyar Milk seller; Aayar Cattle rearer The Soil of Mullai land The land of Mullai has red soil with stones and pebbles Forests in Tamil Nadu Mangrove forests Pichavaram in Cuddalore district; Malai forests Nilgiris district; Reserve forests Kanyakumari district; Shola forests Coimbatore and Nilgiris districts Field Marutham land The vast flat land on the Earth is called plain The crop fields and their surroundings were known as Marutham The agricultural land and the area around it God Indiran Vendhan ; People Uzhavar Uzaththiyar; Occupation Farming; Plant Flower Kanchi Marutham Lotus Kuvalai; Animal Bird Buffalo Crane; Musical Instrument Marutha yazh The People and their Occupations Uran Small Landlord; Uzhavan Farm worker; Kadaiyar Merchant The Soil of Marutham land The land of Marutham is formed of alluvial soil and red soil Sea Sea shore Neithal land The salty water body that covers a large part of the surface of the Earth is called sea The Sea and the area around the sea is called 'Neithal' God Varunan Rain god ; People Parathavar Fisher man ; Occupation Fishing; Plant Flower Punnai Senganthal; Animal Bird Fish Sea gull; Musical Instrument Vilari yazh The People and their Occupations Serppan Seafood vendor and trader; Pulamban Who thrive on coconut; Parathavar Sea warrior Merchant; Nulaiyar People who thrived on fish culture; Alavar Salt cultivator The Soil of Neithal land The land of Neithal is made of saline soil Dry land Palai land A dry region with less or without rainfall is called a dry land The sandy land which under goes drought is called Palai When Kurinji and Mullai dries up it is called Palai God Kottravai Mother Goddess ; People Eyinar Eyitriar; Occupation Cattle lifting; Plant Flower Uzhinghai Palai Cactus Iluppai; Animal Bird Tiger Elephant Eagle; Musical Instrument Palai yazh The People and their Occupations Maravar Noble warrior Hunter; Eyinar Warrior The Soil of Palai land The land of Palai is sandy and saline Unit Municipality and corporation Mugilan went to his uncle’s house during summer vacation One day he was playing in a park At that time he heard the Municipality employees announcing that the people to pay taxes for house and others Mugilan ran to his uncle Uncle Why are you running What happened Mugilan Uncle What is Municipality Why should we pay taxes Uncle Mugila Municipality is a form of local government in a small town where to people live This is divided into several wards Our house is in the tenth ward In our locality there are totally wards In Tamil Nadu there are Municipalities Mugilan Who is the head of the Municipality Uncle The head of the municipality is called the President The President and the members of the Municipalities are elected by the people directly The tenure of the members is five years One of the members of the municipality is selected as Vice president Mugilan Uncle What are the duties of Municipality Uncle Constructing library and its maintenance Maintaining local market Santhai Providing drinking water facilities Constructing roads Providing street lamps and Removing garbage dumps Mugilan What is the source of income for the work done by Municipality Uncle Central government and State government provide the money People also pay in the form of house tax professional tax drinking water tax shop tax road tax and drainage tax It also forms the income of Municipality The following also comes under Municipalities Townships Neyveli; Cantonment Boards parangimalai Cunnur and Notified area committee For example we call Chennai Trichy Kovai Madurai and Salem as Corporations Mugilan What is Corporation Uncle Certain Municipalities will be declared by the Government of Tamil Nadu as Corporation based on high population and high revenue Mugilan Uncle How many Corporations are there in Tamil Nadu Uncle In Tamil Nadu Corporations have been established The oldest Corporation is Chennai Mugilan Uncle How are the head and the members of corporation elected Uncle The head and the members of Corporation are elected by the people directly The chairperson of the corporation is called 'Mayor' He is also called as 'the father of the Corporation' The Tenure of the members of the Corporation is years The Indian administrative service officers and similar rank holders are appointed by the government to the Corporation Most of the Urban areas have Corporation Mugilan What are the duties of Corporation Uncle Constructing and maintaining the city roads Providing drinking water facilities Disposing garbage Constructing libraries and maintaining them Creating parks and maintaining them and Maintaining of birth and death records Mugilan What is the source of income to the Corporation Uncle The amount collected from Professional tax Wealth tax Entertainment tax Custom duties and Road tax are the sources of income to the Corporation Mugilan What else are there besides Municipality and Corporation Uncle Apart from the Corporation and the Municipality Town Panchayat also exist The head and the ward members are elected by the people directly The tenure of the President and other members is years Panchayat is governed by the executive officer Town panchayat functions in places where the population exceeds people Mugilan Uncle I came to know the administration of Municipality and Corporation very well Thank you very much Uncle Good Come let us wash our hands and have lunch Philanthropists of Sangam Age Learning Objectives Children will be able to name the philanthropists name the regions ruled by the philanthropists understand the significance of kindness explain how the philanthropists ruled their region Geetha and her Grandpa are on a trip during summer holidays They are on their way to Kodaikanal the hill station in Tamil Nadu This is the first time that Geetha is travelling up a steep hill in a bus Grandpa how did people come to these hills before buses and cars were used They would have used horses and donkeys to climb up the hill Who ruled these regions In the Sangam Age many philanthropists ruled the hilly regions But seven of them were very famous Why only seven were famous Who were they Do You Know Sangam literature consisting of several classical poetry is the main sources of the Sangam Age Those seven philanthropists were Pegan Pari Nedumudi kari Aay Adhiyaman Nalli and Valvil Ori They ruled different hilly regions at different periods during the Sangam Age They were all powerful kind and cared for nature and the people Is that why there are more trees in the hills than in Chennai Hills usually have lot of trees It is important for people to take care of them Shall I tell you a few stories about how those philanthropists and the people protected nature and how in turn nature protected them I would love that Pegan Are you ready for the first story Yes Okay This story is about Pegan Pegan ruled Palani hills Dindigul district the very same hill range that we are visiting today Isn't it cold here Yes grandpa That‛s why Amma has packed sweaters for us Correct One day while Pegan was on his walk he saw a peacock shivering He assumed that the peacock was shivering due to cold and he covered the peacock with shawl Can a peacock use a shawl May be not The point is that Pegan treated the peacock just like his own child How many people now a days show such kindness towards animals Grandpa one day I saw a boy throwing stones at a dog I stopped him May be if he knew about Pegan he would find a way to love animals True It‛s not just kindness towards trees and animals It is also about valuing people We should treat all living things equally Pari Okay the next story is nearly years old A wise and kind philanthropist called Pari ruled Parambu Nadu This was located in Parambu malai a hill range that starts in Sivaganga district in Tamil Nadu and extends all the way to Palakkad in Kerala The Moovendhars the Cheras Cholas and Pandyas wanted to make Parambu Nadu a part of their kingdom They were not able to win the battles against Pari and his army individually So they attacked Parambu Nadu together In the thick forests inside the hills they were not able to defeat Pari‛s army Instead they made sure that Parambu Nadu could not get water or food from below the hill They thought that Pari would surrender after he ran out of food and water Grandpa did Pari surrender No Pari did not surrender Few months passed the Moovendhars later realised that the forests in Parambu malai were so rich that they provided people with a lot of jackfruit edible bamboo and other wild nuts The hill also had a lot of streams that provided them with fresh clean water So they didn‛t need food or water from any other place Yes Their forests took care of them just as Pari the people in his region also took care of nature There is even a famous story that tells his generosity One day Pari was passing a young jasmine climber He saw that there was no tree to help the climber to grow He offered his golden chariot to give support for the climber This is so interesting Do you know that we planted a few trees in our school I will make sure that they grow well just like Pari did Would you like to hear more stories about some of the other philanthropists Yes Adhiyaman There was another philanthropist called Adhiyaman He also ruled a hilly region Thagadur in Dharmapuri district One day he was presented with a very rare type of gooseberry He was told that anyone who ate that rare fruit would be immortal Do you know what did he do He offered that fruit to an old Tamil poetess Avvaiyar The same Avvaiyar I read about her in my Tamil textbook Yes Geetha Avvaiyar was shocked and asked Adhiyaman why he was offering her the gooseberry She said that he should eat this fruit as he was the chieftain Adhiyaman told her that there would be many chieftains after him but there would not be many poets to teach people how to live life better like her Can you imagine a powerful chieftain offering such a valuable gift to an old poetess This shows how people valued each other in the Sangam Age Don‛t you agree Yes grandpa We should always value people around us Valvil Ori Let me tell you a story of another chieftain Valvil Ori who ruled a hilly region in Kolli hills Namakkal district Does the 'Vil' in his name mean bow How smart you are Yes it does 'Val' means powerful and 'Vil'means bow He got his name as he was an expert archer Amazing what did he do for the people Ori was not only known for his skill in archery but also hailed as a kind ruler He used to reward bards musicians dancers and other artisans for their skills Grandpa I like Valvil Ori What about the other three philanthropists Nedumudi kari Aay also ruled a hilly region in the Pothigai hills South of Madurai Nedumudi kari ruled the region of Thondaimandalam at Tirukkoyilur Nalli ruled the region of Thottimalai under the king Cheran They were all known for their kindness That‛s why even after so many years they are still fondly remembered by us Thank you for the interesting stories I will share these with all my friends Glossary Sangam Age A period in the history of ancient Tamil Nadu Philanthropist A person who seeks to promote the welfare of others Steep hill A very tall hill Immortal Living forever Bards A poet Artisan A worker in a skilled profession Recap There were many philanthropists in Sangam Age Seven of them were famous The Moovendhars were the Cheras Cholas and Pandyas Philanthropists were known for the kindness towards the people and nature The seven philanthropists were Pegan Pari Nedumudi kari Aay Adhiyaman Nalli and Valvil Ori Aay Dharmapuri district Adhiyaman Pothigai hills Valvil Ori Sivaganga district Pari Kolli Hills Pari did not care for nature at all Sangam Age had seven famous philanthropists We should value the people and animals Nedumudi kari ruled the region of Thottimalai Physical Features of Tamil Nadu Learning Objectives Children will be able to understand the physical features of Tamil Nadu locate mountain plateau plain and coastal regions in Tamil Nadu describe the features of mountains plateaus plains and coast explain the types of forests found in Tamil Nadu Our state Tamil Nadu is located in the South of India It is the eleventh largest state in India It shares boundaries with Andhra Pradesh on the North Karnataka on the North west Indian Ocean on the South Kerala on the West Bay of Bengal on the East Tamil Nadu extends upto Kanniyakumari which forms the southern most tip of India It is the meeting point of Arabian Sea Indian Ocean and Bay of Bengal The Pulicat lake is situated at the northern end of Tamil Nadu Tamil Nadu had districts R e e t l y g o e r m e t announced more districts namely Kallakurichi Chengalpattu and Tenkasi At present there are districts Tamil Nadu and its neighbours Do You Know The Madras Presidency called as Tamil Nadu comprised of Andhra Pradesh Karnataka Kerala and Odisha Later in Telugu speaking region of the state was split to form Andhra Pradesh Similarly in Malayalam and Kannada speaking regions of the state were split into Kerala and Mysore Landscape of Tamil Nadu The landscape of Tamil Nadu can be divided into four categories namely Mountains Plateaus Plains Coast Mountains Tamil Nadu is the only state in India which has both the Western ghats and Eastern ghats They meet at the Nilgiri hills in Tamil Nadu Doddabetta is the highest peak in Nilgiri hills Tamil Nadu has various hill stations like Ooty Kodaikkanal Kolli hills Kothagiri and Yercaud The Eastern ghats do not get enough rainfall unlike the Western ghats which receives lot of rainfall The plantations grown in these ghats include tea coffee and spices Tamil Nadu has rich flora and fauna Mudumalai wildlife sanctuary Indira Gandhi wildlife sanctuary and National park in Anaimalai are in the Western ghats of the state There are a variety of plant species found in them The Kurunji shrub is the most special of them all Kurunji flowers blossom once in years Plateaus There are three plateaus in Tamil Nadu namely Bharamahal plateau Coimbatore plateau and Madurai plateau There are many small hills between these plateaus Chennimalai is one among those hills in Erode Plains Plains in Tamil Nadu can be divided into river plains and coastal plains a River plains Rivers Palar Cheyyar Pennar and Vellar form the Northern plains The middle river plain is formed by Cauvery and its tributaries River Vaigai and Thamirabarani form the Southern plains River Cheyyar is a tributary of River Palar It is a seasonal river that flows through the district of Tiruvannamalai Rivers and waterfalls of Tamil Nadu Coastal plains Coastal plains of Tamil Nadu are also called Cholamandalam plains which extend from Chennai to Kanniyakumari Coasts Tamil Nadu has the third longest coastline in India The coastal region extends from Chennai to Kanniyakumari Pamban island forms a part of Ramanathapuram It separates Gulf of Mannar and Palk strait districts share the coastline The notable beaches of Tamil Nadu are a Marina Beach the second longest urban beach in the world Rameswaram beach is famous for its beautiful view Kanniyakumari beach is famous for its beautiful views of sunrise and sunset over the water Coastal areas of Tamil Nadu Do You Know Pamban bridge in Rameswaram is India‛s first sea bridge opened in the year Do You Know Droogs are steep rocks Rock fort is a famous droog in Tiruchirapalli Tamil Nadu Waterfalls of Tamil Nadu Waterfalls is an area where the river water flows down from a mountain Tamil Nadu has several waterfalls Some of them are a Hogenakkal waterfalls is located in Dharmapuri on the River Cauvery It is known for bathing areas boat rides and attracts many tourists all round the year Courtallam Aintharuvi Hogenakkal falls Courtallam waterfalls is located in Tenkasi It is in the Western ghats on the river Chittar There are a total of nine falls of which Peraruvi Aintharuvi and Puli Aruvi are the most prominent Suruli waterfalls is located in Theni Here the water falls from a series of rock steps Vattaparai waterfalls is located in Kanniyakumari The falls is surrounded by forest on all sides People are allowed to take a natural bath here Climate of Tamil Nadu Do You Know Thiruthani recorded the all time highest temperature of °C in May Source Indian Meteorological Department IMD Tamil Nadu experiences tropical climate and there is very little difference between summer and winter The temperature during summer can rise up to °C degree celsius Due to its location Tamil Nadu experiences hot and humid weather almost throughout the year with mild winter Tamil Nadu is dependent on monsoon rains and often faces droughts if monsoon fails Seasons of Tamil Nadu Winter season January February Summer season March May South West monsoon June September North East monsoon October December Forests There are many types of forests across Tamil Nadu Most of these forests are found in the areas near the ghats These forests have so many types of trees The topmost branches of the trees form a continuous chain such that little or no sunlight hits the ground this is called canopy The forests are divided based on the canopy cover Very Dense Forest The Nilgiris Coimbatore Tirunelveli Erode Moderate Dense Forest The Nilgiris Coimbatore Erode Krishnagiri Open Forest Salem Vellore Dharmapuri Forests in Tamil Nadu The forests can also be grouped as a Evergreen forests The word evergreen means Ever always + green = Always green The trees in these forests have leaves that are always green In Tamil Nadu we find evergreen forests in the Western ghats of Tirunelveli Kanniyakumari The Nilgiris and Coimbatore Deciduous forests The trees in these forests shed their leaves during the dry season These forests are usually found near the evergreen forests They generally grow in the lower regions of the hills Swamp Mangrove forests The word swamp means areas that are low where water gets collected easily These forests are usually found near the beaches and river beds The Pichavaram mangrove forest is located near Chidambaram in Tamil Nadu Deciduous forest mangroove forest Glossary Flora and fauna The plants and the animals of an environment Ghat A mountain pass mountain range Drought A prolonged period of very low rainfall Weather The daily state of the atmosphere or air in any given place Climate The average of weather conditions in an area over a long period Recap Tamil Nadu is located in the South of India Landscapes can be divided into four categories namely mountains plateaus plains and coasts Plains are found along the rivers and the coasts The coastline of Tamil Nadu is shared by districts Tamil Nadu has a tropical climate Forests can be grouped as evergreen forests deciduous forests and swamp forests Mudumalai wildlife sanctuary Corbett national park Sunderbans national park Ranthambore national park Aravalli range Nilgiri hills Himalayan range Vidhyas range sunlight canopy forest mangrove extreme winters highest rainfall tropical climate snow fall Deciduous forests Swamp forests Evergreen forests Mountain ranges in Tamil Nadu Pamban bridge Suruli waterfall Western and Eastern ghats India‛s first sea bridge Theni Pichavaram Third longest in India Tamil Nadu‛s coastline Mangrove forest Tamil Nadu is the eleventh largest state in India Tamil Nadu is located in the west of India Kurinji flowers blossom once in years Tamil Nadu experiences hot and humid weather throughout the year Deciduous forests do not shed leaves Mountain Plateau Plain Coast Waterfall Transport Learning Objectives Children will be able to understand the importance of transport list the various modes of transport describe each mode of transport Transport Transport is the movement of people animals and things from one place to another Modes of Transport There are different modes of transport in India Modes of Transport Roadways Railways Waterways Airways Before the invention of wheels humans used to walk everywhere They used bullock carts to cover distances Even today many use bicycles which are eco friendly to travel a Roadways India has been building roads since old times Roadways connect the nook and corners of our country National Highways NH These are the main roads connecting cities in the country NH runs from Srinagar to Kanniyakumari The Golden Quadrilateral road connects the four major cities Chennai Mumbai Delhi and Kolkata in India State Highways SH These are the roads connecting important cities within the state SH runs from Arcot to Villupuram District Roads They are of two types Major District Roads M D R and Other District Roads O D R These roads connect markets and offices in the district Village Roads These roads connect villages or a group of villages with each other and also to other major roads near it Bus is the most important means of public transport system in India Buses are managed by the respective State governments Many State governments have introduced air conditioned buses and sleeper buses The Chennai Mofussil Bus Terminus is the largest bus terminus in Asia Chennai Mofussil Bus Terminus Koyambedu Bus Rapid Transit System BRTS is a high quality bus based transit system It has been introduced in some cities in India The BRTS ensured that there are roadways that only buses can use Railways Railway is the most important form of transport system connecting various states in India The first railway line was laid between Mumbai and Thane in One of the earliest railway stations built in Tamil Nadu was in Royapuram in the year Steam engines were used in the beginning From steam engines to high speed rail the growth of Indian Railways over the past years has been vast and it has contributed to the development of India Major Rail links from Tamil Nadu Name of the train From To Himsagar Express Kanniyakumari Jammu Tamil Nadu Express Chennai New Delhi Tirukkural Express Kanniyakumari New Delhi Coromandal Express Chennai Kolkata Chennai Express Chennai Mumbai There are also sub urban rails that connect different places within a city The first modern rapid transit system in India is the Kolkata Metro Rail System The Chennai Metro Rail was started in the year Do You Know Indian Railways is the largest network in the world Darjeeling Himalayan Rail in West Bengal is a World Heritage Site and it is the only steam operated railway in India Chennai Metro Rail Waterways India has a very long coastline and hence ports remain main centers for trade Oceanic or Coastal water transport India has major ports and Tamil Nadu is the only state in India that has three major ports Ennore Chennai and Tuticorin Shipping Corporation of India a government owned company manages all offshore and other marine transport related infrastructure in the country Water transport happens through Boat Speed Boat Ship The boats are widely used for fishing in Tamil Nadu Airways Air transport is the fastest way to travel to different parts of the world The very first air service of Asia was inaugurated by India in the year by Post and Telegraph Department by carrying mail from Allahabad to Naini across the Ganga river In Tamil Nadu there are international airports at Chennai Coimbatore Madurai and Tiruchirappalli Airlines plays a huge role in connecting cities within the country and across the world Helicopters are used for short distances and in hilly regions like Haridwar Badrinath Kedarnath and Darjeeling India has the world‛s highest helipad at the Siachen glacier which is feet above sea level Advantages of transport Growth of agricultural and industrial production Transport system plays a huge role in the growth of agricultural and industrial production by carrying raw materials to different parts of the country Growth in trade It helps in promoting trade in the country Transport plays a key role in the country‛s export and import of goods Promotes tourism It helps people from different countries to visit other countries Without a good transport system promotion of tourism is not possible Glossary Trade Buying and selling of goods and services Import Buying of goods or services from another country Export Selling goods or services to another country Helipad Place where helicopters land Recap Transport is the movement of people animals and things from one place to another The four modes of transport are roadways railways waterways and airways Roadways are used to travel by bicycles buses and cars etc The four types of roadways are National Highways State Highways District Roads and Village Roads Railways is the most important mode of transport which connects the states Waterways include the transport done through water bodies It happens through boats speed boats and ships Airways is the fastest way to travel We use aeroplanes and helicopters for air travel Chennai Kanniyakumari Madurai Trichy Boat Cycle Walking Bullock cart International airport in Tamil Nadu Bus Important public transport Chennai Train from Kanniyakumari to Jammu Thiruchirappalli Major sea port of Tamil Nadu Chennai metro rail started in the year Himsagar Express Transport is not needed for people Ports remain main centers of trade Roadways do not connect different parts of our country The Chennai Mofussil Bus Terminus is the smallest bus terminus in Asia Tamil Nadu has major ports English Unit Exploring Space Hi I am Nila I am in space Will you join me Let us learn Earth the Desolated Home It was the year humans had destroyed the Earth and started colonising the red planet Mars India established three colonies Arivumathi’s family lived in one such colony On her birthday her grandfather travelled more than km to meet her When he reached he saw her sleeping in her capsule He said Wake up Arivu Arivumathi was surprised Grandpa When did you come I was thinking that you won’t be coming for my birthday He sighed Don’t you know about the dust storm of Mars Sometimes it even lasts for a month But this time it did not So I am on time It still took me three sols to reach here Now come on let’s not waste time We will go to harvest the vegetation hab for vegetables In the hab he said Hmm these carrots are not tasty anymore like the ones I ate in my childhood She asked Why do you say so Grandpa Grandfather explained The vegetables we grow here do not taste like the ones on the Earth I really wish you had tasted the carrots from the Earth Arivu asked eagerly How did they grow the crops and vegetables on Earth Hearing this Grandfather was reminded of life on Earth He said The Earth had fertile soil so the fruits and vegetables grown were healthy and tasty She asked But I learnt that humans used chemical fertilizers and polluted the soil Here we get unpolluted food and water Is that correct Grandfather laughed These fruits vegetables and water are not the same as in the Earth They are not real Arivu exclaimed Even the water He said Of course In Mars we get water from burning fuels On the Earth we used to get water from rain it was natural and it was free She said Grandpa enough of your stories about the Earth I know that life there was easy but here survival is very difficult He replied Yes my dear adapting to Mars is difficult Today we are fighting for things which we got easily He continued In the Earth you did not need a spacesuit or an oxygen cylinder Also the years are longer here Arivu said Yes grandpa In Mars sols Earth days make a year He smiled Ha Ha Yes you would be years old on the Earth now Grandpa thought to himself We destroyed our home The home that nature had offered us Now we are trying to make this our home Arivu looked at him and said Don’t worry grandpa the scientists are trying to Terraform the Mars He said True but nothing can be the Earth The Earth is our home Ah let us leave this for now Today we should celebrate Let us sing Beyond the universe I dream of flying beyond the Earth amidst the planets and the countless stars I would stop by the red planet Mars here we dream of a home away from home Fly on to watch the Saturn with its ring and moons Then I stopped by Jupiter marvelled by its red storms that look like marbles Hurdling through a belt of asteroids I crossed Uranus without a fuss To Neptune the blue ice giant Further high I fly beyond the galaxy To meet the creator Of this Magnificent display To take me beyond the Milky Way To voyage across the galaxies Let us read Amuthan and Nilavan visited the Space Museum They saw a model of a space shuttle Then Nilavan found a latch and opened the shuttle They entered the shuttle and the door locked So many switches What does this big green switch do No don’t touch it What have you done Amuthan Sorry I thought the button would open the door but looks like I hit the wrong button Lost in Space Now they were trapped inside and they walked into the deck But Amuthan had pressed the switch and the shuttle bursts into outer space The shuttle went through a belt of asteroids The shuttle crash-landed on a new planet They ran for the suits Nilavan saw green lights coming towards the shuttle Amuthan an Asteroid is coming towards us Turn the shuttle Are you alright Amuthan I am fine Quick We must wear a spacesuit Yes they are all around us and that shuttle is very big Let us wear our suits Look at those lights It is coming towards us How will I turn the shuttle Let me try pulling this lever Please don’t be afraid There is a problem with your shuttle We can fix How is this it for you possible Do you speak our language We can read your mind and use that to speak your language Aliens from the big shuttle shattered the windows and took them out The aliens gave them a special room so that they can remove their suits and rest Please rest here and eat these capsules They are the same as your food When the time comes we will See you Thank you for your help Are you coming to Earth with us Hey wake up Your ship is ready Put on your suits It is time to go home Unit My native place I love my native place Do you Let us learn Trip to my grandparent’s village It is summer Vacation has started for Santhosh His parents are going to Sirumalai their parents village Santhosh is excited He records an audio diary on his mother’s phone He records all his feelings during the visit Later he writes down in his diary what he had recorded Let’s read his diary to know his experiences during this visit April I am very eager to visit my grandparents village I will meet my grandparents and cousins I have packed my clothes and tab for playing video games We will be travelling in a bus I am so excited April Today we are travelling Though it is summer the weather is pleasant in the morning There are numerous trees with yellow flowers on both sides of the road There is greenery all around There are many white cranes in the lush green paddy fields The scarecrows have managed to scare away the crows in the fields There is no traffic noise and air pollution in the village I get off the bus and run to meet my grandparents They are delighted to see me The house is surrounded by many big trees There are a few jackfruit mango neem banana pomegranate and coconut trees The trees have abundant fruits My grandfather plucked some ripe mangoes for me The mangoes are so juicy and sweet April I have woken up early today I am out for a walk in the morning The cool breeze is calming The coconut palms are swaying lazily The farmers are already in their fields Some of them are cutting the crops and some of them are threshing the paddy The air is filled with the sweet sound of birds singing in the trees and the bushes The cuckoo’s song is perhaps the most enchanting I come home I freshen up and eat the tastiest breakfast in my life Later my grandmother introduces a girl Paavai She goes to the village school She lives down the street She is very eager to show me around the village Paavai shows me how to play with a tyre and a stick We happily run down the lanes balancing the tyre with a small stick We stop to talk to Paavai’s friends Amir Peter and Umaiyal All children here too have their summer vacation Amir is helping his father in milking their cows He lets me pat his black calf Peter and Umaiyal are sitting with their grandmother breaking groundnut pods and piling them neatly Later they will take the nuts to the village market to sell them I help them for some time April Paavai takes me to the village pond There are many children splashing around in the pond Some boys are climbing to the top of the tall tamarind tree Girls are playing hide and seek near the big banyan tree My mother and my aunties take me to the river for a refreshing bath I play for some time in the cool water but I cannot swim So I sit on a big smooth rock and watch my friends swim like experts They talk and laugh a lot as they wash their clothes and dry their hair in the Sun The river is so clean that I can see the pebbles in the riverbed and colourful fish swim by I love the scenery April We are back to our home in the city The trip to our grandparents home was so enjoyable Those two days flew by so fast I realised that during this stay I had neither watched television nor played video games I am eagerly looking forward to our next visit Let us sing Farmer’s friend Often seen as filth But gives the soil good health To reward the farmer with wealth Ploughs the soil before farmer Use not the chemicals to harm her Please praise our motherland’s armour Shy to show his looks Toils often on fishing hooks To give the fisher something to cook Be humble like a worm Think no one to harm You will be free to spread your charm Let us read The Farmer and his daughters In the village of Manipuram there lived a wealthy farmer He had three daughters All his daughters were married and living their life happily The farmer was getting old He wanted to distribute his wealth to his daughters But he wanted to know what responsibility he could give to each of his daughters He called all his daughters and gave each of them a bag of millet He asked them to use grains in the best way possible and then come back to him after one year After one year the daughters came back to their father’s house The farmer welcomed all of them First he called the elder daughter and asked about what she had done with the grains given to her She replied Father I fed those grains to flocks of birds that I saw on my way back to home Then the father called the second daughter and asked the same She replied Father I thought those grains were sacred So I mixed those with other grains kept for community food service So that everyone could have it After this the third daughter came The farmer asked her about the grains She said Father I don’t have those grains with me now I need two bullocks and men to get the grains Father was confused and asked her Why do you need bullocks and men to bring the grains here The daughter smiled and replied I sowed those grains and now it has grown as crops So I need a bullock cart and men to harvest and bring back the grains Father was happy to know that she used the grains wisely Father found her apt and gave her the responsibility of the fields He distributed his other wealth equally among the other two daughters Unit Our Nation I love my country So I keep it clean Do you Let us learn The Guardians of the Nation Anandhan an d Yazhin i came home from school After washing their face hands and legs they sat down next to their father Their father was watching the news on the television There were two bowls of chickpea sundal They ate and watched a ceremony where people were paying respect to a helmet on top of a gun Dad what is this place What are they doing asked Anandhan Dad replied This is Amar Jawan Jyoti a memorial for the soldiers who died for our country Every year December is observed as Armed Forces Flag Day On that day we remember the sacrifices of our soldiers for guarding our nation It is a great honour to serve the nation by joining the army Why do the soldiers people die When will it stop Yazhini proudly declared When I grow up I will join the army and serve the nation Anandhan said I will become a doctor and treat the people Yazhini asked Why don’t you join the army and serve the nation like me Father intervened her and said Joining the army is not the only way to serve the nation Each one of us can serve the nation in our own way Yazhini asked Really dad How can we serve the nation Father said Serving in the army is a grace but not everyone gets a chance to serve But each of us has a role in our society and by doing that role we are serving our nation Father continued I will tell you the story of Karmugilan He was a doctor who died serving the people He was young and talented He went to the USA for studying His parents were very proud of him They thought that he would live in the USA and continue his practice But to everyone’s surprise he came back to India and started treating poor people free of cost Yazhini asked Were his parents not angry with him Dad said They were angry But they knew he was happy One day dengue broke out in the nearby villages He left to those villages to treat the people He saved the lives of many He was soon well known in the village and people poured in to get treated But one day he got infected by the disease and was taken to the city hospital He was in critical condition His parents were upset and worried He told his parents that he had done his duty to the country and was happy In a couple of days he died In his memory the people of the village have built a hospital and treated people at free of cost That’s really great dad He is a real hero said Yazhini Father replied Each one of us should love and respect our country We should treat everyone around us with love and respect That’s the real service to the nation Let us sing Patriotism Will we live in a country Without inner boundaries Will we treat everyone alike Or will we show our dislike Will we stick to our core in Or will we become foreign Yes we love our nation Divided when seen as persons Yes we have different language Yet our integrity shouldn't damage Will we make our mother proud Or be with her like the crowd Learn how to be kind And love each of her child Let us read The Legend of Jaswantgarh Jaswant Singh Rawat was an Indian soldier the place Jaswantgarh in Arunachal Pradesh gets its name from him The legendary story The battle of Nauranang handed down through the ages of Nauranang is inspiring and records the valour and patriotism of Jaswan There was a war between India and China in the year In the final part of the war Nauranang was the last stand of the Indian army against the Chinese army The battle started on November and continued for seventy-two hours At A M in the Eastern Himalayas the Chinese army attacked the lonely Indian post in Nauranang Knowing that the Chinese army was stronger the Indian soldiers on the post were ordered to retreat and regroup But Jaswant did not leave his post and decided to continue the fight to hold the Chinese until the reinforcements arrive Two village girls named Sela and Nura helped Jaswant They set up weapons at separate points Jaswant taught the girls to handle fire guns All three kept shooting on the Chinese army Jaswant was running to different gun points and kept shooting His intention was to give the Chinese army a perception that they are facing a huge Indian battalion He did this for three continuous days Jaswant and the girls had killed three hundred Chinese soldiers The Chinese army decided to cut food supply to the post The Chinese soldiers caught the man who brought food for the three In the Chinese interrogation the man told the truth that a single soldier was guarding the post A single soldier and two girls from a local tribe had fooled the Chinese They were shocked and furious They surrounded Jaswant Singh and launched the final attack Jaswant shot himself as Chinese were going to capture him A grenade blast killed Sela Nura the tribal girl was captured alive After the war the commander of the Chinese army returned the brass bust of Jaswant A war memorial with the brass bust was made to remember him and his service to the nation All army personnel who pass through this memorial pay their respect to him The Indian Army still treats him as a serving officer and awards him promotions India awarded him the Mahavir Chakra Jaswant may have died in battle that day but he still lives in the memory of people in Jaswantgarh and the Indian army Hospitality I greet my guests with a smile What about you MY LITTLE PICTIONARY Shadow n the dark area seen under an object in light Twig n small thin branch of a tree or bush Disguise to change the appearance to hide identity Gruel n thin watery porridge Guest n the person who is invited to a function or to stay at one’s house The Gift Once a beggar was hungry He saw a big house and went there to see if he would get something to eat The house was very big and luxurious There was a beautiful garden around the house As he neared the house he could smell tasty food He knocked the door A well dressed man opened the door The man’s face shrank on seeing the old man He asked in a harsh tone What do you want The old man with his feeble voice replied It has been two days since I had food so please give me something to eat The rich man got angry and shouted at the beggar Do you think I am running free food service Get out of here The old man with the same tone requested Is there any left out Don’t stand here wasting my time get out of my sight said the man and slammed the door The old man slowly walked away In his way he saw a lady from the house dropping banana leaves with food in the trash can He was sad He slowly walked to the next house and knocked the door Is anybody there After repeated knocks a voice answered Nobody is home Try the next house If there is no one then who is answering me asked the old man The man got irritated and opened the door and said Why don’t you try the big house in the same street The old man sadly replied I tried but he did not offer any food He asked How can you expect me to help you when the richest man of the village denied The old man left the place The old man was tired and could not walk anymore So he sat under a tree and soon slept A man in shabby clothes woke him and asked Who are you Why are you lying here The old man replied I have no food and no place to stay The poor man said You look tired and hungry come to my home and stay with us The old man replied I don’t want to be a burden to you I just need some food The poor man said Okay just come and have some food with us He took the old man to his hut The hut was very small and barely enough for the family The old man saw that the house wouldn’t withstand the monsoon The house had no furniture but only a few utensils were there for use The people in the house a lady and two children were very happy to welcome the old man in They made him sit comfortably The children sat near him The man introduced himself and his family I am Kaliyan I work in the farm nearby This is my wife Viji and my children Gopi and Rathika Soon the children got close to the old man They asked many questions and played with him Kaliyan helped the man wash his face and hands When the old man entered the hut Viji was ready to serve the food They all sat in a circle Viji served the gruel from an earthen pot First she gave to the old man and then to the children and Kaliyan After the dinner Kaliyan laid a mat for the old man to sleep Next morning the beggar asked them to pack their things They all couldn’t understand why he asked so Before they could ask anything the beggar said I am not a beggar I am a land lord from a nearby town My family and I were helping the poor and the needy My wife and son died two years back Without them I continued my service As I grew older I wanted someone to take care of my wealth and service after me You have to accept my request and fulfill my desire Kaliyan was reluctant but the old man persuaded him and his family The old man was happy that his service would continue many more years even after his death Why did the oldman disguise himself as a beggar Glossary shrank an adverse reaction feeble weak denied refused shabby worn out reluctant hesitant persuaded convinced garden very small trash can hungry and tired old man well maintained hut earthen pot gruel wasted food draw in your mother tongue meaning use in a sentence parts of speech Banana leaf Join in any group Pick and support or oppose any one of the characters Say some sentences for the one you support and say some sentences against the other one to win I oppose the rich man because I support Kaliyan because Hi friends I am here to show my magic tricks Now I take the word colour and the word ful to make a new word colourful Like this we can join many words together to form new words A suffix is a letter combination that are fixed at the end of the word The suffixes add new meaning to the word less ful er ment when we add the suffix less it gives the meaning without when we add the suffix er it denotes a person who does the action when we add the suffix ful it gives the meaning full of when we add the suffix ment it denotes the name of the action less toothless careless ful joyful beautiful er singer painter ment judgement treatment dance er entertain ment fear ful Make something better A person one who teaches Very pretty Having no money word penny beauty develop teach suffixes ful ment er less Mother Nature Look at the hospitality of Mother Nature It gives everything to all creature There are no strangers under the tree Enjoy the shadows and fruits for free There is a home for bird And refreshing place for the herd This virtue is our culture Follow it in your future Always welcome with smiling face Wins the hearts in life’s race Fortune knocks with its best Those who cares for their guest Glossary hospitality taking good care of the guests and visitors strangers unknown people refreshing renewing virtue high moral behaviour culture the habits and customs of a particular society fortune luck nature tree bird face culture Present Perfect tense is used to show that an event has happened in the past and has present consequences You all know the forms of verbs Those are Present Past Past Participle Present Participle go goes went gone going We use past participle form of the verb along with the words have or has to show present perfect tense I have played cricket You have played cricket He has played cricket We have played cricket She has played cricket They have played cricket It has played cricket In the above examples you can see that the verb is in past participle form for all the subjects only the words have has changes has is used for he she and it have is used for I you we and they An event that happened in the past that affects the present We are going to Ooty will you come with us No I have gone to Ooty many times Where is your father He has gone to shop He will return soon Action that was completed recently Yeah I have completed my work Stop The train has gone I have read this story She Shanmathi has given the book We My friends have come to the party My friend The manager has accused him You The flight has lost the contact I She writes a letter to her friend She has written a letter to her friend Mohamad loses his purse in the crowd They eat all the bananas themselves I book two tickets for my brother Mahesh gives the book to his friend drank written won taken spoke given miss see play prepared gone August b August January Judge b District collector Politician Hello Hello May I please speak to Sathana May I know who is speaking I am Suganthi her friend Just a minute Sathana it’s for you Hello Hello I‘m not able to hear you Speak a little louder Hi Sathana Am I audible This is Suganthi How are you What a surprise I am good What is the matter I am going to the library tomorrow Would you like to come with me Of course I need to renew my membership card Good I will pick you up around The library opens at a m Ok I will be ready Structures that are useful for this situation Who is speaking Tell me your name Your name please Can I speak to I want to speak with Can I have a word with The Two Pigeons Once there lived two white pigeons They were friends They spent their days looking for food During afternoons they would rest on their favourite tree in the forest Then they would sing and dance Soon it would be night they would lock their wings and sleep One day it was raining heavily in the forest The animals ran to their home So did one of the hen-pigeons She ruffled her feathers and shook her body to remove the water She adjusted her wings and perched on the tree and started waiting for the cock-pigeon The rain continued to pour heavily and it was getting dark She started to worry for her friend He is never so late I hope he is safe she whispered to herself Ah The rain is heavy let me wait in this tree till it stops thought the cock-pigeon and perched on a tree He did not know there was a bird catcher nearby The bird catcher silently reached near the pigeon and CLAMPED He had caught the pigeon The pigeon tried to fly and flutter in vain The cock-pigeon was tensed and fainted The hunter put the pigeon in his cage and started to walk home I should be home before the rain increases he thought to himself It started to rain heavily just then the hen-pigeon saw a bird catcher coming near the tree In the cage he had the cock-pigeon It was unconscious Fear gripped the hen pigeon Was it her friend The bird catcher neared the tree She had to hide but she also wanted a closer look to see if it was her friend She flew down to the lowest branch Oh no It is him What shall I do now I have to help my friend worried the hen-pigeon The sky thundered and the bird catcher took cover under her tree Looks like I have to wait till the rain stops said the bird catcher Soon it stopped raining the bird catcher wanted to leave but it was too dark and late in the night I will camp here for the night and leave in the morning he thought It was a wet and cold night and he wanted to start a fire to keep himself warm He could not find any dry twigs The pigeon in the cage woke up and tried to fly only for his wings to hit the cage The hen-pigeon started to cry Her friend said Do not feel sad dear We have a guest now The man is shivering and hungry He needs your help The pigeon flew from the tree in search of dry twigs She got two or three twigs at a time and made a big heap of dry twigs She got flintstones for the bird catcher to start the fire The bird catcher was surprised by the hen-pigeon He made fire You are my guest I have no food to give you I will jump into this fire so that you can eat me The bird catcher was overwhelmed by the hospitality of the pigeon He caught the hen pigeon and stopped her from jumping into the fire Oh kind bird What do you want I will help you in any way I can said the bird catcher Please set my friend free My life will be meaningless without him replied the pigeon He opened the cage and set the pigeon free I was cruel and selfish I will never trap any bird again said the bird catcher He stayed the night there In the morning the pigeons got him nuts fruits and seeds to eat The bird catcher thanked the pigeons and walked away The pigeon started to worry for her friend They would rest on the tree The bird catcher’s clothes were dry The pigeon flew away for dry twigs The bird catcher let the pigeon jump into the fire I hope he is safe Do not feel sad dear I will camp here for the night Oh no What shall I do now I was cruel and selfish Many animals lived in a big forest An elephant had a small piece of land She grew many vegetables and fruits in it She took great care of the garden but it gave food that was just enough for her One summer the forest was dry as it did not rain All the trees and plants were dry and the forest looked brown All the animals felt hot Many animals moved to another forest The elephant somehow got water for just one watermelon plant which had only one watermelon in it A rabbit who had three babies came there in search of food She saw the watermelon and went near it Stop said the elephant The moment the elephant saw her babies she took pity and gave the watermelon That night it rained heavily in the forest Soon the garden was full of vegetables and fruits The elephant shared them with all If we help someone we will receive twice in return During difficult time we should save for ourselves Praise others to get your way Read the two letters below April Dear Grandma Thank you for the gift It was nice Yours lovingly Kamalesh October Dear Grandma Hi How are you I hope this letter finds you in good health Thank you for the wrist watch presented to me for my birthday It is very light and waterproof It is useful to know the time during my exams Yours lovingly Agathiyan Moorthy is an old man He comes to the park every day He tells exciting stories to the children who play there After playing children sit around him to hear stories of kings and queens and monkeys and lions You are one of the children who love his stories Write a letter thanking Moorthy thatha You can use the key words below lovely excellent interesting enjoyable fun thank thoughtful Name of the object In your mother tongue Use in a sentence colour thank drive retire less ful er ment ous ment Dear aunty Yours lovingly Learning Outcome Now I Can use present perfect tense write a thank you letter listen and respond to speak over the audio phone understand the prose and supplementary use suffix read and understand a passage Recite the poem and identify the rhyming words listen and respond to the audio Sports Karate makes me brave and bold Would you like to learn it MY LITTLE PICTIONARY Gourd n a large vegetable with hard skin Victory n winning an opponent Archer n a person who shoots with bow and arrows Audience n people who come together to watch something Judo n a sport where one tries to unbalance the opponents by using arms and legs Gourd n a large vegetable with hard skin Victory n winning an opponent Archer n a person who shoots with bow and arrows Audience n people who come together to watch something The Strength in his Weakness Akilan was an active and energetic boy He liked sports as much as studies They were like his eyes How could he choose one over the other He had a passion for sports So he spent most of his evenings in the playground He also remembered his father’s words Learn well live well So Akilan used to spend his mornings on studies His physical education teacher was his inspiration The teacher was good at Judo His passion for learning Judo grew every day He was afraid that his interest in Judo would upset his parents Finally one day Akilan told his parents about his passion for Judo and also showed the medals he won in sports His parents were astonished on seeing the medals and certificates that he won in school After a few months in an accident Akilan lost his left hand That day onwards he did not go out of house often He used to sit in a corner His parents were keen to fulfil their son’s passion His father showed an advertisement of a Judo school that he came across in a newspapper Akilan saw the advertisement his passion for Judo energised him He asked his father if he could join the school His father with tears of joy got him admitted in the Judo school Akilan was very excited on his first day in Judo school His master was the best Judo teacher in the town His master trained him the basics before teaching the advanced skills Everyone wondered how a boy with one arm could master Judo Akilan learnt and practised consistently for two years He practised only a single stroke for two years Akilan was surprised and annoyed as his master taught him only one stroke but soon he mastered the stroke No one could excel him in that stroke To everyone’s surprise Akilan was picked by the master for National Judo Competition Everyone ridiculed Akilan and his master as they were not sure how a boy with one hand could win a national competition To everyone’s surprise Akilan easily defeated all his six contenders with his single stroke Akilan reached the finals Akilan’s heart was beating fast and he could not believe that he was in the finals The final match began and it had a total of six rounds The opponent was very strong and defeated Akilan easily in the first two rounds The referee blew his whistle then Akilan’s master rushed to him and said Believe yourself The key to success is to focus on your strengths and not your weakness Akilan felt some new energy rushing through him He did not want to lose this match Akilan understood the hidden hint his master gave him He had to focus on his single stroke and not on the strength of the opponent Bam Bam Bam Bam Four strokes and four knockouts Akilan had won the finals He was the champion Akilan thanked his master for training him and for believing in him Soon Akilan’s curiosity took over and he asked How did I win the competition with a single stroke His master told him My dear you learnt the most difficult stroke in Judo that very few can master If your opponent wants to beat you they should hold your left hand This is the secret behind your victory Glossary passion strong emotion inspiration mentally stimulated to do something creative wondered to think with a feeling of surprise excel exceptionally good ridiculed teased a Cricket b studies Kabbadi Karate b Judo Kalari two strokes b many strokes single stroke three years b two years one year Believe yourself Learn well live well How did I win the competition with a single stroke My dear you learnt the most difficult stroke in Judo It is a big tree No it is a huge tree You both are correct As the father said the words big and huge have similar meanings There are many words that have the same meaning Let us see Example angry furious happy joy cut chop slim thin small sick large glad stone leap I ate the big apple This is a little dog I threw a rock in the lake I am so happy In picture In picture The sun is happy The tree is tall The pond is full of water The pond is empty The tree is short The sun is sad The words that denote differences in the above pictures give the opposite meaning Happy is the opposite of sad Tall is the opposite of short Full is the opposite of empty bright huge full bottom Is this bottle empty Is he standing on top BIs this a small tree Is this a dark room The Swimmer She stands still and tall She seems greater than all She dives like the fish To be like her one can only wish She swims with perfect flight Her strokes like dancing light She breathes air And rips across the water with flair Up ahead the audience cheer She knows that the finish line is near She picks up her pace As she wants to win the race Straining with all her might She never gives up the fight As she reaches the wall Her name as winner they call Glossary strokes a particular style of moving the arms and legs in swimming rips pull something quickly or forcibly cheer expressing good wishes flair ability talent strain force give up surrender tall light might A conjunction is a word that joins two words or sentences I can not go out because it is raining He missed the bus because he came late She did not buy the book because she had no money In the above sentences the word because is used to explain the reason for the first event Priya was sick so she consulted a doctor He came late so he missed the bus She had no money so she did not buy the book In this sentences the word so is used to explain the result of the first event The cat was hungry because I had a headache I was on leave so it ate a fish He was afraid of the dog because she had to attend function She went home early so he ran away because so when vehicles are stopped b when vehicle are going to avoid head injury b to get rid of sunlight Who are you ma Why are you standing alone Why did you come here That’s good But I will not harm you Fine Don’t worry I am also a policeman Oh Come I can help you find your parents First I will buy you something to eat My name is Rosy I am lost I came here with my parents for car festival Thank you But my parents and teachers advised me not to go with any stranger Sorry I am looking for a policeman or traffic police for my guidance If so I will give my father’s phone number Please call him But I will not come with you That’s good I will call your father mI lost my path Please call my parents Could you please call my parents Practice Makes a Man Perfect Long ago there lived an archer named Uthaman During his time the forests and animals filled the lands He was a skilled archer and could perform wonderful feats of archery He could hit the centre of the target precisely no matter how far the target was He was also a show off He liked to show his skills for the crowds to admire One day as usual he was shooting arrows at the targets The admirers watched in awe At that time a man with a beard as white as snow carrying oil gourds joined the crowd and stood at the back As Uthaman finished the crowd clapped and cheered for him except the oil seller He neither clapped nor cheered Suddenly with a deep and loud tone he said It‛s just a matter of practice Uthaman got annoyed The irritated Uthaman asked Are you an archer Do you think anyone can do what I do The old man said calmly No sir I am not an archer I don’t doubt your skills All I said was that everything was a matter of practice Uthaman was red in anger What do you know to pass such thoughtless comments on others Who are you Sir there is no reason to be angry I am a simple oil seller I am sure you must have guessed that by seeing my gourds I fill these gourds with oil and sell them Over the years I have achieved some skill in filling the gourds If you allow I will show it to you said the old man Uthaman in a mocking tone said Hmm Show us your skills Everyone was curious They wanted to see what would happen next The crowd inched closer to get a clear view of the oil seller Unfazed by the crowd and by habit the oil seller was calm He patiently placed an empty gourd on the ground He then placed a small coin on the mouth of the gourd The small coin made of copper had a small hole at its centre The oil seller stood up took some oil in his ladle and began to pour oil into the gourd From the height he poured the oil it went straight into the gourd through the hole in the coin When the oil seller had finished filling the gourd he lifted the coin He showed people that the coin did not have any trace of oil The crowd was shocked to silence Then one person cheered and soon the entire crowd burst into a loud cheer for the oil seller The oil seller smiled and said As I told there is nothing special about it It‛s only a matter of practice Uthaman was just as surprised as the crowd He smiled and said You have taught me something today Thank you painting archery dance gourds of oil gourds of milk gourds of water a vegetable vender an oil seller a merchant a piece of paper a small coin a small stick draw in your mother tongue meaning use in a sentence parts of speech Bow Join in any group Pick and support any one of the characters Say some sentences for the one you support and say some sentences against the another one to win I support the archer I support the old man We had our annual sports day on the of this month It was fun They decorated the school and the playground There was the March past The headmaster started the event There were races jumps and other events Martin and I took part in and meters race In meters race I came first I got a gold medal My friend Ravi got first in meters The girl’s team won the relay race In the long jump Rubesh won the first prize He is in the sixth grade Yasmin was the champion of the year The events closed with a giving away the prizes Martin Rubesh Yasmin Ravi Individual photo identity form for District level sports meet For individual sports only Sport Game Paste your photo to be attested by the head master Age group Under Boys Girls Name of the student Standard and section Father’s Name EMIS Number Date of birth DD MM YYYY Name of the school with address Residential address with contact number Name of the zone Name of the Educational district Name of the revenue district Name of the division Identification marks Signature of the student It is certified that the particulars furnished above have been verified with reference to the information registered in the school record and found correct I Can Do Name of the object In your mother tongue Use in a sentence fast afraid train fear practise speed fix young near old break far nature herd bird race face creature because so Learning Outcome Now I Can be get help from the helpdesk understand the prose and supplementary use similar words and opposite words read a passage and identify the characters use connecting words because and so fill an application form listen and respond to the audio recite the poem and identify the rhyming words Learn Always I try to solve my problem with new ideas Do you MY LITTLE PICTIONARY waxwork a lifesize dummy made of wax magician n a person who performs magic tricks disguise to make a person look different to hide their identity chit n a short l note on a piece of papers statue n a human made figure of a person or animal that is life-size or lager FIVE DETECTIVES After a week It was a sunny afternoon after a long time in Ooty Arul and Amudha were sitting on their balcony The last three vacations were very exciting for them as they were involved in solving three mysterious cases in their city They missed their friends Sreejith Jessy and Fathima They called themselves The Five Detectives or D They were famous in Ooty for their courage and skill The police appreciated D for their admirable acts Amudha and Arul missed Pablo Pablo was Sreejith’s dog He played an important role in solving the mysteries Sreejith Jessy Fathima and Pablo came to Amudha and Arul’s house Pablo was jumping with joy and continuously wagging his tail Amudha I am so happy to see you all Arul Now we can all head to solve a mystery It will make our vacation interesting Sreejith Mystery Did something happen in the town while I was gone Arul No Sree Nothing at all Amudha urged that they all go the town's fair She told them about different games magicians and most importantly the Waxworks a studio with many wax figures inside After a lot of pestering everyone agreed to go On their way back they saw Inspector Velayudham on his bike He was the inspector of the area Inspector Velayudham has been very busy these days said Amudha This made the group curious about what was happening in their city that they had no clue of Monday Jessy overheard her father talking on the phone about a robbery that was expected to take place in the museum Jessy rushed to see her friends in the morning and told them what she heard Sreejith Oh now I know what Inspector Velayudham is up to Jessy Let us solve this case before he does Sreejith I feel we will find more clues if we are near the city area We will also be able to observe more things I will disguise myself as that old man we saw on the street Everyone agreed to it Sreejith dressed as the old man Sreejith sat on the old man’s bench coughed and sniffed like him No one could recognise Sreejith Soon a man on a cycle came and sat next to the old man He said Where have you been since yesterday Take this The man handed over Sreejith a packet of chocolate and went away Sreejith took the chocolate and kept it in his pocket He saw the real old man coming in his direction from the other side He also saw Inspector Velayudham rushing out of a shop towards him Fathima and Jessy were watching all this from afar They got worried and rushed with Pablo towards the Inspector Pablo started barking and jumping on the Inspector The inspector was annoyed with the dog Sreejith saw it as a chance to run from there He hid in a bush nearby Inspector Velayudham ran towards the old man and caught him Then he asked him to give the chocolate to him The old man was puzzled Inspector took the old man to the Police station and locked him While this was happening the D gathered in Jessy’s garage They opened the chocolate to find a small chit They opened it and found a list of grocery items They were very confused Amudha Sree is it a code Sreejith Yes it seems so Amudha I wonder if it is some kind of magic pen like the one you showed us When we show it under a light we can see the writing Jessy It could be I still have his pen with me I will go and get it at once Jessy got the magic pen They flashed the light on the paper and some words glowed on it The message said Tell Number Waxworks Tuesday PM Number Arul Tomorrow is Tuesday So the gang is meeting tomorrow While they sat in the garden Inspector Velayudam saw Sreejith dressed as the Old man He was furious Then Sreejith had to confess He handed over the chit to the inspector The inspector was glad to have found the chit but was furious about their behavior He warned them to stay away from the case Sreejith’s idea was to disguise himself as a wax statue As it will be the most easy way to get all the information That evening all of them went to Waxworks They observed each wax statue and noted down details While getting out of Waxworks Sreejith unlocked one of the windows in the room Tuesday Night He saw the Inspector inside Waxworks and had no way of getting in without being noticed He was really sad and went home In the morning Sreejith heard the news of Inspector Velayudan arresting the three robbers and also the diamond necklace Everyone was upset that they didn’t get the chance to solve the mystery As they sat in Jessy’s living room they overheard Jessy’s father on the call saying Where is the real necklace This news alarmed the D Fathima told everyone to rush to the city as some message will be passed regarding this Within no time the D was in front of the old man’s bench Everyone sat at different places to keep an eye on the man After an hour a man came and sat next to the old man The old man was busy drawing something on the ground with his stick They noticed that inspector Velayudham was observing at a distance and started following that man But they waited for the old man to leave and went to see what he had drawn on the ground and it said Waxworks At Waxworks Sreejith Amudha if you were to place the diamond necklace in this place where would you place it Amudha thought for a second and said On the princess statue She already wears so many jewels that this will go unnoticed Everyone’s eyes lit up They walked straight to the princess statue They saw the diamond necklace Sreejith carefully removed it and kept it in his pocket As soon as they came out there was a senior policeman standing The children went straight to him and handed over the diamond necklace They told him the whole story They were appreciated for their courage and dedication towards their city Glossary admirable praise worthy mystery kept secret pestering irritating overheard to hear without the speaker’s knowledge solve to find the answer sniffed to smell by short inhalations furious intensely angry LET US BUILD We two went to the hill So we felt too happy Here the words two to and too sound alike But they have different meaning We know that these kind of words called Homophones Let us see how to two and too differ in meaning Those two went Two tables are number to the mountains too small very and felt too cold Here two is used to show the number To used to show the place direction It can also come to show reason Too means very extreme Two tables are number to the mountains too small very and felt too cold to lift reason LET US SING Why is the sky blue Why is the earth round Why is silk soft Why is fire hot Think Why is it so Why does the river flow Why does the wind blow Why does the sun shine Why does the rain pour Think Why is it so Let us seek With questions all week As we grow With answers to know Think Glossary Soft smooth Blow a sudden Shine bright Pour flowing LET US KNOW Let us learn the describing words He rides his bicycle carefully He rides his bicycle carelessly The above sentences tell about how he rides his bicycle Such words that describe an action or verb are called adverbs LET US READ The Witty Sparrow Once a very clever brown sparrow lived in a forest had three eggs in her nest The nest was in a bush All the animals greeted her Madam with respect Gullu the young elephant never did so THUD THUD Gullu walked past the bush purposefully It rattled the nest Madam was worried that Gullu might crack the eggs If you do this tomorrow I will tie you up with a strong rope and then You can’t move at all I warn you Tie me up Ha Ha Ha We will see That afternoon she went to the river bank to drink water A crocodile was stretching in the spot she was drinking water Blocking me again You have done it twice this week Move on I don't want to drink muddy water Move on did you say I will stay put you better go elsewhere to drink water Little thing like you tying me up Ha Ha Ha Today I will let you be But if I find you in the same place tomorrow I will tie you up with The sparrow went back to her nest and got a brilliant idea Next morning Gullu came thumping towards the bush HEY Are you not tying me up How dare you Aren’t you afraid of me Just wait The sparrow took a strong creeper and tied the elephant on one end USHHHHH Don’t you dare to move Stay here until I fly and reach the other end of the rope to pull you When I say pull pull with all your strength Let us see if you can move an inch It went to the river saw the crocodile blocking its way I will not move Just like yesterday drink the muddy water Sparrow took the other end of the creeper and tied the crocodile I warned you yesterday Now stay still until I grab the other end When I say Pull lets see if you are able to pull or not Sparrow went to the centre of the creeper PULL The elephant and the crocodile pulled each other at the same time This went on all day Both the animals were exhausted Please let me go I won’t disturb you again Good I will remove the rope Untie me I won’t stand in your way Gullu ran into the forest and the crocodile dived into the river Soon the eggs hatched Madam Sparrow lived happily with her three little babies LET US READ ALOUD Once two merchants lost a camel They met a boy who was passing by and asked him if he had seen it The boy said he had not seen the camel He asked Was your camel blind in the right eye Yes he was said the merchants Was it lame in one left foot asked the boy It was said the merchants Was it's front tooth missing asked the boy yes they said Did it have honey on one side and wheat on the other yes they answered Please take us to it But I have not seen your camel said the boy and I do not know where it is The merchants got angry and said Really How could you tell us everything about our camel That is my secret said the boy The merchants took him to the king The boy told the king that he had not seen it Then the king asked him how he knew so much about it The boy said that the camel had eaten grass only on the left side of the path So he knew that it was blind The marks of its one left foot were faint This showed that the camel was lame While eating grass it had not eaten the grass in the middle So he learnt that it had lost its front teeth There were ants carrying grains of wheat on one side of the path and flies eating honey on the other We are one I want peace for all in the world Do you MY LITTLE PICTIONARY wag fast movement of the tail to and fro pet n an animal raised as a friend or family sink n a fixed basin with a tap for water crack break or cause to break without completely separated parts garbage n rubbish or waste LET US LEARN The Cracked Coffee Cup Kani was waiting for her parents to return from work She was eager to talk to her parents about her day at school Suddenly Teddy the dog ran to the gate with his favorite pillow Teddy where are you running asked Kani Kani ran after Teddy to see where he was going Kani’s parents were at the gate Teddy was so happy to see them and he took his pillow as a sign of welcoming them Teddy would not stop wagging his tail and followed them until they pet him Kani didn’t wait for a moment and started talking about her day to her parents It was a Saturday morning At AM while Kani was painting Teddy again ran to the gate with his pillow Teddy parents are here and where are you running again asked Kani Kani again ran after him This time it was Selvi the house helper at the gate Teddy would not stop wagging his tail and followed her until she pet him Selvi then started cleaning the house and every time she walked near Teddy he would wag his tail Kani walked into the kitchen where Selvi was cleaning the vessels Near the kitchen sink Kani saw an old cracked cup with coffee in it After finishing all the work at home Selvi drank the coffee At around PM while Kani and Teddy were in the garden she heared someone whistling Teddy again ran to the gate with his pillow Teddy Selvi akka left an hour ago and where are you running again asked Kani Kani again ran after him This time it was Muthu Muthu collects garbage from every house Teddy would not stop wagging his tail until Muthu pet him Kani ran to the kitchen to pick up the garbage bag Kani will you eat these sweets There are only two left and it is getting old asked Kani’s mom No I won’t eat replied Kani There is also some leftover rice from yesterday I will pack both the sweets and rice We can give it to Muthu said Kani’s mom Kani drops off the garbage and gave Muthu the leftover food After an hour Kani’s father prepared Kani’s favorite biryani Kani’s family sat to have lunch We are having guests at home Kani said her mom Who is coming asked Kani Rani aunty and her -year-old son Anbu are coming from America replied her mom I am very excited to play with Anbu At what time are they coming Around PM replied her mom Before they come home you take Teddy for a walk Ok said Kani’s father Sure said Kani After a few hours of nap Kani parents started preparing dinner for Rani aunty Kani’s mom took the new dinner plates cups and spoons from the cupboard and cleans them Kani took Teddy out for a walk While crossing a provision store at the end of the street Teddy suddenly started running Teddy why are you running again asked Kani Kani ran with Teddy while holding his leash very tightly This time it was Amar the provision shop owner who was standing outside the shop Teddy ran to him and would not stop wagging his tail until Amar pet him There was a dog lying outside the shop Kani remembered how some people would throw stones at this dog While she was thinking about it Teddy started playing with that dog Kani pet the other dog After a few minutes Teddy and Kani started walking into the next street Teddy started running again Oh no Teddy not again Why are you running again Who was it now said Kani This time it was Mary She was a differently abled person who sells candles outside a church Teddy ran to her and would not stop wagging his tail until she pet him They continued walking Teddy and Kani finally reached home and were ready to welcome guests Kani’s family had a great time with Rani aunty and her son After a long day they all went to sleep Kani was sleeping and suddenly saw flashes of the broken coffee cup leftover food the street dog getting hit by stones in her dream Kani woke up very disturbed She looked around She drank water and went back to sleep After a while Kani saw flashes of Teddy playing with Mary Muthu and Anbu Kani woke up again but this time with tears filled in her eyes She realized how Teddy was compassionate and how he loved everyone equally At that moment Kani decided that she will also treat everyone equally with love and respect She hugged Teddy and kissed him Teddy wagged his tail and both went back to sleep Kani narrated the entire dream to her parents Kani parents didn’t say a word and remained very quiet The same day at am Teddy ran to the gate with his pillow It was Selvi again Selvi started doing her routine of cleaning dishes Kani walked into the kitchen to see a new coffee cup on the counter Kani smiled and walked back to the room with a renewed hope Glossary leftover extra excess differently abled a person who is physically disabled flash Sudden burst of bright light disturbed troubled renewed to start freshly LET US BUILD I took my dog to the vet veterinary surgeon This school has a lab laboratory I visited the zoo zoological park Clipped words are a short form of a word which makes them easier to spell and write Here are some more words Original words Clip words advertisement ad automobile auto mathematics math microphone mic centum cent photograph photo examination exam spectacles specs refrigerator fridge hippopotamus hippo gymnasium gym The words vet lab and zoo are called clipped words why such words needed LET US SING The Dreamer Imagine There are no diversity It isn't hard to do Nothing to kill or die for Am I a dreamer I hope not the only one Will you join me To make the world as one Imagine All that belongs to you is shared I wonder if you can No need for greed or hunger Am I a dreamer I hope not the only one Will you join me To make the world as one Glossary imagine think hope confident belong to be a part share distribute wonder surprise greed excessive desire hunger desire for food LET US KNOW A king went to a forest on a horse He stopped under a tree to rest and tied his horse there A loin from a distance saw him and he also saw it He took his horse and fled away In above story the coloured words are used instead of nouns King and lion These words are called pronouns Pronouns are used in the place of a noun When we have to repeat a noun we should use a pronoun instead of the noun Subject pronoun Object pronoun Possessive Adjectives reflexive I Me My Myself We Us Our Ourselves You You Your Yourself yourselves They Them Their Themselves He Him His Him self She Her Her Herself It It its Itself LET US SPEAK Let us learn to enact the story Steps to follow to enact Note to the teacher Give two more picture stories for children to enact with some key words for making dialogues LET US SPEAK Step Look at the pictures Step Decide in your pair who will be the lion and who will be the rat Step Decide the scenes Hint Each picture is a scene Step Make dialogues for each scene and practise it Some dialogues that will help you are Oh lion Please leave me I can save you in danger How will you save me Now run before I eat you Oh king I am happy I could help you and Thank you rat for saving me Step Act it to the class LET US READ The New Start Tenzin a boy from Tibet was forced to out of his country He writes about his experience in his journal Let us read about his experience My name is Tenzin I am from Tibet From Tibet we first migrated to Himachal Pradesh in India While we lived in a refugee camp in India I learnt a few words of English From Himachal Pradesh we moved to Karnataka My family had a hard time adjusting to this new country We moved many times We first lived in McLeod Ganj and then we moved to Mysore And from Mysore we went to Gurupura and then to Kollegal I was tired and homesick Finally we decided to come back and settle in Gurupura Beginning a new life in a new place was not easy We didn't understand the system in India We didn't know how to get a house Shopping for food was the most difficult job We didn't know the names of the items we wanted to buy We asked the Refugee Relief Group to help us They arranged a house for us and showed us where to buy what we needed They even helped us get admission to the school close to our house I started going to school In the beginning I didn't understand anything I often thought of my friends in Tibet I would cry every day after I returned from school I wanted to go back to my school and my friends Every year we need to go to the government office and get our book signed Mother says that if we miss getting it signed then we will have to leave India too Now I have made friends here There is Julie my art and craft teacher She is a very nice person She helps me learn English words Miss Malliga is also a wonderful teacher She teaches me computers I have a friend whose name is Binsa She is from Nepal She didn't know English either when she came here Now we learn and practise English together There is Nimmi who fights with everyone who teases us And I must not forget to mention Charles who taught me how to play baseball I often wonder how would it be if I had lived in the same place all my life I miss my home in Tibet But that does not mean that I am not grateful to India its people and the government While many people are my friends there are still many who look at us as though we were aliens Sometimes I want to tell them that we are humans too We live on Earth too just a different part of Earth Our history teacher tells us that is people who made the boundaries of the countries We drew the lines before we draw the lines now and we will continue to draw new lines I think we would not stop braving likes unless we realise that we are all one We all are humans and we live together on Earth We need to share and grow with each other Now that I think of this I wonder if we did not have the boundaries will we need weapons Will we need protection from our own people Does an eagle ever need to be saved from another eagle Then why do people have to be saved from other people I want to help people realise that we are all one And that it is up to us to see beyond the boundaries and connect as people Only then we can fight the real evil of greed and injustice in the world together I want to end by saying that I am happy now My mother says we can be happy anywhere I enjoy being here Many people are very nice and helpful I still remember my friends and my school in Tibet I want to visit them when I grow up to tell them that we live in a wonderful world To tell them that the world can be united only by its people Come join me on this journey to make this world better A safer place A happier place A place with no boundaries LET US READ ALOUD A leader and his followers went to Ooty They shared stories to forget thigh pain from their tired legs They decided to take some rest When they were crossing a river the leader saw a poisonous scorpion floating in the river It was going die in the water The leader wanted to save it but it bit him Seeing this the followers asked him the reason of why he tried helping it even if it bite him The leader said that helping others is the nature of human and biting is the nature of the insect My Duties I close the running tap Don't you MY LITTLE PICTIONARY monster n a large ugly and scary imaginary creature shadow n a dark area or shape produced by a body coming between light and a ground earrings n a piece of jewellery worn on the ear stream n a small narrow river sword n a weapon with a long LET US LEARN The Monster Tree It is very dark and the wind is whistling no one is around One can hear the cry of a wolf far away The bush is dancing to the wind’s musi It seems as if it was a welcome dance Behind the bush there was a huge shadow It moved slightly and for a second everything was quiet No wind no movement nothing There was dead silence Suddenly a bolt of massive lightning appeared with a rumble of thunder In the lightning I could see the tree It was a monster tree I got scared and wanted to run away As I screamed in fear the monster woke up I could see it now awake transformed into a monster amid the bolts of lightning that hit the ground I wanted to run but I couldn’t move my legs The reeds from the bush have caught my legs Oh my god It is going to kill me I thought I tried to free my legs but in vain The monster’s branches became very sharp like a sword and came towards me My heart raced and I felt it might burst Mommmmm Jana What happened Get up Did you have a nightmare Asked her mother Jana hugged her mother and slept with her Her mother asked her about the dream in the morning but Jana said nothing Only a month ago Jana and her family had come to the village The previous day Jana's friend was telling her It was a very big peepal tree near the entrance of the village All children used to play under it and many birds made nests on it The elders rested in the shade But one day two men were running away from the tree They said there was a monster in it and asked people to not go near it The children ignored the warning and went to play When the children stepped near the tree it shook its leaves They hadn’t seen the tree like this They looked at one another and altogether took another step The tree twisted its branches and threw the swing near them Then the trunk of the tree cracked open and the tree roared The tree had become a monster They got scared and ran away She continued Children went to the village and told the elders what happened near the tree No one believed them Soon many more got affected by the tree and this worried the people of the village They planned to cut it But the village head stopped them He told them how the tree had helped the village He advised them to make a fence around the tree to stop people from going near it Since then the tree is called the monster tree Many years have passed and the area near the tree is desolate now The previous evening Jana went to play with her friends She was a brave and curious little girl They were playing a few meters away from the monster tree Jana was waiting for her turn Just then she felt her ears tingle She removed her earrings and kept it on the ground Suddenly a squirrel took her earring and ran away She chased it and before she knew she was in front of the monster tree Her friends shouted No Jana Don’t go there She replied I have to find my earring Then they shouted in fear It is behind you Run Jana Run She turned and saw one of the branches coming to hit her She bent down and dodged it She ran away from the tree That night she had the nightmare That day Jana decided to overcome her fear So she asked more about the monster tree She came to know that the tree was good and helpful She put her fear away and tried to find the reason for the change in tree's behaviour So she spent many days watching the tree She went to the tree whenever she had the time She felt that the tree was also watching her One day she decided to go near the tree When she crossed the fenced area the tree started to scare her But not as much as before She stepped forward and the tree swayed its branches again Then the tree dropped its sharp branches close to her Yet she was not afraid When she was going to touch the tree it opened its mouth and roared Jana calmly touched the tree and patted it The branches stopped moving and it was quiet The tree grumbled Go away Please go away She asked Why I know you are a good tree Why are you doing this The tree shouted Yes I was good but it is only because of you I have become like this Sorry You are a little girl What would you do Wait let me call my friends said the tree Come out said the tree In a few seconds one by one many squirrels came out from the tree Hundreds of them were there The tree continued They are the reason for me to become a monster Long ago a pregnant squirrel came here She said I am the last of my kind in this village The hunters are trying to kill me Please save me The tree said I did not know that people were so selfish They destroy everything mercilessly I wanted to save the squirrels So I became a monster After listening to the tree’s story Jana felt embarrassed She went to the village head and explained The villagers understood their mistake and took an oath not to do any harm to nature From that day on the villagers started calling it The mother tree Glossary whistling high pitched sound by using breath massive large ignore refuse to take notice of nightmare scary dream dodged avoided to escape oath promise pledge LET US BUILD I am a dog I am a pup Bear Cub Duck Duckling zebra foal sheep lamb eagle eaglet fish fry owl owlet deer fawn cat kitten tiger cub ostrich hatchling frog tadpole ca f elephant chick crane LET US SING Social Responsibility Our world becomes green When you keep the surroundings clean All of us are responsible for our society To take care of it is our duty Be proud of yourself as a human When you put the litter in a trash can Reduce the use of electricity by will And help the Earth grow without any ill All should vow to do social welfare I will start with nature’s care Glossary responsible in charge of proud glad reduce make something less vow pledge promise welfare comfort and security LET US KNOW Past perfect tense is used to show that something happened before another action in the past It can also be used to show that something happened before a specific time in the past LET US READ The Case of The Missing Water The tank in Divya’s village was almost dry Ammachi began to pray for rain Amma collected all the buckets and pots and vessels in the house and filled them up We need to store as much water as we can she said Appa collected tools to dig a little deeper We just need enough until the rains arrive he said Divya got out her notebook and pencil She put on her thinking cap and followed her parents to the tank She examined the tank bed closely It was cracked and dusty Divya wondered Where did the water in the tank go Did it run away Was it stolen This is a mystery Divya loved solving mysteries Like the time Ammachi couldn’t find her reading glasses Divya had found them in her book marking the page she was reading I’ll find that water Divya muttered to herself Divya walked to the other side of the tank past dead fish and dried reeds Do you know where the water could have gone Divya asked a fisherman Downstream the fisherman suggested Divya followed the dry stream bed down the hill At the bottom was another tank It had lots of goats but no water Divya asked the goatherd Do you know where the water might be Upstream the goatherd suggested That’s where I came from Divya said No water there Further up then the goatherd said That’s where your water comes from Divya climbed up to the tank Then she climbed up some more to a tank further up the hill There was no water no birds There was only one person there Rani I can’t find any water Any idea where it’s gone Divya called to her She knew Rani from school Downstream Rani called back Divya was suddenly angry She stomped her foot NO she shouted It’s not I have searched and searched It’s not upstream or downstream Got it How about up there Rani suggested Divya and Rani looked up at the sky The sun glared back at them Everything was white-hot and dusty No they agreed together No water there Divya collapsed into the boat with Rani and gnawed on a lotus stem She was hot and tired Manju’s parents left the village Divya said They went to the city where they have water Maybe we should all go You go Rani snapped No one asked you to be here Fine Divya said And she stomped back home But it wasn’t fine There was still no water still no rain The next day Divya brushed her teeth with muddy tank water in a tiny glass Thooo she spat In school the class was half-empty More families had left the area She missed all her friends In the middle of Environmental Studies class she turned and ran out of school She ran and ran until she was panting She finally sat at the side of the road I have to find the water she huffed Can I help said a voice It was Rani who had seen Divya running away from school Divya beamed Yes We have to do this properly Rani said Like real Sanitary Engineers Like who Divya asked Sanitary Engineers build pipes and tanks and drains I am going to be one when I grow up Rani said Divya and Rani decided to draw a map of their village and all its tanks and streams showing all the places where the water might have flowed Where could the water possibly have gone Finally they sat back and pored over the map We haven’t seen that tank yet Divya pointed to one of the tanks they had drawn Let’s go Rani agreed Divya and Rani began climbing up the hill The stream here was dry as well Maybe we shouldn’t have missed school This tank is probably dry as well Rani said sadly When they reached the tank Divya and Rani realised they were wrong This tank was full Rani pointed at a small pump at the end of the lake There was a tanker just below the bund collecting water as it flowed A man stood by guiding the tanker Mystery solved said Divya angrily Where are you taking our water Divya wanted to know The city the man said I need to supply nine-thousand litres today That’s not fair Rani said The man shrugged That’s how it is My friend is a Sanitary Engineer Divya yelled She knows what’s fair The man laughed Sanitary Engineer it seems You’re just children Rani said quietly Yes but I know you can’t just take our water away Go home the man said You can’t change anything Divya had an idea She hugged the pump You can’t turn it on now Rani ran up to hug the pump too Hey said the man Now he was really angry Just go home he said That was when the clouds broke and rain poured The monsoon is here Divya shouted I’m going home even if you aren’t the tanker man said It rained and rained WOOSH the bund overflowed and the stream rushed down splashing them The water has been found Mystery solved Divya said WOOOOOO They yowled with joy LET US READ ALOUD I am Mani I have to take a bus to nearby city I crossed the road to reach the bus stand I got the bus and sat down and took out a book to read Before I started to read I just looked at the people around me The two men sitting next to me were talking loudly Some were listening music on their phone I was unable to focus on reading The men were talking about cleaning the city As they were talking they opened a pack of biscuits to eat After some time I dozed off When I opened my eyes the bus had reached the city The two men were not there but pieces of the biscuits and wrappers were there I cleaned the wrappers and put them in the dustbin We know the forms of the verbs they are Present Past Past Participle Present Participle leave leaves left left leaving The past participle form is used in past perfect tense with auxiliary had Come let us use it I had left the station He had left the station We had left the station She had left the station You had left the station It had left the station They had left the station Future perfect tense Future perfect tense is used for actions that will be completed before some other point in the future Present Past Past Participle Present Participle write writes wrote written writing The past participle form is used in future perfect tense with auxiliary will have Come let us use it I will have written my homework He will have written his homework We will have written our homework She will have written her homework You will have written your homework It will have completed its work They will have written their homework LET US SPEAK Story Telling LET US SPEAK Today we will learn to tell a story Step Choose the story you want to tell Step Tell the place where the story is happening Step Tell who the characters are Step Tell three events that lead to the end of the story Step End the story The Ant and the Grasshopper In a deep forest near the mountains lived an ant and a grasshopper The ant worked hard in the summer and saved food for the winter The grasshopper played in the Sun without collecting food The grasshopper always called the ant to play but the ant wanted to save food for winter It was now winter the ant had food to eat but the grasshopper did not We should work hard and save Unit Ninh explains the Rules of Association Football Association Football more commonly known as soccer in North America and Football pretty much everywhere else in the world is a game played with two teams of players with players taking the field at any onetime The object of the game is for your team to score more goals than the opposing team To score a goal you must put ball into your opponent’s goal For it to count the whole of the ball must cross the goal line In football you are allowed to touch the ball with every part of your body except your arms The main ways to move the ball is to kick the ball to a team mate which is known as a pass or run with the ball whilst controlling it with your feet known as dribbling When the ball is in the air players can head or chest the ball as well Teams will usually orchestrate passes and dribbles so that the ball travels up the field so that they can score The defending team will try and stop you by tackling The can intercept passes block shots or try and kick the ball away from you and move the ball in the other direction so that they can score themselves A defender must be careful here as if the referee decides that they made contact with the player without touching the ball or made contact without trying to win ball he can award a foul against them Fouls usually lead to free kicks but can also lead to a yellow card which is a warning or a red card where you are sent off the pitch Two yellow cards equals one red card The game is played in two halves of minutes for a total playing time of minutes There’s a minute break at half time Unlike most other sports in football when there is a stoppage in play the clock does not stop Instead a referee will add the amount of time all the stoppages last for and they will play this as added time at the end of each half Highest score at the end of minutes plus added time wins There are ties in Football and if both teams have the same amount of goals at the end of time this is declared as a draw Football is a really simple game and that’s basically it Unit It is my first day at school Mummy is holding my hand and walking with me I am grown up now I say Let go let go Mummy holds my hand very tight There are many children near the school They come by bus They come by car They come by rickshaw They cycle They walk like me We reach the gate Mummy lets go of my hand She stays at the gate I have to go inside alone There are many new faces all around me I take one step I take another step I look back Mummy gets smaller as I walk away Will she disappear I run back to her I don’t feel so grown up I hold her hand Don’t go away I say Everyone is inside now I am the only one outside The teacher comes out She smiles at me I smile back Mummy says Rani I will be here when you come out I let go of her hand She waves to me I run inside Mummy will be there after school Unit It rained through the night in Chennai India’s largest city has experienced its heaviest rainfall in more than a hundred years With the rain not letting up much of the city is now under water These pictures sent to us by local residents show us the extent of the devastation Navigating through the flooded streets is difficult and at times difficult leaving many areas cut off The airport is closed and train services suspended while highways leading to Chennai are blocked The army and navy are now being deployed to get to those who are still stranded In some parts of the city neighbourhoods are under several feel of water and residents have had to go without food The power supply in many areas have also been cut The rain is said to be caused by a depression in Bay of Bengal With more showers expected it is going to be a while before Chennai clears up Social Science Unit Our earth Imayan is waiting for his father after returning from school in the evening His father is an employee in a reputed bank Imayan Come Daddy Imayan ran and hugged his father Father Imaya Had your snacks Imayan Yes I had My social teacher is going to teach about earth tomorrow Please tell me about the earth Father Ok I will tell you Imayan How did the Earth form Father Approximately billion years ago Solar System was a cloud of dust and gas known as Solar Nebula Due to an explosion these particles collapsed and began to spin having the sun at centre The bigger particles which revolve around the sun are called planets Thus the planet Earth formed Imayan Will you explain about Universe Daddy Father The Universe is a vast expansion of space The Universe consists of billions of galaxies stars planets dwarf planets comets asteroids meteoroids and natural satellites The exact size of the universe is still unknown Scientists believe that the universe is still expanding outward Imayan What is a galaxy daddy Father A Galaxy is a huge cluster of stars Our galaxy Milky way is one among the countless of galaxies in the Universe Imayan Ok Daddy What is Solar system Father Solar system consists of the sun the eight planets their moons dwarf planets asteroids and comets These objects are gravitationally bound Imayan Very interesting dad Tell me about our Solar System Father There are planets in our solar system They are Mercury Venus Earth Mars Jupiter Saturn Uranus Neptune Imayan Dad Where is our Earth in the Solar System Father The Earth is the third planet from the sun and the fifth largest in solar system Imayan It is said that the earth is rotating itself and at the same time revolving around the sun Is it true Father Yes Earth has two movements They are Rotation Revolution Rotation The movement of the earth on its axis is called rotation of the earth Day and night are caused due to the earth’s rotation Revolution The movement of the Earth around the Sun on it’s axis which is Tilted about is called revolution of the earth Seasons are caused by Earth’s revolution Father Life is possible only on the Earth because of the presence of land air and water Imayan Oh I see What is the distance between the sun and the earth Father The distance between the sun and the earth is nearly million kilometres Imayan Say some more interesting facts about Planets Dad Father Mercury and Venus lie near to the sun Next to Earth is Mars Jupiter Saturn Uranus and Neptune The planets nearer to the sun are very hot The planets away from the sun are very cold Mercury is the smallest planet Jupiter is the largest planet Imayan Wow Amazing Where do we live on the Earth Father We live on the surface of the Earth It is made up of continents and oceans Imayan continents What are they Father Listen They are Asia Africa North America South America Antarctica Europe and Australia Imayan Which is the biggest continent Father The Asia continent where we live is the biggest of all Australia is the smallest one Antarctica is a snow covered landmass Imayan What are the five oceans Daddy Father Pacific Ocean Atlantic Ocean Indian Ocean Southern Ocean and Arctic Ocean of the Earth is covered by water and is covered by landmass About of water is saline of water is fresh and of water is easily accessible Imayan Thank you Daddy Today I have learnt a lot about the earth from you Now I am going to study and do my home work Father Ok Imaya Go and study Unit Towards history Stone Age In the beginning humans were not aware of metals They took several years to discover metals Our lives today are their gifts During this period humans were not aware of scripts The Stone Age is the period in which Stones were used as weapons Nature of Human Evolution Early humans lived in jungles along with animals They used stone tools to protect themselves drive away animals dig out roots shoots et The most important thing is that they ate everything raw including flesh They did not know the use of fire in the beginning At first dog was their good companion Wild animals ran away when dogs barked Dog was the first pet animal They took it wherever they went Later they started rearing cattle and were very useful to them They observed some grains growing along the river side They ate and found them very tasty They observed that the scattered grains were eaten up by birds They were keen observers They found that the grains grow with the help of sunshine and rainfall Thus they learnt the art of cultivation Humans noticed forest fire At first they were afraid of fire They found some animals died due to fire They ate the flesh of the burnt animals It tasted good They also observed that the spark came out by scratching two stones together Since then they ate cooked food Nomadic Life Early humans did not know to grow crops They wandered in all the landscapes in search of food They ate whatever they got and drank water from natural sources This kind of life was called nomadic life They wore skins of animals leaves and barks of trees to cover their body They lived in caves and holes of big trees Stones were sharpened as tools by them They made it with the help of other stones too These sharp tools were used to hunt animals and tear their flesh They used bones horns stones skin branches of trees and sticks as their tools and weapons This stage of development in history was called New stone age or Neolithic age Stone wheels When the stones rolled from the mountains they acquired a round shape Humans observed them and thus wheel was invented In the beginning it was made of stone and later by wood Wheel is the first scientific invention of man Pottery Pottery was also one of the greatest inventions by humans The baked pot was strong and looked beautiful Stone Age people made all the household artefacts by themselves Stone houses were built The roofs of these houses were thatched with sticks and husks After several inventions humans started to live in a settled life Agriculture Agriculture was an important activity in the history of humans They started cultivating crops They sowed seeds and harvested crops They found it convenient to live along the river as the crops grew well Progress in man’s life There burial pots called urns in which the dead bodies were placed and buried under the ground Chalcolithic Age At the end of New Stone Age copper was invented In this age both stone and copper were used This period was called Chalcolithic Age Bronze was produced when copper zinc and tin were mixed together The period when people made tools from bronze was called Bronze Age Iron Age After this humans discovered iron and started using iron tools and weapons This age was called Iron Age In this age household articles and agricultural tools were made up of iron Archaeological excavations coins potsherds metal objects and so on are dug out from Archaeological sites Such objects are preserved in the museum In Tamilnadu Athichanallur Arikkamedu and Keeladi are such sites where the objects used by the people of the past are excavated Still research is going on in these sites Unit Good Citizen Man is a social animal Human beings are bestowed with senses Human beings think and act using their senses They are born free but bound in the social web They cannot live alone They need social and emotional support To live in the society they need to develop some good values We are born with few values and rights These values are further polished in educational institutions The aim of education is to change a person into a valuable human being Good values Good values are the qualities of a person that keep the society running These qualities can be developed by all The term civic relates to people or civilian or citizen of a country People should live together in unity Despite all the disparities living together in harmony is a significant value Helping others is also an important value There should be no disparity among people and all are one Today’s children are tomorrow’s citizens of the nation Moral and good values have to be inculcated in children So that they may become valuable citizens Personal values Personal value is the basic value for an individual Some personal values are love mercy generosity honesty truth friendship hospitality peace tolerance faith and so on Cultural values Becoming well mannered and cultured is an essence of the society Irrespective of language and religion people live together in harmony This help to maintain cultural values We are all humans We must live together as brothers and sisters Social values How should you behave in public places We should maintain the following good values in public places Maintain good relation with people Respect elders Protect nature Be tolerant and Maintain friendship Disciplinary values Disciplinary values are punctuality involvement treating every one as equal doing work ontime holding morals discharging duties without fail and so on Constitutional values Safeguard public properties Maintain unity and integrity of the nation Develop scientific attitude Protect natural resources Care for the environment Honour national symbols Respect martyrs and their sacrifices Preserve our cultural values and heritage Develop patriotism Unit Atmosphere Biosphere Biosphere is the combination of Lithosphere Hydrosphere and Atmosphere that can support life Atmosphere Atmosphere is the envelope of air around the Earth Weather Weather is a day to day conditions of atmosphere at any place in regard to temperate pressure wind humidity and rainfall Climate Climate is the average weather condition of a vast area over more than years Atmospheric Layers We know that the gravitational force increases near the Earth and decreases as we go higher As a result the density of air also differs and can be found in five layers called Troposphere Stratosphere Mesosphere Thermosphere and Exosphere All weather changes occur in the Troposphere The study of weather is called Meteorology Solar Radiation The sun is the only source of light to all the planets in the solar system The land water and air in our planets receives heat from the sun The Earth receives heat energy from the Sun in the form of radiation It is called solar radiation Sunlight falling on the Earth is reflected CO and other gases in the atmosphere trap heat keeping the earth warm Elements of climate Temperature Pressure Wind Clouds Rainfall Temperature Land Conduction Water Convection and Atmosphere Terrestrial radiation The earth has the capacity to reflect the sun’s rays The temperature is not same every where Latitude altitude distance from the sea position of the mountains are some of the factors that determine the temperature of a place Why does heat vary from morning to evening It is because of the sun’s rays The land is divided into various heat zones according to the fall of sun’s rays on the surface of the Earth The zone between Tropic of Cancer and Tropic of Capricorn is called Tropical or Torrid zone where the sun’s rays fall vertically The zone between N to N latitude and S to S latitude which receives slanting rays of the sun is called Temperate zone The zone which receives the extreme slanting rays of the sun and experiences extremely low temperature is called Frigid zone Pressure When the temperature increases pressure decreases and when the temperature decreases pressure increases Wind The air which moves horizontally from high pressure area to low pressure area is called wind Air never moves in one direction It differs from place to place and time to time This is due to the rotation of the earth Different types of wind Planetary wind This wind blows in the same direction throughout the year and Monsoon wind The word monsoon is derived from the Arabic term mausim which means season Monsoon wind is the seasonal wind Types of Monsoon winds in India are South West monsoon wind and North East monsoon wind Sea breeze Sea breeze blows from sea to land in the evening Land Breeze Land Breeze blows from land to sea in the morning Local wind Local wind affects the weather Warm local wind North West India Loo Cool local wind North East India Norwesters Jet streams Air currents in the upper layers of atmosphere is known as Jet streams It could determine the arrival and departure of monsoon winds in India Cyclone Hurricane Cyclone changes its position and direction with time to time The speed of wind also changes with time It gives heavy rainfall Clouds Clouds are large collection of very tiny droplets of water These are divided into four types on the basis of appearance and height They are Cirrus cloud Cirrus cloud appears like a silver grey fish at a very high altitude in the sky These may not give rain Stratus cloud Stratus cloud is grey in colour and are spreadout They may give small shower Cumulus cloud Cumulus cloud looks like a Puffy White cotton and gives convectional rainfall These clouds are associated with rainfall lightning and thunder Nimbus cloud Nimbus cloud appears as dark or grey in colour It gives heavy rainfall It is called vertical or rain clouds Rainfall Condensation of the Water vapour causes rainfall Rain water must be saved and not be wasted Convectional Rainfall During summer solar insolation takes place in land and water evaporates from lakes ponds seas oceans and vegetations Due to this a heavy rainfall with lightning and thunder occurs in the evening for a short period Orographic Rainfall When the moisture laden winds from the sea rises as it moves over a mountain range it becomes cool and causes heavy rainfall The opposite side of the mountain is called Leeward side It receives very little rainfall Cyclonic rainfall The warm air from the hot area is heated and moves upwards Hence a low pressure area is developed and it attracts air from high pressure area Owing to Earth’s rotation a circular motion of winds develop It gets cooled and brings heavy rainfall Rain water harvesting Rain water harvesting is a technique of collection and storage of rainwater into natural reservoirs or tanks or the infiltration of surface water into subsurface aquifers before it is lost as surface runoff One method of rainwater harvesting is Rooftop Harvesting FOOD know about spoilage of food and the food preservation methods list out the deficiency diseases and the prevention methods know about obesity and the method of calculation of BMI understand the importance of balanced diet identify the safety measures to be followed in the kitchen Introduction Our body needs nutrients like proteins carbohydrates and fats for its proper functioning We get these nutrients from the food we eat If we do not take all these nutrients in right proportion it results in some diseases Sometimes we do not preserve the food properly and it gets spoiled Sometimes through the spoiled food also we get diseases So we need to preserve the food we eat In this lesson we will study about spoilage of foods and the ways to preserve them deficiency diseases balanced diet and also about kitchen safety Spoilage of Food Food items like fruits vegetables milk and meat will be fresh for very short time These are called perishable foods and they get spoiled easily Some food items like rice have long life time but they also decompose The change in the normal state of the food is called spoilage of food Spoiled food becomes unsuitable to eat We can notice such changes from the taste and smell of the spoiled food Eating spoiled food results in diseases Salt Sugar Apple Corn Orange Wheat Pulses Tomato Papaya Rice Cucumber Causes Once the food items are harvested they begin to decompose Food can be spoiled by factors like air and oxygen moisture enzymes microorganisms light and temperature Air and Oxygen When oxygen reacts with food contents it produces changes in the colour and flavour of the food Moisture Moisture keeps the food fresh When the moisture is gone vegetables and fruits shrink Due to evaporation moisture loss occurs in foods like meat fish and cheese Enzymes Enzymes break down the tissues and components of the food in different ways like oxidation browning and ripening So the food items decay Microorganisms Microorganisms such as fungi yeast and bacteria can grow well in low temperatures They multiply in food and spoil them Light Light produces colour changes and also vitamin loss Temperature Sometimes rise in temperature causes food spoilage Effects Spoiled foods are not suitable to eat They may not be fresh and tasty Sometimes it will be harmful to consume them Microorganisms present in spoiled foods may cause foodborne diseases like stomach pain fever dysentery vomiting and indigestion Preservation of Food The process of keeping the food materials for a long time without getting spoiled is called preservation of food Food will be spoiled if it is not prepared preserved and handled in the right way There are many methods used to prevent delay and reduce the spoilage of food Food Preservation Methods Cultivation of food requires lot of efforts Nowadays food cultivation and the crop yield are decreasing There are many people suffering in the world without food So we need to protect and preserve the food The following are the ways to preserve food Drying It is the removal of water content from the food by drying it in the sunlight Grains Addition of salt When salt is added to food it removes the water from the food Fish Pickles Addition of sugar When sugar is added to food it dissolves in the water content of the food and preserves the food items from spoilage Jam Fruit juices While purchasing packed food items we should check the following details Manufactured date Expiry date Ingredients Energy content of the food material Freezing The microbial growth and the enzyme activity on the frozen food items can be prevented by this method Fruits Vegetables Boiling It kills the microorganisms present in the food materials Milk Water Canning and bottling In this method food is packed in air tight cans so that germs do not grow on them Milk powder Addition of chemical preservatives Chemical preservatives are added to stop the growth of micro-organisms in certain food materials Sodium benzoate is added with fruits Sulphur dioxide is added with dry fruits Vinegar is added with pickles Irradiation is a modern method by which food is exposed to gamma rays or ultra violet rays to kill the bacteria and the mould It does not affect the taste of the food or nutritive value of the foods Onion Potatoes Gamma rays Bacteria Purpose of Food Preservation Modern technologies have increased the food production But practicing agriculture is abandoned in many places as there is failure of monsoon At that same time many people suffer in the world without food So food should not be wasted by any means Preservation of food is important for the following reasons To retain the colour taste and nutritive value of the food To make food available throughout the year To prevent the growth of microorganisms like bacteria and fungi in the food items To reduce the wastage of food materials Preserving food not only protects our health but also makes food available to the people who need it Obesity Obesity and overweight are defined as abnormal or excessive fat accumulation in the body that may affect the health Obesity is most commonly caused by excessive food intake lack of physical activity and also genetic reasons Obese people take more food but work very less When they eat more and work less excess energy is accumulated as fat and creates problems Obesity increases the likelihood of heart disease diabetes and high blood pressure Prevention Obesity is mostly related to our life style and habits Eating healthy foods and having regular physical activity can reduce obesity and overweight It is important that you maintain proper weight in the young age In order to avoid obesity and overweight you need to do the following Avoid fast foods fried items and meat with more fat Eat fruits and vegetables legumes whole grains and nuts Do regular physical exercises Don’t play games in computer and mobile phones Have proper sleep time Heart Disease Diabetes Obstructive sleep apnea High blood pressure High blood cholesterol Certain types of cancer Body Mass Index People are generally classified as obese and overweight based on Body Mass Index BMI Body mass index is obtained by dividing as a person’s weight in kilograms by the square of his height in metres kg m People with BMIs between and have less chance of developing diseases like cancer heart disease and diabetes If the BMI is over kg m people are said to be obese and the range of kg m denotes overweight BMI of a person with kg weight and a height of cm can be calculated as below BMI Weight in kg Height in m × Find your B M I My B M I My weight kg My height in m DISEASE A disease is an abnormal condition that affects a living organism This abnormal condition affects the structure and function of the organism Diseases may be caused by external factors as well as internal dysfunction Each disease has symptoms We come to know about the diseases from their symptoms Causes of Diseases Diseases are caused by microorganisms like bacteria virus protozoa and fungi They are transmitted by insects and also through contaminated air and water Some diseases are caused when the function of the organ is affected In general causes of diseases can be classified as below Metabolic factor Diabetes Genetic factor Colour blindness Microorganisms Bacterial diseases Nutritional factor Marasmus Environmental factor Cholera Disease Health Issues Depression Allergies Heart Disease High Blood Pressure Negative oughts Toxins Poor Sleep Trauma No Exercise Digestion Problems Immune Imbalances Inammation Poor Diet Stress Obesity Cancer Irritable Bowel Arthritis Diabetes Anxiety Auto-Immune Disease Root Causes of Disease Types of Diseases There are four main types of diseases They are Infectious diseases Hereditary diseases Physiological diseases Deficiency diseases a Infectious diseases Infectious diseases are caused by microorganisms which invade our body and multiply inside them These diseases are spread from one person to another Common cold b Hereditary diseases Hereditary diseases occur due to abnormalities in the gene These diseases are passed from parents to children Heart disease Physiological diseases Diseases which are caused due to malfunction of the body organs are called physiological diseases Asthma d Deficiency diseases A diet which contains all essential nutrients in correct proportion is indispensable for maintaining good health Deficiency in one or more of the nutrients causes various diseases These are called deficiency diseases Protein deficiency diseases Marasmus and Kwashiorkor are the protein deficiency diseases In marasmus the child loses weight and it will appear as though bones are covered by skin In Kwashiorkor the child develops an enlarged belly with swollen face and feet By eating protein rich foods like egg milk fish and green leafy vegetables we can avoid protein deficiency diseases More number of people die every year due to heart disease than any other diseases Kwashiorkor disease is found more among people in developing countries It is because their diet is high in carbohydrates which is cheaper and low in proteins As they live below poverty line they couldn’t afford protein rich food which is costly Vitamin and mineral deficiency diseases Certain diseases are caused by deficiency of vitamins and minerals By eating vitamin and mineral rich food items we can avoid these diseases The following table gives some of the diseases caused by deficiency of vitamins and minerals and the food items which rectify them Name of the Vitamin Mineral Name of the disease Food containing the Vitamin Mineral Vitamin A Night blindness Egg Milk Carrot Papaya Vitamin B Beri beri Milk Peas Cereals Green vegetables Vitamin C Scurvy Amla Orange Lemon Tomato Vitamin D Rickets Sunlight Milk Egg Fish Vitamin E Sterility Apple Wheat Green vegetables Vitamin K Haemorrhage Green vegetables Tomato Cabbage Iodine Goitre Iodized salt Vegetables Iron Anaemia Cashews Beans and lentils Spinach Food Pyramid Food pyramid is designed to make healthy eating Depending upon our work age and sex the requirement of various nutrients vary from person to person For example growing children need more proteins in their food People doing hard physical work labour needs more carbohydrate and fats in their diet Eating healthy breakfast helps to improve concentration and it boosts metabolism Balanced diet The food we normally eat in a day is our diet For growth and maintenance of good health our diet should have all the nutrients that our body needs in right quantities Such a diet is called balanced diet Pulses groundnut soya beans sprouted seeds fermented foods banana jaggery seasonal vegetables and fruits provide more nutrients Therefore one can have a balanced diet without much expenditure Some major food items are given in the table below Major Food Items Sources Carbohydrates Honey Sugarcane Fruits Whole grains Vegetables Rice Proteins Legumes Pulses Nuts Soya bean Green leafy vegetables Fish Egg Milk Fats Egg yolk Saturated oil Meat Spinach and Ponnanganni keerai are some of the low cost highly nutritive food materials They contain more minerals vitamins fibrous nutrients available in all seasons Fat Oil Salt and Sugar Vegetables Fruits Grains Meat Fish Egg and Alternative Milk and Alternative Kitchen Safety Kitchen is an important place in our homes We prepare our food in the kitchen We use gas cylinders for cooking Some of us may use electric stoves The equipments and the environment in the kitchen may be little dangerous So we need to be cautious and careful What we should do and shouldn’t do in the kitchen are given below Gas Gas catches fire easily Once gas is leaked there may be dangerous consequences So we need to be careful while handling cylinders The following table gives what should we do and what we shouldn’t do while handling gas cylinders Do’s Keep the cylinder in vertical position at plain level and in a well aired place Keep the lighter ready and then turn on the gas stove knob Keep the windows and doors open to ensure ventilation in case of gas leakage Always use I S I standard gas stoves regulators and gas tubes Don’ts Do not keep the cylinder in horizontal or inverted position Do not turn the knob before lighting the lighter It may lead to gas leakage Do not turn on electrical appliances in the kitchen if there is a gas leakage It may lead to fire Don’t use low quality gas stoves tubes and regulators It may lead to gas leakage Electrical appliances Do not operate electrical appliances with wet hands because it leads to electric shocks Fire Do not keep the inflammable materials like kerosene etc near the stoves In case of person’s clothes catching fire cover the person with a thick blanket or carpet If kerosene or oil catches fire use sand to put out the fire If solid materials like wood catch fire use water to put out the fire If an electrical appliance catches fire unplug the appliances and disconnect the electricity Use proper fire exitinguishers to put out the fire Type of Fire Type of Fire Extinguisher Class-A Wood Paper Water Class-B Liquid Gaseous fuels Carbon dioxide Class-C Electrical sources Dry chemical In order to avoid fire any one of the following sources is removed Cut off the fuel Cut off the air supply Lower the temperature Wood Paper Liquid Gaseous fuels Electrical sources Burns In case of minor burns the burnt area should be held under cool running water for some time and proper medical treatment should be given Any blister if formed should not be pricked drying temperature humidity bacteria drying freezing adding sugar adding salt Vitamin-A Vitamin B Iron Vitamin-D obesity headache ghee fruits rice oil fever stomach pain Protein deficiency Vitamin D Rickets Physical inactivity Obesity Inflammable material Kerosene Fruits Freezing Kwashiorkor Vinegar is added as a preservative for pickles Irradiation affects the taste of the food materials In case of gas leakage we can continue to use electrical appliances Deficiency due to iodine is called as beriberi Growing children need more proteins in their food Water know about the sources of water understand the importance of water management get awareness on water pollution know about waterborne diseases Introduction Thirukkural says If it be said that the duties of life cannot be discharged by any person without water so without rain there cannot be the flowing of water We can’t survive without water Water was once available in the nature freely Now it is sold in the shops for money Water has become scarce nowadays So we should preserve it for our basic needs and also for the needs of future generation In this lesson we will study about the sources of water how to manage water how it is polluted and how the polluted water causes diseases Sources of Water Water is the most abundant substance on the Earth It fills the seas rivers and lakes and covers more than two-thirds of the earth’s surface It also exists as snow and ice on mountains In the atmosphere water is present in huge quantities as vapour and clouds The following are the sources of water River water and lake water Spring water Sea water Underground water Well water River Water and Lake Water River is a channel through which fresh water flows The origin of river is usually hills or mountains It flows towards ocean sea and lakes Lake is an area filled with water Man-made lakes created when dam is built on a river is called reservoir Small areas filled with water are called ponds Rivers streams groundwater rainfall melting snows or a combination of these are the sources of water in lakes reservoirs and ponds As less amount of salt is dissolved in it it is suitable for drinking and irrigation Sea Water Due to the presence of more amount of salt sea water is called saline water It is not suitable for irrigation as well as drinking Sea water has salinity of approximately or parts per thousand This means that every ml of sea water contains grams of salts Sodium chloride dissolved in it Underground Water During rainfall part of the rain water gets absorbed in the soil It flows through various layers of the soil till it reaches hard rock where it gets accumulated to form reservoir This reservoir of water is the underground water This water may contain soluble salts of calcium and magnesium Underground water is made available for human use either as well water or spring water Well Water When the earth’s surface is dug deep water reservoirs are found above the rocks The depth of a well varies from place to place Well water contains soluble impurities depending upon the nature of soil Well Water When the earth’s surface is dug deep water reservoirs are found above the rocks The depth of a well varies from place to place Well water contains soluble impurities depending upon the nature of soil Spring Water Sometimes the accumulated underground water applies pressure on the rocks and comes out of the earth’s surface in the form of a spring from any available opening This water is called spring water Spring water usually contains dissolved salts and minerals but it is free from suspended impurities Water Cycle Continuous movement of water from the Earth to the atmosphere and back to the Earth is known as water cycle or hydrologic cycle Water cycle consists of the following four stages Evaporation The process in which water is changed into water vapour by the heat of the sun is called evaporation It takes place from the surfaces of rivers oceans lakes and ponds Plants also release water by transpiration Condensation The process of converting water vapour into water on cooling is called condensation Water vapour in the atmosphere being lighter rises up and cools down It further condenses to form tiny water droplets CONDENSATION PRECIPITATION RAIN GLACIER EVAPORATION TRANSPIRATION OCEAN STREAM RIVER LAKE GROUND WATER Precipitation The water droplets join together to form clouds As they get cooler the droplets become bigger and heavier and fall as rain If the air is very cold they freeze to fall as hail of snow Flowing back to Oceans Rain water forms streams and springs which join together to form rivers Rivers flow finally into the sea and ocean thereby completing the cycle In freezing conditions water falling from the sky becomes snow or hail Hail stones are balls of ice Take half a glass of water Clean the outside part of the glass Add few ice cubes and leave it for minutes You will observe drops of water appearing outside the glass This happens because the water vapour in the air condenses on the cold surface of the glass Water Management About of total water available on the earth is too salty to be used for drinking and irrigation The rest of water is fresh water Most of the fresh water i e of the total fresh water is frozen as ice caps and glaciers and occurs as ground water Out of the remaining of water about occurs as moisture in soil air and in bodies of living organisms The rest constitutes fresh surface water sources such as rivers and lakes It amounts to about part of one percent of total water available on earth By this it is clear that a very small fraction of water is available for the use of human beings animals and plants The following figure shows the percentage distribution of total available water Total global water Freshwater Other saline water Oceans Surface other freshwater Ground water Glaciers and ice caps Freshwater Atmosphere Living things Rivers Swamps marshes Soil moisture Lakes Ground ice and permafrost Surface water and other freshwater Agriculture is the source of our living It uses most of the world’s fresh water resources It consumes around of the available fresh water Fresh Water Management Water management is the activity of planning developing and managing the optimum use of water resources Water which is obtained naturally from ice sheets ice caps glaciers ice bergs ponds lakes rivers streams and underground are called fresh water Fresh water is having low concentrations of dissolved salts Nowadays we don’t get enough rainfall and except few most of the rivers are drained Due to recent changes in the climate we don’t have water in lakes and ponds People in many countries suffer without water even for their basic needs So we need to manage the available water Rain Water Harvesting The process of collecting rain water from the roof top of the buildings is called rain water harvesting In this system rain water is stored into a storage tank for later use Rain water available in the open spaces around the buildings may also be recharged into the ground It is another method of rainwater harvesting The government of Tamil Nadu leads the nation in implementing rain water harvesting programme It has made it mandatory for all houses and buildings in the state to install rain water harvesting facility Advantages Rain water harvesting can reduce flooding in the cities Rain water harvesting can reduce top soil loss Ground water level can be increased Ground water can be conserved It can improve plant growth March is observed as World Water Day Estimate the amount of water used by your family in a day for drinking brushing bathing cleaning vessels washing cloths toilets and cleaning the floor Find out for which activity water usage is more and how it can be minimized Farm Ponds A farm pond is a structure dug out on the Earth It is usually square or rectangular in shape Rainwater is stored in it for irrigation purposes It is surrounded by a small bund which prevents erosion on the banks of the pond The size and depth of the pond depend on the type of the soil water requirements of the farmer its uses and the cost of excavation Water is conveyed to the fields manually by pumping or by both Waste Water Management Used water from any combination of activities such as domestic houses industrial commercial agricultural is called waste water This water has been used for laundry bathing dish washing toilets and industrial purposes Waste water also includes rain water that has been accumulated pollutants as it runs into the oceans lakes and rivers Pollutants are unwanted chemicals or materials that contaminate water The goal of waste water management is to clean and protect water so that it can be reused It also must be clean before it flows into oceans lakes and rivers Waste Water Treatment Generally waste water is treated by physical chemical and biological processes using filtration sedimentation adding cow dung powder and bacteria This method is followed in industries Visit an industry in your area with the help of your teacher Observe and note the waste water treatment process Pipes take water to treatment centre Screening stage Primary treatment stage Final treatment stage Filtered into river Secondary treatment stage Advantages Waste water treatment ensures that the environment is clean There is no water pollution It prevents waterborne diseases It ensures that there is adequate water for irrigation Desalination of Sea Water Desalination is an artificial process of converting saline water sea water into fresh water The common desalination processes are Distillation Reverse Osmosis The process in which both evaporation and condensation go side by side is called distillation Reverse osmosis is a process of forcing water under pressure through a semi permeable membrane Tiny pores in the membrane allow water to pass but exclude most salts and minerals The reverse osmosis process helps to solve the water scarcity problem Ocean water Pre-treatment filters removed suspended solids and other particles Reverse osmosis membranes separate dissolved minerals and other impurities Conditioning disinfection minerals and or chemicals are added You get water Water Pollution Contamination of water bodies by human activities is called water pollution Our water resources pond lake river canal and well are polluted by sanitary water industrial wastes insecticides fertilizers sewages synthetic detergents chemical fertilizers oil heavy metals and radioactive wastes These unwanted and harmful substances which pollute water are called water pollutants Sources of Water Pollution The major sources of water pollution are industrial waste sewage domestic waste chemical fertilizers and insecticides synthetic detergents and oil spill of the world population does not get safe drinking water Industrial Waste The discharge of untreated industrial wastes from the industries into rivers and lakes is one of the main causes of water pollution The industrial wastes contain harmful substances such as acid alkalis and hot water The chemicals like Arsenic Lead Mercury and Cadmium are released by the industries and it leads to toxicity in plants and animals Sewage The dumping of sewage into rivers and lakes is the second major cause of water pollution in big cities Domestic Waste Food waste soaps and detergents garbage wrappers plastics and other materials carried by the flowing water pollute the water bodies Chemical Fertilizers and Insecticides The excess use of fertilizers and pesticides causes water pollution Because these chemicals are washed into the rivers and lakes with rainwater they pollute the soil and underground water also Pesticides like DDT Dichloro Diphenyl Trichloroethane enter the bodies of aquatic animals and reach the human body by way of food chain Synthetic Detergents Excess use of synthetic detergents for washing purposes produces foam and they pollute the water Oil Spill Oil leakages on the surface of the sea affect the marine organisms Prevention of Water Pollution Excess use of fertilizers and pesticides should be avoided in agricultural land Use of synthetic detergents should be minimized or biodegradable detergents should be used Trees and shrubs should be planted along the banks of the rivers or lakes Plastic waste food materials and vegetables should not be thrown into open drains Proper sewage treatment and management should be implemented Waterborne Diseases Illness caused by the micro-organisms present in the untreated or contaminated water is called waterborne diseases They are responsible for morbidity and mortality in all age groups particularly among children under years of age It is believed that of all diseases in the world are caused by inadequate sanitation and polluted water Poverty illiteracy overcrowding and low health services are also directly or indirectly responsible for the prevalence of these diseases Types of Waterborne Diseases Diarrhoea dysentery typhoid and cholera are some of the common waterborne diseases They are caused by micro-organisms like bacteria and virus Some of them are spread by mosquitoes The following table gives the causative agents and the symptoms of few waterborne diseases Name of the Waterborne Diseases Causative Agents Symptoms Diarrhoea Bacteria and Parasites Salmonella Shigella and E coli Indigestion Sweating Abdominal pain Vomiting Stomach cramps Dysentery Shigellosis Bacteria Shigella Blood in stool Indigestion Vomiting Dehydration Fever Weight loss Typhoid Fever Bacteria Salmonella High fever Head ache Stomach pain Muscle weakness Weight loss Cholera Bacteria Vibrio Cholerae Severe diarrhea Vomiting Dehydration Hepatitus A Virus Hepatitus Vomiting Fever Dark urine Itching Yellow skin and eyes Lack of appetite Hepatitus E Virus Hepatitus-E Vomiting Fever Dark urine Itching Yellow skin and eyes Lack of appetite E coli Salmonella Shigella Vibrio Cholerae People all over the world are worstly affected by diarrhoeal diseases Three million people die worldwide every year due to these diseases Visit a primary health centre in your area and find out the common waterborne diseases prevalent among the people Also find out the causes for them Prevention of Waterborne Diseases Good personal hygiene should be practiced and basic sanitation should be improved Chlorinated and boiled water should be used for drinking Drink boiled or pasteurized milk Dispose infectious wastes properly Other Diseases Apart from the waterborne diseases mentioned above there are many diseases which are spread by vectors which breed in stagnant water in our surrounding For example Aedes mosquito breeds in stagnant water and it causes Dengue fever Similarly pigs feed in the stagnant sewage water The pigs infected by virus spread Swine flu Dengue Fever Dengue is a viral disease spread by Aedes female mosquitoes that bite during day time They breed in clean stagnant water found in containers and old tyres Symptoms Symptoms may include high fever severe head ache muscle and joint pain and a characteristic skin rash Symptoms of Dengue fever typically begin three to fourteen days after infection Deficiency of platelets in blood Intense stomach pain Regular vomiting with blood Prevention Spray the house with anti mosquito spray Try to wear cloths that cover skin areas Close the doors and windows during early morning and evening Do not leave stagnant water anywhere in and around the house Treatment Dengue is caused by a virus and so there is no specific treatment or cure A high fever and vomiting can dehydrate the body So the person should drink clean water bottle water Rehydration salts can help replace the fluids and minerals lost in the body Taking pain killers like Tylenol or Paracetamol can help to reduce fever and ease pain Aedes mosquitoes also transmit Chikungunya and Yellow fever This can result in death if any treatment is not taken Swine Flu H N Swine flu is a respiratory disease caused by Influenza virus that infects the respiratory tracts of pigs and results in barking cough It can be transmitted to human beings People who are constantly exposed to pigs are at risk of Swine flu infection By keeping our surrounding free from sewage water we can avoid exposure to pigs Name of the Diseases Causative Agents Symptoms Dengue Fever Virus Flavi Virus High fever Severe head ache Muscle and joint pain Vomiting with blood and Stomach pain Swine Flu H N Virus Influenza Infection in respiratory tracks Indigestion Nasal secretions Bacteria Virus Protozoa sky earth atmosphere rain Sea Well River Underground Distillation Decantation Reverse Osmosis Desalination Leakage of oil Cloud Reservoir Plant growth Distillation Pollute marine organisms Rainwater harvesting Influenza virus Swine Flu Man-made lake Plants After completing this lesson students will be able to know about types of pollination and the agents of pollination understand the life cycle of flowering plants identify different types of soil know how the honey bee earthworm dragon fly are useful to farmers Introduction Plants are useful to us in a number of ways Plants produce their own food At the same time they are used as food by men and animals Plants are not only used as food but also as medicine Almost all parts of the plants are useful to us As a natural resource they are beautiful and pleasing to our eyes They release oxygen which is essential for our survival into the atmosphere Some plants grow in our surrounding naturally and some are grown by us We need to know about plants which are useful to us in many ways Let us study in this lesson about the life cycle of plants agriculture and the types of soil Reproduction in Plants Reproduction is the process by which new individuals of the same species are produced Both plants and animals reproduce The flowers perform the function of reproduction in plants There are two kinds of reproduction that take place in plants They are sexual reproduction and asexual reproduction In asexual reproduction new plants are produced from roots leaves stems and buds In sexual reproduction new plants emerge from seeds Flower Flower is the reproductive part of a plant It is a modified shoot Flowers have four important parts They are Sepal Petal Androecium Gynoecium Sepal It is the outer part of the flower Usually it is small and green in colour It protects the bud in the early stage Petal It is often colourful and it attracts the insects Androecium It is the male reproductive part of the flower It is composed of stamens Each stamen consists of a stalk called filament and a small bag like structure called anther at the tip The pollen grains are produced in the anther within the pollen sacs Gynoecium It is a female part of the flower It has three parts They are ovary style and stigma The ovary contains the ovules The flowers which contain either androecium or gynoecium are called unisexual flowers Corn Papaya Cucumber The flowers which contain both androecium and gynoecium are called bisexual flowers Mustard Rose Papaya Unisexual flower Rose Bisexual flower To attract the pollinators Insects plants are bright in colour and produce smell in their flowers Plants which are pollinated by the honey bees and butterflies have sweet scents and bigger colourful petals Sunflower Pumpkin Pigments present in petals give them different colours Plants which are pollinated by the moth and bats release their fragrance mostly at night and have colourless petals Mango Banana Guava Jasmine et The following table gives the names of the pigment present in petals Colour of the petals Name of the pigment Red Pink Blue Purple Anthocyanin Yellow Orange Carotenoids Green Chlorophyll Kurinji or Neelakurinji Strobilanthes kunthianu is a shrub that is found in the Chola forests of the Western Ghats in South India Nilagiri Hills which literally means the blue mountains got their name from the purplish blue flowers of Neelakurinji that blossoms once in years Take a hibiscus flower or a rose flower Display the parts like sepal petal gynoecium and androecium in a chart paper and note down its colour and shape Pollination The transfer of pollen grains from the anther to stigma of a flower is called pollination Pollination is the first important event in the development of fruit and seed Pollination is followed by fertilization Two types of pollination take place in the flowering plants They are self pollination and cross pollination The transfer of pollen grains from the anther of a flower to the stigma of the same flower is called self pollination The transfer of pollen grains of a flower to the stigma of another flower of a different plant of the same species is called cross pollination Pollen grains A pistil of the same flower collects pollen Pollen comes loose from stamens Cross pollination Pollen from stamens sticks to a bee as it visits a flower to collect food The bee travels to another plant of the same type Pollen on the bee sticks to a pistil of a flower on the other plant Pollen grains Pollen In self pollination seeds produce weak plants and new varities of plants cannot be produced In cross pollination seeds produce good plants and new verities of plants can be produced Pollination takes place through different agents They are explained below Pollination by Wind Anemophily The flowers pollinated by wind are mostly small in size and do not have any attractive colour smell and nectar The pollen grains are non-sticky dry light and powdery Hence they are easily carried by the wind Grass Maize Pine Pollination by Water Hydrophily The flowers of water plants are not colourful and they have no nectar Pollen grains of these plants have mucilaginous covering to protect them from getting wet They float in water and reach the other plant Vallisneria Hydrilla Zosteria Pollination by Insects Entamophily This is the most common type of pollination in plants like sunflower ladies finger brinjal and pumpkin Some flowers are large in size and they have sweet smell Some of these flowers produce nectar They attact insects like butterflies and honey bees Fruit bats humming birds and ants may also act as pollinating agents Pollination by birds is known as Ornithophily Vallisneria Hydrilla Sunflower Grass Brinjal Maize Pumpkin Hydrophily Entamophily Anemophily Fertilization The process of fusion of male pollen grains and female stigma gametes is called fertilization The cell which results after fusion of the gametes is called a zygote The zygote develops into an embryo Pollen Grain germinating Pollen Tube Zygote Formation Ovum Fruits and Seed formation After fertilization the ovary grows into a fruit and other parts of the flower fall off The seeds develop from the ovules The seed contains an embryo enclosed in a protective seed coat Based on the number of cotyledons in the seed the angiosperm plants have been divided into two groups namely dicotyledon and monocotyledon Dicotyledons have seeds with two cotyledons Pea Bean Castor They have leaves with netted venation and taproot system Seed coat Embryonic leaves Embryonic root Embryonic Shoot Cotyledons Tip Midrip Margin Vein Lamina Petiole Mono cotyledons have seeds with one cotyledon Maize Rice Wheat They have leaves with parallel venation and fibrous root system Embryonic leaf Embryonic shoot Embryonic root Sheath Cotyledon Fruit tissue Seed coat Endospem Life Cycle of a Flowering Plant The major stages of the flowering plants are the germination of seed growth flowering re-production pollination seed formation and seed spreading Every seed has minute plant called the embryo Under favourable conditions like sunlight water and soil embryo is grown up into a new plant This new plant bears fruits with seeds and multiplies This cycle continues forming the life cycle of flowering plants Dispersal of Seeds Spreading of seeds from one place to another with the help of agents like air water animals and birds is known as dispersal of seeds A single plant produces a large number of seeds If all these seeds fall directly below the parent plant the seedlings would have to compete for space water oxygen minerals and sun light When the seedlings are grouped together in one place they can easily be destroyed by grazing animals But by nature the seeds and fruits of plants are distributed far and wide through various agencies Dispersal by Wind Anemochory The seeds which are smaller lighter and tiny float in air over long distance Some of them proceed with hairs and membranous wing like structures and so they are carried away easily Cotton seed Drumstick Dispersal by Water Hydrochory Fruits which are dispersed by water have outer coats modified to enable them to float The mesocarp middle layer of coconut is fibrous and is easily carried away by water They reach different places and grow into a new plant Lotus Coconut Dispersal by Animals Zoochory Some fruits have hooks spines bristles stiff hair etc on their outer coat These fruits stick on the furry coats or skins of some animals and are carried from one place to another Xanthium Achyranthus Dispersal by Birds While eating fruits like tomato and guava birds eat seeds also along with the edible portion and they are passed out in the excreta later These types of seeds are protected from the digestive juices by their seed coat Self Dispersal Method Autochory Some fruits disperse their seeds in the wind through an explosive mechanism and spread them Ladies finger Balsam Man is also responsible for the dispersal of many fruits and seeds Useful plants like cinchona rubber and eucalyptus have been successfully introduced by man to the new surroundings far away from their original habitat Germination of Seeds The seed is a fertilized ovule It consists of embryo food materials which are protected by the seed coat During favourable conditions the seed germinates and gives rise to a new seedling During the early stages of germination the seedlings get the food required for its growth from the cotyledons After the food stored in the cotyledons has been used up the seedling gets its food from the soil The seedling absorbs water and nutrients from the soil with the help of its roots It develops leaves and grows into a plant Embryo Sead Coat Cotyledon Foliage Leaves Agriculture Man started practicing agriculture thousands of years back This was one of the developments of civilization In the modern days agriculture is practiced on a large scale due to the advancement of science and technology Application of modern technologies like plant breeding and usage of chemicals like fertilizers and pesticides have increased the yield Major agricultural products are cereals vegetables fruits and oil seeds They are cultivated not only for our basic needs but also for commercial purpose Soil Soil is one of the most important natural resources It is essential for agriculture It supports the growth of plants by holding the roots and supplying water and nutrients It is the home for many organisms Soil is formed by the breaking of rocks by the action of wind water and climate The mixture of rock particles and humus is called the soil The soil is classified on the basis of the proportion of various sizes Sandy Soil Clay Soil Loamy Soil Sandy soil It contains greater proportion of big particles They cannot fit closely together Water can drain quickly through the spaces between the sand particles So sandy soils tend to be light well aerated and dry Clay soil It contains greater proportion of fine particles packed tightly together leaving little space for air It can retain a lot of water in the tiny gaps between the particles Plants like paddy grow well in this soil Loamy soil It contains large and fine particles in almost same proportion The best top soil for growing plants is loam It is a mixture of sand clay and another type of soil particle known as silt Silt occurs as a deposit in river beds It has right water holding capacity for the growth of plants Clay and loamy soil are suitable for growing wheat gram and paddy Take a little amount of soil and powder it Put this soil in a glass tumbler Mix it with water stir it well with a small stick to dissolve the soil Let it undisturbed for some time Now you can see different layers of soil The rotting matter floating on the water is called humus The other layers are clay sand and gravel From this we can see that the soil is a mixture of various particles Humus Water Clay Sand Gravel Classroom Agriculture Classroom agriculture creates the basic understanding about agricultural practices in the classes Through this we come to know about the values and importance of agriculture To mould us into better members of the society this programme teaches the connections between agriculture and the environment food energy animals society economy science and technology Friends of Farmer Insects are generally considered to be harmful But many of them are helpful to us in many ways Earthworm honeybee and dragonfly are useful to plants and farmers Earthworm Earthworms help to increase the amount of air and water that gets into the soil They break down organic matters like leaves and grass into smaller particles that plants can use When they eat them they leave behind castings that are a type of fertilizer The process of decomposing bio-degradable wastes by earthworms is known as vermicompost Honey bee Honey bees are helpful for cross pollination in flowers They are attracted by the colour and smell of the flowers They convert the pollen which is the only natural protein source for them into honey Honey is used as food and also for medicinal purposes Bees also produce wax which is used for making candles Dragon fly It destroys the egg and larva of harmful insects and mosquitoes and prevents the spreading of diseases It is also helpful in cross fertilization Visit a nursery garden near your area and observe how the varieties of saplings are growing there Prepare a report about it sepal petal androceium gynoceium anemophily hydrophily entamophily ornithophily anemochory hydrochory zoochory autochory pollination by insects pollination by wind pollination by water pollination by animal grass vallisneria hydrilla lotus Earthworm Destroys the egg and larva of mosquitoes Birds Honey Coconut Ornithophily Bee Dispersal by water Dragonfly Vermi-compost OUR ENVIRONMENT Environment is everything that is around us There are two types of environment They are physical environment and biological environment Physical environment includes all non-living things like land water and air Biological environment includes the living things such as plants and animals Natural environment has lot of economic values Plants and animals in our environment are useful to us in a number of ways Animals like cow buffalo and goat give us milk Some animals are used for transportation These animals are raised in farms In this lesson we will learn about dairy farms poultry farms apiculture manures and vermicompost After the completion of this lesson students will be able to Know about different types of farms List out the economic importance of dairy farms and poultry farms Know about Apiculture and the uses of honey Understand the different types of manures and their uses Know about vermiculture and vermicompost Farming is the activity of growing crops and raising livestock It is a part of agriculture Agriculture is the cultivation of land and breeding of animals and plants to provide food fiber woods and medicinal plants to sustain and enhance life But farming is more profitable than agriculture So it is done on a commercial scale An area of land with fields and buildings that is devoted primarily to growing crops or raising domestic animals or both as a business is called farm Large scale farms grow one or two major crops or animals Middle sized and small sized farms grow different types of crops and animals Dairy Farm Dairy farming is a type of agriculture that focuses on extraction of milk and preparation of various milk products like cheese butter curd et High milk producing cows along with bulls and oxen are raised in commercial dairy farms Other animals found in these farms include goats sheep and camels Do you know District Livestock Farm in Hosur Krishnagiri district of Tamil Nadu is the biggest cattle farm in Asia Total area of this farm is acres Visit an animal farm in your area and prepare a list of animals domesticated there Also find out the products you can get from there Cattle breeds In India there are cattle breeds They are domesticated for milk agricultural work transportation and many other needs Gir Sahiwal Red Sindhi Kangayam and Ongole are some of the cattle breeds found in India Cattle breeds found in different states of India are given in the table Gir Sahiwal Red Sindhi Malvi Ongole Nagari Cattle Breed States Gir Gujarat Rajasthan Sahiwal Punjab Haryana Uttar Pradesh Red Sindhi Andhra Pradesh Malvi Rajasthan Madhya Pradesh Nagari Haryana Uttar Pradesh Rajasthan Kangayam Tamil Nadu Ongole Andhra Pradesh Activity Some of the cattle breeds found in Tamil Nadu are given below With the help of your teacher find out the districts where they are found Kangayam Bargur Umblachey Pulikulam Do you know India has the largest number of livestock in the world holding million In our country housed the second largest number of cattle in the world with million One million Ten lakh Apart from these animals buffaloes are also domesticated in India There are buffalo breeds in India Buffaloes produce more amount of milk than cows Also buffalo milk has more nutrients than cow’s milk Murrah Jaffrabadi Bhadawari and Surti are the buffalo breeds that are found in India India is the biggest buffalo milk producer in the world Some of the buffalo breeds found in our country are given in the table Jaffrabadi Murrah Bhadawari Surti Mehsana Nagpuri Do you know White Revolution in India was launched in s to make India self dependent in milk production Dr Verghese Kurien is called the Father of White Revolution Buffalo Breeds States Murrah Punjab Haryana Uttar Pradesh Bhadavari Uttar Pradesh Madhya Pradesh Jaffrabadi Gujarat Surti Rajasthan Gujarat Mehsana Gujarat Nagpuri Central and South India Nili Ravi Punjab Haryana Feeding Cattle need nutritious feed in order to be healthy and to produce high milk yield The cattle feed includes roughage and concentrates The roughage contains high amount of fiber and it includes fodder hay straw and silage Concentrates include broken grams cereals millets rice polish cotton seeds and oil cakes Apart from these feed cattle need an adequate amount of fresh water Diseases Foot and mouth disease and anthrax are some of the common diseases found among cattle Maintaining proper sanitation is necessary to stop the spread of these diseases Timely vaccination can prevent most of the diseases Veterinary medicine deals with the prevention diagnosis and treatment of disease disorder and injury for domestic and non-domestic animals Uses Cattle are useful to us in a number of ways Some of them are listed below We get milk from cows Cow’s milk contains essential minerals needed for us Bullocks are used to plough land harvest and thrash crops Cattle are employed in transportation Cattle dung is used as manure It is also used as fuel and for generation of biogas Panchagavya is an ayurvedic medicine used in agriculture to control pest and fungi It is a mixer of dung and urine of cows fresh milk curd jaggary and ghee Leather goods are manufactured from cattle hides Poultry Farms In poultry farms avian species are reared and bred for the purpose of egg meat or both Fowls ducks geese turkeys and some verities of pigeon are the most commonly reared species Chicken occupy of the total poultry Poultry birds grown for meat are called broilers Layers are the female fowls grown for egg production The poultry industry is important in providing a balanced diet for human population Proper management of poultry includes methods of hatching rearing housing sanitation prevention of diseases and a sound marketing system In Tamil Nadu famous poultry farms are found in places like Namakal Palladam and Chennai Breeds There are more than hundred breeds of fouls Fowls are classified on the basis of their utility to man They are meat type broiler egg type egg layer and dual type Assel Chittagong Ghagus Busra Brahma and Cochin are some of the breeds found in our country Local and indigenous birds are reared in rural places Traditionally these birds have a poor meat production capacity compared to commercial broiler and layers But meat and egg from this type of poultry is better than other commercial poultry Ghagus Plymouth Cochin Brahma Assel Broiler Kadaknath Feeding Poultry birds need proteins carbohydrates fats minerals and vitamins for egg and meat production Bajra barley maize wheat rice bran jowar oil cake fish meal bread and green residues of vegetables are the feed given to the poultry birds Poultry products Poultry birds benefit us in many ways Egg meat and manure are the three main benefits we get from them Poultry birds are good source of nutritive food Eggs laid by them are rich source of protien These are easily digestable They contain minerals like calcium potassium and iron vitamins and moderate amount of fat Their feathers are used for making pillows and quilts Dropping of the poultry birds is used as manure It is highly valuable for crops Poultry Diseases If poultry animals are not cared or fed properly they suffer from a number of diseases Poultry birds affected by virus suffer from fever and diarrhea Foul cholera is caused in them by bacteria Over exposure to wet and cold conditions causes cramps in poultry birds Poultry birds are affected by internal parasites like round worm and tap worm They are also affected by external parasites like flees lice ticks et Do you know India ranks fifth in poultry production in the world Whitelegon is the most egg yielding breed in the world Do you know Egg contains minerals like calcium phosphorus and sodium and vitamins like B B and D Nutritious content of egg is Water Protein Fat and Minerals Poultry Diseases If poultry animals are not cared or fed properly they suffer from a number of diseases Poultry birds affected by virus suffer from fever and diarrhea Foul cholera is caused in them by bacteria Over exposure to wet and cold conditions causes cramps in poultry birds Poultry birds are affected by internal parasites like round worm and tap worm They are also affected by external parasites like flees lice ticks et Poultry management Poultry birds need a clean environment The following measures should be taken in order to avoid disases Poultry houses should be clean and disinfected It should have windows for ventilation Light is essential for high egg production Poultry birds need clean and fresh water Timely vaccination is necessary to prevent diseases II Apiculture Rearing of honey bee for honey is known as apiculture It is also called bee keeping In this technique honey bees are reared in a specially designed wooden box Honey bees have been very closely associated with humans since ancient times Various products like honey and wax are obtained from honey bees Earlier honey is extracted from the hives in the forests Nowadays they are domesticated by farmers to produce honey Bee keeping is a profitable rural based industry Honey bees are social insects The nest of honey bee is known as the bee hive They live in colonies and show division of labour Types of Honey Bee Three types of honey bee are found in a colony They are Queen bee the Drones and the Worker bees Queen Bee The queen is the largest member of the bee colony There is only one queen and it is the fertile female of the colony They are formed from fertile eggs The queen is responsible for laying eggs in a colony It lays about two thousand eggs per day The life span of the queen bee is years Drones Drones are the fertile males They develop from unfertilized eggs They are larger than the workers and smaller than the queens Their main function is to fertilize the eggs produced by the queen They also help in maintenance of hive temperature The number of drones in a colony amounts to hundreds and sometimes to thousands The normal life-span of a drone is days Worker Bees These are sterile female bees and the smallest members of the colony These bees are very active Their function is to collect honey look after the young ones clean the comb defend the hive and maintain the temperature of the bee hive Life span of worker bee is six weeks Do you know One queen bee has to fly miles three times around the globe to make one pound of honey Honey bee can fly up to six miles and as fast as miles per hour Honey and bee wax are obtained from honey bees Other products which are obtained from bees are bee venom propolis and royal jelly Honey Honey is a sweet viscous edible natural food product It contains proteins free amino acids vitamins and minerals like calcium iron phosphorus and manganese The following are the uses of honey bees Honey has an antiseptic and antibacterial property It is an antibioti It helps in building up haemoglobin content in the blood It is used in Ayurvedic and Unani system of medicines It prevents cough cold fever and relieves sore throat It enhances digestion and appetite It provides essential aminoacids required for the growth of the body Bee wax Bee wax is secreted by the wax glands of worker bee to construct the combs of bee hive Some of the uses of bee wax are given below It is widely used in cosmetic industry The wax is used in the preparation of shoe polish and manufacture of cold creams lipsticks candles and lubricants It is also used in the preparation of ointments and in pharmaceutical industry Useful products from Honey Bees Honey is the exciting source of natural sweet It is also called as Liquid Gold III Manure Manure is an organic matter used as fertiliser It is mostly derived from animal and plant residues It increases the fertility of the soil by adding nutrients such as nitrogen phosphorus and potassium It is a natural form of fertiliser and it is cheaper Types of manure Animal manure green manure and compost manure are the different types of manures Animal manure Common form of animal manure is the farmyard manure It contains the feces and urine of different livestock like horses cattle pigs sheep chickens turkey and rabbits It contains nutrients like nitrogen phosphorus and potassium It increases the capacity of soil to hold more water and nutrients Green manure This is a manure obtained by decomposition of green leaves twigs of trees shrubs and herbs Leguminous plants like clover are used for this purpose These plants are ploughed in the soil They fix nitrogen in the root of the plants They also help in suppression of weeds and prevention of soil erosion Compost Compost is obtained by decomposition of organic matter like crop residues animal wastes and food wastes by various microorganisms like bacteria and fungi under controlled conditions These microorganisms break down organic matter into simpler substances Activity With the help of your teacher set up a compost pit within your school compound Put all the organic wastes like food waste and cover it with soil Wait for three weeks and then you can use this as manure for the plants in your school Animal manure Green manure Compost IV Vermiculture Vermiculture or Vermicomposting is a method of transforming organic wastes such as waste papers leaves pieces of woods et into a nutrient rich fertilizer using earth worms It is a healthy and clean way to eliminate wastes going into our landfills It keeps the environment clean Earthworms eat the organic wastes and excrete it in the form of castings This is known as vermicompost It is used as fertilizer for the soil and it improves the properties of the soil Materials used for Vermicomposting Organic matters which are biologically degradable are used in vermicomposting Some of them are given below Crop residues like rice straw rice husk tea wastes and tobacco wastes Fruit and vegetable wastes Animal wastes like cattle dung poultry droppings and droppings of goat and sheep Advantages of Vermicompost Vermicompost provides the essential nutrients such as nitrogen potassium and phosphorus for the plant growth It improves the water holding capacity of the soil and prevents soil erosion It enhances plant growth suppresses diseases in plants increases porosity and improves water retention and aeration It reduces the need for chemical fertilizers Do you know Common earth worms are not used for vermicomposting Specialized breeds that multiple while living in colonies are used for this The most common are Red wigglers European night crawlers and African night crawlers Surti Egg White revolution Transportation Layers Leguminous plants Green manure Buffalo Cattle Milk Farming is done on a commercial scale Vermicompost can be used to clean sewage Leguminous plants fix nitrogen in the leaves of the plants Namakkal district is famous for dairy farm Murrah is a buffalo breed ANIMALS Introduction Our planet earth has countless number of organisms including plants and animals Among them animals are the most advanced organisms Animals are a gift of nature to human beings They are very closely associated with us in our daily life and contribute a lot to us Man is exploiting nature nowadays more than ever before Hence animals are affected and many of the plant and animal species are disappearing from the surface of the earth We are going to study about this in this lesson This lesson will deal with reproduction in animals extinction of animals and the ways to preserve them Reproduction in Animals Reproduction is the biological process by which an organism gives rise to a new organism This process is seen in all living organisms both plants and animals Reproduction is essential for the continuation of similar kinds of species generation after generation In animals two types of reproduction are seen They are sexual reproduction and asexual reproduction Sexual Reproduction Sexual reproduction is a natural way of reproduction in humans animals and also in most of the plants This type of reproduction is more complex and lengthy as compared to asexual reproduction Different and unique offspring are produced by sexual reproduction Sexual reproduction consists of the following stages a Pre-fertilization b Fertilization Post-fertilization a Pre-fertilisation This is the first stage of sexual reproduction In this stage gamete sex cells formation and transfer of gametes take place In animals males and females have different reproductive organs The male reproductive organ is called testes and the female reproductive organ is called ovary The testes produce the male gametes known as sperms and the ovaries produce the female gametes known as ova or eggs The male gametes reach the female gamete during this stage b Fertilisation When the male gamete reaches the female gametes they begin to fuse together The fusion of gametes is known as fertilization During fertilization the nuclei of the sperm and the egg form a single nucleus together resulting in the formation of a fertilized egg known as zygote Fertilisation in animals takes place in two ways They are External fertilization and Internal fertilization External fertilization takes place outside the animal’s body It usually takes place in aquatic environments where both eggs and sperm are released into the water Fertilization in frogs and fish takes place by this method When the fertilization takes place inside the animal’s body it is called internal fertilization Internal fertilization takes place in animals like cat dog cow et Embryo formation The zygote fertilized egg further divides repeatedly into group of cells These cells develop into different tissues and organs constituting a full body This structure is known as embryo The embryo continues to develop in the uterus and it is developed into body parts such as head face hands legs et Based on whether the embryo develops outside or inside the body animals are classified into oviparous and viviparous respectively Oviparous animals Animals in which embryo develops outside the body are called oviparous animals They produce their offspring by laying eggs In the case of birds new ones are produced from the eggs The egg shell protects the embryo from outer environment and the embryo receives its nutrients from the egg yolk In these animals the new born one will have different developmental stages For example in butterfly there are different developmental stages like egg larva pupa and adult Each stage is different The process in which a butterfly becomes an adult is called metamorphosis The life cycle process can take a month to year Stage Eggs In the first stage a butterfly lays eggs on a leaf These eggs are very small and round About five days after the eggs are laid a tiny worm-like creature will hatch from the egg Stage Caterpillar Larva The second stage is the caterpillar It is also called larva It looks like a worm The caterpillar starts to eat leaves and flowers once it has hatched It grows very fast because it eats a lot As it grows fast it sheds its old skin and gets new skin A caterpillar shedding its outgrown skin is called molting Stage Chrysalis Pupa The third stage is the pupa It is mostly brown or green This is the resting stage as well as the changing stage The caterpillar turns into a butterfly Do you know Amphibians are animals which have double life The early part of an amphibian’s life is spent in the water As they get older they spend time on land Amphibians like frog lay thousands and sometimes millions of small soft eggs in the water Stage Butterly Adult In the fourth stage the pupa opens and a butterfly comes out A butterfly is sometimes called an imago It is also called as adult Butterflies are very colorful When the butterfly first comes out it is very tired and so it rests Then the butterfly will lay eggs and the lifecycle will start all over again Viviparous animals Animals in which the embryo develops inside the body are called viviparous animals These animals give birth to the young ones The developing embryo gets its nutrients from the mother Humans cows deer and dogs are examples for viviparous animals Activity Write down the names of any three oviparous and viviparous animals in the table given below Oviparous animals Viviparous animals Oviparous animals Viviparous animals The development of the embryo takes place outside the animal The development of the embryo takes place inside the animal They produce their young ones by laying eggs They directly give birth to the young ones The embryo receives the nutrients from the egg yolk The embryo receives the nutrients from the mother Examples for oviparous animals are insects fish reptiles and birds Examples for viviparous animals are cats dogs humans and lions Asexual Reproduction The type of reproduction in which only a single parent gets divided into two new offspring is known as asexual reproduction This type of reproduction takes place in micro organisms like hydra and amoeba Asexual reproduction produces offspring that are identical to the parent There are several ways by which animals reproduce asexually Some of them are explained below Fission Fission occurs in some invertebrate organisams without back bone multi-celled organisms In this method an organism splits itself into two parts For example flatworms sea anemones and sea cucumbers divide into two halves and regenerate the other half in each of the resulting individuals Budding Budding is a form of asexual reproduction that results from the outgrowth of a part of the body Then the bud is separated from the original organism forming two individuals Budding occurs commonly in some invertebrate animals such as hydras and corals Fragmentation Fragmentation is the breaking of an individual into parts followed by regeneration Reproduction through fragmentation is observed in sponges and sea stars Fragmentation may occur through accidental damage damage from predators or as a natural form of reproduction Sea Anemone Hydra Star Fish Spores Some protozoan bacteria plants and fungi reproduce via spores Spores are the structures naturally grown as part of an organism’s life cycle They are separated from the organism and dispersed through a medium such as air or water In a suitable environment the spores will develop into a fully grown organism Activity Visit a nearby museum or a higher secondary school lab in your area Find the specimens of starfish cucumber and hydra there Collect the pictures of these species and prepare an album An endangered species is an animal or a plant that is at the risk of extinction It means that they might extinct from the earth soon It is reported that nearly species of plants and animals are critically endangered in India Snow Leopard Bengal Tiger Asiatic Lion Purple Frog and Indian Giant Squirrel are some of the endangered animals in India Similarly plants like Umbrella Tree Malabar Lily Rafflesia Flower Indian Mallo and Musli Plant are endangered II Endangered Species Lion tailed Macaque Asiatic Lion The Niligiri Tahr Snow Leopard Collect the pictures of different plants and animals Prepare a poster showing the endangered animals and plants in India Also find out where they are found Do you know An animal is said to be endangered if its population is currently less than or less than for the past three years Indian Mallo Malabar Glory Lily Umberlla Tree Rafflesia Flower Causes for Endangerment The following are the reasons why an animal or a plant is endangered or extinct Forests which provide food and shelter to animals are destroyed for human needs Large number of animals is hunted for their horns skin teeth and many other valuable products Activity Write few slogans for conservation of forest and animals Observe some important days related to nature like World Wildlife Day and organise a rally on those days Do you know In the recent years more number of animals is affected by wastes in the form of plasti Animals mistake plastic as their food and eat them Surgeons in Tamil Nadu Veterinary University Chennai have removed kg of plastic from a cow Pollutions like air pollution and water pollution affect the animals Sometimes animals are taken to new habitat by people They cannot survive there Pesticides and chemicals which are used to get rid of insects pests or weeds poison the plants and animals Natural disasters like flood cyclones and fire also destroy animals Saving endangered Species Nature is beautiful and it is filled with varieties plants and animals But they are endangered mainly due to human activitys we need to take some measures to protect them Hunting and poaching animals should be prohibited We should not pollute the environment Limiting the usage of plastic and recycling it can save the endangered animals Pesticides and chemicals which pollute the environment should be avoided Planting native trees will provide food to the animals We should buy eco friendly products only Activity Plant native trees like Banyan Tree Neem Tree Umbrella Tree and Java Plum Tree in your school area These trees can benefit birds Do you know Project Tiger was initiated in India in to protect the Bengal Tiger It was launched on April Due to this project the population of Tiger has increased in India from in to in Red Data Book The Red Data Book is a book maintained for recording rare and endangered species of animals and plants This book is created to identify and protect the species which are about to extinct Black Confirmed to extinct species Red Endangered species White Rare species Green Formerly endangered species but started to recover It is maintained by the International Union for Conservation of Nature IUCN an international organization working in the field of nature conservation The Red Data Book contains colour-coded information sheets Advantages of the Red Data Book It helps to evaluate the population of a particular species The data given in this book can be used at the global level The risk of a species becoming globally extinct can be estimated with the help of this book It provides the necessary guidelines for implementing protective measures National Parks A National park is an area which is strictly reserved for the betterment of the wild life In these areas activities like forestry grazing or cultivation are not permitted Even private ownership rights are not allowed in these areas The national parks cover an area of square kilometers Do you know Red Data Book of India contains the conservation status of animals and plants which are found in the Indian subcontinent Surveys conducted by the Zoological Survey of India and the Botanical Survey of India provide the data for this book III Conservation of Animals Biodiversity is the term used to describe different plants animals microorganisms and insects et that are found on the earth Conservation of biodiversity helps us to protect maintain and recover the endangered animals and plant species Conservation is the protection preservation management of wildlife and natural resources Endangered species are maintained in certain protected areas such as national parks and wild life sanctuaries In India there are about national parks and wild life sanctuaries Jim Corbett National Park Jim Corbett National Park is located close to Nainital in Uttarakhand Tigers are found in this park Other animals found here include several species of deer leopards jackals red foxes black bear sloth bear and monkeys Gir Forest National Park It is located in Gujarat Asiatic lions in their natural habitat can be seen here Other animals that are found here include sambar chinkara chital porcupine wild boar and black buck Kaziranga National Park Wild animals such as Rhinoceros Tiger Elephant Wild Buffalo and Swamp Deer are seen here This park also has bears leopards and several species of local and migratory birds This park is famous for one horned Rhino Sundarban National Park Located in West Bengal the Sundarban National Park is a Tiger and Biosphere Reserve on the Ganges Delta Bengal tiger saltwater crocodile wild boars foxes leopard cats huge turtles Ganges river dolphins and several other varieties of mammals and reptiles along with a huge variety of local and migratory birds can be seen here Kanha National Park Kanha National Park located in Madhya pradesh was established as a part of Project Tiger Apart from tiger animals such as elephants jackals leopards striped hyenas monkeys and several varieties of deer including black buck swamp deer chital and sambhar are seen here Periyar National Park Periyar National Park is in Thekkady Kerala Various species including the majestic elephants royal tigers and fishes reptiles and birds can be seen here Guindy National Park This park is located at the heart of the Chennai city It is a home to spotted deer black bucks white bucks river otter hyena bonnet monkey civet cat jackals pangolin hedgehog and common mongoose et Wildlife Sanctuaries A sanctuary is a protected area which is reserved for the conservation of animals only Harvesting of timber collection of forest products and private ownership rights are allowed here Tourist visit is also allowed in these places Kalakkad Wildlife Sanctuary The Kalakkad wildlife sanctuary is famous for Tigers Lion tailed macaque Nilgiri langur bonnet macaque langur Nilgiri tahr sambar sloth bear gaur elephant flying squirrel panther wild dog and pangolin are some of the animals found here Mudumalai Wildlife Sanctuary It is located in Ooty Bengal Tiger Giant Elephant and Leopard are found here Elephant safari is famous in this sanctuary Mundanthrai Wildlife Sanctuary It is located in Thirunelveli District Major wild life animal found here is Tiger Name of the Park District Gulf of Munnar National Park Ramanathapuram Indira Gandhi National Park Coimbatore Mudumalai National Park The Nilgiris Mukurthi National Park The Nilgiris Anaimalai Wildlife Sanctuary It is also called as Indira Gandhi Wildlife Sanctuary It is situated in Coimbatore District Dhole Wild dog and Giant Squirrel are seen here Vedanthangal Bird Sanctuary It is a very old sanctuary in Tamil Nadu It is located in Kancheepuram District It has many migratory birds like Spoon bills Open billed storks Pelicans et Advantages of Conservation Species can be adapted to their habitat Species can interact with each other Natural habitat of the animals is maintained It is less expensive and easy to manage IV Prevention of Cruelty to Animals Do you know Point Calimere Sancturary Nagappattinam Karaivetti Bird Sanctuary Ariyalur Vaduvur Bird Sanctuary Tiruvarur Vallanadu Black Buck Sancturary Tuticorin Viralimalai Bird Sanctury Trichi Grizzled Squirred Sancturary Virudhunagar Cruelty to animals includes capturing trapping poisoning of any wild animal collectively There are many animal welfare organizations concerned with the health safety and psychological wellness of animals They include animal rescue groups which help animals in distress and others which help animals suffering from some epidemi Animal Welfare Board of India and National Institute of Animal Welfare are the government organizations which work for the welfare of animals There are some private welfare organizations also Name of the Santuary District Meghamalai Wildlife Sanctuary Theni Vandaloor Wildlife Sanctuary Chennai Kalakkad Wildlife Sanctuary Thirunelveli Grizzled Squirrel Wildlife Sanctuary Virudhunagar Blue Cross Blue Cross is a registered animal welfare charity in the United Kingdom It was established in with the vision that every pet will enjoy a healthy life in a happy home The charity provides support for pet owners who cannot afford private veterinary treatment helps to find homes for unwanted animals and educates the public in the responsibilities of animal ownership Blue Cross of India was established at Chennai in the year Now Blue Cross of India is one of the largest animal welfare organizations in India The main office is located at Guindy Chennai with all amenities like hospitals shelters ambulance services and animal birth controls et Activities of the organization include providing shelters adoption maintaining hospitals and mobile dispensary and providing ambulance services Do you know Blue Cross of India was founded by Captain V Sundaram of Chennai He was an Indian pilot and animal welfare activist AIR Introduction Air is present everywhere around us Though we cannot see it we can feel it Air is a mixture of gases like oxygen nitrogen carbon dioxide and hydrogen These gases act as an envelope around the earth and form the atmosphere It is the presence of atmosphere that makes the earth a suitable place for living In the recent years more number of industries has been established and they release excess of harmful gases like carbon dioxide into the atmosphere Because of this air is polluted more than ever before In this lesson we are going to study about different layers of atmosphere air pollution air borne diseases and the measures to control air pollution Atmosphere The earth is surrounded by a layer of gases which is called the atmosphere It is composed mainly of nitrogen and oxygen Other gases like carbon dioxide and argon comprise of the atmosphere by volume The atmosphere is like a blanket that surrounds the earth It protects the Earth from getting too cold or too hot Atmosphere is divided into five different layers The layers from the bottom upwards are called Troposphere Stratosphere Mesosphere Thermosphere and Exosphere Troposphere The troposphere is the lowest layer of the atmosphere From the sea level it extends upto about km It is the densest layer and almost of the air in the atmosphere is found in this layer This layer also has water vapour We live in the troposphere and most of the weather clouds rain snow is found in this layer All weather changes also occur in this layer Stratosphere It extends from the top of the troposphere to about km above the ground Ozone layer found in this layer absorbs harmful ultraviolet rays which can cause damage to our skin and eyes There is no water vapor in this layer The temperature in this layer is around − Read the weather news in a daily news paper and note down the changes in the weather over a week In which layer these changes take place Discuss in the classroom about these changes and record your points Mesosphere The region above the stratosphere is called the mesosphere It extends upward to a height of about km from the ground The temperature in this layer decreases with height and it is − Most of the meteors found in the sky burn in this layer Thermosphere The layer of very rare air above the mesosphere is called the thermosphere It is found above the mesosphere Exosphere The outermost layer of the atmosphere is called the exosphere It lies between km above the earth The air here is extremely thin Air is important for all the living organisms Without air no life can exist on the earth We take in oxygen from the air and release carbon dioxide Plants in turn use carbon dioxide present in the air to produce their food The gases such as oxygen nitrogen carbon dioxide and hydrogen present in the air are important to us for many reasons Let us study about the importance of air in this section II Importance of Air Water Cycle Water vapour present in the air is important for the formation of water cycle Water from the water bodies such as rivers and oceans evaporates and becomes water vapour This water vapour then forms the clouds These clouds move to the land and get cooled to give us the rain This movement of clouds is possible due to air Supplies Energy We breathe oxygen present in the air and it is supplied to the cells in our body Body cells burn the food molecules with the help of oxygen and produce energy With this energy we do all kinds of works Do you know As the height increases the amount of air in the atmosphere decreases and so the oxygen level will decrease That is why mountain climbers carry oxygen cylinders while climbing mountains Sound travels through air We hear many things from the surrounding and people hear what we speak This is possible due to air because sound needs a medium to travel Sound travels from the point of generation to the listener through air Useful for plants Nitrogen present in the air is useful for plants The nitrogen in the atmosphere is converted into easily absorbable nitrates by plants with the help of some microbes It is known as nitrogen fixation These nitrates are useful for the growth of plants Also air is helpful for the pollination of plants Pollen grains travel from one plant to another plant through air Thus cross pollination is achieved with the help of air Transport Movement of air is called wind This is helpful for the ships and boats to sail on the water Airplanes and helicopters travel though air Sports Paragliding is the recreational and competitive adventure sport of flying In this sports pilot sits in a harness suspended below a fabric wing Hang gliding is also an air sport or recreational activity in which a pilot flies a light non-motorized foot launched air craft called a hang glider Paragliding and hang gliding are possible with the help of air Other sports like wind surfing kite surfing and sailing are also possible with the hep of air Do you know Bir billing in Jogindernagar valley of Himachal Pradesh is known as para-gliding capital of India In Tamilnadu Yelgiri is a good paragliding spot Activity Find out the places where wind energy is produced Also discuss about the importance of wind energy in the classroom and make a report on your discussion Parachutes and Hot air balloons Parachutes and hot air balloons are used to land from above In case of emergency people use parachutes and come down slowly and safely with the help of air Wind energy Air flows from a region of high pressure to low pressure This flow of air at high speed is called wind This wind is used to generate electric power with the help of wind mills The presence of harmful substances in the air which can have an adverse effect on living beings and the environment is called air pollution When harmful substances including gases like carbon dioxide carbon monoxide sulphur dioxide et and particles like dust and aerosols are released into the earth’s atmosphere air pollution occurs These substances are released into the atmosphere at a rate which exceeds the natural capacity of the environment to absorb them Air pollution may cause diseases allergies and even death to humans It may also cause harm to other living organisms such as plants and animals It may damage the natural environment also III Air Pollution Causes of Air pollution Air pollution is caused by both natural and manmade activities Air pollutants are released into the atmosphere through human activities like burning of fuels releasing industrial wastes mining et Natural events like volcanic eruption also cause air pollution Let us see about some of the causes of air pollution in detail Industries Many industries have been established to manufacture things Large amount of carbon monoxide hydrocarbons organic compounds and chemicals are released into the air by these industries Because of this pollutants quality of air is affected very much Do you know The word pollution is derived from the Latin word polluere which means contamination or make dirty Activity Organise a debate in your class about the advantages and disadvantages of industries Discuss in what way industries are responsible for air pollution Also discuss what measures can be taken to minimise air pollution caused by industries Burning of fuels Combustion of fossil fuels like coal and petroleum release sulphur dioxide which is an air pollutant Major air pollutants are released by the vehicles including bus cars trains and airplanes Improper or incomplete combustion of fuel release carbon monoxide Nitrogen oxides which are released by both natural and man made processes also cause air pollution Agricultural activities Use of insecticides pesticides and fertilizers in agricultural activities has increased in the modern days They emit harmful chemicals such as ammonia into the air causing air pollution Mining Extraction of minerals from the earth is called mining Mining processes release dust and chemicals into the air causing massive air pollution This affects the health conditions of workers and the people living in the surrounding areas Household activities Air is polluted through household activities also While cleaning and painting we use lot of chemicals These chemicals pollute the environment Effects of Air pollution Air pollution affects all living organisms including man It causes serious health problems to human beings and affects both plants and animals It brings about lot of changes in the climate and environment also In this section let us learn about some of the effects of air pollution Taj Mahal in Agra is built entirely by white marbles But it has become yellow in colour in the recent years It is because of air pollution Industries located in these areas release lot of pollutants into the air Every day metric tons of waste is being dumped into the city Diseases Air pollution causes several respiratory and heart problems Many people have died due to air pollution Air pollutants cause pneumonia and asthma in children Global warming Air pollution results in the accumulation of carbon dioxide in the atmosphere When gases like carbon dioxide are present in the atmosphere in large amount they increase the atmospheric temperature With increased temperatures melting of ice and icebergs in polar regions and increase in sea levels are taking place It affects the living organisms living there Acid rain As we saw earlier harmful gases like nitrogen oxides and sulfur oxides are released into the atmosphere while burning fossil fuels When it rains the water droplets combine with these gases and fall on the ground in the form of acid rain Acid rain affects human animals and crops Depletion of ozone layer Ozone molecules are present in the Earth’s stratosphere and they are responsible for protecting humans from harmful ultraviolet UV rays Chlorofluorocarbons released into the atmosphere by human activities deplete the ozone layer As the ozone layer is depleted UV rays reach the earth and they cause skin and eye related problems to us Marine life Large amount of nitrogen present in some fertilisers is washed into the water bodies They cause the growth of green algae in the seas This is called Eutrophication This adversely affects fish plants and animal species Effect on wildlife Harmful substances present in the air affect wild animals Wild animals move to a new place when the air is polluted When their habitat is changed they face extinction Chemicals like chlorofluorocarbon CFC which are used in refrigerators spray cans and fire extinguishers have reduced the amount of ozone in the stratosphere It has resulted in the depletion of ozone layer in the Antarctic region Prevention of Air pollution If the air pollution increases at this rate then there will be no life on the earth in the future Future generation will be affected very badly So we need to take some measures to avoid air pollution Some of them are discussed below Major pollutants which cause air pollution come from automobiles Using public modes of transport can reduce the rate of pollution We also should encourage others to use public transport By reducing the usage of fossil fuels for burning we can save the environment Using non-renewable energy resources like solar energy and wind energy instead of conventional energy can reduce air pollution We need to reduce our usage We can reuse or recycle few items Switch off fans and lights when you are not using them CFLbulbs consume less electricity By using these bulbs we can save energy Planting more trees can reduce the amount of carbon dioxide in the atmosphere Diseases which are caused by microorganisms and communicated through air are called airborne diseases When we breathe in air there are chances for the microorganisms present in the air to get into our body The microorganisms which cause airborne diseases are bacteria virus and fungi These microorganisms are transmitted through droplets caused by coughing or sneezing breathing and talking Let us study about some of the airborne diseases here IV Airborne Diseases Diseases caused by bacteria Diphtheria Whooping Cough and Tuberclosis are some of the common airborne diseases caused by bacteria Diphtheria It is caused by the bacteria Cornebacterium diphtheria It generally affects the upper respiratory tract nose and throat and causes fever sore throat and chocking of air passage Whooping Cough Whooping cough is caused by Bordetalla pertusis It also affects the respiratory tract and causes mild fever severe cough ending in whoop Tuberculosis Tuberculosis is caused by the bacteria Microbacterium tuberculosis When we breathe the bacteria present in the air gets into the lungs and affect it Infected person has to be treated with anti-tubercular drugs for a period of months to one year Do you know National TB Control Programme was started in World Tuberculosis Day is observed on March Disease Causative Organism Mode of Transmission Tissue Organ affected Symptoms Tuberculosis Mycobacterium tuberculosis Droplet infection from sputum of infected persons Lungs Persistent cough Chest pain Loss of appetite Loss of weight Diptheria Cornebacterium diphtheria Droplet infection Droplet nuclei Upper Respiratory tract Fever Sore throat Choking of air passage Whooping Cough Bordetalla pertussis Droplet infection Direct contact Respiratory tract Mild fever Severe cough ending in whoop Diseases caused by Virus Some diseases are caused by the virus present in the air Common cold influenza measles mumps and chickenpox are some of the diseases caused by virus Common cold Common cold is an infectious disease which affects the upper respiratory system like nose and throat and it is easily spread Symptoms of common cold include cough painful throat running nose and sometimes fever Though many viruses can cause this it is generally caused by Rhinovirus Influenza Influenza is commonly found during childhood It is caused by the virus Myxo virus and results in inflammation of nasal mucosa and pharynx It is also known as flu Mumps It is caused by Myxovirus parotidis and it affects the upper respiratory tract Some of the common symptoms of mumps include fever headaches sore throat and swelling of parotoid glands which makes the jaw movement difficult Chickenpox It is common among children but adults also may get it Affected people will have blisters or spots in the body and face along with fever Those blisters with fluid will drain but sometimes it may leave scars Measles Measles is caused by Rubeola virus and it is easily caught by people from other infected people Symptoms of measles include eruption of small rashes in skin cough sneezing redness of eye pneumonia and bronchitis There is no cure for this disease Yet people can recover from this by proper rest and diet Disease Causative Organism Mode of Transmission Tissue Organ affected Symptoms Common Cold Rhino virus Droplet infection Upper respiratory tract Inflammation of nasal chamber Fever Cough Running nose Sneezing and Headache Influenza Myxo virus Droplet infection Respiratory tract Inflammation of nasal mucosa pharynx Fever Body pain Cough Sore throat Nasal discharge Respiratory congestion Measles Rubeola virus Droplet infection Direct contact with infected person Respiratory tract infection Eruption of small red spots or rashes in skin Cough Sneezing Redness of eye Pneumonia Bronchitis Mumps Myxovirus parotidis Droplet infection Contact with infected person Upper respiratory tract Enlargement of parotid gland movement of jaw becomes difficult Chicken Pox Varicella Zoster virus Droplet infection Direct contact with infected person Respiratory tract Eruptions of the skin Fever and Uneasiness Prevention Prevention is better than cure Airborne diseases can be prevented if we take certain measures Avoid close contact with people who have active symptoms of disease Maintain personal hygiene Keep the patient in complete isolation Cover nose and mouth while sneezing or coughing Avoid touching the face or other people with unwashed hands Wash your hands thoroughly Timely vaccination can prevent the diseases Evaluation I Choose the correct answer Chlorofluorocarbon is used in a refrigerator b air conditioners c Both d None Which of the following gas is released by automobiles a Carbon monoxide b Oxygen c Hydrogen d Nitrogen A wind mill is used to produce a chemical energy b mechanical energy c electric energy d All of these Activity Divide the students in the class into different groups and discuss how airborne diseases can be prevented Troposphere Satellite Stratosphere Space craft Exosphere Ozone layer Thermosphere Meteors Mesosphere Weather change Social Science Unit Our earth Imayan is waiting for his father after returning from school in the evening His father is an employee in a reputed bank Imayan Come Daddy Imayan ran and hugged his father Father Imaya Had your snacks Imayan Yes I had My social teacher is going to teach about earth tomorrow Please tell me about the earth Father Ok I will tell you Imayan How did the Earth form Father Approximately billion years ago Solar System was a cloud of dust and gas known as Solar Nebula Due to an explosion these particles collapsed and began to spin having the sun at centre The bigger particles which revolve around the sun are called planets Thus the planet Earth formed Imayan Will you explain about Universe Daddy Father The Universe is a vast expansion of space The Universe consists of billions of galaxies stars planets dwarf planets comets asteroids meteoroids and natural satellites The exact size of the universe is still unknown Scientists believe that the universe is still expanding outward Imayan What is a galaxy daddy Father A Galaxy is a huge cluster of stars Our galaxy Milky way is one among the countless of galaxies in the Universe Imayan Ok Daddy What is Solar system Father Solar system consists of the sun the eight planets their moons dwarf planets asteroids and comets These objects are gravitationally bound Imayan Very interesting dad Tell me about our Solar System Father There are planets in our solar system They are Mercury Venus Earth Mars Jupiter Saturn Uranus Neptune Imayan Dad Where is our Earth in the Solar System Father The Earth is the third planet from the sun and the fifth largest in solar system Imayan It is said that the earth is rotating itself and at the same time revolving around the sun Is it true Father Yes Earth has two movements They are Rotation Revolution Rotation The movement of the earth on its axis is called rotation of the earth Day and night are caused due to the earth’s rotation Revolution The movement of the Earth around the Sun on it’s axis which is Tilted about is called revolution of the earth Seasons are caused by Earth’s revolution Father Life is possible only on the Earth because of the presence of land air and water Imayan Oh I see What is the distance between the sun and the earth Father The distance between the sun and the earth is nearly million kilometres Imayan Say some more interesting facts about Planets Dad Father Mercury and Venus lie near to the sun Next to Earth is Mars Jupiter Saturn Uranus and Neptune The planets nearer to the sun are very hot The planets away from the sun are very cold Mercury is the smallest planet Jupiter is the largest planet Imayan Wow Amazing Where do we live on the Earth Father We live on the surface of the Earth It is made up of continents and oceans Imayan continents What are they Father Listen They are Asia Africa North America South America Antarctica Europe and Australia Imayan Which is the biggest continent Father The Asia continent where we live is the biggest of all Australia is the smallest one Antarctica is a snow covered landmass Imayan What are the five oceans Daddy Father Pacific Ocean Atlantic Ocean Indian Ocean Southern Ocean and Arctic Ocean of the Earth is covered by water and is covered by landmass About of water is saline of water is fresh and of water is easily accessible Imayan Thank you Daddy Today I have learnt a lot about the earth from you Now I am going to study and do my home work Father Ok Imaya Go and study Unit Towards history Stone Age In the beginning humans were not aware of metals They took several years to discover metals Our lives today are their gifts During this period humans were not aware of scripts The Stone Age is the period in which Stones were used as weapons Nature of Human Evolution Early humans lived in jungles along with animals They used stone tools to protect themselves drive away animals dig out roots shoots et The most important thing is that they ate everything raw including flesh They did not know the use of fire in the beginning At first dog was their good companion Wild animals ran away when dogs barked Dog was the first pet animal They took it wherever they went Later they started rearing cattle and were very useful to them They observed some grains growing along the river side They ate and found them very tasty They observed that the scattered grains were eaten up by birds They were keen observers They found that the grains grow with the help of sunshine and rainfall Thus they learnt the art of cultivation Humans noticed forest fire At first they were afraid of fire They found some animals died due to fire They ate the flesh of the burnt animals It tasted good They also observed that the spark came out by scratching two stones together Since then they ate cooked food Nomadic Life Early humans did not know to grow crops They wandered in all the landscapes in search of food They ate whatever they got and drank water from natural sources This kind of life was called nomadic life They wore skins of animals leaves and barks of trees to cover their body They lived in caves and holes of big trees Stones were sharpened as tools by them They made it with the help of other stones too These sharp tools were used to hunt animals and tear their flesh They used bones horns stones skin branches of trees and sticks as their tools and weapons This stage of development in history was called New stone age or Neolithic age Stone wheels When the stones rolled from the mountains they acquired a round shape Humans observed them and thus wheel was invented In the beginning it was made of stone and later by wood Wheel is the first scientific invention of man Pottery Pottery was also one of the greatest inventions by humans The baked pot was strong and looked beautiful Stone Age people made all the household artefacts by themselves Stone houses were built The roofs of these houses were thatched with sticks and husks After several inventions humans started to live in a settled life Agriculture Agriculture was an important activity in the history of humans They started cultivating crops They sowed seeds and harvested crops They found it convenient to live along the river as the crops grew well Progress in man’s life There burial pots called urns in which the dead bodies were placed and buried under the ground Chalcolithic Age At the end of New Stone Age copper was invented In this age both stone and copper were used This period was called Chalcolithic Age Bronze was produced when copper zinc and tin were mixed together The period when people made tools from bronze was called Bronze Age Iron Age After this humans discovered iron and started using iron tools and weapons This age was called Iron Age In this age household articles and agricultural tools were made up of iron Archaeological excavations coins potsherds metal objects and so on are dug out from Archaeological sites Such objects are preserved in the museum In Tamilnadu Athichanallur Arikkamedu and Keeladi are such sites where the objects used by the people of the past are excavated Still research is going on in these sites Unit Good Citizen Man is a social animal Human beings are bestowed with senses Human beings think and act using their senses They are born free but bound in the social web They cannot live alone They need social and emotional support To live in the society they need to develop some good values We are born with few values and rights These values are further polished in educational institutions The aim of education is to change a person into a valuable human being Good values Good values are the qualities of a person that keep the society running These qualities can be developed by all The term civic relates to people or civilian or citizen of a country People should live together in unity Despite all the disparities living together in harmony is a significant value Helping others is also an important value There should be no disparity among people and all are one Today’s children are tomorrow’s citizens of the nation Moral and good values have to be inculcated in children So that they may become valuable citizens Personal values Personal value is the basic value for an individual Some personal values are love mercy generosity honesty truth friendship hospitality peace tolerance faith and so on Cultural values Becoming well mannered and cultured is an essence of the society Irrespective of language and religion people live together in harmony This help to maintain cultural values We are all humans We must live together as brothers and sisters Social values How should you behave in public places We should maintain the following good values in public places Maintain good relation with people Respect elders Protect nature Be tolerant and Maintain friendship Disciplinary values Disciplinary values are punctuality involvement treating every one as equal doing work ontime holding morals discharging duties without fail and so on Constitutional values Safeguard public properties Maintain unity and integrity of the nation Develop scientific attitude Protect natural resources Care for the environment Honour national symbols Respect martyrs and their sacrifices Preserve our cultural values and heritage Develop patriotism Unit Atmosphere Biosphere Biosphere is the combination of Lithosphere Hydrosphere and Atmosphere that can support life Atmosphere Atmosphere is the envelope of air around the Earth Weather Weather is a day to day conditions of atmosphere at any place in regard to temperate pressure wind humidity and rainfall Climate Climate is the average weather condition of a vast area over more than years Atmospheric Layers We know that the gravitational force increases near the Earth and decreases as we go higher As a result the density of air also differs and can be found in five layers called Troposphere Stratosphere Mesosphere Thermosphere and Exosphere All weather changes occur in the Troposphere The study of weather is called Meteorology Solar Radiation The sun is the only source of light to all the planets in the solar system The land water and air in our planets receives heat from the sun The Earth receives heat energy from the Sun in the form of radiation It is called solar radiation Sunlight falling on the Earth is reflected CO and other gases in the atmosphere trap heat keeping the earth warm Elements of climate Temperature Pressure Wind Clouds Rainfall Temperature Land Conduction Water Convection and Atmosphere Terrestrial radiation The earth has the capacity to reflect the sun’s rays The temperature is not same every where Latitude altitude distance from the sea position of the mountains are some of the factors that determine the temperature of a place Why does heat vary from morning to evening It is because of the sun’s rays The land is divided into various heat zones according to the fall of sun’s rays on the surface of the Earth The zone between Tropic of Cancer and Tropic of Capricorn is called Tropical or Torrid zone where the sun’s rays fall vertically The zone between N to N latitude and S to S latitude which receives slanting rays of the sun is called Temperate zone The zone which receives the extreme slanting rays of the sun and experiences extremely low temperature is called Frigid zone Pressure When the temperature increases pressure decreases and when the temperature decreases pressure increases Wind The air which moves horizontally from high pressure area to low pressure area is called wind Air never moves in one direction It differs from place to place and time to time This is due to the rotation of the earth Different types of wind Planetary wind This wind blows in the same direction throughout the year and Monsoon wind The word monsoon is derived from the Arabic term mausim which means season Monsoon wind is the seasonal wind Types of Monsoon winds in India are South West monsoon wind and North East monsoon wind Sea breeze Sea breeze blows from sea to land in the evening Land Breeze Land Breeze blows from land to sea in the morning Local wind Local wind affects the weather Warm local wind North West India Loo Cool local wind North East India Norwesters Jet streams Air currents in the upper layers of atmosphere is known as Jet streams It could determine the arrival and departure of monsoon winds in India Cyclone Hurricane Cyclone changes its position and direction with time to time The speed of wind also changes with time It gives heavy rainfall Clouds Clouds are large collection of very tiny droplets of water These are divided into four types on the basis of appearance and height They are Cirrus cloud Cirrus cloud appears like a silver grey fish at a very high altitude in the sky These may not give rain Stratus cloud Stratus cloud is grey in colour and are spreadout They may give small shower Cumulus cloud Cumulus cloud looks like a Puffy White cotton and gives convectional rainfall These clouds are associated with rainfall lightning and thunder Nimbus cloud Nimbus cloud appears as dark or grey in colour It gives heavy rainfall It is called vertical or rain clouds Rainfall Condensation of the Water vapour causes rainfall Rain water must be saved and not be wasted Convectional Rainfall During summer solar insolation takes place in land and water evaporates from lakes ponds seas oceans and vegetations Due to this a heavy rainfall with lightning and thunder occurs in the evening for a short period Orographic Rainfall When the moisture laden winds from the sea rises as it moves over a mountain range it becomes cool and causes heavy rainfall The opposite side of the mountain is called Leeward side It receives very little rainfall Cyclonic rainfall The warm air from the hot area is heated and moves upwards Hence a low pressure area is developed and it attracts air from high pressure area Owing to Earth’s rotation a circular motion of winds develop It gets cooled and brings heavy rainfall Rain water harvesting Rain water harvesting is a technique of collection and storage of rainwater into natural reservoirs or tanks or the infiltration of surface water into subsurface aquifers before it is lost as surface runoff One method of rainwater harvesting is Rooftop Harvesting Ancient Excavation understand about excavation know about archaeologists know some examples of excavations Rekha It is so hot today I do not think that I can go out to play Grandma Ah very true But when I was young I used to play outdoors all the time Rekha How did you play when it was hot Grandma When I was young our neighbourhood was full of trees and I used to play in the shade of the trees Rekha Wow Really I wonder how people lived in those days Rekha How is that possible Tell me more Grandma Have you ever found a sea shell while digging in the beach Rekha Yes Grandma Similarly there are people who dig the earth at various places to find things that people used before These people are called Archaeologists The process of digging the ground is called Excavation EXCAVATION Excavation is a controlled exploration of what lies under the surface of earth All forms of archaeological excavation require great skills and careful preparation Excavations can be classified based on the purpose like planned accidental or rescue Most excavations are properly pre planned and their purpose is to find buried evidences from the site EXCAVATION Excavation Archaeologist The things that Archaeologists find during excavation are called artefacts Archaeologists can tell a lot about people who lived there by looking at their houses clothes bones and other artefacts The class will get divided in groups of and plant a sapling in the school premises The students will clear the soil dig the soil and plant the sapling Who is an Archaeologist Archaeologists They study the history of humans and places through excavation and analyse the artefacts Excavation gives us a glimpse of the past Some interesting examples from the world Pyramids in Egypt When the Pyramids were excavated it was found that the small pyramids were made for the Queens They found huge tombs with super structures which were built for the burial of the royal family Skeletons found in the pyramid gave information about the average height and age of the people Indus Civilisation Indus Civilisation is also called Harappan Civilisation This was the first site to be excavated in the early century Baked bricks were found underground The city had a well-planned proper sanitation systems proper well and a way to direct waste water to closed drains There were advanced granaries Great bath and protective walls It was found that the city and its civilisation were very advanced for their time Pyramid Indus Civilisation excavation Some interesting examples from Tamil Nadu There are many places in Tamil Nadu where excavations had happened and many interesting things were found Adichanallur Adichanallur Thoothukudi District Among the artefacts unearthed were Urns pottery of various kinds Red Ware Black Ware iron implements daggers swords spears and arrows some stone beads and a few gold ornaments Bronze objects representing domestic animals and wild animals like tiger antelope and elephant have been unearthed The people were skilful in making pottery and in working stone and wood There are many places in Tamil Nadu where excavations had happened and many interesting things were found Some interesting examples from Tamil Nadu Adichanallur An archaeological site is any place where there are physical remains of past human activities Imagine yourself to be an archaeologist and list down the things that you would collect during an excavation Arikamedu Arikamedu is an archaeological site situated near Pondicherry The excavation revealed that it was a costal village that traded with Rome An archaeologist found Roman lamps glass stone beads gems cutlery and crockery wine containers et He noted that for the local fishermen of the village the antiques were new Arikamedu Some Dinosaur eggs were discovered at Senthurai in Ariyalur Keezhadi Keezhadi Sivagangai District The Archaeological Survey of India ASI excavated an ancient town dating to Sangam Age in Keezhadi village at Thiruppuvanam taluk Excavations have produced evidence for brick buildings and well laid out drainage system Tamil Brahmi inscription on pottery beads of glass carnelian and quartz pearl gold ornaments and iron objects shell bangles ivory dice have been unearthed The Roman artefacts found at the site add to the evidence of ancient Indo -Roman trade relations Keezhadi Glossary Archaeologist A person who learns about human history through excavation Excavation Digging the earth to find building and tools made long ago Unearthed Find something in the ground by digging Recap  Excavation is the process in which people dig the Earth to find things that were used long ago  Archaeologists study the history of humans and places through excavation and analyse artefacts  Pyramids and Indus Civilisation are excavation sites in the world  Adhichanallur Keezhadi and Arikamedu are important excavation sites in Tamil Nadu Archaeologists b Scientists c Excavationist Prince b King c Queen Egypt b Harappan c American Thoothukudi b Chennai c Pondicherry Modern b Sangam c Middle age Pyramids Adichanallur Baked bricks Keezhadi Pottery Roman lamp Sivagangai Indus civilisation Arikamedu Egypt During excavations many artefacts were found Indus Civilisation is located in Harappa Adichanallur is an archaeological site in Coimbatore district of Tamil Nadu Keezhadi excavation revealed that it was not a developed city Roman lamps glass stone beads gems et were found in Arikamedu Hydrosphere describe the features of Hydrosphere define each type of water body list the steps to be taken to conserve water explain the steps involved in the water cycle Rani Sundar Our earth is huge isn’t it Sundar Yes Rani It is huge Do you know what does it consist of Rani No can you tell me Sundar Sure The earth consists of Lithosphere Hydrosphere and Atmosphere Rani Oh Such big words What does this mean Sundar This means that the earth consists of land water bodies and air Rani Yes That’s true Sundar When we went to the Marina Beach have you noticed how much water in the sea The water from oceans seas and so on become a part of the hydrosphere Rani Wow Can you tell me more about hydrosphere Sundar Sundar Sure Marina Beach Hydrosphere Hydrosphere is the total amount of water present on a planet The hydrosphere includes water that is present on the surface of the planet underground and in the air Therefore a planet’s hydrosphere can be in the form of liquid vapour or solid in the form of ice Hydrosphere covers about of the planet Earth This includes water in liquid and frozen forms is salt water and rest of the water is found in ground lakes rivers and also frozen as ice in the form of glaciers and icebergs Glacier Iceberg There is no aquatic life in Dead Sea because it is too salty Importance of Hydrosphere We need water to carry out many activities in our daily lives We need water to drink take bath cook food et Animals and plants also need water for their survival If there is no water it cannot evaporate and form clouds So there will not be any rain Pond Stream River Lake Types of water bodies Oceans Oceans are vast water bodies that usually separate continents from one another The water is salty in nature There are five oceans on earth They are the Pacific Ocean Atlantic Ocean Indian Ocean Southern Ocean and Arctic Ocean Indian ocean Sea Seas are also vast water bodies but smaller than oceans in size They are partly closed by land and opens up to the ocean Sea water is salty in nature Example Arabian Sea Indian Ocean Arabian Sea It is incredible that a wide variety of earth’s living organisms exist within the oceans Some of the longest flowing rivers in India are the Ganges Yamuna Godavari Krishna and Cauvery River lake waterfall sea et Rivers Rivers are large streams that flow over the land Rivers are fresh water bodies which generally begin at mountainous areas They usually drain in oceans or seas Example Ganga and cauvery Lakes A lake is a water body surrounded by land on all sides Lakes can have salt or fresh water Example Dal Lake Gulf A gulf is a large area of an ocean or a sea that is surrounded by land Example Gulf of kuchch Bay A bay is a body of water which is partially enclosed by land It has a wide mouthed opening of land and is joined to the sea or other large water bodies Example Bay of Bengal Sambhar Salt Lake in Rajasthan is one of the important inland salt water lake in India Lagoon A stretch of salt water separated from the sea by a low sand bank Example Lake Chilika in Odisha Strait A strait is a narrow stretch of water which joins two larger water bodies Example Palk Strait joining the Bay of Bengal and the Indian Ocean Waterfall Water fall forms when a river flows from a great height Example Courtallam Waterfall Courtallam Waterfall We should be very careful about how we use the water We have the choice to conserve water resources or pollute them further Water pollution is a common phenomenon around us We throw garbage join sewage to rivers and so on making river water contaminated and not fit for use This increases the scarcity of water for household use Rani Oh water scarcity Sundar Yes We faced it too Rani The whole of Tamil Nadu faced a huge water crisis Rani You are right I think we should come up with step to use water thoughtfully Children you can easily do these Take water in a bucket for bathing instead of using shower After washing vessels check if the taps are closed Can you help Rani to come up with more steps Do not put plastic garbage when you go near beaches It is very dangerous for the aquatic life Sundar Rani Do you know that water continuously moves on below and above the surface of the earth Rani Really How Sundar There is a water cycle that occurs continuously Water changes its state from solid liquid gas in this cycle The stages involved in a complete water cycle are Stage I Evaporation The heat of the sun falls on the water bodies like oceans seas lakes rivers et The water slowly evaporates as vapours into the air Stage Condensation As the vapours rise high the cooler temperatures make them cool down and turn back into liquid This is called condensation Wind moves the liquid around leading to the formation of clouds Stage Precipitation Wind movements cause the clouds particles to collide They become rain bearing clouds and fall back onto the earth’s surface by the process known as precipitation This may occur in the form of rain hail snow or dew depending upon the temperature conditions Stage Runoff and Infiltration The water either runs off into oceans rivers and ground surface or is absorbed into the soil infiltration This cycle continues Glossary Continent Main stretches of land found on earth Evaporate The process by which liquid becomes gas Precipitation Rainfall Recap  Earth is made up of land water and air  Water is necessary for all life forms   of water is found in ground lakes ponds streams and rivers  There are five major oceans in the world The Pacific Atlantic Indian Southern and Artic ocean Waterfall forms when river falls from great height We should use water carefully Air Water Land Plants Ganga Atlantic Arctic Pacific River Gulf Lake Bay First Second Third Fourth Sea Strait Bay Pond Fresh water Sambhar lake A lagoon Palk Strait Joins Indian Ocean and Bay of Bengal Formation of cloud Inland salt water lake Chilika in Odisha Condensation Dal lake About of water on the earth is salt water Water is not necessary for our basic needs Water in the sea is sweet We should keep the tap open throughout while washing utensils We should save water Continents of the world describe the key features of each continent describe some countries in each continent Introduction Where do we all live We all live on the Earth Earth is our home The total land on the earth is formed of seven continents of various sizes Some are connected to each other while others are not Each continent has a different number of countries The seven continents of the world are Asia Africa North America South America Antarctica Europe and Australia Asia Asia is the world's largest continent in size and population The world's two most populous countries China and India are in Asia Asia has the highest point on earth the peak of Mount Everest which is in the Himalayas Asia is the birth of great ancient civilisations Indus civilisation Chinese civilisation and Mesopotamian civilisation Himalayas The Great Wall of China Some other countries in Asian continent are Japan Singapore Malaysia Saudi Arabia Sri Lanka Nepal Pakistan Maldives Philippines Afghanistan Thailand and Indonesia Now let us learn more about our country which is the part of Asia The Great Wall of China is the man made structure that can be seen from space Thousands of years ago the seven continents of the world were joined together as a single huge landmass called Pangaea But it slowly broke apart and separated as seven continents Asia Asia is the world's largest continent in size and population The world's two most populous countries China and India are in Asia Asia has the highest point on earth the peak of Mount Everest which is in the Himalayas Asia is the birth of great ancient civilisations Indus civilisation Chinese civilisation and Mesopotamian civilisation Himalayas The Great Wall of China Some other countries in Asian continent are Japan Singapore Malaysia Saudi Arabia Sri Lanka Nepal Pakistan Maldives Philippines Afghanistan Thailand and Indonesia Now let us learn more about our country which is the part of Asia India India is our country India is known as the Land of unity in diversity as people from different religions languages cultures live united India has states and union territories New Delhi is the capital of India India has several historical monuments Taj Mahal is one such monument It is situated in Agra on the banks of river Yamuna Taj Mahal is built completely using white marble stones This most beautiful monument is recognised as one of the seven wonders of the world Taj Mahal Sanchi Stupa GangaiKonda Cholapuram St George Fort Some other historic monuments in India include India Gate in Delhi Sanchi Stuba near Bhopal Gateway of India in Mumbai St George Fort and GangaiKonda Cholapuram in Tamil Nadu Gateway of India India Gate Africa Africa is the second largest continent of the seven continents of the world The world's longest river the Nile and the world's largest desert the Sahara both are home in Africa More than of the world's gold and diamonds come from the mineral rich continent of Africa Sahara Nile River Clean River Polluted River The continent was uninhabitable Not fit for habitation and remained unknown for thousands of years earning it the name of Dark Continent Some countries in African continent are Sudan Libya Egypt Kenya Zimbabwe Ethiopia and Guinea North America North America is entirely within the Northern Hemisphere North America is the third largest continent by area following Asia and Africa The largest fresh water lake Lake Superior is located in this continent The Mississippi Missouri is one of the longest river located in North America The United States of America USA is a part of North America New York USA Ottawa Canada North America is the only continent in the world that has all climatic types Some countries in North American continent are Canada Mexico Nicaragua Honduras Cuba Guatemala Panama and Costa Rica South America South America is located mostly in the Southern Hemisphere with a relatively small portion in the Northern Hemisphere The world's largest river which is also the second longest is the Amazon river in South America Brazil a country in South America is one of the largest coffee producer in the world The Andes is one of the longest mountain range in South America Andes is an example of fold mountain Mt Aconcagua is the highest peak in the Andes One of the highest volcanoes of the world Mt Cotopaxi is found in this continent South America The Amazon rainforest covers most of the Amazon Basin in South America Andes Mt Cotopaxi Some countries in South American continent are Argentina Bolivia Brazil Colombia Ecuador Paraguay Peru Uruguay and Venezuela Country Continent Antarctica Antarctica is the coldest continent on Earth It is also called the White Continent or the Frozen Continent Antarctica experiences half a year of sun light and half a year of complete darkness Penguins are found in Antractica There are only permanent research stations from different countries can be found there Penguins in Antractica Europe Europe and Asia are parts of the same major landmass Europe is separated from Asia by the Ural mountains and the Caspian Sea The world's smallest country the Vatican City is in Europe The Volga is one of the longest rivers in Europe Finland in Europe is called the Land of Lakes because melting ice sheets have created a lot of lakes here Some countries in European continent are France Spain United Kingdom Germany Norway Austria Greece Spain Portugal and Italy Vatican City Italy London England Russia the country stretches over a vast expanse of Eastern Europe and Northern Asia Ukraine's Steppe region is called the Bread Basket of Europe because it produces a large amount of wheat Which state is called the Bread Basket of India Australia Australia is an Island continent covered with unique landscapes and natural wonders The Great Barrier Reef the pride and joy of Australia is made up of nearly individual reefs and visible from space Australia includes the islands of Tasmania and numerous small islands The Great Barrier Reef Kangaroo Glossary Civilisation A society in an advanced state of social development Island A piece of land surrounded by water Monument A building that is of historical importance and preserved as public property Recap  Earth has seven continents Each of these seven continents is divided into countries  The names of the seven continents of the world are Asia Africa North America South America Antarctica Europe and Australia Five Seven Nine Africa Asia North America Kaveri Ganga Nile North America Australia Europe Asia Antarctica Africa Asia Vatican city Africa Amazon forest Europe Sahara desert South America Kangaroo Australia Biggest Continent Asia is the third largest continent India has one of the seven wonders of the world Brazil is one of the largest coffee producer in the world The great barrier reef is in India Antarctica has half year of light Unit Forts and palaces Introduction Tamil Nadu has been ruled by several empires especially by the Chera Chola Pandya and Pallava rulers Cholas Pandyas and Nayakkars constructed magnificent forts and palaces in Tamil Nadu The Dutch the British and the French entered our country and they built forts to protect their territories Fort The architectural monuments are now preserved in the form of palaces forts and other historical sites in Tamil Nadu Today only a few palaces and forts are in good condition They are the prime attractions for tourists in Tamil Nadu Vellore Fort Vellore Fort is a th-century fort situated in Vellore Tamil Nadu It was built by the Kings of Vijayanagara Among the forts in Tamil Nadu Vellore fort is considered to be one of the most invincible fort It is surrounded by a deep and wide moat The water of this moat was home to thousands of crocodile It was feared by many raiders of the fort This fort is a good example of military architecture It is studded with double fortifications In Tipu Sultan’s family was detained here by the British The first rebellion against the British broke out at Vellore Fort in Vellore fort Inside the Vellore fort there is a well-known temple called Jalakanteswarar temple a church a mosque a museum and several government offices LET US Vellore Fort has five important Mahals They are Hyder Mahal Tippu Mahal Begam Mahal Candy Mahal Badhusha Mahal Dindigul Fort Dindigul Fort is a th-century hill fort situated in Dindigul Tamil Nadu It is also called Dindigul Malai Kottai In the century the fort was passed on to the Kingdom of Mysore Dindigul Fort was built by the Nayakkars of Madurai in order to defend their region from the invading Mysore army Presently the fort is maintained by the Archaeological Survey of India The fort was cemented with double walls to withstand heavy artillery Dindigul Fort Fort St George is the first fort built by the British in India Fort St George is located in Chennai State Secretariat is functioning inside the fort Thirumayam Fort is famous for its artistic work and architectural brilliance It is located in Pudukottai Tamil Nadu Thirumayam Fort is popular for its large rock inscriptions It is also known as Oomayan Kottai The magnificent Sadras Fort was built for commercial purposes by the Dutch It is located in Kanchipuram Gingee Fort Gingee Fort is another beautiful fort in Tamil Nadu It is located at Villupuram district Gingee fort is built across three hills The fort walls are km long and the three hills are connected by walls It is built at a height of feet and protected by a feet wide moat It is a huge fort with many attractions like Kalyan Mahal temples Aanaikulam pond granaries and a watch tower Tharangambadi Fort Tharangambadi Fort Tharangambadi fort is locally called Danish fort It is located on the shores of Bay of Bengal in Tharangambadi Tranquebar Tamil Nadu The fort is trapezoidal in shape with three rooms in the left wing The central part of the fort has four domes The central pillar of the hall holds the entire weight of the domes Tamil Nadu has great palaces in many places Some are described here Thirumalai Nayakkar Palace The majestic Thirumalai Nayakkar Palace is a century architecture of Nayakkar dynasty It is one of the most popular palaces in South India Thirumalai Nayakkar Palace is located in the city of Madurai This is one of the tourist spots of Tamil Nadu Thirumalai Nayakkar Palace is widely known for its giant pillars It has an archaeological museum The major attraction of this palace is the courtyard and the dancing hall LET US Tamukkam Palace was the summer residence of the Queen Rani Mangammal of Nayak dynasty It is located in Madurai Thirumalai Nayakkar Palace ow and Arrow Sword Throne Shield Crown Fernhills Palace in Ooty served as the summer palace for the Kings of Mysore Thanjavur Maratha Palace Thanjavur Maratha Palace is popularly called Thanjavur Aranmanai Thanjavur Maratha palace was originally constructed by the rulers of Thanjavur Nayakkar kingdom After the fall of the Thanjavur Nayakkar kingdom it served as the official residence for Thanjavur Maratha Thanjavur Palace Complex is a tourist attraction which houses three separate venues the palace the art gallery and a manuscript library Saraswathi Mahal LET US Saraswathi Mahal is considered as one of the oldest historical libraries in India Saraswathi Mahal also has a museum The library has more than a million manuscripts in languages like Tamil Sanskrit Marathi Telugu and Manipravalam Thanjavur Maratha Palac Padmanabhapuram Palace Padmanabhapuram Palace is a beautiful historical monument that is situated at Padmanabhapuram Kanyakumari District It is also known as Kalkulam Palace Padmanabhapuram Palace is a wooden palace which is built in Kerala style of architecture It is a fine example of art and craftsmanship The Padmanabhapuram Palace was built by the ruler of Travancore The palace has various sections like Queen Mother Palace Council Chamber Southern Palace and so on Padmanabhapuram Palace Recap Palaces and forts are the prime attractions of Tamil Nadu tourism   Vellore fort is a fine example of military architecture   The major attraction of Thirumalai Nayakkar Palace is the courtyard and the dancing hall Glossary Manuscript a document written by hand Moat A deep wide ditch surrounding a fort Raiders Invaders Gingee fort Pudukottai Danish fort Chennai Tammukkam Palace Villupuram Thirumayam fort Madurai Fort St George Tharangambadi Unit agriculture Introduction Agriculture is the art and science of preparing the soil for cultivation growing crops and raising livestock It has become a necessity for the humans Agriculture led to the development of human civilisation India is an agricultural country One-third of our nation‛s income comes from agriculture Agricultural development contributes to the economy of our country Farmers in India A farmer is a person who cultivates crops and rears animals poultry and other livestock India is a land of farmers It is called so because majority of Indians are directly or indirectly involved in agricultural activities Agriculture is the backbone of our economy Farmers who cultivate in an area less than hectare are called micro farmers Types Of Farming There are several types of farming Subsistence farming Commercial farming Plantation farming Mixed farming Subsistence Farming In subsistence farming crops are cultivated and used only for own family consumption Such type of farming is adopted by small and marginal farmers on fragmented land holdings The cultivated crops are usually food crops The method of this farming is generally archai Commercial farming Unlike subsistence farming here the crops are cultivated for commercial use and is sold in markets This method of farming is done by using modern tools and techniques Plantation Farming Plantation Farming is done in an estate where a single cash crop is cultivated on a large scale Examples Tea Coffee and Rubber Mixed Farming Mixed farming refers to the rearing of animals along with the cultivation This type of farming is economical The Government has set up agencies like the Food Corporation of India to purchase the farm products directly from the farmers at reasonable rates Water Resource for Agriculture There are no perennial rivers in Tamil Nadu Tamil Nadu depends on Northeast and Southwest monsoon Hence agriculture in Tamil Nadu is dependent on ground water Modern Well irrigation Irrigation Irrigation is the supply of water to land or crops for the purpose of agricultural production Types of Irrigation Well Irrigation Canal Irrigation Sprinkler Irrigation Drip Irrigation Well Irrigation Well irrigation has been practised in Tamil Nadu for many generations It is a less expensive type of irrigation Archaic Well irrigation Modern Well irrigation Canal Irrigation Canal irrigation is the most important form of irrigation in India Most of the North Indian canals are perennial The main canal irrigated areas are in the northern plains of India such as Uttar Pradesh Punjab Haryana Rajasthan and Bihar Canal Irrigation Green revolution is a process which brought an increase in crop production by using new varieties of seeds pesticides and new agricultural techniques Dr M S Swaminathan of Tamil Nadu is known as Father of Green Revolution in India Sprinkler Irrigation Sprinkler irrigation is similar to natural rainfall Water is sprayed through pipes in the air through sprinklers Drip Irrigation Drip irrigation is a type of micro-irrigation system that saves water and soil nutrients In this system water drips slowly into the roots of plants through pipes Pipes can be either above the soil surface or buried below the surface The water directly reaches the roots and minimises evaporation Sprinkler Irrigation Drip Irrigation Animal husbandry is the branch of agriculture It is to raise animals for meat fur milk eggs and other products One who produces food for us It is used for ploughing It is used for separating grain from hay Horticulture is the science or art of cultivating fruits vegetables flowers or ornamental plants Important crops in Tamil Nadu Tamil Nadu has different types of soil rainfall and weather across its districts It is suitable for the production of fruits vegetables spices plantation crops flowers medicinal and aromatic plants Horticulture is the fastest growing sector within agriculture in Tamil Nadu Paddy is grown in large areas because rice is the main staple food of the state The principal food crops are rice maize jowar cholam bajra Kambu ragi and pulses bengalgram redgram greengram blackgram and horsegram The cash crops include cotton sugarcane oilseeds coffee tea rubber coconut gingelly and chillies Mango and Banana are the leading fruit crops of Tamil Nadu The main flowers grown in Tamil Nadu are Jasmine Chrysanthemum Marigold and Rose Which State is known as the Rice bowl of India Think Thanjavur is an important agricultural centre located in the Cauvery Delta It is known as the Rice bowl of Tamil Nadu LET US Cropping seasons in Tamil Nadu Navarai Sornavari Kar Kuruvai Samba Thaladi Coimbatore is the largest cotton producing district in Tamil Nadu It is known as the Manchester of South India Glossary Recap Archaic Ancient Minimize Reduce Perennial Everlast India is an agricultural country Indian farmers are the backbone of the Indian economy There are several methods of farming systems in India There are four basic types of irrigation The principal food crops are rice maize jowar bajra ragi and pulses Unit educational rights Introduction Education is important for people as well as the nation Education is the first step for a child‛s development Education improves knowledge skills values and the quality of one‛s life It also helps in overall development of a country Importance of Education Education doesn‛t mean that one should be literate It is more than literacy Education helps to analyse the reason build skills to live know what is right and wrong lead a moral life Literacy in itself is no education Literacy is not the end of education Real education consists in drawing the best out of yourself -Mahatma Gandhi Education helps in broadening one‛s mind It removes superstitious beliefs Education helps in increasing awareness of surroundings social and political issues It develops wisdom Swami Vivekananda is best known for his speech which began with the words Sisters and brothers of America Education is the manifestation of the perfection already in man -Swami Vivekananda Gurukulam is the system of education that was practised in ancient India Guru teacher and the Shishya student lived in Ashram Educational Rights Every child has right to have free and compulsory education The Right to Education Act RTE specifies different responsibilities to the local authorities and government to ensure free and compulsory education Right to Education Act describes the importance of free and compulsory education for children between to years of age Education should be affordable to the common people There should be no discrimination in education It should be based on need of the child and mould the child‛s thoughts The child should be at the centre of an education system The legislative section is divided into three lists Union List State List and Concurrent List Education comes under Concurrent list Important features of RTE Until the completion of elementary education no student is stopped from school Twenty-five percent reservation is given to the economically Underprivileged people in all private schools Improvement in the quality of education School infrastructure should be improved every three years Finances will be shared between the state and the central government National Education Policy NEP In the Government of India has framed the National Education Policy NEP to promote education among the people of India The NPE covers all educational systems from primary to college level Child labour is not allowed in our country All children are entitled to have free and compulsory education Educational Schemes The most important milestone in education is the free mid day meal programme which was implemented by the former Chief Minister of Tamil Nadu K Kamaraj Indian educational system is mainly divided into four stages They are Lower primary Upper primary Secondary Higher secondary The Sarva Shiksha Abhiyan SSA the Right to Education Act RTE Act have improved the educational performance Sarva Shiksha Abhiyan SSA Education for All was launched in the year Objectives of Sarva Shiksha Abhiyan Increasing the enrolment in primary schools Getting access to the free and compulsory education for children up to age Improving the quality of education Samagra Shiksha subsumes the three erstwhile Schemes of Sarva Shiksha Abhiyan SSA Rashtriya Madhyamik Shiksha Abhiyan RMSA and Teacher Education TE Rashtriya Madhyamik Shiksya Abhiyan RMSA was launched in The aim of this programme Raising the minimum level of education to class X Later in the government of India wanted to provide a single scheme for school education starting from pre-school to Class XII This scheme is known as Samagra Shiksha SS Objectives of Samagra Shiksha Providing quality education and improving learning outcomes of students Supporting all state governments in implementing RTE Focusing on girl education Focusing on digital education In the past two decades India has achieved a maximum enrollment of students in schools LET US Perunthalaivar K Kamaraj‛s birth anniversary of July is celebrated as Educational Development Day in recognition of his contribution to the development of education Ensure assure Erstwhile Former Superstitions Irrational religious belief Education is very important for every individual Every child has the right to have free and compulsory education Education should be affordable to common people The Right to Education Act describes the importance of free and compulsory education for children between the to years of age Samagra Shiksha Scheme improves the quality of education and the learning of students English Unit Sea turtles Listen to the teacher reading this section Most of us have seen a tortoise in a zoo or a reptile park However not many would have seen its marine relative the sea turtle This is not surprising since these reptiles spend almost their entire life in the sea There are seven species of marine or sea turtles in the world Of them five are found in India’s coastal waters the Olive Ridley the Hawksbill the Green Sea Turtle the Loggerhead and the Leatherback Compared to most tortoises sea turtles are huge Even the smallest species the Olive Ridley weighs up to kg when fully grown The largest of them all the Leatherback grows to a length of m and each could weigh as much as kg Sea turtles live their life entirely in the oceans But they still have a connection with land they must come ashore to lay eggs Today four of the sea turtle species mentioned above have become extremely rare in Indi The Olive Ridleys however are still commonly seen nesting on sandy beaches all along our coasts Take turns and read this section aloud Work in pairs and underline the new words Find out their meanings from the dictionary Between the months of January and March female Olive Ridleys come ashore at night to lay their eggs This is quite a problem for them as a turtle’s front flippers enable it to swim gracefully and effortlessly but are not very useful for moving on land The turtle has to haul itself laboriously onto the beach Then it chooses a spot well away from the high-tide line Here it scoops out a nest cavity cm deep into which it lays about eggs Each egg is in the shape and size of a table tennis ball Once all the eggs are laid the turtle fills in the cavity then it camouflages the nest by tossing sand on it using its flippers That done it returns to the se The eggs are left to incubate under the warmth of the sun In many places around the world local people follow the tracks of the turtle to its nest They collect the eggs for eating Jackals domestic dogs and pigs too dig up and eat the eggs by following the scent left by the turtle Those eggs that escape such people and predators hatch days later The hatchlings slash open the leathery eggshell with the help of a tiny egg-tooth This is like a razor blade at the tip of a hatchling’s snout When most of the eggs have hatched the hatchlings push themselves upwards through the sand and emerge on the surface of the beach From here they make a hurried dash to the se Read this section in pairs Many of these tiny hatchlings which weigh less than grams each will not even reach the se They will fall prey to crabs or birds even before they reach the water Most of those that do make it into the water will also be eaten by many predators in the sea within the first few days of their lives In fact scientists estimate that only one in every thousand hatchlings becomes an adult It is perhaps to ensure that enough hatchlings survive to keep the species going that sea turtles lay so many eggs After many years of swimming in the open ocean the female hatchlings that have become adults return to the same beach where they were born They come there to lay their own eggs How they manage to find the place after so many years in the sea is one of the many mysteries of these fascinating reptiles They have survived natural dangers for millions of years But sadly human activities during the last few decades have put them in grave danger There are many factors that threaten their survival People hunt them for their meat or collect their eggs Sometimes they are accidentally trapped in the nests of motorboats Problems like pollution dumping of plastics into the ocean and construction activities on nesting beaches also hurt their survival Only by systematically tackling these problems and removing these threats can we ensure that sea turtles will continue to exist in the years to come Poem The crocodile How doth the little crocodile Improve his shining tail And pour the water of the Nile On every golden scale How cheerful he seems to grin How neatly spreads his claws And welcomes little fishes in With gently smiling jaws Supementary Owlie Mom Payal yelled in pani Owlie’s gone Where would she have gone Payal her mother said crossly She was right there sleeping in her cage a little while ago But she’s not there now And Mom the door to the garden is open That got Payal’s mother running into the room Sure enough there was no sign of Owlie What was an owl doing in a house you ask Well Payal’s house was home to all kinds of creatures mainly abandoned animals People brought lost dogs injured cats and baby birds that had fallen out of their cages to Payal’s mother It wasn’t that they had a large farm or even a large house It’s just that everyone knew that Payal’s mom had a BIG heart But even in a household used to such unexpected visitors Owlie’s advent had been memorable Shefali didi had just turned up one day carrying a carton When Payal’s mother opened the carton there was the smallest of owlets sitting in one corner a small ball of brown and grey Payal’s mother picked her up gently and placed her in her lap talking to her just as she would to the dogs She had never handled owls before so she was very careful not to get pecke When the owl got used to her and seemed relaxed enough Payal’s mother placed her inside a cage There were always empty cages in Payal’s house just in case a bird dropped in The baby owl climbed on the rod and settled herself Mom what shall we call her asked Payal all excited‘You choose a name said her mother smiling How about Owlie asked Payal So Owlie it was The name was settled but there was a bigger problem What does one feed an owl Owls are hunters They eat rats and snakes and frogs And in Payal’s house they were all vegetarian even the dogs Payal’s mother was totally anti-meat But now that Owlie had come to stay she had to get over her dislike for meat That was another reason why that day was memorable It was the first day that meat was brought to the house Payal got the number from her friend and called the meat shop to ask them to deliver half a kilogram of minced meat to the house They put the meat before Owlie Of course Owlie didn’t know what to do with it She was just a baby after all If the mother owl had been there she would have softened the meat and shoved it down Owlie’s throat Payal’s mother decided she had to be mother owl She picked up a tiny bit of meat with her right hand and squished it up until it was soft Then with her left hand she pressed open Owlie’s beak and shoved the food down In a second Owlie fell off her perch on to the floor of the cage She lay on her back on the floor of the cage with feet up in the air Mom Payal cried You’ve killed her Payal’s mother was equally aghast Oh she sai Oh what have I done The poor little bird After Payal and her mother had finished crying and hugging each other they started talking bravely about where to bury Owlie Just then Owlie opened one eye and then the other She got onto her feet and quietly climbed the perch Payal learnt later that falling on her back and pretending to be dead was Owlie’s way of defending herself against danger Not that Payal’s mother was a danger to Owlie but the baby owl did not know that then So that was Owlie’s first day at home In the beginning Owlie had to be forced to eat That was Mom’s joBut Owlie soon realised that if a hand came towards her it meant food Her mouth would open automatically and her beak would snap around what was offere Only Owlie found it difficult to know when she was being offered food and would try to take a bit out of any hand that came her way This meant lots of bitten fingers for Payal and her mother Reading up more about owls and their habits Payal discovered that Owlie was a Spotted Owlet She had the typical grey-brown coat heavily spotted with white the pale face yellow eyes and the white neckband which looked like a ribbon Payal decide Soon Payal took over the job of looking after Owlie She saw that the cage was cleaned every day She filled the water bowl Once Owlie began to eat by herself Payal too could feed her She loved the way Owlie took a piece of raw meat from her han During the day Payal kept the cage covere Owls are night birds so they slept during the day At night when owls are active Payal took off the cover They had decided that they would let Owlie fly away once she had grown bigger But that meant that she had to learn to fly To do that Owlie had to be in a closed room After much discussion Owlie’s cage was shifted to the library It was a lovely room with two doors one which led to the rest of the house and the other that opened into the garden It was also Payal’s favourite room It had tall bookshelves and she spent hours there reading all kinds of books The bookshelves also had lots of little knickknacks Her mother loved pretty things and displayed them here along with the books So there were beautiful pieces of pottery dolls from wherever they had travelled and of course wooden and clay animals and birds from all around the worl Once Owlie was moved to the library strict rules were laid down for everyone in the house The two doors were never to be left open not at night not in the day Every night Payal would leave the cage door open and put a plate of mincemeat on top of the cage This was so that when Owlie flew out of her cage she could also learn to find her foo Initially Payal would shut the cage door every morning when she popped in to say hello to Owlie before going to school She would always find Owlie on her perch inside the cage though the cage door was still open But Payal knew Owlie was flying because she found bits of meat all over the room After some time Payal stopped shutting the cage door even during the day After all people seldom went into that room all day and Owlie was always asleep so there seemed little point Every day when Payal came back from school the first thing she did was to peep into the library Usually she would find Owlie fast asleep on her perch But today it was different The cage was empty and there was no sign of Owlie And the door to the garden was open Mom Payal howle Who left the garden door open How will we find Owlie now Don’t panic said Mom She must be somewhere around They shut the garden door and looked in every corner of the room Behind doors on top of the tall bookshelves in every nook and cranny No Owlie Tears ran down Payal’s cheeks They had wanted Owlie to fly away but not so soon She was still so small how would she hunt for her food What if a kite or eagle swooped down on her Finally Mom said Well now Owlie has gone we may as well leave the doors open and air the room Wiping her tears Payal threw open the doors to the room She hoped secretly that Owlie would come in if the doors were kept open Mom left the room to go do her afternoon errands When she came back a couple of hours later Payal was sitting gazing mournfully at Owlie’s cage‘Why don’t you find yourself a good book to read Mom aske She knew that reading a book was the only way Payal would cheer up When Payal was sad she always read‘Okay sighed Payal and started looking for a book she had not rea She noticed a curio on a shelf that she had never noticed before Hello Where did this one come from she wondere Where did her mother get the owl from She was about to pick it up when the curio opened one eye It was Owlie pretending to be a curio Mom bawled Payal She’s back Don’t you ever give me a fright like that again she scolded the owl as she put her back in her cage Payal swore later that Owlie winked back at her She probably di Unit When the trees walk Hi Ayesha come on Lets read the story about moving trees Reading One morning while I was sitting beside Grandfather on the veranda steps I noticed the tendril of a creeping vine trailing nearby As we sat there in the soft sunshine of a North Indian winter I saw the tendril moving slowly towards Grandfather Twenty minutes later it had crossed the step and was touching his feet There is probably a scientific explanation for the plant’s behaviour something to do with light and warmth perhaps but I liked to think it moved across the steps simply because it wanted to be near Grandfather One always felt like drawing close to him Sometimes when I sat by myself beneath a tree I would feel rather lonely but as soon as Grandfather joined me the garden became a happy place Grandfather had served many years in the Indian Forest Service and it was natural that he should know trees and like them On his retirement he built a bungalow on the outskirts of Dehradun planting trees all around lime mango orange and guava also eucalyptus jacaranda and Persian lilacs In the fertile Doon Valley plants and trees grew tall and strong There were other trees in the compound before the house was built including an old peepul that had forced its way through the walls of an abandoned outhouse knocking the bricks down with its vigorous growth Peepul trees are great show offs Even when there is no breeze their broad-chested slim-waisted leaves will spin like tops determined to attract your attention and invite you into the shade Grandmother had wanted the peepul tree cut down but Grandfather had said Let it be we can always build another outhouse Grandmother didn’t mind trees but she preferred growing flowers and was constantly ordering catalogues and seeds Grandfather helped her out with the gardening not because he was crazy about flower gardens but because he liked watching butterflies and There’s only one way to attract butterflies he said and that is to grow flowers for them Grandfather wasn’t content with growing trees in our compoun During the rains he would walk into the jungle beyond the river-bed armed with cuttings and saplings which he would plant in the forest But no one ever comes here I had protested the first time we did this Who’s going to see them See we’re not planting them simply to improve the view replied Grandfather We’re planting them for the forest and for the animals and birds who live here and need more food and shelter Of course men need trees too he added To keep the desert away to attract rain to prevent the banks of rivers from being washed away for fruit and flowers leaf and see Yes for timber too But men are cutting down trees without replacing them and if we don’t plant a few trees ourselves a time will come when the world will be one great desert The thought of a world without trees became a sort of nightmare to me and I helped Grandfather in his tree-planting with greater enthusiasm And while we went about our work he taught me a poem by George Morris Woodman spare that tree Touch not a single bough In youth it sheltered me And I’ll protect it now One day the trees will move again said Grandfather They’ve been standing still for thousands of years but there was a time when they could walk about like people Then along came an interfering busybody who cast a spell over them rooting them to one place But they’re always trying to move See how they reach out with their arms And some of them like the banyan tree with its travelling aerial roots manage to get quite far We found an island a small rocky island in a dry river-be It was one of those river-beds so common in the foothills which are completely dry in summer but flooded during the monsoon rains A small mango tree was growing on the islan If a small tree can grow here said Grandfather so can others As soon as the rains set in and while rivers could still be crossed we set out with a number of tamarind laburnum and coral tree saplings and cuttings and spent the day planting them on the islan Take turns and read this section alou Work in pairs discuss describe and list the three main events in this section The monsoon season was the time for rambling about At every turn there was something new to see Out of the earth and rock and leafless boughs the magic touch of the rains had brought life and greenness You could see the broad-leaved vines growing Plants sprang up in the most unlikely of places A peepul would take root in the ceiling a mango would sprout on the window-sill We did not like to remove them but they had to go if the house was to be kept from falling down If you want to live in a tree that’s all right by me said Grandmother crossly But I like having a roof over my head and I’m not going to have my roof brought down by the jungle Then came the Second World War and I was sent away to a boarding school During the holidays I went to live with my father in Delhi Meanwhile my grandparents sold the house and went to Englan Two or three years later I too went to England and was away from India for several years Some years later I returned to Dehradun After first visiting the old house it hadn’t changed much I walked out of town towards the river-be It was February As I looked across the dry water-course my eye was immediately caught by the spectacular red blooms of the coral blossom In contrast with the dry river-bed the island was a small green paradise When I went up to the trees I noticed that some squirrels were living in them and a koel a crow pheasant challenged me with a mellow who-are-you who-are-you But the trees seemed to know me they whispered among themselves and beckoned me nearer And looking around I noticed that other smaller trees wild plants and grasses had sprung up under their protection Yes the trees we had planted long ago had multiplie They were walking again In one small corner of the world Grandfather’s dream had come true Poem Trees The Banyan is the largest of trees The Peepul quivers in the breeze The Coconut grows up straight and tall The Neem trees fruits are very small The Tamarind gives us pleasant shade The Date’s leaf is as sharp as a blade The Teak tree gives us useful wood The Mango gives us fruit that is goo Supplementary Once upon a time there was a farmer He lived in a village up in the hills beside a forest In his farm where he grew many kinds of vegetables he also had an apple tree For many years the farmer and his family had enjoyed the tastiest apples from the tree As a boy the farmer and his friends played under the apple tree They played hide and seek around the tree They climbed the tree and swung on it and in season they plucked and ate the apples As the years passed the boy grew into a man He took over the farm and continued to enjoy the fruits from the tree In the meantime many small animals and birds started living in the tree The man’s children and their friends started playing under it The large and shady apple tree now grew old and was bearing fewer and fewer fruits It was nice to sit under its shade in the summer but nothing grew under it The farmer felt the space could be used to grow some vegetables He also felt he could use the wood to build a new room in his house Therefore he decided to cut the tree He did not think about the wonderful times he and his friends had playing around the tree or the delicious apples they ate Rather he felt the tree had outlived its usefulness and should be cut down When the farmer took his axe and began chopping the tree all the little animals birds and insects that lived in the tree came rushing down They started running around in alarm chirping and squeaking all over the place The farmer was adamant He raised his axe and the uproar grew The farmer however forgot his childhood and his animal friends He began to chop the tree harder All the little animals became desperate and wanted to protect the apple tree at any cost They ran around in circles making a huge commotion This brought the children out The farmer’s daughter and her friends began to plead with him They gathered around the farmer and said Please don’t cut the tree We play here just like you di These small animals live here If you cut the tree where will they go You can enjoy the shade when you become ol It is a beautiful tree All of a sudden the farmer noticed a small fruit hanging from a branch It was an apple and looked as delicious as the ones he ate as a boy He plucked it and bit into the juicy fruit The memories of the fun he had had as a boy came rushing back When his daughter saw the changed expression in her father’s face she started pleading harder The farmer put down his axe He understood that the tree was home to many lovely animals and provided them with so many things He wanted his little girl to have the childhood that he had ha He threw away the axe and said to his daughter I promise that I will never cut this tree You and your friends will have your tree and your playground Unit A visitor from distant lands Mani’s family lived in a village near Gingee in Villupuram district I don’t want to eat potatoes today because they are foreign vegetables No they are not Amma bought them from the vegetable shop near the bus stop Appa Selvi is too small to understand that potatoes are not from Indi So whatOur teacher told us that we should buy and eat locally grown foo She also told us to use things made in our country What else did your teacher tell you Then you cannot eat popcorn the next time we go to watch a movie And you cannot order tomato soup either or even pineapple juice Mani then you can’t order anything Why Why can’t I eat popcorn or soup or or anything that I want to Don’t you know that corn tomatoes and even ladies fingers all came from other countries Really How did they come to our country Amma Did they get on an aeroplane and come here People came to India in search of spices especially black pepper A man from Portugal named Vasco da Gama sailed to Keral Amma and Appa laughe They could have brought some sweets Why didn’t they They took spices from Indi Imagine the joy of the sailors when they reached Kozhikode and found black pepper They took a lot of pepper back to their country Yes but who brought the vegetables into India The Portuguese brought them to Indi Potato was one of those vegetables Wow This potato has travelled so far Careful Selvi don’t upset our foreign visitor Mani and Selvi looked at the potato curry on their plates And quickly began to eat it Who Who is our foreign visitor Amma you are making fun of me Selvi pulled a long green chilli out of the curry No Amma is not making fun she is talking about the foreign fruit chilli How sad for Columbus It was a little sad but because he went to South America he found the chilli It was as spicy as the black pepper And so Christopher Columbus packed the chilli and took it back to his country with him This sailor was actually looking for Indi He wanted to buy black pepper Instead he found South America and the chilli But how did it come here Chilli was one of the things that the Portuguese brought to Indi In India chilli was first brought into Goa and the people there learnt to use this new spice in their cooking Before the entry of chillies pepper was used in cooking And how you make our food delicious What a long distance you have travelled They shouted and quickly took a bite of the chilli To waste you would be very bad and so we are going to eat you Ah It’s hot and spicy Poem I dream of spices My mother would say Little boy Raj Go to Muthu’s and get some cinnamon betel leaves and ginger and garlic And so I go to the shops singing all the way and when Muthu asks me what I’d want I rattle off a list Sesame seeds onions tomatoes and pickles And back home Mother twists my ears Ouch Supplementary Spices of India In India spices are the soul of foo When we think of spices we think of tasty and healthy foo Many of the spices in our food are added to balance nutrition and to keep us healthy They add flavour and nutrients to dishes without fat or calories Spices like cumin mustard pepper cloves fennel cinnamon and turmeric are very important in Indian foo When it comes to Indian food the first thing that comes to many people’s minds is probably Spicy curry People say curry comes from the Tamil word kari In Tamil kari means sauce It is something that is cooked with a roasted or powdered mixture of spices condiments and herbs This mixture of spices can be different in different places It can be mild or it can be spicy and pungent Flowers leaves roots bark seeds and bulbs are combined in many different ways to produce a great variety of flavours sweet sharp hot sour spicy aromatic tart mild fragrant or pungent When cooked with rice meat fish or vegetables the spices give the dish a special savoury taste It makes us want to eat more But apart from delicious food spices also bring to mind adventure Many of the most exciting voyages of modern history were made to conquer the spice trade and the race to become its master The colonization of the Americas and Asia had its roots in the spice trade In Columbus went west to find India and pepper but ran into America and the chilli Vasco da Gama six years later went around Africa to reach Kozhikode the home of pepper These voyages ended the very profitable trade that the Arabs and the Romans had built up over the centuries They set the stage for a new worl Spices were always an important part of India’s trade Spices were traded with Mesopotamia China Sumeria Egypt and Arabia along with perfumes and textiles as far back as years ago much before the Greek and Roman civilisations Indian epics and in writings dating back to the Roman Empire in the st century AD CE talk about the cloves Thousands of years ago the great masters of Ayurveda had listed the use of spices for cooking and in medicines While these spices are readily available today there was a time when people risked their lives to get Indian spices During the Middle Ages a pound of ginger was worth the price of a sheep A pound of mace was equal to the price of three sheep or half the price of a cow Pepper was the crown jewel of all spices What are those spices that the world wanted so badly Cardamom cloves ginger mace and nutmwere some of the other spices that left Indian shores to flavour the world’s kitchen Using spices in cooking has a long history It may go back as far as years ago Though we cannot know for sure how men came to use spices it is quite possible that it was by chance However spices have played a vital role in our food now for a long time In earlier centuries spices were not easily available and were very expensive Thus spice traders became rich Pepper and cinnamon no longer cost a fortune However while they seem to have lost their glory and value they will never lose their place in a kitchen Especially an Indian one Black Pepper Black pepper also known as Black gold was the most prized spice traded from the Kerala coast Indians have been using black pepper for a very long time Farmers began growing it around years ago and exported it to North and West Asi The trade soon spread to Greece Rome Europe and China and also became popular in the Islamic Empire Recipes from rich Roman households show the value of the spice in ancient Rome The Romans sent ships a year from Egypt to trade with India and bring back enormous quantities of pepper Cinnamon Indians have been using cinnamon for a long long time The Chinese wrote about it in BC BCE Cinnamon not only adds great flavour to food but also helps to preserve it People from other parts of the world appreciated the fragrance and taste of cinnamon They wanted it too and were willing to pay a good price for it The Greeks Romans and Egyptians bought cinnamon from Indi In the Middle Ages the Venetians grew rich by levying tax on the cinnamon that was brought from India to Europe and the Mediterranean Sports Stars Both Ayesha and Madhi enjoy playing games and sports Lets join them Catch this ring Madhi Oops I missed it Sports Stars MIRRORING The teacher selects three pairs The pairs are made to stand facing each other The teacher whispers a game to each pair One person makes a movement the other tries to mirror the movement or copy it exactly Then they change roles When both have played both roles try to coordinate movements with each other so that both become player and mirror at the same time Then the rest of the class have to find out which sport they are mirroring Passing the ball kicks for karate bowling the ball batting etc READING Listen to the teacher read a diary account of a school boy and answer the questions Each day is a new beginning It has so much to unfold and I had the best day at school today Cricket is something that I love Today my teacher told us that we would be learning about a cricketer I thought of Sachin Virat Kohli and many other male players in the Indian cricket team but she introduced Mithali Dorai Raj an Indian cricketer and the captain of the Indian women’s cricket team in Tests and One Day Internationals ODIs I never thought a woman could play cricket so well It was why I have never let my little sister play cricket with me I would tell her It is not for you you had better play with girls However I was taken by surprise when I learnt that Mithali started to play the game at the age of and that she was selected for the Indian team at the age of Mithali lives in Hyderaba I was interested to learn that her mother tongue is Tamil I felt very proud that she has been widely recognised and acknowledge She was the highest run scorer in Women’s International Cricket and the only woman cricketer to surpass the run mark in ODIs Mithali is the first player to score seven consecutive s In fact she is nicknamed Tendulkar of Indian women’s cricket as she is presently the all-time leading run scorer for India in all formats including Tests ODIs and T s I would love to quote what Mithali had to say about this compliment She said On the one hand being compared to Sachin is an absolute privilege I do not think I have achieved even half of what he did for the country On the other being a woman cricketer I want people to know me for my own identity I would rather not be compared to a male cricketer She indeed is an inspiration to all of us She actually started playing cricket with her brother When she was young she used to go with her father to the grounds where he practise She used to stand outside the ground and returned the ball when it came her way Though it was a humble start she managed to secure a name and a place for herself Many of us think cricket is for men however she broke the traditional barriers and proved that women are on par with men in every fiel The Government of India in recognition of her contribution to cricket conferred on her the Padma Shri Awar Mithali Dorai Raj And I forgot to mention about the recent achievement of our Indian women cricket team Mithali Raj and another woman player Smriti Mandhana hit stylish half centuries and India cruised to a comfortable nine-wicket victory over South Africa in the second women’s T International on of February Mithali anchored the innings to perfection with an unbeaten Now that I am inspired by her and my attitude has changed I certainly will be happy when my little sister follows her passion Women’s Cricket World Cup is older than Men’s The Women’s World Cup was first held in England in two years before the inaugural of Men’s Cricket World Cup A school-going girl writes the diary account The boy was so inspired by Mithali that he was happy for his sister to play cricket Mithali Raj is happy to be recognised as Tendulkar of Indian Women’s Cricket Women should not be compared with men in cricket says Mithali Mithali Raj was not encouraged to play cricket by her family members Mithali is one of the women players to score seven consecutive s Mithali’s mother tongue is Telugu GLOSSARY Recognised Known Acknowledged Accepted Privilege Honour Consecutive One after another Identity Who What a person is or how a person is known Inspiration Here a person one looks up to Passion Desire Usha Rani cop-cum kabaddi champion rose from shanty town of Subedarpalaya in Yeshwanthpur near Bengaluru in Karnatak Armed with her mother’s unfulfilled dream to become an athlete she became determined and practised kabaddi at the Kanteerava Stadium every morning rain or shine As a school child she grew up watching Kabaddi at a club in front of her house and soon joined the club and started playing kabaddi at National level in sub-junior category Whenever she was not playing she was the source of support to her parents and others at home She used to sell flowers for her daily living and she had to struggle all through her life until she got a job in the Karnataka State Police Force She was selected as a police person for her excellence in sports and was the youngest in the Karnataka State Police women Kabaddi team She was just years old when she won a Gold Medal in kabaddi She is much acclaimed for her raiding skills in kabaddi E S Sumanth sports officer at Karnataka State Police Sports Promotion Board says Despite a well-paid job Usha participated in national events every year without a miss She is an expert in giving leads raiding opponents and consistently playing a prominent role in the Indian kabaddi team Usha Rani is now working hard and practising every day to win the Gold medal at the Asian Games in She has also become a role model to her brothers and sisters at home and other fellow sports persons India has won all six Womens Kabaddi World cups played from GLOSSARY Shanty town A poor area Unfulfilled Unrealised Prominent Noticeable Determined Will powered Every person who achieves success in life has to work hard with dedication and determination One can always learn something from another persons story No opponent is too big to defeat So believe in yourself and follow your passion The word batmiton will instantly bring PV Sindhu in everyone’s min Pusarla Venkata Sindhu is one of the two Indian badminton players to ever win a silver medal in Olympics the other being Saina Nehwal who has won a bronze medal in Olympics Sindhu came to international attention when she broke into the top of the BWF Badminton World Federation in September at the age of She is one of the top five shuttlers in the women’s singles category She started playing badminton at the age of eight Though her parents were professional volleyball players Sindhu chose badminton over volleyball because she drew inspiration from the success of Pullela Gopichand the All England Open Badminton Champion Sindhu first learned the basics of the sport with the guidance of Mehboob Ali She then joined Pullela Gopichand’s Gopichand Badminton Academy While profiling Sindhu’s career a correspondent with The Hindu wrote The fact that she reports on time at the coaching camps daily travelling a distance of km from her residence is perhaps a reflection of her willingness to fulfil her desire to be a good badminton player with the required hard work and commitment Gopichand seconded this opinion The most striking feature in Sindhu’s game is her attitude and the never-say-die spirit Despite PV Sindhu being busy with her training schedules and International tournaments she managed to attend regular school until class after which all her classes were through correspondence She did balance both her passion as well as her academics and she holds a Bachelor’s degree in Commerce BCom After joining Gopichand’s badminton academy Sindhu won several titles She has won many awards as well as cash grants for her contribution and among them these three awards were conferred on her by the Indian government Rajiv Gandhi Khel Ratna award the highest sporting honour of India Padma Shri the fourth highest civilian award of India Arjuna Award The second most popular sport in the world is Badminton Do you know the first popular one It is Football GLOSSARY Correspondent Reporter Commitment Dedication Never-say-die Don’t stop trying Civilian Ordinary people Sports Name of the player Field of sports Awards Cricket Bat Football Bow and Arrow Tennis Club Golf Net Volleyball Racquets Archery Helmet Being compared to Sachin is an absolute privilege Honour Right Favour Disadvantage The boy was taken by surprise when he learnt about Mithali Dorai Raj Affected Moved Amazed Upset Usha Rani had to struggle all through her life Fight Duel Fun Work hard Usha Rani is an expert at giving leads Clumsy Sharp Skilled Bad No opponent is too big to defeat Competitor Rival Helper Enemy Himachal Pradesh is an ideal place for paragliding Skiing offers opportunities to delve into oceans Paragliding is also a recreational adventure sport Scuba Diving has a huge following all over the worl The most suitable period for Skiing is from March to June PICTO GRAMMAR Hot tea Beautiful flower Two dice Tired man Bald head Young graduate An adjective is a word that describes a noun USE GRAMMAR When there are two or more adjectives together they appear in the following order Quantity One Five Nine Quality or Opinion Brave Great Amazing Size Small Tall big Age Old Young Adult Colour Purple Dark Green They have a post-box Red Small Rectangular I have sticks Long Two Brown Find me brushes New Five Yellow Mahesh is a boy Thin Tall Clever It is a plate Round Pink Small Tiny Small Enormous Little Puny Ample Great Plentiful Generous Restricte Kind Harsh Concerned Charitable Gentle Honest Reliable Trusty Sincere Deceitful Cheerful Bright Low Gay Contente Writing School Name Address February Name of the Chief Guest Designation Address Respected Madam I am writing this letter on behalf of school Our school is going to conduct its Annual Day on of February In this connection we cordially invite you to our Annual Day to be the cheif guest and address the gathering We are sure the students will benefit from your ideas and words We will be privileged to have you in our school on this special day We look forward to receiving your acceptance Yours Sincerely Signature School Pupil Leader Imagine that you are the sports captain of your school Write a formal letter to the sports captain of another school inviting her his team for a friendly match You may choose any sport Give details of time and place Note Follow the format of the letter given above CREATIVE WRITING Note Date your entry Write naturally and truthfully Use first person I read about Mithali I like her playing style etc Make your entry informal and expressive Use words that express feelings and write what you feel about it LANGUAGE CHECK POINT Kovai is further from Chennai than Trichy Sheeba is more stronger than Sinduj My elder sister is six feet high Kovai is farther from Chennai than Trichy Sheeba is stronger than Sinduj My elder sister is six feet tall Further means additional Farther is used to talk about distance Avoid double comparatives Adjectives of one syllable usually form their comparatives by adding er to the positive Adjectives with more than two syllables take more We generally use tall with people and it’s the opposite of short Use high when referring to trees buildings mountains and it’s the opposite of low Team Work Poem WARM UP What is the most essential quality required to win the game given below It’s all very well to have courage and skill And it’s fine to be counted a star But the single deed with its touch of thrill Doesn’t tell the man you are For there’s no lone hand in the game we play We must work to a bigger scheme And the thing that counts in the world to-day Is How do you pull with the team They may sound your praise and call you great They may single you out for fame But you must work with your running mate Or you’ll never win the game Oh never the work of life is done By the man with a selfish dream For the battle is lost or the battle is won By the spirit of the team You may think it fine to be praised for skill But a greater thing to do Is to set your mind and set your will On the goal that’s just in view It’s helping your fellowman to score When his chances hopeless seem Its forgetting self till the game is o’re And fighting for the team Edgar Guest About the Author Edgar Albert Guest began his illustrious career in at the age of fourteen when his work first appeared in the Detroit Free Press His column was syndicated in over newspapers and he came to be known as The Poet of the People Guest was made Poet Laureate of Michigan the only poet to have been awarded the title His poems often had an inspirational and optimistic view of everyday life GLOSSARY Deed Act Achievement Scheme Plan Fame Glory Mate Companion Partner Spirit Will Determination O’re A poetic abbreviation for over do fame star play great scheme done thrill drill skill Contraction is a shortened form of a word or group of words with the omitted letters often replaced in written English by an apostrophe It’s It is Doesn’t There’s You will That’s I have He’d Aren’t He has Won’t Can not It’s helping your fellowman to score When his chances hopeless seem Its forgetting self till the game is o’re And fighting for the team They may sound your praise and call you great They may single you out for fame But you must work with your running mate Or you’ll never win the game Supplementary Think To Win The bicycle wobbled as ten-year-old Rucha leaned forward in the seat and pumped the pedals Hold tight Vishnu I will fall she shouted to the boy who ran behind steadying the bicycle For the past two weeks he had been teaching her to ride Don’t worry Ruchaji you are doing well he puffe For a few moments he let go off his hold and Rucha was on her own Of course she did not know it and rode along smoothly Vishnu stop the cycle I want to get off Rucha calle Use the brake Vishnu called out His voice came from some distance away and Rucha realised that he was not holding the bicycle any more I will fall I will fall she waile And before Vishnu could reach her the bicycle wobbled tilted to one side and Rucha was deposited into a bush Shaken but unhurt Rucha cried angrily I told you to hold tight I told you I would fall she glared at Vishnu But Ruchaji you were riding quite well and anyway you have to learn riding without someone holding the cycle isn’t it Vishnu explaine See I fell didn’t I Rucha would not be pacifie She stormed into the house to complain You fell Doesn’t matter said her mother calmly We all do when we are learning to ride a cycle At least you are not hurt The bicycle is too big for me Rucha complaine When I am in the seat my toes barely touch the ground Her mother explained to her that she found nothing wrong with it Riding a cycle of that height was right for her After all she was growing up Mummy may I ride the bicycle asked Seema Rucha’s sister younger to her by three years No Seema you cannot Rucha cut in before her mother could answer When it is so high for me how can you sit You are much shorter No amount of pleading helpe Hold tight Vishnu I will fall There was a considerable contrast between the two sisters Rucha was very protective of her younger sister She was overprotective with her Rucha herself had been overprotecte She seldom did things rashly Even in running and playing she would be conscious of her movements Seema on the other hand was bold and prone to taking risks Next week inter-house badminton matches were to be held in the school Rucha was in the senior team She gave up other activities and practised with her friends Rucha hit harder they told her on the day of the match Aruna a very good player of their house was expected to win And she di Rucha and her opponent were almost evenly matched and Rucha lost the game by a couple of points Their house stood second in the overall tally I can’t seem to win said Rucha remorsefully You played all right Aruna consoled her The time when your opponent was at the net if you had hit just a little harder over her head you could have won that point I know I know replied Rucha but somehow I always make such mistakes You must practice more That is all Aruna told her I suppose so Rucha replied goomily Cheer up now Aruna told her At least you trie I say the inter-school sports meet is coming up You are in the school’s relay team aren’t you I will probably make everyone lose the race Rucha said still gloomy Don’t think that way Aruna pleaded with her You run fast We need you Rucha finally agreed to stand in if no better person could be foun Meanwhile she would train with the rest of them under the new PT instructor Prakash Sir He was very enthusiastic about sports and drove the children hard praising scolding correcting but mostly encouraging them Rucha you are nimble and light You can do better than that he told her often How can I do that Rucha confided to Arun I will most probably fall Don’t be silly We are all trying to better ourselves You must try too Aruna told her Springfield have a very fast runner in their team Shabnam their teammate informed them Has anyone heard about her It seems they call her PTUsha Prakash Sir overheard this conversation He took a quick decision The girls relay team gather here in five minutes he called out All the girls came together Girls I have been watching you all You need some more practice more time on the fiel You are not doing enough he told them Ociferous protests greeted this All right all right girls calm down he held up his hands placating them Tell me what is your goal To win the race isn’t it Not just to make an attempt To win Are we agreed The girls murmured their assent I know you have been training You just need to give a little extra push to your efforts to win I know all of you have it in you he told them Right let us start with these exercises He showed them exercises that would allow their legs to stretch more stride faster Then he trained them in the skill of passing the baton without losing spee Don’t slow down when you near your next team member Prakash Sir said Maintain your speed while passing your baton Only when the baton has left your hand you slow down Do you understand And you who are going to receive the baton also keep in motion jogging All right enough for today Report to me same time tomorrow again Then turning to Rucha he said I want a word with you You are apt to slow down after starting well said Prakash Sir Don’t do that Maintain your speed he advised her Sir I am not very good Rucha said dolefully No self-doubts Rucha This is exactly what I have been wanting to tell you You must have a positive attitude Don’t even think of losing See yourself winning Think to win Only to win You can do it I can feel it Rucha went home with Prakash Sir’s words ringing in her ears You can win Good luck The next few days he saw the girls training extra har Prakash Sir was never far even as he trained other children The day of the sports meet dawned and the children piled into buses to reach the venue There was laughter and a great deal of joviality as Prakash Sir had seen to it that they were fit and relaxed as well The stadium where the meet was being held bustled with great activity Children from several schools were moving around checking out the different venues where particular events were to be hel Prakash Sir collected the schedule and gave the girls appropriate instructions The Principal of the host school inaugurated the meet with a short speech and also introduced the participating schools Then the events starte Rucha and most of the other children of their school easily got through the heats to enter the finals scheduled for the following day The next morning after a few individual events it was time for the girls relay race Four schools had entered the finals Rucha Aruna Shabnam and Neelam were Team Prakash Sir gave them final words of encouragement Girls you are a good team You can win Go ahead and show your mettle Good luck Shabnam a tall girl was their first runner She would pass the baton to Neelam Neelam would pass it to Aruna and Aruna to Rucha who would be finishing the race for them The whistle blew and the first runners were off With her long strides Shabnam gave the team a marginal lea But by the time Neelam had passed the baton to Aruna both Team A and D had drawn level with her Then the runner of Team D fumbled and dropped the baton Aruna ran for all she was worth just managing to keep abreast of the runner of the Team Finally the baton was in Rucha’s han She had already noted with dismay that she was pitted against PT Usha of Team Just my luck the thought had flashed through her min She had quickly put that thought aside and when the baton was passed to her she was more than ready She heard the shouts of her schoolmates Rucha come on Ru cha Ru cha Out of the corner of her eye Rucha saw PT Usha trying to overtake her Fleetingly she thought Not again Then Prakash Sir’s words came to her Think to win The next moment Rucha was conscious of nothing except the tape at the finishing line which she had to reach Totally absorbed she ran she lost track of time and distance She ran on not conscious of the fact that the race was over till Aruna called out to her Rucha have you won We have won And she was hugging and kissing her Prakash Sir was beaming at her and everyone was applauding her Even PT Usha came over to shake her han I thought I was fast but you were simply she shook hands with her It is always a proud moment for the winner of a medal when she is called to the victory stand but for Rucha it had a double meaning She had overcome her hesitations and denials She could win whenever she chose to LATA KAKU Girls you are a good team Which team do the girls belong to Badminton Hockey Relay Volleyball team house company school teams of the same school schools in the locality schools in neighborhood schools from other districts friend teammate younger sister opponent Neelam Aruna Rucha Aruna Rucha Neelam Neelam Rucha Aruna Aruna Neelam Rucha His voice came from some distance away and Rucha realized that he was not holding the bicycle any more I will fall I will fall she waile For the past two weeks he had been teaching her to ride Even PT Usha came to shake her han I thought I was fast but you were simply superb she shook hands with her Imagine you are Rucha and make a diary entry on your feelings about the days happening and your victory The start is given Complete the diary Read the story carefully Prepare your dialogue Co-ordinate with your group Present your skit to the class CONNECTING TO SELF Together Everyone Achieves More TEAM KEY TRAITS FOR WORKING IN A TEAM Positivity Believe in yourself Take part in competitions prayer activities etc Communication Interact with your classmates team mates and teachers at the right time Dedication Put your heart and soul into whatever you do to turn your dreams into reality Willing Never let an opportunity slip by Take part in scholastic and co scholastic activities willingly Adaptability Adapt yourself to the changing needs Make use of the technology available for learning Discuss Have you ever employed any of these qualities in your daily life Share your experience STEPS TO SUCCESS Weight lifting Boxing Silambam Fencing Weight lifting Hide and Seek Kho-Kho Tennikoit Kabaddi Badminton Cycling Tennis Squash Trapeze Throw Ball Bowling Goalball Snooker Polo Five Pins Carrom Board Cricket Base Ball Hockey Basket Ball LEARNING LINKS AND REFERENCES E-links https wwwkheloindiagovin https wwwindiagovin topics youth-sports games https wwwwomeninsportorg https wwwolympicorg women-in-sport-commission https wwwindependentcouk sport the most-influential-women in-sport-the-full-list https wwwwomenssportsfoundationorg https ngwsdorg Books Ranjis Wonderful Bat Other Stories Ruskin Bond Sports Magazines Pioneers in Sports National School Games Taekwondo Lawn Tennis Volleyball Gold Medal Under Gold Medal Under ICT CORNER Sport Stars Experience the thrill of playing sports word quiz game Figure Screen shot of the sports quiz game Procedure Step Scan the QR code and install the game from Android play store Step Open the game and click play to start Step Look at the picture clue Drag and drop the letters to coin the name of the sport URL https playgooglecom store apps detailsidcomzeeksportquiz Step Step Step Language Activity Collect the names of different sports by playing this quiz Talk about your favorite sport in the class Learning Objectives To know different sports To develop speaking skill Figure Type the word sports quiz in the search bar of the Android play store Figure Install the game and click play to start playing Figure Drag and drop the letters according to the picture Steps to install the game from play store Step Step Step Figure Type the word sports quiz in the search bar of the Android play store Figure Install the game and click play to start playing Figure Drag and drop the letters according to the picture Language Activity Collect the names of different sports by playing this quiz Talk about your favorite sport in the class Learning Objectives To know different sports To develop speaking skill URL https playgooglecom store apps detailsidcomzeeksportquiz Trip to Ooty Both Ayesha and Madhi enjoy watching the toy train Madhi See how excited they look Yes they are Coimbatore Dear Malli Thanks for your letter and it was great to hear from you You asked me to tell you about my trip to Ooty with my friends I had the most wonderful time Twenty girls and boys from class six went on the trip Our class teacher Geetha madam and two others took us My grandmother has told me about the beautiful journey to Ooty by the toy train many times She said that it was a spectacular trip up and down the slopes with birds and trees dancing along Ooty is so close to Coimbatore but I have never been there nor seen that train So I was really thrilled when the school arranged this trip You can imagine how excited I was when I stepped into the toy train with my friends I looked around at the wooden chairs with cushioned seats and oil painted walls as I put my bag on the mesh of the luggage rack I was bubbling over with excitement Hi Fatima isn’t this fun I called out as my friend came into the compartment Come sit here I have kept a seat for you You can keep your bag next to mine What have you brought to eat Parotta and delicious chutney Did you see the train It’s so beautiful Fatima replie Our teacher Geetha madam came around to see if everyone was seated properly The train is about to leave so take your seats everyone she sai Just then the train started with a jerk It moved very slowly leaving the station with a long hoot Everyone clappe The train went snaking up the steep hillside weaving its way through forests of tall trees swaying in the breeze One of the boys Muthu said It is going so slowly I can walk along its side And he got up to go to the door From the other end the teacher saw him and said in a firm voice Muthu go back to your seat at once The girls sniggered and Muthu sat down with a long face GLOSSARY Mesh Material made of a network of wire or thread Swaying Moving slowly or rhythmically Snaking Moving like a snake Sniggered Laughed in a half suppressed way Section The scene outside was beautiful with the purple-blue mountains forming a lovely backdrop to the green fields and tea estates Monkeys were racing all along the tracks Some were in groups and some had babies clinging onto them Look Fatima doesn’t that monkey look cute holding on to its mother’s stomach I pointed excitedly The monkeys were really bol One of them tried to snatch a banana that a girl had in her hand as she leaned out of the window to look at the train curving behind on the track She let out a scream and moved back Now it was Muthu’s turn to snigger I looked entranced at the misty clouds which covered the mountains and moved in and out of the forests It looked just like a dream sequence in a movie Fatima pointed to a bubbling stream with a small waterfall Look Merlin can you see that bird there It is such a pretty blue and has such a lovely crown she sai Just then the train stopped suddenly with a thu Oh what happened asked a boy Hey why has the train stopped shouted another passenger But nothing could stop Muthu He and his friends were the first to step out to see what had happene Geetha madam tried to stop the children running out but they were too excited and begged to be allowed to go out In the end the whole compartment stepped out And what a sight greeted their eyes GLOSSARY Clinging Fitting closely to the body Scream Cry in a high pitch Snatch Quickly seize someone in a rude or eager way Entranced Filled someone with wonder and delight holding their entire attention Thud A dull sound as that of a heavy object striking a solid surface Toy Train The Nilgiri Mountain Railway was built by the British in Mountain Train is another showcase of heritage of Indi This rail connects Udagamandalam and Mettupalayam The journey is the most picturesque train ride that mesmerizes travellers of all age groups This train travels through serpentine curves tunnels bridges waterfall hood cliff edges and tea estates covering a distance of km The uphill journey takes almost hours In the year UNESCO declared the Nilgiri Mountain Railway as an extension of the World Heritage Site Darjeeling Himalayan Railway Vintage Steam Locomotive is still retained as an excellent attraction to this train Section There was a cute baby elephant sitting on the track The mother elephant was nearby trumpeting loudly The engine driver tried to coax the baby off the track with a bunch of bananas The mother didn’t let anyone near the baby So people stood around trying to make the baby move by making all kinds of sounds The baby just sat there looking frightened and the mother kept trumpeting Finally Muthu the naughty boy of the class went up to the baby with a bunch of bananas Just as it moved to eat it he moved backwards He kept doing this till the baby was out on the side of the tracks Luckily the mother too stopped trumpeting and watched the whole show Everyone cheered as the baby started eating the bananas Many bunches of bananas were piled near the baby and the mother As they were eating everyone got into the train and it left after a delay of half an hour Geetha ma’am had told us that we would see elephants if we were lucky Madam wouldn’t have imagined we would see a wild elephant this close said Fatim It was such a fantastic trip On a normal fast train ride we do not notice the scenery or the landscape It rushes by so fast But slowly chugging up and down the beautiful mountainside was different I will never forget the wide wind-swept tea estates cloud covered mountains or the swaying trees It was enchanting to listen to the murmur of streams and waterfalls and musical bird calls We even saw an elephant and its baby Our whole group was so excited by the trip and they still talk about it Your loving friend Merlin GLOSSARY Trumpeting Making a loud noise Chugging Move slowly making regular muffled sounds as of an engine running slowly Coax Persuade someone gently to do something Murmur To make a low continuous indistinct sound grumble Geetha madam arranged the trip She had heard about the beautiful journey by the toy train She wanted to visit Ooty She loved to go with her friends the children had to take their breakfast she wanted to check whether all the children were present the train was about to move the train was about to stop wanted to relax themselves wanted to see what had happened were getting bored sitting inside the train wanted to enjoy the beauty of nature they wanted to move the baby elephant out of the track they were afraid they were confused someone stopped the train train travels along the city train never passes through such places windows are closed train travels too fast Merlin’s class teacher arranged a trip to A monkey snatched a banana from a girl It was a memorable trip for everyone eye catching thrilled testy shout afraid A syllable is a unit of sound in a wor Each unit consists of a vowel soun Example The word water has two syllables wa and ter Wonderful Behind Bananas Excitement Snatch Windows Thud Everyone Ooty Otacamund Oththai-Kal Mandu Mund Toda Irula Mund Britons British Todas Tourists Madras Presidency About the place and the people what is happening what do the children and the adults do kind of shops performances PICTO GRAMMAR SIMPLE PRESENT TENSE Past Present Future Past Present Future Past Present Future Magnet attracts iron He opens the door and enters the room Kanyakumari Express departs at pm Simple Present Tense Facts that exist at all times Magnet attracts iron Permanent situation I live in Chennai Expressing actions happening now He opens the door and enters the room Habitual actions Ravi goes to school at am e Future reference Kanyakumari Express departs at pm Venkat will leave the class as soon as Anbu arrives Past Present Future My grandfather is reading the newspaper now Past Present Future You are always disturbing me Present Progressive Tense Unfinished Actions Now My grandfather is reading the newspaper now Annoying Habits You are always disturbing me Definite Future Plans with time word The Prime Minister is visiting Chennai tomorrow Deepa waters the plants every morning A triangle has three sides Sandhya is writing a letter The children are playing in the garden I go to school regularly Children like likes ice-creams Birds is flying are flying in the sky The doctor is treating are treating the patient Our school is commencing commences at in the morning The florist sell sells flowers on the street Vimala Hello Srinath I haven’t seen you for a long time Where are you rushing off Vimala Why are you going to hospital Are you ill my frien Vimala Oh What happened to him Srinath Yes I am free Vimala You are in a hurry meet you tomorrow Take care Srinath Ok Bye SIMPLE PAST TENSE Past Present Future Past Present Future Merlin went to Ooty last week Once there lived a farmer He had four sons Simple Past Tense Completed action Merlin went to Ooty last week Shakespeare wrote The Tempest Actions in stories She boarded the train and looked for her friends Past Present Future Past Present Future When I entered the room the telephone was ringing Malathi was watering the plants all day Past Progressive Tense Overlapping action When I entered the room the telephone was ringing Past habits Arun was eating a lot of junk food those days Emphasis of length or duration Malathi was watering the plants all day Recalling the past It was raining that day I remember it well start eat have finish go reach I got up at O clock LANGUAGE CHECK POINT I have seen him yesterday I saw him yesterday The present perfect is a present tense It can’t be used with adverbs of past time I will call you when dinner will be ready I will call you when dinner is ready When the verb in the main clause is in the future tense the verb in the subordinate clause should be in the present and not in the future I am getting up every day at am I get up every day at am Habitual action should be in simple present tense I am thinking its an interesting book I think its an interesting book When using think to express an opinion do not use the continuous form of the ver Sender’s address Beach Road Kanyakumari Date July Salutation Dear Rosy Body of the letter How are you I am fine I couldn’t write earlier because I was very busy I like my new home It is a lovely house I have a big bedroom looking over the garden I helped Mummy paint the bedroom walls yesterday We chose a pretty yellow A boy called Sundar lives next door He likes animals not just like we do but even more He says he is going to be a Vet when he grows up I am still thinking about being a writer Do you want me to send the story I am writing It is all about Ooty the Queen of Hill Stations Write soon I am looking forward to hear all your news Subscription Yours lovingly Signature Mangai Sender’s Address Date Salutation Body of the letter Subscription Signature CREATIVE WRITING Plan How many days for the trip What mode of transport to use Which route to take Which hotel to book for the stay What are the tourist spots to be visited What are the things to be packed for the trip Poem From A Railway Carriage WARM UP Read the title What do you think the poem is about Have you been on a train Close your eyes and think about the moving scene outside a train window Take turns in class to describe one image that crossed your min I saw a tea vendor run past the window I saw tall trees flash past Faster than fairies faster than witches Bridges and houses hedges and ditches And charging along like troops in a battle All through the meadows the horses and cattle All of the sights of the hill and the plain Fly as thick as driving rain And ever again in the wink of an eye Painted stations whistle by Here is a child who clambers and scrambles All by himself and gathering brambles Here is a tramp who stands and gazes And there is the green for stringing the daisies Here is a cart run away in the road Lumping along with man and load And here is a mill and there is a river Each a glimpse and gone forever Robert Louis Stevenson Robert Louis Balfour Stevenson Nov December was a Scottish novelist poet essayist musician and travel writer His famous works are Treasure Island Kidnapped Strange Case of Dr Jekyll Mr Hyde and A Child’s Garden of Verses GLOSSARY Charge To make a rush at or sudden attack upon a person or thing Clamber Climb or move in an awkward and laborious way using both hands and feet Brambles A prickly scrambling shrub of the rose family especially a blackberry Tramp A person who travels from place to place on foot in search of work or as a beggar Stringing Hang so that it stretches in a long line Lumping Carry with difficulty Glimpse See or perceive briefly or partially Faster than fairies faster than witches Bridges and houses hedges and ditches Here is a child who clambers and scrambles All by himself and gathering brambles And ever again in the wink of an eye Painted stations whistle by Each a glimpse and gone forever I can help you to cross the river I can border your garden I can alert you I can carry you You can ride on me You can climb on men You can lay down on me You can play with me A simile is a figure of speech that directly compares two things Similes explicitly use connecting words such as like and as as cool as like a child CREATIVE WRITING Cinquain Poem Brainstorm some interesting nouns verbs and adjectives connected to travel Pick out the most descriptive words from your brainstorming and put your cinquain together Your cinquain should have five lines and the finished poem should have only eleven words A cinquain poem has eleven words arranged like this Line A single word title a noun Line Two words that describe the title adjectives Line Three words that describe the action of the title Line Four words that describe a feeling in a phrase Line One word that repeats the title Train long snaking hooting chugging steaming along the winding tracks Procession Supplementary Gulliver’s Travels Gulliver a ship’s doctor took a job on a ship that was going on a long voyage The voyage started well but soon things changed dramatically The ship got caught in a violent storm and was thrown off course Then it hit a rock and broke up completely Six of the crew members including Gulliver got into a small boat and rowed until they were overturned by a big wave which came up suddenly Gulliver was a good swimmer and he managed to swim till he reached lan The coast appeared strange and lonely Gulliver dragged himself along the shore He looked for some people or houses But there was no sign of life Hungry and exhausted he fell on a patch of grass and fell into a deep sleep When Gulliver woke up he was lying on his back and the sun was in his face When he tried to get up he found himself unable to sit up or move at all Terrified and puzzled he tried to turn his hea He found his arms and legs were securely tied with slender strings on each side and attached to pegs fixed on the groun His hair which was long and thick was similarly tied down He felt something moving along his body almost up to his chin To his surprise he saw a human being not six inches high with a bow and arrow in his hands and a quiver at his back Gulliver later learnt that these creatures were called Lilliputians Startled by this sight Gulliver cried out and soon managed to free his left arm The frightened Lilliputians fired dozens of tiny arrows into his hand face and body until he once again lay down calmly The Lilliputians then built a stage to Gullivers side that was about a foot and a half tall upon which an obviously important person stood and made a ten-minute speech to Gulliver in a language he could not understan By now Gulliver was really hungry With gestures he signaled to the little people that he wanted food and drink The Lilliputians first got Gulliver to promise to behave himself and then promised to get him some foo They soon brought baskets of meat and several loaves of bread which he ate three at a time because they were so tiny The Lilliputians also brought two barrels of drink which he enjoyed even though the barrels were smaller than a glass Gulliver was tempted as he lay on the ground to take up fifty of the small creatures in his hand and crush them but he did not want to be pricked with arrows again and he had promised to behave in exchange for good treatment After he had eaten Gulliver promptly fell asleep because his drink had a sleeping draught in it They then set about transporting Gulliver to the capital They used a large platform with twenty-two wheels pulled by dozens of four-and-a-half-inch horses They somehow managed to put him on the platform and dragged Gulliver down the road to the city Suddenly Gulliver woke-up when the vehicle stoppe Two or three curious young Lilliputians wanted to see how Gulliver looked when asleep They climbed up into the engine and advancing very softly to his face put the sharp end of their half-pike into his left nostril This tickled Gulliver’s nose like a straw and made him sneeze As they started moving again Gulliver saw that more than one hundred thousand Lilliputians had come out to see the strange giant It was a carnival atmosphere and the Lilliputians seemed to be enjoying themselves much to Gulliver’s amusement Finally they arrived at the Emperors palace The Emperor was there to receive Gulliver Gulliver was lodged in an old and disused temple His lwas chained and he could only move about a little bit After a few weeks the Lilliputians and their Emperor decided that he meant them no harm So Gulliver was set free to roam around Lilliput on condition that he would not harm them and would help them in whatever way he coul Gulliver agreed and was free He was provided with food and water a house was built for him Gulliver stayed with Lilliputians helping them in many ways Once it so happened that the neighbouring kingdom of Blefuscu declared war on Lilliput The king brought a hundred ships to mount an attack The Lilliputians ran to Gulliver for help The Emperor said Dont let us down now Gulliver we need your help Gulliver walked into the se He took a long rope tied all the hundred ships together and dragged them in the water Gulliver pulled the ships the whole day going round and round until the army of Blefuscu was giddy and in no position to fight The King of Blefuscu came begging for peace between the two kingdoms The Emperor agree Gulliver was hailed as a hero and lived peacefully in Lilliput for many years Gulliver was the captain of the ship One of the Lilliputians gave a ten minutes talk in Gulliver’s language Gulliver took the small creatures in his hand and crushed them The horses were four and a half inches tall The war between the two kingdoms ended in peace He felt something moving along his body almost up to his chin They somehow managed to put him on the platform Dont let us down now Gulliver we need your help A doctor One of the crews A swimmer the captain was afraid of him confirmed that he was not harmful was a kind hearted person wanted to get something from him made the army of Blefuscu giddy fought with the army of Blefuscu drowned the army of Blefuscu in the water defeated the emperor of Blefuscu You can begin like this Gulliver was travelling in a ship One stormy night the ship was wrecked Use dust bins Do not throw rubbish in public places STEPS TO SUCCESS Leaves Fruit Seed Flowers root Drive Get in Arrive Park Open door Travel Book Plan Confirm Enjoy Rest Return Supper Go out Visit Check out Pack Pay bill Vacate Drive Wait Slow Go Stop Get ready LEARNING LINKS AND REFERENCES E-links http wwwtamilnadutourismorg http whcunescoorg http wwwwwfindiaorg about wwf critical regions western ghats about the western ghats tourismgovin http incredibleindiaorg Books Primer on Forest Biodiversity PS Ramakrishnan Back to Nature BK Trehan Forests and Forestry KP Sagreiya ICT CORNER Gulliver Travels Procedure Step Scan the QR code and install the game from Android play store Step Click auto play to start the game Step Click on the interactive objects in each scene and have fun Step Proceed to read it myself and read to me Steps to install the game from play store Step Step Step Scan the QR and install the game Click auto play to start playing Click the fruits to feed Gulliver Click interactive objects in each scene and have fun Language Activity Observe and write a description of each scene and present it to your class Learning Objectives To learn vocabulary To develop reading skill URL https playgooglecom store apps detailsidcomtabtalegulliver Text for Listening Unit White water rafting The icy Himalayan heights are the source of a major chunk of India’s rivers The complex network of rivers flowing through valleys and forests are just perfect for adventure sport like the white water rafting Among the other regions in the country the Garhwal and Kumaon region in Uttarakhand is regarded as the best location for a perfect water adventure The most suitable period for this watery performance is between September-November and March May Paragliding Paragliding has a huge following all over the world and is the recreational and competitive adventure sport It is a relatively new sport in Indi The major paragliding sites in India are Himachal Pradesh Uttarakhand Rajasthan and Maharashtr The flying season spans September to December and then March to June Skiing Skiing is a big craze worldwide Gulmarg in Kashmir offers one of the largest facilities for this winter sport The best part is that the snow conditions remain excellent from December to April Meanwhile the slopes in Garhwal and Kumaon are also ideal place for skiing in the winter months Auli in Garhwal is currently rated as one of the India’s best skiing resorts Snorkeling and scuba diving While the sky and the mountains provide you with a good amount of adventure the underwater ecosystems promise a stunning world of mysterious beauty exhibited in its marine flora and faun The areas around the Lakshadweep Andaman and Nicobar Islands as well as Bay of Bengal present water sport lovers opportunities to delve and dive deep inside the ocean’s depths and enjoy the marvellous sights they have to offer Unit Udagamanadalam the Queen of Hill Stations Udagamanadalam is located in the Western Ghats zone at an altitude of m It is the headquarters of the Nilgiri District where the two mountain ranges meet Udagamanadalam popularly called Ooty by the tourist is the Queen of Hill Stations Centuries ago this was also called as Oththai-Kal single stone Mandu Mund is a name of Toda Village The British started calling it as Ootacamun Coffee and Tea Plantations and trees like Conifers Eucalyptus Pine and Wattle dot the hill side in Udagamanadalam and its environs Summer temperature is maximum of C and a minimum of During the winter it is a maximum of C and a minimum of This area was inhabited by the tribals called Toda long before anybody ventured into this region Curiously enough this slice of paradise remained unknown even during the periods of the great Southern Dynasties It was the British who ventured into the region during early nineteenth century In search of cooler climates development and modernization took place after their arrival This was the Summer Capital of the Madras Presidency during the British Rule It is the pride of the Blue Hills and centre of attraction This was formed by MrJohn Sullivan the then Collector of Coimbatore in the year This is located in an area of acres Fishing was the major activity in this place In the year Tourism Development Corporation Government of Tamilnadu on behalf of the Tourism Department took possession of this place for Boating activity which provides another thrilling entertainment for the tourists Prose Who Owns the Water Hi Ayesha Look at the rainbow in the sky Do you know when it appears Yes of course It appears in the sky when the sun shines through raindrops During which season do you see a peacock dance Which season is shown in this picture What are the people doing In which season can you see trees without leaves Name the country where your can find this season Which season is shown in this picture How do you know Look at the pictures discuss in pairs share your answers with the class Prose Who Owns the Water Section I READING Listen to the teacher read this section Once upon a time on the outskirts of a dusty little village a tiny bird searched for a place to lay her eggs The land was parched and dry and there wasn’t a bush or tree in sight Finally in desperation the little bird discovered a shallow depression in the groun Using her claws to remove the stones and loosen up the packed earth she broadened the hole and there underneath the hot sun she laid her eggs The eggs hatched and the good mother protected and fed her babies until they were big enough to fly away And here our story would have ended except this isn’t a tale of the little bird but a much more interesting one of the hole she used as a temporary nest A hole you may ask What could be interesting about a hole in the ground Well this hole grew to be quite important as you will discover For some time the hole remained dusty and untenanted until one day a passing wild boar settled his rump into the depression The pit was not comfortable enough and getting up he scraped and dug carving a pit of more hospitable proportions Backing into this hollow he turned around a few times and with a satisfied grunt settled down to a long snooze A very long snooze it was too The boar turned and scrabbled in his sleep loosening the earth around his cosy dugout until the fading sun and the rumble in his stomach told him it was time to get up With a mighty stretch and a final kick the hungry boar departed his daybed without a backward glance And is that it you will enquire To which I will reply No it isn’t dear one Not by a long shot Our story has just begun GLOSSARY outskirts the outer areas of a city or a town parched very dry desperation losing hope untenanted not occupied rump back part of a mammals body or the part of the body you use to sit scrabbled moved hands and feet around cosy comfortable rumble a low sound like thunder A tiny bird looked for a place to lay her eggs The land was wet and green The little bird found a shallow hollow in the groun The eggs hatched and the babies flew away The pit was comfortable for the wild boar to sleep in The wild boar got up from its daybed because it was disturbed by another boar Do you know WEATHER The conditions in the atmosphere like rain wind or temperature at any time CLIMATE The general weather conditions of a place a wam climate cold climate SEASONS One of the four periods of the year which has its own typical weather conditions resulting from the earths changing positions in its orbit around the sun Section Read this section in pairs A pack of wild dogs catching the scent of boar in the wind came to the spot where he had lain They sniffed the circle that was rich with the smell of the animal They whined and snarled and dug at the smell as if digging the elusive boar himself out of the groun Finally realising that there was no dinner to be found there they departed their noses and tails high in the air And in doing so they left the hole a little bigger and wider than they had found it And then what happened you will ask Do other animals come along too They do indeed my chil I told you the hole had a story to tell Not long after the rains came It poured and poured and only those of us who have seen the monsoons will know what that means It rained without stopping for three days and three nights and the dry earth soaked up the moisture as a hungry puppy laps up milk GLOSSARY sniffed to breathe in air in a noisy way whined made a high pitched cry snarled made a deep angry noise soaked completely wet The whole earth smelled wet and fresh and even the normally serious looking people in the village went around with smiles on their faces The hole in the ground collected the water that fell and around its edges the grass grew a brighter green Soon buffaloes discovered the grassy spot and as buffaloes want to do they wallowed in the puddly water turning the hole into a muddy pit I was not there to see but I am told that many afternoons did the buffaloes gather and thus with a multitude of hooves trampling the soil the pit that was once a tiny depression widened and grew and became a little watering hole And they all lived happily ever after you will say in glee But that rarely happens in real tales my dear There is more to go so you will have to wait awhile Complete the sentences given below with words phrases The wild dogs came to the spot to catch The rains came and poured The whole earth smelled and The hole in the ground was filled The buffalo in the hole The hole became and Section GLOSSARY wallowed to lie and roll in mud multitude a large number of people trampling crushing tilled prepared the land for crops meagre small quantity gratitude thankful Read this section in pairs A poor farmer tilled the land near the once small depression His life was hard and the rains were often cruel In summer months he had to travel far to get water for his thirsty crops and even then his harvest was meagre One day not long after the last of the season’s rains he straightened up from his back breaking work and looked over the land that was soon becoming brown again And on the horizon just beyond his pitiful plot his eyes came to rest on a patch of green Going closer to investigate the farmer fell to the ground with gratitude at the sight of the verdant bowl Here was water to be had and so close to his holding Forgetting all tiredness he raced home and brought out his pickaxe and spade and soon the buffaloes picnic spot was a perfectly decent little pon Is this story going to end with a moral you ask me suspiciously No little one but there is something to learn from everything we see and hear so hush while I come to end of the tale So happy was the farmer that he told his wife who summoned the village priest to bless their fortune I do not need to tell you how soon news travels in a little village and so it was quite a crowd that gathered by the side of the pond to see the priest furrow his brow and chant serious something that nobody ever understands Just then the richest farmer in the village pushed his way to the front of the group He was always upset when things took place that he was not invited to Looking at the farmer and the placid pond a slow smile of contentment creased his face I see you have come to bless my pond he said to the priest Your pond stuttered the poor farmer Why yes smoothly oiled the rich one Your patch surely ends just there This land is all mine And saying this he crossed his arms and planted his feet four-square on the groun As the rich farmer and the poor one looked at each other the buffaloes the dogs the boar and yes even the little bird stopped by to see They all stood around the little jewel of blue and in every mind small and big came a similar thought Surely I had something to do with this And so I end with a question to you my beloved frien Who owns the water Not a moral just a thought a germ of an idea to dig and make bigger Answer the following questions in one or two sentences Why did the farmer have to travel far What sight made the farmer thankful Name the tools the farmer brought out What did he do with them Why did the crowd gather by the side of the pond When did the richest farmer get upset Why GLOSSARY verdant green with grass suspiciously doubtfully summoned called fortune luck contentment satisfaction stuttered spoke with difficulty four-square solidly LANGUAGE CHECK POINT Incorrect Correct Note There is a table besides the be There is a table beside the be beside means next to at the side of besides means in addition to Everyone played games accept Kathir Everyone played games except Kathir accept means to receive except means to leave out I see TV news regularly I watch TV news regularly watch is to look at something carefully usually at something which is moving see is to just look at something in front of us The clouds moved away Velu thanked his friend It rained heavily Eat slowly he helped Velu in time the sun came out you will get choke the match continue I Join the sentence of Column A with B using the words given in the box WRITING K Trees can help you recognise seasons How do the trees look different in each season Write a short paragraph with the clues given below CREATIVE WRITING Summer Trees stretch their leafy branches towards the sun Spring Branches are full of new green leaves Rain Trees absorb water and look green Autumn Trees shed their leaves Indian Seasons Summer comes in a blaze of heat with sunny smiles and dusty feet Then seasons change to muddy roads monsoons and mangoes leapfrogs and toads Spring is pretty but short and sweet when you can smell the grass from your garden seat Autumn is English in red yellow and brown Autumn is Indian whenever leaves fall down Nisha Dyrene GLOSSARY blaze bright flame or fire leap to jump high dusty covered with tiny bits of sand toad a small brown animal similar to a frog A Childhood in Malabar A Memoir It was someone’s birthday at Ambazhathel I’m not sure whose the day there was a cyclone Ettan my elder brother and I were invited to the feast there that day Malathikutty took us to the serpent shrine before lunch We watched Meenakshi Edathi setting out turmeric milk and bananas for the snakes Meenakshi Edathi was a distant relative of the Ambazhathel family Being poor she was dependent on their generosity She was dark skinned and middle-age She spent her time rushing around the house and compound never stopping to rest her face perpetually wearing an expression that asked for forgiveness She had only certain trivial duties to perform like welcoming the oracle with an offering of paddy when he came in a procession lighting all the lamps at dusk churning the curd and taking out the butter for the children and drawing designs with rice batter on the door on the day of the Nira festival There were innumerable servants to carry out all other tasks However the family could not have existed happily for a single day without Meenakshi Edathi She was the only one who knew how much paddy should be boiled each time to make enough rice for the household or how many mundus had been given to the washerman or when to give the children a purgative Why isn’t the snake coming I aske Snakes never come out when human beings are watching chil The black Krishnasarpam will glide out as soon as we go away said Meenakshi Edathi I began to feel sleepy after lunch Malathikutty came back with us to Nalapat Barely an hour after we got home we heard the sound of the gale The wind tore through the coconut palms in the southern compound with a frightening roar The dry leaves that had collected around the pond swirled upwards belligerently Branches shook The seat of the swing that hung from the ilanji tree fell down I wonder whether it’s a cyclone The sound of it scares me said Ammamm She asked all of us to sit down in the middle room upstairs and gave us metal dice to play with Since the light had grown dim she lit a brass lamp as well Muthassi called out from the thekkini the southern room downstairs Have you closed all the small windows Kochu I ll close them Amme I’ll close all of them answered Ammamm We suddenly heard the sound of the rain from the south-west like the roar of a vast crowd of people Using all her force Ammamma slammed the windows shut Raindrops glimmered on her face It’s not even four but it’s pitch dark outside said Ammamma‘I want to see Kutti Oppu said Malathikutty She’ll come by dusk said Ammamma‘I want to go to Ambazhathel now this minute said Malathikutty I’ll send you to Ambazhathel as soon as the storm stops Ammamma tried to comfort her but Malathikutty began to sob loudly That was when we heard a coconut palm crashing down Kochu what was that Will the house collapse That was Muthassi Don’t worry It was a coconut palm falling We’ll go and have a look at it once the rain stops Let’s say our prayers and sit here quietly said Ammamm All of us took shelter in the southern room downstairs as Ammaman’s mother instructed us to do She said this room had the strongest ceiling The thekkini was flooded and the water that had collected in the sunken courtyard of the nalukettu the central hall with four wooden pillars began to overflow Ammaman and all of us sat on the be Ammamma and the grandmothers sat on the rolled-up mattresses stacked on the floor And the servant woman took refuge in the makeshift toilet adjacent to the room Ammayi arrived drenched to the skin unmindful of the thunder and lightning and driving rain How can you be so foolish Bala What if you fall ill of a fever asked Ammaman Ammayi laughe Here’s Kutti Oppu exclaimed Malathikutty joyfully Ammayi hugged her Cheriamma suggested that we chant aksharaslokams to forget our fear each one of us would have to recite a verse and the next person would follow with a verse that began with the first letter of the third line of the quatrain that had just been chante No one volunteered though So Cheriamma recited from Vallathol’s Imprisoned Aniruddhan Ammamma said I can’t remember a single couplet I hope the house doesn’t collapse murmured Muthassi As soon as Ammaman and Ammayi went upstairs the servant woman started to wail loudly She kept hitting her head with her hands while she waile What madness is this Do you want to break open your head asked Ammamm What if I never see my folks again My Guruvayoorappa I’ll never see them again You can go home tomorrow morning as soon as the rain stops All right said Muthassi This rain will never stop It’s a whirlwind isn’t it We’ll all die sobbed the woman Is she crazy asked Muthassi We heard trees crashing to the groun And a dog whining in the western yar Aiyo Sankara What if the cowshed crumbles Bring the cows in and tie them up in the washing area outside the kitchen said Ammamm The cowshed won’t fall down Valiamm Its beams are quite strong said Sankaran Nair who had gone to check things out Then let the cows stay there There’s knee-deep water in the yard now said Sankaran We want to swim I crie You can swim in the courtyard of the nalukettu said Ettan I put my hand into the water in the courtyar It’s ice-cold I grumble Don’t play in the water children Ammamma called out loudly We climbed back on the be Someone seemed to be knocking on the door on the southern side Sanakaran opened it A dog stood on the verandah dripping wet-Thumbi the black-and-white pet dog from Ambazhathel Look here’s Thumbi He’s drenche Poor thing he must have come out with Balamani Amma said Sankaran We looked at Thumbi and he looked at us He was shivering in the col Sankaran spread a gunny bag on the verandah Lie down on this In a storm like this how can we make a difference between a man and a dog Go to sleep Thumbi Thumbi lay down on the gunny bags and looked contentedly at me and my brother We spent the whole night in the southern room By the time we woke up the rain had stoppe It was the sound of a pleading voice saying Please open the gate that actually woke me A young man stood smiling in the waist-high water at the gate I’m from Vadekkar Is everyone here all right Yes said Ammamm We’ve had no casualties How did you come Balan I started out at daybreak and waded through the water That’s really smart The number of huts and trees that have collapsed Fowls lying dead everywhere dead goats floating in the water what a sight Come in Balan and change your mundu Have they sent us anything from Vadekkara Murukkus or dates I aske No chil I’ve come empty-handed said Balan displaying his buck teeth What a time to ask for murukkus and dates muttered Ammaman’s mother I hung my head ashame GLOSSARY Kamala Das In Malayalam In English Edathi brothers wife Ettan elder brother Ammamma mothers mother Muthassi fathers mother In Malayalam In English thekkini backyard Ammayi mother-in-law Cheriamma chitti in Tamil Ammaman maternal uncle ICT Corner Conjunction Eater Steps to Play the Game Scan the QR or click the URL and open the game in the browser Click Play to start the game Read the instructions given in How to Play You have to compete with the computer frog and gobble all the answers you can by identifying the correct conjunction which are written near the insects Language Activity Read a piece of article or the prose piece and pick out the conjunctions Write your own sentences using the conjunctions Learning Outcome To know the types of conjunctions To use the conjunctions in sentences Hello Mathi if two witches would watch two watches whi ch watch ch oh it sounds really funny but let me try it again Prose That Sunday Morning Hi Ayisha would you like to try this tongue twister If two witches would watch two watches which witch would watch which watch They are trying a tongue twister just for a laugh Would you like to join them Prose That Sunday Morning A day without laughter is a day wasted Charlie Chaplin Listen to your teacher read a part of the story Go through the questions given below in section I Answer them in one or two sentences My father was posted in Patn On the first Sunday there my brother and I decided to do a little exploring on our bikes It was still very early in the morning and only a few people were about The roads were good and the trees lining them were shady There were no imposing buildings or monuments as there are in Delhi from where we had just come After cycling for about half-an-hour my brother got bored and said Come on Ill race you to that corner The loser treats the other to a chocolate okay Okay one two three I said and then we were off This was not the first time we had race Only my brother had invariably beaten me and then crowed about it for days I was determined to win this time I pedalled as fast as I coul My legs ached and my skirt billowed out threatening to hit my face The trees on either side of the road had become one green blur My hair blew behind me and my lungs were bursting for air Soon I drew level with my brother and then gradually I moved ahea Answer in one or two sentences Why did the family move to Patna Who was challenged for a race Is the brother boastful What makes you think so Why did the trees become a green blur Which line tells you that the girl was faster than the boy GLOSSARY exploring travelling for discovery imposing grand or impressive invariably always crowed boasted billowed out to flare out in the wind threatening warning blur unclear I could see the corner in a haze I was starting to whoop with glee but the whoop froze on my lips There right in the middle of the road stood alone a cow I jammed on the brakes and the cycle stopped abruptly but I could not stop the momentum of my own body I flew over the handlebars and landed smack on the back of the unfortunate animal The cow startled by this sudden attack reared up and started running I clung to her for dear life as she charged up the road and round the corner As we turned I spotted two rows of resplendent cavalry officers mounted on their magnificent horses coming towards us They obviously belonged to the governors bodyguar I could only cling on helplessly as the frightened cow charged straight at the horses The horses panicked and scattere There was a regular stampede The cow managed to fall into a ditch and in the process dislodged me and I landed on the soft earth bordering the ditch Read the events of the story They are in the wrong order Put them in the correct order And it charged straight at the cavalry officers on horseback And so she flew onto the back of the cow So everybody panicked and made a general rush to safety The startled cow charged off in fear She applied the brakes but was thrown off the cycle Just then she saw a lone cow in the middle of the roa Finally the cow fell into a ditch and dislodged the girl The girl cried out in delight as she overtook her brother on her cycle GLOSSARY abruptly suddenly momentum the force of a moving body unfortunate unlucky startled frightened resplendent brilliant in appearance cavalry a unit of the army serving on horseback magnificent grand stampede rush dislodged freed I sat up with a groan and saw that the cavalry horses were still out of control Some of them were running like mad in circles while their riders tried to bring them under control Two horses were nowhere to be seen and one horse threw its rider right in front of my eyes The poor man landed in the ditch just next to the cow The cow thinking this was another attack bellowed loudly and lowering its head at the unfortunate man The poor fellow scrambled out of the ditch tearing his pants at rather an awkward place Realising this he sat down on the road with a thump and would not get up I saw my brother approaching with my bike in tow coming up to me with a grin on his face I felt like hitting him You looked such a sight on top of that cow he said and started laughing Then he probably realised that I might have been hurt and asked Are you all right Of course I am I said haughtily and got up at once Nothing on earth would have made me admit to him how frightened and shaken I was Just then my brother spotted one of the horse riders coming towards us with a thunderous scowl on his face Behind him was the man to whom in all probability the cow belonge My brother gave them an uneasy glance and said I think it would be nice if we moved quickly from here I looked round and saw that if both of us did not move fast enough we would be called in for a lot of explanations With one accord we got onto our bikes and beat a hasty retreat The morning had already been rather eventful and we did not want to add another unpleasant episode to it SAVITA SINGH Based on your reading put a √ for the correct and x for the incorrect statements The man didn’t want to get up because he was tired as he was thrown into the ditch The boy was rather unsympathetic to his sister The girl was badly hurt The boy and the girl were taken by the cavalry to explain their action They rode back home quickly The girl admitted to her brother that she was badly frightene Section GLOSSARY groan an utterance expressing pain bellowed the cry of a cow scrambled to move or climb hurriedly awkward sensitive haughtily arrogantly scowl threatening look retreat to move away unpleasant disagreeable drew level with ran very quickly in panic whoop with glee to leave a place quickly jammed on the brakes as if one’s life depends on it clung for dear life tried to stop the motion immediately charged up the road rose to an equal level beat a hasty retreat shout with enthusiasm and happiness Introduction Ask students to write a topic sentence It clearly indicates what the whole paragraph is going to be about Laughter is the best medicine The internal or supporting information Let students compose several supporting sentences that give more information about the topi It can relieve us from any kind of stress Life has become monotonous too busy to pay heed to our health stressful work schedules Conclusion Instruct students on ways to write a concluding sentence that restates the topic sentence In general To conclude Thus To sum up Therefore It is important to have sense of humour I last night went to the cinem I went to the cinema last night Adverbs or adverbial phrases of definite time like yesterdaytodaytomorrow last week two months ago are usually placed at the end of the sentence If we want to emphasize the time we put the adverb at the beginning Yesterday I was very busy Pushpa came here two months before Pushpa came here two months ago Ago is used to refer from the time of speaking Before is used to refer to a point of time in the past She angrily spoke She spoke angrily Adverbs of manner usually go in the end-position Poem A TRAGIC STORY There lived a sage in days of yore And he a handsome pigtail wore But wondered much and sorrowed more Because it hung behind him He mused upon this curious case And swore hed change the pigtails place And have it hanging at his face Not dangling there behind him Says he The mystery Ive found Says he The mystery Ive found Ill turn me round he turned him round But still it hung behind him Then round and round and out and in All day the puzzled sage did spin In vain it mattered not a pin The pigtail hung behind him And right and left and round about And up and down and in and out He turned but still the pigtail stout Hung steadily behind him And though his efforts never slack And though he twist and twirl and tack Alas Still faithful to his back The pigtail hangs behind him William Makepeace Thackeray GLOSSARY sage wise man yore long ago pigtail a plaited lock of hair worn singly at the back mused thought over curious eager to learn more mystery puzzle stout thick in structure William Makepeace Thackeray was one of the great novelists of the English Victorian Age His Vanity Fair is one of the finest and best-known novels in English literature Thackeray wrote in a colorful lively style with a simple vocabulary and clearly structured sentences These qualities combined with his honest view of life give him an important place in the history of realistic literaturesuggest the sage lacked practical common sense And swore hed change the pigtails place make the poem humorous show the clowning movements of the sage that are actually funny but have a serious tone faithfully change pigtail round sage down slack out hung place behind vain face BROUGHT TO BOOK This has got to stop immediately Justice Mathematics said in a stern voice rapping the hammer for silence in the court He pushed back the horn-rimmed glasses up his nose and glared first at Mahesh and then at the crowd in the court Everybody respected him even Mahesh so a pin-drop silence fell in the court instantly Let us proceed Justice Mathematics said nodding his hea Your witness first he gestured at the torn Ms English Mahesh chewed his nails nervously Your Honour began the lady in a trembling voice when I came to this house I wore a lovely pink and grey dress shiny and unmarke And Sir just look at me now Everybody gazed at her Her dress was unrecognizable Covered with ink and grease spots mercilessly dog-eared and two corners chewed away she looked a wreck Tears rolled down Ms Englishs cheeks Offering her a handkerchief Justice Mathematics asked gently How did it happen Ms English Well sniffed Ms English this boy she pointed at Mahesh brought me home a few months back but never bothered to cover me properly with the nice brown paper his father had brought Did Mahesh not get scolded and punished in school for that Justice Mathematics enquire Oh yes he was repeatedly said Ms English in a tearful voice but all the punishment and scolding slipped off him like water off a ducks backNot only did he ruin my looks she continued he also ill-treated me The audience was stunned ill-treating a delicate creature like Ms English How terrible By now tears had started rolling down Ms Englishs big eyes And stopping only to sniff delicately in her handkerchief she told everyone about how Mahesh dropped her carelessly stuffed her anyhow in his crammed bag sometimes next to the lunch box dripping with oil Mahesh turned red as many pairs of eyes glared at him Oh Why had he not listened to his mother who had told him many times to take care of his books He was otherwise a good boy and even managed to stay within the first five ranks inclass But he was extremely lazy Mahesh the stentorian voice of Justice Mathematics brought him back to reality What do you have to say for yourself Mahesh managed to mumble an apology I am sorry Sir What do you mean by saying sorry screamed Justice Mathematics You have to undo what you have done Do you understand He looked above the top of his glasses and seemed as if he would like to bite Mahesh Next he barked at the peon Mr Geography stood up shakily and went to the witness box He was in a worse condition than Ms English He had no cover the Contents page was hanging in on its last threads but the worst part were the maps They had been filled in mercilessly with all the colours in the paint box Yes prompted Justice Mathematics My story is quite similar to Ms Englishs Mr Geography said in a broken voice All my fellow brothers laugh at me whenever Mahesh pulls me out of his bag I especially envy my brother who belongs to Shobith She has not only covered him neatly her handling is so gentle that he always looks as if he has just stepped out of the booksellers shop and he added she fills in her maps with a pencil And so it went on with all the books copies pencil box and even the school bag complaining about Maheshs negligence They looked battered and the worse for wear Justice Mathematics face became dark when he heard that Mahesh tore off pages from the copies to make paper planes Mahesh withered under his murderous look Mr Pencil Box complained that Mahesh never cleaned it As a matter of fact he had covered the court floor with pencil shavings the moment he had stood up as a witness and accidentally opened himself This was not all Mahesh chewed him whenever he got stuck for an answer He pointed at his pock-marked body for everyone to see The elderly and ponderous Mr School Bag lumbered to the witness box with his broken straps and buckles dragging behind him I might as well be a sack of cement he began in a grave voice as that is how I am treate Mahesh never packs me the night before as all sensible children do but leaves it till the very last moment And then naturally there isnt any time to do anything but cram everything in anyhow With the result neither my friends inside nor I am happy Your Honour piped a small voice I also want to say something Justice Mathematics looked carefully and found that the voice belonged to a small notebook much in the same condition as others All right he nodded please come to the witness box The young Master Notebook marched to the witness box and took the oath Your Honour it has become a regular practice and I dont know how long I will be able to bear it he stopped all choked up Do go on prompted Justice Mathematics gently The Master Notebook got hold over himself and continued It started a few weeks back Mahesh was solving some problems in Mathematics one of them was tougher than others and he failed to solve it Can you imagine how he vented his anger Well he threw me against the wall A shock wave rent the courtroom and everybody started talking at once Justice Mathematics went red with anger as he banged the hammer loudly and you could see that he was wishing that the table were Mahesh Mahesh meanwhile stared at his boots Was he really that cruel He felt really ashamed of himself I intensely dislike such children who do not take proper care of their books Justice Mathematics said in a serious voice all the while eyeing Mahesh sternly However this court is different from the other courts Here the punishment is decided by the victims and we decide by majority if the verdicts are more than one He looked at all the bedraggled books and notebooks pencils and pencil box and the school bag in the court They in turn looked at Mahesh each and every one of them in terrible anger Mahesh trembled in his shoes Let us thrash him first and then throw him against the wall as he threw me this was the Master Notebook his voice shrill with fury No No Let us all bite him and let him see how it feels to be chewed This obviously was Mr Pencil Box He became so agitated that he once again opened himself and spilled some more pencil shavings on the floor I suggest dragging him around the courtroom a dozen times will be a good punishment said Mr School Bag Why dont we all jump on him together till he yells for mercy exclaimed Mr Geography rubbing his hands in anticipation This appealed to all of them and even Justice Mathematics got up from his chair to join the gang Menacingly they all advanced towards Mahesh who looked around frantically for somewhere to run to somewhere to hide Nothing There was no place to run to The mob was almost upon him when a soft voice rose above the frightening silence I say stop it Please do stop Amazed everybody turned around even Mahesh opened his eyes a crack which he had shut in fright Then the petite Ms English rose from her seat and spoke to Justice Mathematics in a firm voice I dont mean to interrupt Your Honour it is just that I feel that everyone deserves a second chance and after all this is Maheshs first offence he deserves a little consideration Mahesh looked at her in admiration he could have hugged her She was the one who had been treated most shamefully by him and look at her Standing so staunchly by him The others too saw reason and slowly backed off agreeing to give Mahesh a second chance Mahesh see that you never ill-treat a book again was Justice Mathematics parting shot Mahesh Mahesh a hand started to shake him and he jumpe Had the others changed their minds about not punishing him Oh Mahesh do get up You will be late for school Slowly Mahesh opened his eyes Why He was in his bed Yes There was the battered bag on the floor the books half on the floor and others stuffed in the bag But what was this The English book was lying near his pillow and seemed to smile at him Maheshs mother was astonished to see him rushing through the chores and then sitting down to glue and cover his English book that very morning Next year Mahesh Kumar got the prize for the BestLooked-After Books Madhumita Gupta Read the story again and fill in the table with the present condition of the characters given below Ms English Mr School Bag The young Master Notebook Mr Pencil Box Mr Geography ICT Corner Spot the Adverb Steps to Play the Game Scan the QR or click the URL and open the game in the browser Click Play to start the game Read the instruction given in How to Play Help the rabbit collect more and more gold coins by identifying the adverbs Language Activity Read a piece of article or the prose piece and pick out the adverbs Write your own sentences using the adverbs Learning Outcome To know the adverbs To use the adverbs in sentences The Jungle Book Hey Ayesha look at the little boy How did he befriend these wild animals It’s a big story Let’s read it It’s a big story Let’s read it The Jungle Book was written by Rudyard Kipling The book has attracted audiences of all ages for its plot structure and characters Children especially enjoy this story as it deals with the early childhood of a boy in the midst of wild animals in the forest Characters Father Wolf Mother Wolf Tabaqui the Jackal Shere Khan the Tiger Man’s Cub Mowgli Wolf’s Cubs Narrator Scene I The scene opens in the Seeonee Hills It’s seven o’clock a sunny evening in the middle of the jungle The Moon is yet to rise and with no stars to brighten the sky utter darkness surrounds the forest Father Wolf wakes up from his day’s rest releases and spreads out his paws one after the other to make himself ready for the hunt Mother Wolf with her big grey nose drops her four tumbling squealing cubs into the mouth of the cave where they all live Augrh It is time to hunt again Moves down to spring downhill where he notices a little shadow with a bushy tail at the entrance and whines Good Luck go with you O chief of the Wolves And good luck and strong white teeth go with noble children that they may never forget the hungry in this worl In a stiff tone Enter then and look but there is no food here For a wolf it may not be enough but for so mean a person as myself a dry bone is a good feast All thanks for this good meal licking his lips Looks at the Father and Mother Wolf who seem to be uncomfortable How beautiful are the noble children How large are their eyes And so young too Sits still rejoicing in the mischief that he had made In a spiteful tone he says Shere Khan the Big one has shifted his hunting grounds He has told me that he will hunt among these hills for the next moon Shere Khan was the tiger who lived near the Waingunga River twenty miles away Angrily He has no right to come here By the law of the Jungle he has no right to change his quarters without due warning If he comes here he will frighten every head of game within ten miles and I I have to kill for two these days Quietly His mother did not call him Lungri the Lame One for nothing He has been lame in one foot from his birth That is why he has only killed cattle Now the villagers of the Waingunga are angry with him and he has come here to make our villagers angry They will scour the jungle for him when he is far away and we and our children must run when the grass is set on fire Indeed we are grateful to Shere Khan Quietly I go You can hear Shere Khan below in the forest Scene Father Wolf listened and below in the valley that ran down a little river he heard the dry angry whine of a tiger who has caught nothing and does not care if all the jungle knows it The fool To begin a night’s work with that noise Does he think that our bucks are like his fast Waingunga bullocks Hush It is neither bullock nor he hunts tonight It is Man The whine had changed to a sort of humming purr that seemed to come from every quarter of the compass It was the noise that bewilders woodcutters and gypsies sleeping in the open and makes them run sometimes into the very mouth of the tiger Man Showing all his white teeth Hah Are there not enough beetles and Man and on our ground too Scene The law of the Jungle which never orders anything without a reason forbids every beast to eat Man except when he is killing to show his children how to kill and then he must hunt outside the hunting grounds of his pack or tribe The real reason for this is that Man-killing means sooner or later the arrival of men on elephants with guns and rockets and torches Then everybody in the jungle suffers The reason the beasts give among themselves is that Man is the weakest and most defenceless of all living things and it is true that Man-eaters become mangy and lose their teeth The purr grew louder and ended in the full-throated howl Aaarrh Then there was a howl an untigerish howl from Shere Khan He has misse What is it Runs out a few paces and hears Shere Khan muttering and mumbling as he tumbles about in the scru The fool has had no more sense than to jump at a woodcutter’s campfire and has burned his feet With a grunt Tabaqui is with him Something is coming uphill Twitching one ear Get ready The bushes rustled a little in the forest and Father Wolf dropped with his haunches under him ready for his leap Then if you had been watching you would have seen the most wonderful thing in the world the wolf checked in mid-spring He made his bound before he saw what it was he was jumping at and then tried to stop himself The result was that he shot up straight into the air for four or five feet landing almost where he left groun Man Snaps A Man’s cu Look Directly in front of him holding on by a low branch stood a naked baby who could just walk as soft and as dimpled a little atom as ever came to a wolf’s cave at night He looked up into Father Wolf’s face and laughe Is that a Man’s cub I have never seen one Bring it here A wolf accustomed to moving his own cubs can if necessary eat an egg without breaking it and though Father Wolf’s jaws closed right on the child’s back not a tooth even scratched the skin as he laid it down among the cubs In a soft tone How little How naked and how bold The baby was pushing his way between the cubs to get close to the warm hide So this is a man’s cu Now was there a wolf that could boast of a Man’s cub among her children I have heard now and again of such a thing but never in our Pack or in my time But see he looks up and is not afrai The moonlight was blocked out of the mouth of the cave for Shere Khan’s great square head and shoulders were thrust into the entrance Tabaqui behind him was squeaking My Lord my Lord it went in here Shere Khan does us great honour angrily what does he need My quarry A Man’s cub went this way Its parents have run off Give it to me Shere Khan had jumped at a woodcutter’s campfire as Father Wolf had said and was furious from the pain of his burned feet But Father Wolf knew that the mouth of the cave was too narrow for a tiger to come in by Even where he was Shere Khan’s shoulders and forepaws were cramped for want of room as a Man’s cub would be if he tried to fight in a barrel The Wolves are a free people They take orders from the Head of the Pack and not from any striped cattle-killer The Man’s cub is ours to hunt if we choose What talk is this of choosing It is I Shere Khan who speaks The tiger’s roar filled the cave with thunder Mother Wolf shook herself clear of the cubs and sprang forward her eyes like two green moons in the darkness facing the blazing eyes of Shere Khan And it is I Raksha The Demon who answers The Man’s cub is mine He shall live to run with the Pack and to hunt with the Pack and in the end he shall hunt you Father Wolf looked on amaze He had almost forgotten the days when he won Mother Wolf in a fair fight from five other wolves when she ran in the Pack and was not called The Demon for compliment’s sake Shere Khan might have faced Father Wolf but he could not stand up against Mother Wolf for he knew that where he was she had all the advantage of the ground and would fight to the death So backed out of the cave mouth growling and when he was clear he shoute Each dog barks in his own yard We will see what the Pack will say to this fostering of man-cubs The man-cub is mine and will come to me in the end Mother Wolf threw herself down panting among the cubs and Father Wolf said to her gravely Shere Khan speaks this much truth The cub must be shown to the Pack Will you still keep him Mother Keep him She gasps He came naked by night alone and very hungry yet he was not afraid Look he has pushed one of my babes to one side already And that lame butcher would have killed him and would have run off to the Waingunga while the villagers here hunted through all our lairs in revenge Keep him Assuredly I will keep him Lie still little frog O you Mowgli for Mowgli the Frog I will call you the time will come when you will hunt Shere Khan as he has hunted you The story does not end here It continues with many more episodes such as the acceptance of Mowgli by the Pack of Wolves the friendship between Bagheera and Mowgli Mowghli’s adventurous trips in the jungle with Baloo the bear the fight between Mowgli and the Monkey’s gang et Eventually Mowgli is forced to leave the jungle and he goes to live in the village Later he decides to return to the jungle and live there Listen to your teacher read a description of the character from the story Identify the character based on your understanding and write the name in the space provide Number the characters in sequence as they appear in the story Read scene I of the play carefully and answer the questions below List the characters that appear in the scene What human characteristics do they exhibit The scene is set inside a thick forest and it is nearing dusk Relate this time frame with the behaviour of the animals in the forest Did Tabaqui receive a warm welcome from the pack of wolves How do you know Tabaqui acts as to the pack of wolves a a guard b  a friend c  a messenger d  an enemy Whom does Mother Wolf talk about How does she describe him Who is about to go on a hunt Do the wolves panic on his arrival Explain Match the following SPEAKING READING SlNo CHARACTER TRAIT Father Wolf with a grey nose feeds her four cubs Tabaqui the big one from Waingunga River with a lame foot Mother Wolf the chief of the Wolves Shere Khan begs for meat and thanks for the meal warns the wolves about the arrival of Shere Khan Imagine a conversation among your friends about the four characters in the play Tabaqui Shere Khan Mother Wolf and Father Wolf Use the hints to write it The characters entry in the play Compare and contrast their character traits The reaction of the characters on seeing the man cu Let’s Recall I Read the situation given Write the response of the subject in a sentence Tick the correct box to identify the kind of sentences D Declarative In Interrogative E Exclamatory Im Imperative Example Vendor while weighing the fruits How many kilos do you want Children while eating ice-cream Teacher while noticing students talking in the classroom Waiter while attending a new customer Student while introducing oneself Tourist while visiting the Taj Mahal TTR while checking the tickets of passengers Critic while writing a review of a book Receptionist while attending to a guest in the hotel order a yummy round and big cake her parents her a wonderful doll present Madhu’s friends with which falls on Sunday for her birthday celebration Madhu her close friends invites welcome she and her parents with a broad smile their guests enjoyed the day felt happy and Madhu and her parents the house with colourful balloons her parents decorate and attractive cartoon pink Madhu frock wears on her birthday a long We You They hate prefer like love enjoy wish dislike playing watching coaching football volleyball hockey kabaddi cricket tennis basketball kho-kho badminton and or carrom chess table-tennis squash fencing everyday usually rarely often occasionally generally sometimes daily Samritha Kavish prefers enjoys hates likes Example I enjoy playing badminton and carrom daily PROJECT INSTRUCTIONS Read the complete story carefully Frame a suitable title for it List the characters occurring in the story Identify the events in the story Use a narrator to introduce the scenes occurring in the story if neede A little girl named Goldilocks went for a walk in the forest On her way she came upon a house She knocked at the door but no one answered so she walked right in She found three bowls of porridge in the kitchen As she was hungry she tasted the porridge from the first bowl This porridge is too hot she exclaime So she tasted the porridge from the second bowl This porridge is too cold she sai So she tasted the last bowl of porridge Ahhh this porridge is just right she said and she ate it all up happily After she’d eaten breakfast she was feeling a little tire So she walked into the living room where she saw three chairs Goldilocks sat in the first chair to rest her feet This chair is too big she exclaime So she sat in the second chair This chair is too big too she whine So she tried the last and smallest chair Ahhh this chair is just right she sighe But just as she settled down into the chair to rest it broke into pieces Goldilocks was very tired by this time so she went upstairs to the bedroom She laid down on the first bed but it was too har Then she laid on the second bed but it was too soft Then she laid down on the third bed and it was just right At last she fell asleep As she was sleeping the three bears who lived in that house came home Someone’s been eating my porridge growled the Papa bear and Mama bear repeated the same Someone’s been eating my porridge and they ate it all up cried the Baby bear Someone’s been sitting in my chair growled the Papa bear Someone’s been sitting in my chair said the Mama bear Someone’s been sitting in my chair and they’ve broken it all to pieces cried the Baby bear They decided to look around some more and when they got upstairs to the bedroom Papa bear growled Someone’s been sleeping in my bed Mama bear repeated the same Someone’s been sleeping in my bed and she’s still there exclaimed Baby bear Just then Goldilocks woke up and saw the three bears She screamed Help And she jumped up and ran out of the room Goldilocks ran down the stairs opened the door and ran away into the forest And she never returned to the home of the three bears Form your groups and enact the play in your class ICT Corner Sentence Unscramble Steps to Play the Game Scan the QR or click the URL and open the game in the browser Click Play to start the game Read the instruction given in How to Play Help the rabbit collect more and more gold coins by identifying the adverbs Language Activity Read a piece of article or the prose piece and pick out the different types of sentences Write a story based on the game using the sentences you have learnt Learning Outcome To frame sentences To use different types of sentences Texts for Listening Unit Unit Once there lived three friends Vani kavi and sumi They always played pranks on one another One day Vani bought some delicious berries and she decided to share them with her friends Kavi and Sumi were delighted to see the berries The three of them sat and started eating the berries Suddenly Sumi decided to play a trick on Kavi When she looked under her chair she saw a small heap of berry seeds She stealthily pushed the heap of seeds under Kavi’s chair Then Sumi said What is this Kavi You are so greedy You alone have eaten so many berries Kavi felt bad and didn’t know what to say Vani looked here and there When she looked under Sumi’s chair there was no seeds So she replied Sumi Kavi was at least greedy but see yourself You have eaten all the berries including its seeds Then Kavi understood that her friend had just played a trick on her and then all three of them laughed heartily Now stay tuned for weather report This is weather forecast from news channel We could not ask for a better day for the first day spring Right now it is o C and clear we are expecting the blue skies through out the day though there is only a of showers This good weather can’t last forever It is raining cats and dogs up North So we should see rain by morning Don’t forget your umbrella tomorrow Unit Description of the characters from the story The Jungle Book He is violent and intensely predatory disrespectful to the law of the jungle The main villain in the story and the archrival of Mowgli He is nicknamed as Lungri by his own mother He always feeds on crumbs from either Shere Khan or the wolves of the Seeonee Pack He is the only friend of Shere Khan He acts as a spy and messenger to Shere Khan She is very protective of the man-cub and raises him as her own She is always ready to die in order to protect him she is strong and brave but when angered she becomes the fiercest of wolf in the pack He is taken away by a tiger from his village to the jungle but fortunately he escapes and runs into a cave where a wolf family live Mother wolf names him Mowgli the Little frog He is the main character in the story He is one of Mowglis main teachers protects and guides Mowgli in all ways till the end of the story He loves Mowgli a lot and the two spend much time together loitering in the jungle Science Unit Measurements Your brother asks you what your height is How will you measure it and tell him Your friends decide to play kabbadi How will you measure and draw the border lines Your father gives you a bag and asks you to get potatoes How will you ask the shopkeeper Your mother gets milk from the milkman daily How much does she get How long will it take to reach your school from your house How does the shopkeeper measure kerosene while selling it To do the tasks given above we need to know about measurement The comparison of unknown quantities with some known quantities is known as measurement Measurement of a quantity has two parts a number and a unit To measure the quantities we need measuring tools What are the measuring tools that you know Which of those tools you will use to do the tasks listed above and the similar ones We hear the terms related to measurement like weight kilogram litres millilitres kilometre length distance et In this chapter let’s study in detail about length mass and time and the necessity to measure them Length What is length The distance between one point and the other desired point is known as length It may be the distance between the edges of your book or the corners of the football ground in your school or even from your home to school The standard unit of length is metre It is represented by the letter m Very small lengths can be measured in millimetre mm and centimetre cm Larger measures say height of a building length of a banner or height of a lamp post are all measured in metre How to express still longer lengths say distance between two cities or villages or distance between your school and home It is expressed in kilometre km Know the unit of length km m m cm cm mm Think Can you express km in cm Let us measure the length of your pencil Take the meter scale Notice the lines with marking till for smaller scales or bigger scales The distance between two numbers say between and denotes a centimetre written as cm Notice in between and there will be smaller markings If you count there will be such lines The distance between any two consecutive smaller markings within a cm denotes a millimetre written as mm Why do we need SI Units From the activity you see that your measurement is different from that of your friends Similarly different measuring units are used in different countries For the sake of uniformity scientists all over the world have adopted a common set of units to express measurements This system is called as the International System of Units or SI Units SI unit for length is metre SI unit for mass is kilogram SI unit for time is second SI unit for area is m SI unit for volume is m Prefix Multiples and sub-multiples of SI units are given as prefixes Corrective measures for Measurement Measurement has to be accurate and the approach has to be correct always In our day to day life approximation may not have much impact But it has a large impact in scientific calculations For example if the curvature of key lock and key is changed even by mm the lock would not open So measurements have to be accurate in scientific calculations Let us look at some common mistakes that occur while using a scale To measure the length of a pin The head of the pin has to coincide with of the scale Count the number of centimetre and from there count the number of finer divisions The count of the division is in mm In the above example the length of pin is cm and mm Write the correct submultiple completely Parallax Error Parallax is a displacement or difference in the apparent position of an object viewed along two different lines of sight Correct position of the eye is also important for taking measurement Your eye must be vertically above the point where the measurement has to be taken In the above representation to avoid parallax error reading from B will be correct From positions A and C the readings will be different and erroneous Mass Mass is the measure of the amount of matter in an object The SI unit of mass is kilogram It is represented by kg Weight is the gravitational pull experienced by matter The weight is directly proportional to the mass on the Earths surface Hold a sheet of paper in one hand and a book in other han Which hand feels the heaviness The mass of the book is more than that of a single sheet of paper Therefore the pull on the book is more than that is on the paper Hence our hand needs more force to hold a book than a piece of paper The force what we experience is called as heaviness What is your mass If you measure it in grams that would be a huge number Is it not So it is expressed in kilogram Bigger weights are measured in tonne or metric tonne milligram gram gram kilogram kilogram tonne Beam Balance We use beam balance to measure Mass A beam balance works by comparing the mass of an object to that of known mass called a standard mass Electronic Balance An electronic balance is a device used to find the accurate measurements of weight It is used very commonly in laboratories for weighing chemicals to ensure a precise measurement of those chemicals for using in various experiments Electronic balances may also be used to weigh food other grocery items as well as jewellery Time Day changes into night and night in to day Seasons also change We know time also changes How do we measure change of time Clocks are used to measure time You know how to read a clock face and note the time You can also use your pulse to measure the time roughly Count the number of pulses That can tell you the time elapse These are rough methods for counting passage of time We can use electronic clock stopwatch and other instruments to count even smaller durations of time Some open ended questions During your school sport day it is planned to conduct a mini marathon race within the school campus They decided that the running distance be kilometres Is it possible to have a school campus with the circumference of km Discuss with your friends how big the campus should be Give other options if it is not a big campus Is the distance in the sea also calculated in kilometres How is it possible to calculate the distance in sea water Explore We know that the distance between celestial bodies is calculated in terms of light year Light year is the distance travelled by light in one year Now without calculator find how many kilometres light would have travelled in a year Get the speed of light from your teacher We see that the distances between Chennai and Madurai is written as kms But from which point to which point is this distance calculated As we are science students we need to know it with the precision Is it between the two bus stands Or between the two railway stations Discuss and figure it out Check your answers with your teacher A person needs to drink two litres of water a day Note down how much water you drink each day Make a rough calculation and check if you are drinking the required amount of water Unit Force and motion We have studied in our earlier classes that push or pull results in some motion of the object When we open the door or kick a football or lift our school bag motion is involved and there is some push or pull What is rest What is motion Suppose there is a book on your table right in the middle Is the book moving You will say it is not moving it is at rest If you push the book to one side of the table to clear the space for keeping your notebook then you will say the book is moving When the book was at the same place with respect to the table it was at rest but when it was pushed from one place on the table to another place it was moving Is Mohan in motion Observe the following pictures and say whether Mohan is in motion or at rest Discuss Who is correct Is Mohan really in motion We can clearly say that both Reka and Babu are correct From the point of view of Babu Mohan along with the bus is in motion but for Reka who is sitting beside him he is at one place therefore stationary So according to Babu Mohan is in motion Mohan is at rest from Rekas observation Can you think any other examples Take the case of a book on a table at rest Is it really without any motion We know that Earth is rotating on its axis therefore the table along with the book must be rotating Is it not We are also moving along with the earth Therefore from the point of view of the ground on which we stand the book is at rest Similarly while travelling in a bus we feel that the poles and trees seem to move backwards and the things inside the bus are stationary An object may appear to be stationary for one observer and appear to be moving for another An object is at rest in relation to a certain set of objects and moving in relation to another set of objects This implies that rest and motion are relative How things moveWhen we kick a ball it moves When we push the book on the table it moves When a bullock pulls the cart moves Motion occurs when an object is pulled or pushed by an agency In our daily life we pull out water from the well using bucket Animals pull a bullock cart It is a person or animal that is an animate agency that does the pushing or pulling Sometimes we see a tall grass in the meadow dancing in the wind or a piece of wood moving down a stream What pushes or pulls them We know that blowing wind and flowing water is the cause Sometimes the push or pull can be due to the inanimate agency Forces are push or pull by an animate or inanimate agency Contact Non-contact Forces Forces can be classified into two major types contact and non-contact forces Wind making a flag flutter a bullock pulling a cart are contact forces Magnetism gravity are some examples of non-contact forces In all the above cases the force is executed by touching the body So this type of forces are called contact forces Mysteriously ripen coconut falls to the groun What pulls it to the ground We would have heard about force of gravity of Earth Gravity pulls the ripen coconut from the tree to the groun When we bring a magnet near a small iron nail the nail jumps into the air and sticks with the magnet Observe that the magnet and the nail did not touch each other Still there was a pulling force that made the nail to jump towards the magnet In these two examples the force is applied without touching the object Such forces are known as non-contact forces What happens when we apply a force on an object What happens when you apply a force on an object Say you push a book on the table The book moves Application of force in an object results in motion from a state of rest What happens when a batsman hit a ball The ball is already in motion but with the strike the speed of the ball increases Moreover the direction of the ball changes Application of force on an object results in a change in its speed and change in its direction When we crush a balloon or press roti dough or pull a rubber band the shape of the object changes on application of force Application of force in object results in expansion or contraction Look at this picture The person is applying force to stop the cart from moving When the force is applied against the direction of the motion the speed can be reduced or even the motion is stopped completely Discuss what happens when you apply break in a speeding bicycle In a nutshell we can say that the applied force is an interaction of one object on another that causes the second object to move from rest speed up slow down stop the motion change the direction compress or expan Forces can Change the states of a body from rest to motion or motion to rest Either change the speed or direction or both of the body Change the shape of the body Types of motion We can say that the motion of the pencil was rotational circular straight line or linear and later oscillatory Throw paper aeroplanes or paper dart Watch its flight path when you throw it at an angle The path curves ie the paper flight is moving ahead but its direction is changing while moving Such paths are called curvilinear A fly buzzing around the room is a combination of all these motions and flight path is zigzag You can classify the motion according to the path taken by the object Linear motion Motion in a straight line A person walking on a straight path Curvilinear motion Motion of a body moving ahead but changing direction Motion of a ball thrown Circular motion Motion in a circle Swirling stone tied to the rope Rotatory motion Motion of a body about its own axis Rotating top e Oscillatory motion A body coming back to the same position after a fixed time interval A pendulum f Zigzag irregular The motion of a body in different direction People walking in a crowded street Periodic and non-periodic motions Take the case of the hour-hand of a clock In one day it makes two rounds Look at a bouncing ball It bounces a certain number of times for a given time interval or perio Look at the water waves In a given period that is in a time interval a fixed number of waves hit the shore Motion repeated in equal intervals of time is called as periodic motion Let us take the example of sapling swing in win This motion is not in uniform interval Such motions are called non-periodic motion Revolution of the Moon around the Earth is periodic but not oscillatory However the children playing in a swing is both periodic and oscillatory Fast Vs Slow Look at a tall tree When the wind is gentle its branches are dancing slowly but if the gentle wind becomes strong the branches shake violently and if the speed increases further the branch may even break and fall That is the motion can be slow or fast Can we say a motion is slow or fast without comparing anything Compared to walking cycling is fast but a bus is faster than a cycle The aeroplane is much faster than a bus So slow or fast is a relative concept which depends upon the motions we are comparing Then how do we say a body moves at a particular speed Have you noticed that saying who is fast or slow is easy when we calculate the distance they travelled in one hour In other words you divide the distance travelled by the time taken to get the spee Suppose a car travels km in one hour Then we say that the speed of the car is kmph We read it as three hundred kilometres per hour Note that metre second or kilometre hour comes next to our answer for spee What is it Observe the formula for spee If we denote the distance in metre and time by second then the unit of speed is metre secon If we denote the distance in kilometre and time in hour then the unit of speed is kilometre hour Sometimes we use units like centimetre secon In science we generally use SI units In SI units the unit of distance is metre and the unit of time is secon So the SI unit of speed is metre secon Uniform and Non-uniform motion Suppose a train leaves Thiruchirapalli and arrives at Madurai Will the train travel in an uniform speed First the train will be stationary When the train leaves the station the motion will be slow After it moved some distance it will gather spee After that it may slow down while crossing bridges and stop at intermediate stations for passengers Finally as the train approaches Madurai again it will slow and finally will come to a halt It means that the speed is not the same all through the journey That is the speed is non-uniform This motion is said to be non-uniform motion However in between the journey there may be a stretch where in the train might go at a constant spee During that interval the train will be moving at uniform spee That is its motion is uniform Many motions we see in our day to day life are non-uniform We will learn more about uniform and non-uniform motion in higher classes If an object covers uniform distances in uniform intervals then the motion of the object is called uniform motion Otherwise the motion is called non-uniform motion In a nutshell we can classify the motion in terms of a path b if it is periodic or not c if the speed is uniform or not However in real life the motions are combinations of many types of motion Multiple Motion Look at the bicycle in the picture What type of motion does the wheel perform What type of motion does the cycle in total perform The tyres rotate and make a rotatory motion but the cycle as such moves forward in a linear path Science Today Robot Robots are automatic machines Some robots can perform mechanical and repetitive jobs faster and more accurately than people Robots can also handle dangerous materials and explore distant planets The term robot comes from a czech word robota meaning forced labour Robotics is the science and study of robots What can Robots doRobots can sense and respond to their surroundings They can handle delicate objects or apply great force For example they can perform eye operations guided by a human surgeon or assemble a car With artificial intelligence robots will also be able to make decisions for themselvesHow do Robots sense Electronic sensors function as robot’s eyes and ears Twin video cameras give the robot a D view of the worl Microphones detect sounds Pressure sensors give the robot a sense of touch to judge how to grip an egg or heavy luggage Built-in computers send and receive information with radio waves Artificial Intelligence Artificial intelligence attempts to create computer programs that think like human brains Current research has not achieved this but some computers can be programmed to recognize faces in a crow Can Robots think Robots can think They can play complex games such as chess better than human beings But will a robot ever know that it is thinking Humans are conscious we know we are thinking But we do not know how consciousness works We do not know if Robots can ever be conscious Nanorobotics Nanobots are robots scaled down to microscopic size in order to put them into very small spaces to perform a function Future nanobots could be placed in the blood stream to perform surgical procedures that are too delicate or too difficult for standard surgery Imagine if a nanobot could target cancer cells and destroy them without touching healthy cells nearby Unit Matter around us Matter is everywhere around us The air we breath water we drink and the material we use are made up of matter Matter is defined as anything that occupies space and has mass Matter is found in three major states solid liquid and gas Do you know what is matter made of Matter is made of atoms Atoms are the smallest particle of matter They are so small that you cannot see them with your eyes or even with a standard microscope A standard sheet of paper is about millions of atoms thick Science has come up with a technology to identify the structure of atoms by using Atomic resolution Microscope ARM and Tunnelling Electron Microscope TEM which use electricity to map atoms There is more about atoms in the later classes But first lets learn about the three states of matter Physical Nature of Matter Matter occupies space and has mass What is its nature Many philosophers pondered over this question and came out with ideas It is known that Indian Philosopher Kanada and Greek philosopher Democritus had their ideas similar The Indian philosopher Kanada called it as paramanu and Democritus called it as atomos Imagine that a piece of thread is cut endlessly using knife At one point it would be like a small piece that it cannot be further cut by a knife That small particle may contain millions of molecules and these molecules are made of atoms Matter is made of such smallest particles atoms These atoms are extremely small even to see under a powerful microscope Characteristics of the particles of matter Particles of matter have a lot of space in between them In different forms of matter this spacing will be different Let us add a spoon full of sugar to a glass of water Stir well Sugar disappears completely Where has it gone Will the glass of water be now sweet Water particles have space between them and sugar particles are now occupying those spaces Particles of matter attract each other It is the force of attraction which keeps the particles together This attractive force will be different for different forms of matter Grouping of Matter on the basis of Physical states These are the three physical states of matter Matter can be grouped into solids liquids and gases based on the above characteristics Mass Shape and Volume of Solids Liquids and Gases Let us first take any solid say a stone Answer the following questions Do you need a container to know the shape of a stone Yes No A solid does not need a container It stays as it is because its particles are tightly packed and has a definite shape If you move the stone from the ground to a table or place it on the shelf does its shape change Yes No If you take a stone from the ground and place it on the table or shelf its shape and volume do not change Pencil and books are used for studying The bucket and the comb are made of plastic while the table and ladle are made of woo The scrub brush and broom are rough but the toy bear is soft Light can pass through a glass of water and the spectacles but not through apple or iron box The cow and the bird are living things while the rest are not Water in the glass is liquid but air in the balloon is gas and the rest are solids The feather and the paper cup can float but not the apple or the piece of stone The rubber band can be stretched but not the com Though they have different properties they are matter Brick and door which are hard come under solids things that flow come under liquids and others which are very light and can flow more freely come under gases Diffusion Let us place a book on a table Let it not be disturbe Observe for five minutes Now take a glass of water and add a drop of ink carefully at the centre Do not shake or stir Now light an incense stick and keep it in one corner of the room We can say that air is also a matter Though we cannot see it it occupies space and also has mass Let us try to know more about matter Compressibility of gases compared to liquids and solids Let us take three identical syringes Close the nozzles tightly with a cork After removing the plunger first let us fill it with fine chalk powder Try to press plunger down What do you observe Now let us fill the second one with water Press the plunger down What do you observe Let us now draw the piston back to suck air into the third one Press the plunger down What do you observe Is it easy or hard to press Record your observations and share among the group members You would have observed that the plunger moved freely in syringe with air than in water It was difficult to press the liquids and the piston hardly moved in chalk powder Thus we can conclude that gases are highly compressible as compared to liquids and solids Pure Substances and Mixtures In shops we find products which are sold with label pure For common people pure means unadulterated does not contain any cheap or harmful additives Are they really pure substances as they claim to be For a Chemist the word pure means something else A pure substance is made up of only one kind of particles Pure substances may be elements or compounds An element is made up of same kind of atoms A molecule consists of two or more atoms Compound is the substance formed by the chemical combination of two or more elements Mixture is a physical combination of two are more substances Let us consider the following examples We all eat snacks Can you identify and mention a few things that are present in a mixture or fruit mixture You are able to identify the ingredients in them from their colours appearance or taste We mix rice dal salt chillies pepper ghee and other ingredients to make pongal Pongal is also an example for mixture Why do we call these as mixtures Because they are made of two or more ingredients or components that are physically separable Air is a mixture because it contains oxygen nitrogen carbon dioxide water vapour noble gases and other gases Milk is also a mixture It contains water fat protein et Lemon juice is a mixture Some of us like to have it with less sugar while others like to have it with more sugar But either way it is still lemon juice prepared from lemon extract water and sugar and is a mixture though the amount of sugar added is different Same way even if we add extra water or lemon extract it will still be a mixture A mixture need not have a fixed proportion of components A mixture can be a physical combination of two or more elements Example carat gold which is composed of gold and copper or gold and cadmium It can be a physical combination of two or more compounds Example Aerated drink which is composed of carbon dioxide water sweetening and colouring agents It can be a physical combination of an element and a compoun Example Tincture of iodine is composed of Iodine in alcohol Separation of Mixtures Are all mixtures used as they are Or is there a need for separating the components Materials we use in our day-to-day life are got from different sources and are very often combined with other substances Mixtures like coffee and ice cream are taken as such There is no need for separation of this substances Metals occur in the form of ores under the earth’s crust But if we want to use a pure metal we need to adopt a laborious process of extraction to separate the useful metal from the ore What is meant by separation The process by which the components of mixture are isolated and removed from each other to get pure substance is called separation To know about the original properties and uses of the individual substance we need separation When and why do we need to separate mixturesWhen we need to remove impurities or harmful components from the mixtures Stones from rice When the useful component has to be separated from other components Eg Petrol from petroleum When a substance has to be obtained in highly pure form Gold from gold mines Let us visit Selvi’s Family It is am and Selvi’s family is busy At home in the kitchen Selvi’s mother is making tea for the family and her grandmother is separating butter from curds Her father and uncle are out in the field collecting paddy after harvesting Selvi is helping her mother to cook rice and is separating stones from the rice Selvi’s little brother Balu is fascinated by a piece of magnet that was given by his friend and is playing outside in the sand with it Can you list out in your note book the different activities that Selvi’s family members are engaged in Let us explore the different separating methods involved in the above activities and also learn about a few other methods The choice of the method of separation depends upon the properties of the components of the mixture The separation method may be based on the particle’s size shape or physical state solids liquids or gases Filtering Selvi’s mother used a strainer to remove the tea leaves to get the clear liqui Larger sized particles of tea leaves will be retained by the strainer while the clear liquid will pass through This is called filtering Sieving A sieve is similar to a strainer Sieving is used when we have to separate solid particles of different sizes bran from flour sand from gravel et Wire mesh as a strainer sieve is used to separate gravel from sand at a construction site Churning When very fine insoluble solids have to be separated from a liquid as in butter from curd churning is performe The mixture is churned vigorously when solid butter will be collected on the sides of the vessel Both butter and butter milk obtained after churning are useful and can be consume Threshing when we pluck flowers from plants we are separating the flowers from their stalks Can we do the same for food grains like rice and wheat It is not possible because the grains are small in size and also the quantity is very large Farmers separate grains from their stalks by beating them har The grains are separated from their stalks This is called Threshing Winnowing Rice wheat and other food grains are covered with husk which cannot be eaten by us Husk is very light and gets easily blown away by a breeze or win The method used for removing husk from grain is called winnowing This is done by dropping the mixture slowly from a height in the presence of win Lighter solids ie husks will be carried by wind and will be collected in a separate heap while heavier solids ie grains will fall closer and form a separate heap Handpicking How do we separate a stone from `rice If the stones are visible different from the grain they can be easily picked and separated by han This is called handpicking But if the stones look very similar to the rice grains it is difficult to separate Magnetic Separation In a mixture containing iron the magnetic property of iron can be used to separate it from non magnetic substances by using a magnet Substances that are attracted to a magnet are called magnetic substances Separating solids using a magnet is called magnetic separation Sedimentation Rice and pulses are often mixed with very fine straw husk or dust particles which have to be removed before cooking Are you familiar with the way this is done at home To remove these particles rice or pulses are washed in water The lighter impurities float while heavier rice grains sink to the bottom This is called sedimentation The water with the impurities is carefully poured down leaving clean rice at the bottom This is called decantation Separating mud from muddy water Muddy water is a mixture of very fine particles of soil in water What will happen if muddy water is left undisturbed for some time Mud being heavy will settle down at the bottom of the beaker and will form the sediment Water forms the top layer and is called the supernatant liqui The settling down of heavier components of a mixture when allowed to remain undisturbed for some time is called sedimentation Decantation This process is done after sedimentation The supernatant liquid is slowly poured out from the container without disturbing the sediment The part that settles down the bottom of the liquid is called sediment The water that is obtained after decantation is called the decantate The process of separating liquid above the sediment is called decantation But even after decantation the water is not completely free from fine soil particles How can we remove this We can do this by filtration Do you think a strainer or a cloth can filter theses very fine particles Do it by yourself and find out Filtration We use filter papers to remove the finer impurities A filter paper has very fine pores much smaller than soil particles Let us see how to use the filter paper Take a piece of filter paper Fold it to make a cone see figure Slowly pour the muddy water over the filter paper On filtration clear water filtrate flows down the funnel and mud settles as residue on the filter paper The method of separating insoluble component sand mud et from a mixture using a filter paper is called filtration The liquid which passes through the filter and comes down is called filtrateand the insoluble component left behind on the filter paper is called residue Food Adulteration Sometimes things that we buy in the market are mixed with harmful and unwanted substances It is called adulteration Food can also get adulterated due to carelessness or lack of proper handling We must be careful about the common adulterants in our consumable goods especially in foo Any adulterated food when consumed will be harmful and can be a health hazar An adulterated substance will not indicate the true properties of the original substance For example used tea leaves are sometimes used as adulterants in te Turmeric powder is adulterated with a bright yellow chemical which is poisonous to us Unit The world of plants Rani and Ravi went to vegetable market with their mother They saw variety of fresh green vegetables with attractive colours Their mother bought cauliflower cabbage and raddish Ravi asked his mother Mom do all the vegetables grow under the soil His mother answered No Ravi we get some vegetable from stem some from roots Even some flowers are used for cooking Rani and Ravi were surprised to know that vegetables are from different parts of the plant After returning home they sorted out all vegetables from the bag and discussed which vegetable is from stem which is from root and which is from flower Their mother collected keezhanelli curry leaves and coriander leaves from the garden and said that the purpose of using these leaves in cooking is to add medicinal value and arom Discuss with your teacher about the pictures given below Biology is a natural science concerned with the study of life and living organisms including their structure and functions The living world comprises of plants and animals Plants can prepare food by themselves grow in size and reproduce Various parts of the plants are used as food medicine wood and shelter Plant forms and functions Our body is made up of many organs Similarly the plant body is also made up of several organs such as root stem leaves and flowers Plants are of many forms and many colours yet they are alike in some manner That is they all have stems and leaves above the ground which we can see easily and roots below the groun As shown in the picture a flowering plant consists of two main parts They are Root system and Shoot system The underground part of the main axis of a plant is known as root It lies below the surface of the soil Root has no nodes and internodes It has a root cap at the tip A tuft of root hairs is found just above the root tip Roots are positively geotropic in nature Root system is classified into two types Taproot system and Fibrous root system b Fibrous root system It consists of a cluster of roots arising from the base of the stem They are thin and uniform in size It is generally seen in monocotyledonous plants Example Grass Paddy Maize Shoot system The aerial part of the plant body above the ground is known as the shoot system Main axis of the shoot system is called the stem The shoot system consists of stem leaves flowers and fruits Stem Stem grows above the soil and it grows towards the sunlight It has nodes and internodes Nodes are the parts of stem where leaf arises The part of the stem between two successive nodes is called internode The bud at the tip of the stem is known as apical or terminal bud and the buds at the axils of the leaves are called axillary buds Leaf The leaf is a green flat expanded structure borne on the stem at the node A leaf has a stalk called petiole The flat portion of the leaf is called leaf lamina or leaf blade On the lamina there is a main vein called midri Other veins are branched out from mid ri The portion of the leaf connected in the nodal region of the stem is known as the leaf base Leaves of some plants possess a pair of lateral outgrowth on the base on either side of axillary bu These are called stipules The green colour of the leaf is due to the presence of green coloured pigment called chlorophyll On the lower side of the leaf there are tiny pores or openings known as stomat Habitat What is a habitat Each and every organism needs a place to live and reproduce Such a dwelling place is called habitat From the depths of the ocean to the top of the highest mountain habitats are the places where plants and animals live Types of Habitats Let us study the two major types of habitats I  Aquatic habitat When we visit a pond we see some plants appear to float on water One of the common plants is the Lotus plant Its leaves float on the water There is a small frog sitting on a leaf It is ready to catch the insects flying fluttering around the flowers The stem of the plant is seen to be inside submerged the water Its roots are found within the muddy floor of the pon As this plant grows in water shall we call it an aquatic plant Aquatic habitat includes areas that are permanently covered by water and surrounding areas that are occasionally covered by water There are two types of habitat namely fresh water habitat and marine water habitat a Fresh water Habitat Rivers lakes ponds and pools are the fresh water habitats Water hyacinth water lily and lotus are seen in the fresh water habitat In these plants roots are very much reduced in size Stem and leaves have air chambers that allow aquatic plants to float in water b Marine water habitat From outer space Earth looks like an awesome blue marble that’s because more than of Earth’s surface is covered by oceans Oceans also supports the growth of plants Marine perform about of all photosynthesis that occurs on the planet Example Marine algae Sea grasses Marsh grass Phytoplanktons Terrestrial habitat Terrestrial habitats are the ones that are found on land like forest grassland and desert It also includes man-made habitats like farms towns and cities They can be as big as a continent or as small as an islan They make up about of the entire world habitat Example Evergreen forest scrub jungles Terrestrial habitat is classified into three types They are Forest Grass land Desert a Forest habitat Forest is a large area dominated by trees There are three types of forests They are Tropical forests Temperate forests and Mountain forests Annual rain fall here ranges from cm b Grass land habitat Grassland is an area where the vegetation is dominated by grasses Grasses range from short to tall Example Savanna Grasslan c Desert habitat A habitat without much water is called deserts Deserts are the driest place on earth They get less than cm of rainfall annually Deserts cover atleast of the Earth The plants which grow in this habitat have thick leaves that store water and minerals The plants like cactus store water in their stem and the leaves are reduced to spines They have long roots that go very deep in the soil in search of water Types of desert habitat include    i Hot dry deserts   Semi arid deserts Coastal deserts Cold deserts Example Cactus Agave Aloe Bryophyllum Plant Adaptations and Modifications Adaptations are special features in plants which help them to survive in the habitats they live over a long perio Plants in a specific environment have developed special features which help them to grow and live in that particular habitat In this section Let us study about someadaptations like tendrils twiners and thorns These adaptations are seen in plants which live in terrestrial and desert habitats Tendril Climbers Tendril is a twining climbing organ of some weak stemmed plants like peas and bitter gour Tendril coils round a support and helps the plant to clim Examples Sweet Peas Lathyrus Leaflets are modified into tendrils Bitter Gourd Axillary buds are modified into tendrils which help the plant to clim Twiners Some plants have weak stems They cannot stand straight on their own They must climb on any support to survive Example Clitoria and Jasmine Thorns Leaves of some plants become wholly or partially modified into sharp pointed structures called thorns or spines for defensive purpose Example Agave The leaf apex and margins are modified into thorns Opuntia The leaves are modified into spines Bougainvillea The stem has sharp thorns Unit The World of animals The National School Nallur organised a field trip to a nearby village called Anaikkadu The students were so happy to see a village with ponds streams green fields and coconut trees With the help of their teacher students were allowed to go aroun One of them saw two birds building a nest Where do the birds build nests and whyChildren saw a number of butterflies fluttering near the flowers The air was so fresh so calm so quiet and so relaxing They came across a pond in the distance It had some water Floating on the water were dark green lotus leaves A green frog was leaping from one lotus leaf to another making a croaking soun A girl spotted a rabbit with a short tail Can you make a list of the animals seen by the children Were they all similar In what way they were similar Biodiversity In the living world a lot of diversity is seen both in animals and plants Every plant and animal is unique It is called biodiversity Biodiversity may be defined as the variety and variability among living organisms and the habitats in which they live Biodiversity includes a variety of ecosystems such as those that occur in deserts forests mountains lakes rivers and agricultural fields In each ecosystem living creatures including humans form a community interacting with one another and with other animals plants air water and soil around them The living things form biotic community and non-living things form abiotic community Habitat Fishes and crabs live only in water while many animals like elephants tigers and camels live on lan The geographical features and environmental conditions on earth differ from one place to another Though camel can live anywhere it is able to live in deserts more comfortably Polar bear and penguins dwell in cold regions Living in such harsh conditions requires special features in these animals They help these organisms to live breed and excel well in that particular place Living or dwelling place of an organism is known as habitat Unicellular and Multicellular Organisms Living things are made of small units called cells All the functions and processes in the body of living things are brought about with the help of these microscopic cells Some organisms are made of a single cell and these are called unicellular organisms whereas the organisms that are made of many cells are called multicellular organisms Amoeba paramecium and euglena are unicellular organisms while fish frog lizard bird and man are multicellular organisms  Unicellular organism Unicellular organisms are small usually microscopi They cannot be seen with naked eye They are aquatic simplest and most primitive of all animals They perform all their physiological activities by the special structures present inside the body called organelles Amoeba We know Amoeba is an unicellular organism It does all the activities like digestion locomotion respiration and reproduction within the same cell It swallows food from the water and the food is digested in the food vacuole Contractile vacuoles help in excretion Respiration is by simple diffusion through the body surface They have finger-like projections called pseudopodia false foot which help in movement or locomotion Paramecium Paramecium is also a unicellular organism which lives in water and moves with the help of cili Euglena Euglena is an unicellular animal which moves with a flagellum Multicellular organisms Majority of organisms we see around us including animals are multicellular In such organisms different functions are carried out by different groups of cells or organs in their body Jelly fish Earth worm snails fish frog snakes pigeon tiger monkey and man Adatptation in Animals A Living thing can survive in a particular habitat if its body is adapted to the conditions of that habitat Plants and animals develop special characteristics or features in their body in order to survive in their habitat the surroundings The presence of specific body features for certain habitats which enable a plant or an animal to live in a particular habitat is called adaptation The fish live either in freshwater or in marine water Let us analyse the adaptations seen in fishes for their aquatic life Fish The head trunk and tail of a fish merge to form a streamlined shape The streamlined body shape helps the fish to move through the water easily The fish has special organ called gills It is a respiratory organ which helps to absorb oxygen dissolved in water for breathing It is adapted to breathe in water Most of the fishes have slippery scales all over the body which protect the body The fish has fins for fast swimming The fish has strong tail fin which acts as rudder to change direction and keep its body balance in water Frog Amphibians lead a dual mode of life living both in water and lan They are poikilothermic animals Their body is divided into head and trunk with two pairs of limbs During the larval stage frog respire with the help of gills and the adult frog respire through skin lungs and bucco-pharyngeal region Lizard Lizards are scaly-skinned reptiles that are usually distinguished from snakes by the possession of legs movable eyelids and external ear openings They mostly inhabit warm regions Most lizards are quadripedal walk with four legs and have a powerful lim Some lizards are able to run bipedally with two legs In these lizards the tail is held out backward and upward and acts as a counterweight Some lizards have the capacity to rotate the head around the head joint They breathe through lungs Most lizards eat a variety of insects like mosquitoes and cockroaches with sharp projections on the tongue adapted for grabbing and holding Some lizards Dinosaurs have web in the toes and few lizards are able to glide or parachute the air and make safe landings Birds They have streamlined body covered with feathers This body shape provides minimum resistance to air They have beak instead of mouth They breathe through lungs They have a pair of wings that are modified forelimbs They have hollow and light bones Usually we see birds fly however they can also hop move run etc on the ground and they perch well on the branches of tree with the help of a pair of clawed feet The tail of the bird helps it to control the direction of the movements They have strong chest muscles which help them withstand the pressure of the air while flapping their wings during flight At a time birds can see one object with one eye and another object with the other eye Binocular vision Camel Camel lives in hot desert where water is scarce Camel is able to survive in desert because of the following special features The camel has long legs which help it to keep its body away from the hot sand in the desert A camel can drink large amount of water when it is available and store it in the body A camel’s body is adapted to save water in the dry desert in the following ways i    A Camel passes small amount of Urine   Its dung is dry and it does not sweat  Since a camel loses very little water from its body it can live for many days without drinking water A camel’s hump has fat stored in it In case of energy requirement a camel can break down stored fat for nourishment A camel has large and flat padded feet which help it to walk easily on soft san Thus it is called Ship of the desert Camel has long eye lashes and hairs to protect its eyes and ears from the blowing dust It can keep its nostrils closed to avoid dust during sand storms in the deserts Unit Health and Hygiene The word health refers to a state of complete emotional and physical well-being Healthcare exists to help people maintain this optimal state of health As defined by World Health Organization WHO health is a state of complete physical mental and social well being and not merely the absence of disease or infirmity Health is a dynamic condition resulting from a bodys constant adjustment and adaptation in response to stresses and changes in the environment for maintaining an inner equilibrium called homeostasis Hygiene is a science of establishment and maintenance of health conditions or practices as of cleanliness conducive to health Brushing your teeth regularly is an important part of good oral hygiene Hygiene is defined as the practice of keeping yourself and your surroundings clean in order to prevent illness or the spread of diseases Components of Food Deepa’s family was preparing their monthly provision list When Deepa saw the list she had some questions to ask her parents Why do we eat comparatively more amount of rice and wheat Why do we consume less amount of oil and ghee Discuss about the given list with your teacher The chemical constituents of food which give us energy help to build our body and protect us from diseases are called nutrients The important nutrients are Carbohydrate Proteins Fats Vitamins Minerals Water Carbohydrates Carbohydrates are energy giving component of the foo We can obtain carbohydrates in the form of sugar starch and dietary fibres Fats Fat is also an energy-giving food and it provides more energy than Carbohydrates Some important sources of fats are butter ghee milk cheese paneer nuts meat fish egg yolk et Apart from giving energy they insulate our body and protect the cells Protein Proteins are necessary for our growth as well as for regulating various body functions such as digestion The sources of proteins are pulses eggs fish milk chicken soya bean nut grams etc Proteins are body building foods Vitamins Vitamins are required for carrying out various biochemical reactions in our body Fruits vegetables grains and meat products are good sources of vitamins Vitamins are called as protective foo There are six major vitamins like A B C D E and K Vitamin B and Vitamin C are water soluble Vitamins A D E and K are fat soluble Minerals Minerals are required for growth as well as for the regulation of normal body function Green leafy vegetables like spinach pulses eggs milk fish and fruits are important sources of minerals Minerals are also a protective foods Water Our body needs an adequate supply of water in order to maintain good health Any human being should take minimum eight tumblers Litres of water every day Health and Nutrients Health is a state of complete physical mental and social well-being and not merely absence of diseases Eating a healthy diet keeps you physically and mentally fit When you are physically healthy you feel confident you are more outgoing and have a greater capacity for enjoying life Unhealthy food choices lead to obesity and illness preventing you from socializing with friends and family So choose your diet carefully Balanced Diet A diet should contain adequate amount of all the necessary nutrients required for healthy growth and activity A balanced diet contains sufficient amount of various nutrients to ensure good health Balanced diet is important for the following reasons It increases the capacity to work It gives good physical and mental health It increases the capacity to resist diseases It helps in proper growth of the body Malnutrition When your diet is not balanced what would be the consequence Observe the below picture carefully Do these children look normalGuess what would be the reason These children do not have normal health because of malnutrition Malnutrition occurs when all the nutrients that the body needs are not obtained in the proper proportions from the diet The word malnutrition refers to the condition that results when a person does not take a balanced diet Malnutrition leads to deficiency diseases The diseases that are caused due to lack of nutrients in the diet are called deficiency diseases Physical Exercise Physical exercise is any bodily activity that enhances or maintains physical fitness and overall health and wellness Physical activity is important for many reasons including increasing growth and development strengthening muscles and the cardiovascular system developing athletic skills weight loss or maintenance and enjoyment Physical exercise may help to decrease some of the effects of childhood and adult obesity Rest Proper amount of rest is essential for physical and mental health Rest is as important as nutrition and physical activity for growth and development and good health Personal Cleanliness Hygiene is a set of practices performed to preserve health According to the World Health Organization WHO hygiene refers to conditions and practices that help to maintain health and prevent the spread of diseases Personal hygiene involves those practices performed by an individual to care for one’s bodily health and well being through cleanliness It includes such personal habit choices as how frequently we bathe wash hands trim fingernails and change clothing It also includes attention to keep surfaces in the home and workplace including bathroom facilities clean and pathogen-free Introduction to Microbes When you neglect personal hygiene you are increasing the risk of falling sick Let us name some of the diseases or conditions caused by microorganism due to the negligence of personal hygiene Diarrhoea Tooth decay Athlete’s foot Madurai’s foot Dandruff Do you believe that there are some organisms which you cannot see with your naked eye Yes microbes can not be seen without the help of a microscope Most of the microbes belong to four major groups Bacteria Virus Protozoa and fungi Virus Virus is an infective agent that typically consist of nucleic acid molecule in a protein coat It replicates only inside the cells of other living organisms Virus can infect all types of life forms like plant animals and microorganisms They invade living normal cells and use their cell machinery to multiply They can kill damage or change the cells and make you sick Unit Computer an introduction Boys and girls of standard VI are playing in the playground Siva Hey Salim I saw your father coming with a big parcel yesterday I guess you could have bought a new television Am I right Salim It’s not a television Siv We bought a new computer Malar Oh I see computer I had seen it used in textile shop for billing Selvi Malar not only it is used in textile shops but also in railway stations banks ATM’s and in many places It is used even in our local post offices Nancy Hey I have seen it in my school Salim Is it only in your school Nancy I think your father is also having a computer Nancy Is my father having a computer Without my knowledge I am sure that my father does not have computer He has only a mobile phone Salim That’s what I say Your father’s mobile phone is also like a computer Nancy Oh no Salim What do you mean How can a mobile phone be compared with a computer Salim Nancy we usually think that computer should be like a big TV and a box attached with it But computers are available in different shapes The works which are done with a computer can also be done using a smart phone There may be difference in their speed but their operations remain the same The big computers are shrunk into small smart phones nowadays because of the technological development Most of us think that smart phones are only to make calls because of its handy look But it is not so Selvi What about laptops and tablets Are they same like the computers we usually think of Salim Yes they are all the same There are different types of computers But their performance vary according to their capacity Siva That’s ok Salim why do you need a computer in your home What will you do in that Salim I can use it to draw paint play games and I can learn and develop my general knowledge Selvi Salim you know more about computers Salim I know very little about computers As my father uses computer in his office he knows much about it I shared very little of what I have learnt from my father All the children stood up when the teacher came and stood near them Teacher What is going onChildren We are discussing about the computer sir Teacher Oh I see that’s nice I will explain about computers in detail Firstly I will explain you what is a computer Computer is an electronic device that processes the data and Information according to our needs We can save the data and convert it into information Computers are used in many ways Malar We are eager to know who invented the computer Teacher In the beginning of the century Charles Babbage a professor in Mathematics designed an analogue computer He is known as the father of computerThe basic structure designed by him is being used in all computers Similarly Augusta Ada Lovelace is admired as the first programmer as she developed essential commands for the mathematical operations Nancy Sir can you tell us which device was used before the invention of computer Teacher In the early stage there was no computer Initially the people used a tool called abacus for calculations Later they started using a device called calculator for calculation Selvi Wow It’s really interesting sir Then when did computers come into use Sir Teacher Good question Selvi Computer didn’t come directly from abacus The computers that we use today belongs to fifth generation Nancy Oh Were there four more generations previous to this Teacher Yes Nancy you are correct Siva Sir Can you explain us about the five generations Teacher Sure I can explain In the First generation computers Vacuum tube was use In the Second generation computers they used Transistor In the Third generation computers they used Integrated Circuits In the Fourth generation computers they used Micro processor In the Fifth generation computers Artificial Intelligence is use Selvi Sir we are eager to know more about the present computers which we use Teacher Data and information are the two important elements in computers Malar Sir what is meant by data Teacher Data is the information that has to be processe It cannot be use directly by us Generally they are in the form of numbers alphabet and images Siva Sir then what is information Teacher Information is a form of processed dat Siva What is software and hardware Sir Teacher The commands or programs that are used in computer are called software This software can be divided into two types Operating software Application software Nancy What is Operating Software Teacher Software that is used to operate the computer is called operating software I think you are familiar with Windows and Linux Siva Then what is application software Teacher Application software is a software that is used to run a particular program For example the software used for painting playing games in computer Nancy Oh I have learnt much information about computers today sir Malar Ok Sir then what is hardware Teacher The parts that are available in the computer that helps the software to work is a hardware Salim Sir please tell us more about it Teacher Yes sure I will Whatever we want to send to a computer is sent through a device called input device For example the keyboard mouse and other input devices The data or information that has been sent to the computer are displayed out or reproduced through some devices These are called as output devices For example printer monitor and so on Nancy Ok Sir then what is CPU Teacher It is the central processing unit You will learn and understand more about CPU in your higher classes All Children together Thank you so much sir Today we have learnt and understood more information about computers Heat Learning Objectives To list out the sources of heat To define heat To distinguish hot and cold objects To define temperature To differentiate heat and temperature To understand the conditions for thermal equilibrium To understand why thermal expansion take place in solids To list out the practical applications of thermal expansion in day to day life Introduction We are all familiar with heat We feel it on our body when the sun shines We use heat for cooking our food We reduce the heat by adding ice cubes while preparing fruit juice Let us learn about sources of heat Sources of heat Sun We all know that the sun gives us light Does it give us heat After standing under the sun light for some time touch your hea Does it feel hot Yes it feels hot because the sun gives out heat besides light Now You can understand why it is difficult to walk bare-footed on sunny days in the afternoon Combustion Burning Heat energy can be generated by the burning of fuels like wood kerosene coal charcoal gasoline petrol oil etc In your home how do you get heat energy to cook food Friction Rub your palms for some time and then hold them to your cheeks How do you feel We can generate heat by rubbing two surfaces of some substances In the past people used to rub two stones together to light fire Electricity When electric current flows through a conductor heat energy is produce The water heater iron box electric kettle etc work on this principle Heat Molecules in objects are constantly vibrating or moving inside objects We cannot see that movement with our naked eye When we heat the object this vibration and movement of molecules increases and temperature of the object also increases Thus Heat is an energy that raises the temperature of a thing by causing the molecules in that thing to move faster Heat is not a matter It doesn’t occupy space It has no weight Like light sound and electricity heat is a form of energy In short Heat is the total kinetic energy of constituent particles of objects SI Unit of Heat is joule The unit calorie is also use Hot and cold objects In our day-to-day life we come across a number of objects Some of them are hot and some of them are col How do we decide which object is hotter than the other We use the tip of our finger to find out whether the tea in a cup has enough heat to drink or whether milk has been cooled enough to set for making curds We often determine heat by touching the objects But is our sense of touch reliable Activity Take three bowls Pour very cold water in the first bowl you can also add ice cube for cooling Place luke warm water in the secon Half fill the third with hot water not hot enough to burn Set them in a row on the table with the lukewarm water in the center Place your right hand in the cold water and your left hand in the hot water Keep them in for a few minutes Then take them out shake off the water and put both into the middle bowl How do they feel Priya says My right hand tells me that the water in the bowl is hot and the left hand tells me that the same water is cold Write down in your own words what do you experience Discuss in the class why this happens When you placed your left hand in the hot tub the heat from the bowl made the molecules on your hand vibrate faster When you keep the same hot hand in the second bowl the vibrations transferred from your hand to make the particles in the water vibrate Therefore you feel loss of heat and hence your hand feels col In the same way your right hand which was placed in cold water feels hot when you insert it into the lukewarm water Because it takes heat energy from lukewarm water So the same lukewarm water gives your hands different feeling according to the temperature of your han Measuring temperature by touching is not correct Thermometers are used to measure temperature accurately and quantitatively Cold Lukewarm Hot Temperature Definition of Temperature The measurement of warmness or coldness of a substance is known as its Temperature SI unit of temperature is kelvin Celsius and Fahrenheit are the other units use Celsius is called as Centigrade as well It determines the direction of flow of heat when two bodies are placed in contact The Temperature of Boiling Water Take water in a vessel and place the vessel on a stove Fix the thermometer as shown in figure Caution The thermometer should not touch the vessel in which the water is being heate Otherwise the thermometer will be broken at high temperature All students have to read the temperature of the water and note the reading on the blackboar Do you notice that the temperature is raising What is the temperature of water when it is boiling Does the temperature of the boiling water rise further after that When boiling water is heated for some time the water continues to receive more heat but its temperature does not rise further The point at which the water boils and temperature becomes stable is called the boiling point of water Guess and Write Check your assumption with the help of a thermometer Approximate temperature of the tea when you drink Approximate temperature of cool lemon juice when you drink Normally the room temperature of water is approximately When we heat water its temperature raises and it boils at If we cool the water it freezes at Note you have to say as degree celsius or degree centigrade Is Neela correct Beaker A and B has water at Then pour the water of A and B to an empty beaker Now What is the temperature of the water in the beaker C Neela says it will be One day in the air temperature was measured at in the shade in Libya Afric The coldest temperature in the world was measured in the Antarctic continent It was approximately The minus sign is used when the temperature falls below the freezing point of water which is If water becomes ice at C you can imagine how cold would be Our normal body temperature is Our body feels cool if the air temperature is around to degree Celsius Can you estimate the night temperature in your village or city during winter Heat and Temperature Heat and temperature are not the same thing they in fact mean two different things Temperature is related to how fast the atoms or molecules move or vibrate within the substance Heat not only depends on the temperature of the substance but also depends on how many molecules are there in the object Temperature measures the average kinetic energy of molecules Heat measures the total Kinetic Energy of the molecules in the substance Activity Take one litre water in a pan and heat it on a stove Calculate the time taken to start boiling ie the time taken to thermometer reading goes up to Take five litre water in another pan and heat it on the same stove Calculate the time taken by the water to start boiling In which pan the water starts to boil earlier One litre water Five litre water Both however show a temperature of at the boiling point Five litre water takes more time to boil ie more heat is needed to boil the larger amount of water So five litre boiling water has more heat energy than one litre water Place an open can of lukewarm water in each pan Observe their temperature to find out which can gets hotter In which can water shows quick rise in temperature Can in One litre boiled water Can in five litre boiled water You can see that five litre water pan will raise the can of water to a higher temperature Though both pans of boiling water have the temperature of the five litre water can give off more heat energy than one litre water Because it has more heat energy and gives more energy to the water in the can Total heat is measured by calorie the amount of heat needed to raise one gram of water by one degree centigrade Even though the temperature of the tea is higher than that of pond water the volume of the water in pond is very high hence the amount of molecules in the water in the pond is higher than the tea in the cup So pond has more heat energy than tea cup Flow of Heat An analogy between temperature and water level Water flows when there is a difference in the levels of water in different places It does not matter if there is more water in one place or another Water from a puddle can flow into a reservoir or the other way aroun The temperature of an object is like the water level it determines the direction in which heat will flow Heat energy flows from higher temperature to lower temperature Thermal contact and Thermal equilibrium Consider two bodies A and Let the temperature of A be higher than that of On bringing bodies A and B in contact heat will flow from hot body A to the cold body Heat will continue to flow till both the bodies attain the same temperature The temperature determines the direction of flow of heat You are holding a hot cup of coffee Would the Heat energy transfer from Your body to the coffee or The coffee to your body You are standing outside on a summer day It is outside note that normal body temperature is Would the Heat energy transfer from Your body to the air particles or The air particles to your body You are standing outside on a winter day It is outside Would the heat energy transfer from Your body to the air particles or The air particles to your body Two objects are said to be in thermal contact if they can exchange heat energy Thermal equilibrium exists when two objects in thermal contact no longer affect each others temperature For example if a pot of milk from the refrigerator is set on the kitchen table the two objects are in thermal contact After certain period their temperatures are the same and they are said to be in thermal equilibrium Expansion in solids Sam is trying to open a tight jar but he cannot open it He asks his uncle to help His uncle says that pour some hot water on the lid of the jar Sam does so and tries to open it now Wow The jar is opened easily Do you have such experience How do you open a tightly closed cap of the pen which could not be opened by you normally Most substances expand when heated and contract when coole The change in length area or volume due to contraction expansion is directly related to temperature change The expansion of a substance on heating is called the thermal expansion of that substance When substances are heated the vibration and movement are increasing The total number of molecules remain unchanging after heating Hence No Change in weight This vibration is transferred to one molecule to another and hence heat flows Solid Liquid Gas On Cooling The molecules in the substances move faster when heating spread apart and occupy more space So substances expand when heate Substances also change their states from solid to liquid Co and liquid to gas oling The molecules in the substances move faster when heating spread apart and occupy more space So substances Solid Liquid Gas Substances also change their states from solid to liquid On Heating On Heating On Cooling On Heating Water flows when there is a difference in the levels of water in different places The temperature of an object is like the water level it determines the direction in which heat will flow High Temperature Low Temperature Hammer a nail into a tin can Ease the nail out Put it in again to make sure that the hole is large enough for the nail Then holding the nail with a pair of pliers scissors or forceps heat the nail over a candle in hot water or over the stove Try to put it into the hole in the can I see that You will see that now it is hard to put the nail into the hole Heat expands solids The molecules in the solid move faster spread apart and occupy more space Linear and Cubical Expansion A solid has a definite shape so when a solid is heated it expands in all directions ie in length area and volume all increase on heating The expansion in length is called linear expansion and the expansion in volume is called cubical expansion Why is the iron rim of a bullock cart wheel heated before it is fitted onto the wheel Why is a small gap left between two lengths of railway lines We can perform an interesting experiment to find out an answer to these questions All we need to do is to heat a cycle spoke Linear Expansion Take a bulb dry cell candle cycle spoke coin or broad headed nail and two wooden blocks Place one end of the cycle spoke on a wooden block and connect an electric wire to it Put a stone over the spoke to hold it firmly in place on the wooden block as shown in Figure The spoke should be parallel to the groun Place the second wooden block under the free end of the spoke Wrap some electric wire around the coin or nail and place it on the block You may put a stone over the coin to hold it in place Connect a bulb and dry cell to the free ends of the wires connected to the coin and the spoke and make the circuit shown in the figure When the tip of the free end of the spoke touches the coin the circuit is completed and the bulb lights up Check to ensure this If the bulb does not light up it means the circuit is not complete so check your connections properly Note We will learn about electric circuit elaborately in electricity lesson Now slide a page of your book between the coin and spoke and then slide it out That way you would get a gap between the coin and spoke equal to the thickness of the sheet of paper Does the bulb light up If it does not what could be the reason You saw that the bulb does not light up when the spoke does not touch the coin Now light the candle and heat the spoke with it Did the bulb light up after the spoke was heated for some time If it did then explain how the spoke touched the coin after it was heate Why does the bulb go off some time after the candle is taken away from the spoken What happens to the length of the spoke when it is heated or cooled Cubical Expansion Take a metal ring and metal ball of such size that the ball just passes through the ring Heat the ball and check whether it passes through the ring Passed through Not passed through Now let the ball cool down and check whether it passes through the ring Passed through Not passed through Solids expand due to heat and come back to the original state if heat is removedUses of Thermal Expansion Fitting the iron rim on the wooden wheel The diameter of the iron ring is slightly less than that of the wooden wheel Therefore it cannot be easily slipped on from the rim of wooden wheel The iron ring is therefore first heated to a higher temperature so that it expands in size and the hot ring is then easily slipped over to the rim of the wooden wheel Cold water is now poured on the iron ring so that it contracts in size and holds the wooden wheel tightly Rivetting Rivets are used to join two steel plates together Hot rivet is driven through the hole in the plates One end of the rivet is hammered to form a new rivet hea When cooled the rivet will contract and hold the two plates tightly together Thermal Expansion Examples Give Reasons for the following Gaps are left in between rails while laying a railway track Gaps are left in between two joints of a concrete bridge Cracking of a thick glass tumbler Glass is a poor conductor of heat When hot liquid is poured into the tumbler the inner surface of the tumbler becomes hot and expands while the outer surface remains at the room temperature and does not expan Due to this unequal expansion the tumbler cracks Electric wires Electric wires between electric posts contract on cold days and sag in summers To solve this problem we leave wires slack so that they are free to change length Summer day Winder day Numerical problems I put a kettle containing litre of cold water on the gas stove and it takes minutes to reach the boiling point My friend puts on a small electric kettle containing litre of cold water and it takes minutes to get up to boiling point Which gives more heat in minutes the gas supply or the electricity supply Can you say how many times as much One calorie heat energy is needed to raise the temperature of the water from to How much heat energy is needed to raise the temperature of the water from to Points to remember The main source of heat is sun we can obtain heat from combustion friction and electricity Heat is an energy that raises the temperature of a thing by causing the molecules in that thing to move faster Heat is the total Kinetic energy of constituent particles of objects SI unit of Heat is joule J The measurement of warmness or coldness of a substance is known as its temperature SI unit of temperature is kelvin Temperature determines the direction of flow of heat when two bodies are placed in contact Two objects are said to be in thermal contact if they can affect each other’s temperature Thermal equilibrium exists when two objects in thermal contact no longer affect each other’s temperature Most substances expand when heated and contract when coole The expansion of a substance on heating is called the thermal expansion of that substance A solid has a definite shape so when a solid is heated it expands in all directions ie in length area and volume all increase on heating ICT Corner Heat Through this activity you will be able to understand the Thermal Energy Transfer THERMAL ENERGY TRANSFER URL http d tt pwxqwm cloudfrontnet WGBH conv conv int thermalenergy indexht intro ICT Corner Heat Step Use the given URL in the browser THERMAL ENERGY TRANSFER activity page will open Step Click the icon on the top left of the activity window a list will drop down from the list select a title Step A small flash video window will open click the play icon to play the video and observe Step From the list select any title under the Example list a small flash activity window will open click anyone of the tab given under the window to know the process of thermal transfer Repeat the activity with different titles from the menu THERMAL ENERGY TRANSFER URL http d tt pwxqwm cloudfrontnet WGBH conv conv int thermalenergy indexht intro When an object is heated the molecules that make up the object begin to move faster lose energy become heavier become lighter newton joule volt celsius One litre of water at is mixed with one litre of water at The temperature of the mixture will be An iron ball at is dropped in a mug containing water at The heat will flow from iron ball to water not flow from iron ball to water or from water to iron ball flow from water to iron ball increase the temperature of both Heat is a kind of energy that flows from a hot body to a cold body Steam is formed when heat is released from water Thermal expansion is always a nuisance Borosilicate glass do not expand much on being heate The unit of heat and temperature are the same An ordinary glass bottle cracks when boiling water is poured into it but a borosilicate glass bottle does not The electric wire which sag in summer become straight in winter Rivet is heated before fixing in hole to join two metal plates Heat Temperature Thermal Equilibrium kelvin Ice cube No heat flow Boiling water joule Heat Joule Temperature ice cube Boiling water Total Kinetic Energy of molecules Heat Average Kinetic Energy Electricity To know the sources of electricity To be aware of the equipments working on electricity To know the different kinds of electric cells and understand their applications To be able to use different types of cells in different applications To understand the symbols of circuits and apply them in different circuits To identify conductors and insulators To be able to make their own batteries Introduction We use electricity in our day to day life Have we ever wondered from where do we get this electricity How does this electricity work Can we imagine a day without electricity If you ask your grandfather you can come to know a period without electricity They used oil lamps for light cooked on fires of wood or coal By the advent of electricity our day to day works are made easy and the world is on our hands What are the appliances those work on electricity What are the materials those allow electricity to flow through What are electric circuits What are electric cells and batteries Come on let us descend into this lesson to know more about electricity Sources of Electricity Selvan and Selvi are twins They are studying in sixth standar They visited their grandparent’s village during summer vacation At Oclock in the evening Selvans Grandfather switched on the light The whole house was illuminate Seeing this Selvan asked his grandfather How do we get light by switching on the switch So his grandfather took him to the nearest electricity board and enquired about the electricity Let us look in to the conversation given below Selvan Sir How do the electric bulb lighten up when we switch on the switch Engineer Due to electricity Selvan Oh From where do we get this electricity Engineer We get electricity from thermal power hydel power tidal power wind power solar power etc as sources of electricity Selvan Sir Are these plants exist everywhere Engineer No these plants are constructed depending upon the natural resources available at that particular place For example we have thermal power plant in Neyveli Tamilnadu as lignite is available there Selvan Yes I have seen wind mills near the hills of Tirunelveli District which has potential wind resource Thank you sir for your valuable information Grandfather while walking back to home Do you think we get electricity only from the above mentioned sources Selvan while entering into the home noticing the clock on the wall Grandpa look at that wall clock How does it work Grandfather It needs electrical energy to work Apart from the above mentioned sources we get electricity from cells and batteries Selvan Yes Grandpa now I am going to discuss about all these with Selvi What do you infer from the above dialogue Any device from which electricity is produced is called the source of electricity We get electricity from different sources The Major Electric power stations in Tamilnadu are Thermal stations Neyveli in Cuddalore District Ennore in Thiruvallur District Hydel power stations Mettur in Salem District Papanasam in Tirunelveli District Atomic power stations Kalpakkam in Kanchipuram District Koodankulam in Tirunelveli District and Wind mills Aralvaimozhi in Kanyakumari District Kayatharu in Tirunelveli District Apart from these Solar panels which are prevalent in many places are used to produce electricity Let us discuss in shortly about working power stations Thermal Power stations In thermal power stations the thermal energy generated by burning coal diesel or gas is used to produce steam The steam thus produced is used to rotate the turbine While the turbine rotates the coil of wire kept between the electromagnet rotates Due to electro magnetic induction electricity is produce Here heat energy is converted into electrical energy Hydel power stations In hydel power stations the turbine is made to rotate by the flow of water from dams to produce electricity Here kinetic energy is converted into electrical energy Hydel stations have long economic lives and low operating cost Atomic power stations In atomic power stations nuclear energy is used to boil water The steam thus produced is used to rotate the turbine As a result electricity is produce Atomic power stations are also called as nuclear power stations Here nuclear energy is converted into mechanical energy and then electrical energy Wind mills In wind mills wind energy is used to rotate the turbine to produce electricity Here kinetic energy is converted into electrical energy Cell A device that converts chemical energy into electrical energy is called a cell A chemical solution which produces positive and negative ions is used as electrolyte Two different metal plates are inserted into electrolyte as electrodes to form a cell Due to chemical reactions one electrode gets positive charge and the other gets negative charge producing a continuous flow of electric current Depending on the continuity of flow of electric current cells are classified in to two types They are primary cells and secondary cells Primary Cells They can not be recharge So they can be used only once Hence the primary cells are usually produced in small sizes Examples cells used in clocks watches and toys etc are primary cells Secondary Cells A cell that can be recharged many times is called secondary cell These cells can be recharged by passing electric current So they can be used again and again The size of the secondary cells can be small or even large depending upon the usage While the secondary cells used in mobiles are in the size of a hand the cells used in automobiles like cars and buses are large and very heavy Examples Secondary Cells are used in Mobile phones laptops emergency lamps and vehicle batteries Battery Often we call cells as batteries However only when two or more cells are combined together they make a battery A cell is a single unit that converts chemical energy into electrical energy and a battery is a collection of cells Warning All experiments with electricity should only be performed with batteries used in a torch or radio Do not under any circumstance make the mistake of performing these experiments with the electricity supply in your home farm or school Playing with the household electric supply will be extremely dangerous Electric Circuits Grandfather asked Selvi to bring torchlight While taking the torchlight it fell down and the cells came out She puts the cells back and switched it on Fig A The torchlight did not glow She thought the torchlight was worn out She was afraid that grandfather might scold her She started crying Her uncle came there and asked the reason for crying She conveyed the matter Her uncle removed the cells and reversed them Fig B Now the torch glows Selvi’s face also glows Uncle told her the reason and explained her about electric circuits Inside view of torch An electric circuit is the continuous or unbroken closed path along which electric current flows from the positive terminal to the negative terminal of the battery A circuit generally has a A cell are battery a source of electric current b Connecting wires for carrying current c A bulb a device that consumes the electricity d A key or a switch this may be connected anywhere along the circuit to stop or allow the flow of current Open Circuit In a circuit if the key is in open off condition then electricity will not flow and the circuit is called an open circuit The bulb will not glow in this circuit Circuit breaks sliding switch bulb turned off Closed Circuit In a circuit if the key is in closed on condition then electricity will flow and the circuit is called a closed circuit The bulb will glow in this circuit Types of Circuits Simple Circuit Series Circuit Parallel Circuits Simple Circuit A circuit consisting of a cell key bulb and connecting wires is called a simple circuit Series Circuit If two or more bulbs are connected in series in a circuit then that type of circuit is called series circuit If any one of the bulbs is damaged or disconnected the entire circuit will not work Parallel Circuit If two or more bulbs are connected in parallel in a circuit then that type of circuit is called parallel circuit Symbols of Electric Components In the circuits discussed above we used the figures of electric components Using electric components in complicated circuits is difficult So symbols of the components are used instead of figures If these symbols used in electric circuits even complicated circuits can be easily understoo If any one of the bulb is damaged or disconnected the other part of the circuit will work So parallel circuits are used in homes Electric component Open Closed Symbol Remarks Electric cell Battery Switch-open Switch-closed Electric bulb Connecting wires Longer terminal refers positive and shorter terminal refers negative Two or more cells connectedin series Switch is in off position Switch is in on position The bulb does not glow The bulb glows Used to connect devices The flow of electric charge in a circuit is called electric circuit Simple Circuit Series circut Parallel Circuit Primary cell can be used only once Secondary cell can be recharged by passing current and used again and again Connecting wires made up of conductors and covered with insulators Electric Eel is a kind of fish which is able to produce electric current This fish can produce an electric shock to safeguard itself from enemies and also to catch its foo More to Know Ammeter is an instrument used in electric circuits to find the quantity of current flowing through the circuit This is to be connected in series Conductors and Insulators Will electric current pass throw all materials If an electric wire is cut we could see a metal wire surrounded by another material Do you know why it is so Conductors The rate of flow of electric charges in a circuit is called electric current The materials which allow electric charges to pass through them are called conductors Examples Copper iron aluminum impure water earth etc Insulators Non-Conductors The materials which do not allow electric charges to pass through them are called insulators or non conductors Examples plastic glass wood rubber china clay ebonite etc Connect the objects given in the table between A and B and write whether the bulb glows or not S l No Objects Materials of the objects Glow or not glow Pin Match stick Safety pin Pencil Metal spoon Rubber Pen Wooden scale Hairpin Glass piece Safety measures to safeguard a person from electric shock I Switch off the power supply II Remove the connection from the switch III Push him away using non conducing materials IV Give him first aid and take him to the nearest health centre More to Know Thomas Alva Edison February October was an American inventor He invented more than useful inventions and most of them are electrical appliances used in homes He is remembered for the invention of electric bul Thomas Alva Edison Produce electricity using copper plates zinc plate connecting wires key beaker and porridge rice water the older the porridge the better will be the current Arrange copper and zinc plates in series as shown in the figure Half fill two beakers with porridge Connect the copper plate with the positive of and LED bulb and zinc to the negative Observe what happens Now you can replace porridge with curd potato lemon et Points to remember Any device from which electricity is produced is called the source of electricity There are many sources of electricity such as thermal power stations hydel electric power stations wind mills atomic power station et Device that converts chemical energy into electrical energy is called a cell Electric cells are of two types depending on the continuity of flow of electric current Primary cell is a cell that is designed to be used once and discarde A cell that can be recharged many times is called secondary cell Two or more cells combined together to make a battery An electric circuit is the continuous or unbroken closed path along with electric current flows from the positive terminal to the negative terminal of the battery A circuit consisting of a cell key bulb and connecting wires is called a simple circuit If two or more bulbs are connected in series in a circuit then that type of circuit is called series circuit If two or more bulbs are connected in parallel in a circuit then that type of circuit is called parallel circuit Symbols of electrical components are used to represent complicated circuits in simple way The materials which allow electric charges to pass through them are called conductors The materials which do not allow electric charges to pass through them are called insulators or non-conductors Scientist for the People MICHEL FARADAY Michael this is our food for one week A poor blacksmith’s family in South London Humphry Davy y y yes mom I will adjust with this Recite fourth table do you o o one f f four i i hey stammering Fraday couldn’t continue his school studies because of poverty joined in book binding works Used to read those books in leisure times Your books are boun Would you please take the book Conversations on Chemistry of Jane Marcet by tomorrow I am reading that Your quest for knowledge wondering me I have the tickets for scientist Humphry Davy’s Lecture Wonderful you read that book Thanks sir Faraday continuously listen to the lectures of Humphry Davy in Royal Society Sir may I join as your assistant You have wonderfully taken my lecture notes Definitely join Just you have appointed an ordinary man Wrong Don’t discriminate Faraday did so many experiments in his leisure time He invented dynamo and designed the forerunner of the electric motor Faraday’s scientific lectures attracted the people Sure Faraday should be given SIR title Sorry I don’t want of any awards Science should be used for people To my last breath I want to be a scientist for people Two milestones in technology Take notes Sir I did those experiments too ICT Corner Electricity Through this activity you will be able to form a simple circuit Step Use the given URL in the browser Simple Circuit will open Step In right side of the activity window there are diagrams of some wires and in the left side diagrams of a battery switch and a bulb are given Step By using the mouse drag and drop the wires to the battery and switch to make connections Click on the switch if the circuit is formed correctly the bulb will glow Step Use the second URL to try Series and parallel circuits Simple Circuit’s URL http wwwphysics-chemistry-interactive-flash-animationcom electricity electromagnetism interactive simple circuithtm Series and parallel circuits url http wwwphysics-chemistry-interactive-flash-animationcom electricity electromagnetism interactive components circuits association-series parallelhtm ICT Corner Step Use the given URL in the browser Simple Circuit will open Step In right side of the activity window there are diagrams of some wires and in the left side diagrams of a battery switch and a bulb are given Step By using the mouse drag and drop the wires to the battery and switch to make connections Click on the switch if the circuit is formed correctly the bulb will glow Step Use the second URL to try Series and parallel circuits Step Step Step Pictures are indicative only Evaluation fan solar cell cell television transformer power station electric wire television silver wood rubber plastic In a parallel circuit the electricity has more than one path To make a battery of two cells the negative terminal of one cell is connected to the negative terminal of the other cell The switch is used to close or open an electric circuit Pure water is a good conductor of electricity Secondary cell can be used only once Symbol Description open key cell bulb glows battery bulb does not glow A CELL A DEVICE ELECTRICAL ENERGY IS CALLED IN TO CHEMICAL ENERGY THAT CONVERTS In the given circuit diagram which of the given switch s should be close So that only the bulb A glows Human body is a good conductor of electricity Rahul wants to make an electric circuit He has a bulb two wires a safety pin and a piece of copper He does not have any electric cell or battery Suddenly he gets some ide He uses a lemon instead of a battery and makes a circuit CONDUCTORS INSULATORS Changes Around Us To recognize and enlist a few changes that happen in our day-to-day life To classify the observed changes as slow fast reversible irreversible physical and chemical changes desirable undesirable natural human made To explain the process of dissolution To distinguish between a solvent and a solute Observe the pictures in the previous page and fill in the gaps Ini� al stage Changing stage Seed Sapling Night Rock raw fruit Introduction What is a change The process in which something becomes different from what it was earlier It is the observable difference between initial state and the final state of any substance Change is the law of nature In our day to day life we see many changes around us Weather changes periodically daily seasonly season change periodically A paper burns readily while it takes a few days for an iron nail to rust It takes a few hours for milk to turn into curd but vegetables get softened in a few minutes when cooke The what happense during a change said changes are accompanied by change in properties like shape colour temperature position and composition Some changes can be observed while some are not possible to notice Can you list some of the changes that you have observed in your daily life Classification of Changes There are different types of changes that occur around us Some changes take place very quickly while others take hours days or even years Some changes are temporary while some others are permanent Some changes produce new substances while others do not Some changes are natural while others are made by human beings Some changes are desirable to us but some changes are not desirable We shall now try to classify changes on the basis of certain similarities and differences slow and fast changes reversible and irreversible changes physical and chemical changes desirable and undesirable changes natural and man made changes Slow and Fast changes Slow changes Changes which take place over a long period of time hours days months years are known as slow changes Examples growth of nail and hair change of seasons germination of see Fast Changes Changes which take place within a short period of time seconds or minutes are known as fast changes Examples Bursting of balloon breaking of glass bursting of fire crackers burning of paper Reversible and Irreversible changes Reversible change Changes which can be reversed to get back the original state are known as reversible changes Examples Touch me not plant Responding to touch stretching of rubber band melting of ice Touch me not plant Try to make a boat and an aeroplane one by one using the same piece of paper This means the change of shape discussed here is reversible Irreversible change Changes which cannot be reversed or to get back the original state are known as irreversible changes Burning of a candle Piercing a balloon with a pin Examples Change of milk into curd digestion of food making idly from batterPhysical and Chemical Changes Take an apple and cut it into two halves Cut one half into pieces and share it with your friends Is there any change in the composition of the apple while cutting No only the shape and size have change This can be called a physical change Leave the other half on the table for some time You can see brown patches formed on the cut surface because of the reaction between some substances in the apple and the air around it This is a chemical change Physical changes Physical changes are the temporary changes in which there is change in the physical appearance or physical state of the substance but not in its chemical composition Here no new substance is forme Example Melting of ice the solution of salt or sugar stretching of rubber ban Let us now understand the physical changes that take place in water You already know that water exists in three states as solid liquid and gas Change of state takes place either by heating or cooling By heating energy is supplied and by cooling energy is taken away These are the reasons for the changes Let us name a few processes connected with the changes in states of water Change Process ice into water on heating melting water into steam on heating vapourisation steam into water on cooling condensation water into ice on cooling freezing The change of state from solid to gas directly is called sublimation Example Camphor Let us understand one more physical change Dissolution The spreading of the solid particles broken into individual molecules among the liquid molecules is called as dissolution Solvent is a substance that dissolves the solute Solute is a substance that is dissolved in a solvent to make a solution When solute is dissolved in a solvent it forms a solution Solute Solvent Solution Water is known as the universal solvent It dissolves a wide range of substance Take half a cup of water add one spoon full of sugar and stir well Chemical changes Chemical changes are the permanent changes in which there is a change in the chemical composition and new substance is forme Examples Burning of wood Popping of popcorn Blackening of silver ornaments and Rusting of iron Physical Change Chemical Change No new substance formed New substance formed No change in the chemical composition There a is change in the chemical composition It is a temporary change It is a permanent change It is reversible It is irreversible Look at the pictures and write whether they are physical or chemical changes Desirable and Undesirable Changes Look at the pictures and write whether they are desirable or undesirable changes forest fire decaying of fruit egg to chicken Wind mills Desirable changes The changes which are useful not harmful to our environment and desired by us are known as desirable changes Examples Ripening of fruit growth of plants cooking of food milk changing to cur Undesirable changes The changes which are harmful to our environment and not desired by us are known as undesirable changes Examples Deforestation decaying of fruit rusting of iron Natural and human made changes Identify the type of changes Floods Planting of seedlings Carpentry Land slides Natural changes Changes which take place in nature on their own and are beyond the control of human beings are known as Natural changes Examples Rotation of the earth Changing phases of the Moon Rain Human made or artificial changes The changes which are brought about by human beings are known as human made or artificial changes They will not happen on their own Examples Cooking Deforestation Cultivating crops construction of buildings Points to remember Everything in this world undergoes changes Changes occur in position shape size state colour temperature composition etc Fast change short period of time Slow change long period of time Reversible change can go back to its original state Irreversible change cannot go back to its original state Desirable change changes that are useful and harmless to our environmental Undesirable change changes that are harmful to our environment Natural change changes that take place in nature on their own Human made change changes that are brought about by human beings A solute when dissolved in a solvent makes a solution The process of dissolving the solute in solvent is called dissolution Changes Around Us ICT Corner Through this activity you will be able to understand reversible irreversible changes Step Use the given URL in the browser Reversible and irreversible changess page will open Use the arrow marks on both sides of the substance to choose another substance to test Step Click and drag the substance into the beaker observe whether it dissolves or not Click the Dissolving Reversing button to switch between the both activities Step In the Reversing activity with some substances you can choose either to cool or to Heat them With other substances you can choose either to Heat or to filter them by clicking the respective buttons Step Click on the Reset button to clear Reversible and irreversible changess URL http wwwbbccouk schools scienceclips ages rev irrev changes fssht Pictures are indicative only Evaluation position colour physical state composition Chemical change Undesirable change irreversible change physical change a reversible change a fast change an irreversible change an undesirable change rusting change of seasons earthquake flooding reversible change fast change natural change human made change Growing of teeth in an infant is slow change Burning of match stick is a reversible change Change of new moon to full moon is human made Digestion of food is a physical change In a solution of salt in water water is the solute Curdling of milk irreversible change Formation of clouds change Photosynthesis change burning of coal Human made change Dissolution of glucose reversible change Digestion of food change Cooking of food desirable change decaying of food change Burning of matchstick change Rotation of the Earth Slow change Growth of a child Blinking of eye Rusting Germination of a seed Glowing of a bulb lighting of a Candle breaking of a coffee mug curdling of milk Rotting of an egg condensation of water vapour trimming of hair Ripening of fruit Inflating a balloon popping a balloon fading of wall paint burning of kerosene Give one example for each case that happens around you Slow and fast change Reversible and irreversible change Physical and chemical change Natural and man-made change e Desirable and undesirable change When a candle is lit the following changes are observe Wax melts Candle keeps burning The size of the candle decreases The molten wax solidifies Air Uses of air Composition Experimental verication of Oxygen Nitrogen and Carbon-di-oxide Atmosphere and its layers Air for the survival of plants animals Air is everywhere Burning Combustion Composition Experimental verication of Oxygen Nitrogen and Carbon-di-oxide Learning Objectives To identify the components and uses of air To develop skills in performing experiments and arriving at conclusions To clarify the role of oxygen in the process of burning To realize the significance of air for the survival of plants and animals on earth To appreciate the need of air in protecting our atmosphere Introduction Air is present everywhere around us We cannot see air But we can feel its presence in so many ways For example we feel air when the trees rustle clothes hanging on a clothes-line sway pages of an open book flutters when the fan is switched on when kites fly in the sky We cannot see touch or taste air but we can feel it It is the air that makes all these movements possible Thus we can understand that air is present all around us Air is necessary for us to live We can live without food for some days without water for a few hours but cannot survive without air for more than a few minutes So air is very important for all living beings to survive When air is moving it is called win It is cool and soothing as breeze When air moves with force it can even uproot trees and blow off the roof tops Air is necessary for breathing and also for combustion Shall we do an activity Air is everywhere Let us take an empty glass bottle Is it really empty or does it have something inside Now shall we turn the glass bottle upside down Can you agree that there is still something inside the empty glass bottle Let us do the following activity to find what is there inside an empty glass bottle Dip the open mouth of the bottle into the trough filled with water Now tilt the bottle slightly Now again dip the open mouth of the bottle You can see bubbles coming out of the bottle When you perform the experiment can you hear the bubbly sound can you now guess what was inside the bottle Yes you are right It is air that was present in the bottle The bottle was not empty at all In fact it was filled completely with air even when you turned it upside down That is why we notice that water does not enter the bottle when it is pushed in an inverted position as there was no space for air to escape When the bottle was tilted the air was able to come out in the form of bubbles and water filled up the empty space that the air has occupie Hence we can see that air fills all the space inside the bottle Atmosphere Our earth is surrounded by a huge envelope of air called the atmosphere Atmosphere extends to more than km above the surface of earth and is held in place by the earth’s gravity The atmosphere protects us from many harmful rays coming from the sun The air envelope is thicker near the earth’s surface and as we go higher the density and the availability of air gradually decreases This is because as we go higher the force of gravity decreases so it is not able to hold large amount of air The atmosphere is made of five different layers the troposphere the stratosphere the mesosphere the ionosphere and the exosphere The troposphere is the layer closest to the earth It is the layer in which we live It extends upwards for about km above the surface of the earth Movement of wind takes place in this layer It also contains water vapour which is responsible for making clouds This layer is responsible for the weather we experience on earth Aircrafts usually fly above this layer to avoid strong winds and bad weather The stratosphere lies above the troposphere This layer has the ozone layer in it The ozone layer protects all life on earth from the harmful ultraviolet rays of the sun A weathercock shows the direction in which the air is moving at a particular place Candle Glows Candle is put-o as there was no oxygen Mouse is inserted Mouse died as there was no oxygen in candle glass jar Mint plant is introduced Candle continued to glow because mint provides oxygen Candle glows mouse survies with a mint plant inside You can also make a wind sock to find the direction of the windExperimental verification of presence of Oxygen Carbon-di oxide and Nitrogen in Air Is air a thing or a composite mixture For long time that is until eighteenth century human thought air as a fundamental constituent of matter However an ingenious experiment conducted by Joseph Priestley in showed that air is not an elementary substance but a composition or mixture of gases He was also able to identify a colourless and highly reactive gas which was later named oxygen by the great French chemist Antoine Lavoisier Priestley took a tub of water and made a float and placed a candle on it He covered the candle with a glass jar As the bottom portion of the jar was filled with water no air can enter or exit and hence the jar was completely sealed Fig As you would have guessed the candle flame was extinguished in a very short time He used a magnifying glass to focus the sun rays to light the candle Thus he tried to relight the candle many times without opening the sealed jar Fig The candle could not be relit What can we make out of it It was clear that something in the air was being used for burning and being converted into another substance Once the substance in the air that was aiding the burning was completely used by the burning flame and converted into another substance the flame went out Later chemist named the substance necessary for burning as oxygen and during the process of burning oxygen is converted mostly into carbon dioxide Now as the jar was inside the water Priestley could gently lift the jar and place a live mouse inside it without allowing outside air to enter the jar Fig Without oxygen as you would have guessed the mouse died Fig It was clear that oxygen was necessary for the survival of the mouse In the next step he gently lifted the jar and placed a mint plant Fig Note Look at the Figure you could see that the plant is inserted into the bell jar when the jar is very much inside the water This is done to ensure that the outside air is not entering into the bell jar Plant being a living thing like mouse perhaps he thought would die Instead the plant survive After placing the mint plant he lit up the candle and it continued to burn Fig In fourth experiment he took a jar burned a candle and converted all oxygen into carbon dioxide He placed a mint plant and a mouse into this jar Both the plant and the mouse survived Fig He found that plants and animals have a synergy Animals consume oxygen and release carbon-di-oxide and plants take up carbon dioxide and release oxygen During Jan Ingenhousz showed that sunlight is essential to plants to carry out photosynthesis and also to purify air that is fouled by breathing animals or by burning candles From these experiments it was clear that air is a composite mixture of many gases like oxygen and carbon di-oxide Proof for release of oxygen in photosynthesis Take a healthy branch of Hydrilla and place it in a funnel Invert the funnel in a beaker of water as shown in the figure Invert a test tube over the stem of the funnel The stem of the funnel should be kept immersed inside the water Leave the beaker in sunlight for some time You will notice some bubbles rising in the test tube The bubbles contain oxygen released by the plant during photosynthesis If we show a glowing splinter to the collected air it burns brightly This shows that the collected gas is oxygen Test for the proportion of oxygen and nitrogen in air We know that iron undergoes rusting with oxygen and forms iron oxide This process can be used to estimate the percentage of oxygen in air which has been removed by the rusting reaction Take a small portion of iron wool press it into a graduated test tube and wet it with water Tip away excess of water Take a beaker and fill half of the beaker with water Invert the test tube and place it in air Leave the arrangement at least for a week without making any disturbance to the test tube Observe the changes that had happened in the iron wool and to the level of water inside the test tube We could see that the water level has increased inside the test tube The rise in water is because of oxygen in air which has been removed by the rusting reaction This will be about which is approximately the percentage of oxygen in the air More to Know Daniel Rutherford a Scottish chemist discovered nitrogen He removed oxygen and converted it into carbon-di-oxide using an inverted bell jar using a burning candle He passed this air without oxygen through lime water and removed carbon-di-oxide also Once the carbon-di-oxide was removed in that air neither a candle burned nor a plant breathe Hence he was sure that the remaining air that he had did not have oxygen and carbon-di-oxide He was able to produce a gas which showed the same property of the air without oxygen and carbon-di-oxide Hence this gas was named nitrogen Test for Carbon-di-oxide in air Pour some lime water in a glass tumbler Bubble some air using a straw through the limewater After a few minutes look at the lime water carefully The lime water will produce a white precipitate and that the lime water will eventually turn to a milky white solution This shows the presence of carbon-di-oxide in air Composition of Air From Priestleys experiment which was followed by Ingenhousz and Rutherford we came to know that air was not just one substance We will now describe what air is made up of This is called composition of air The major component of air is nitrogen Almost four fifth of air is nitrogen The second major component of air is oxygen About one fifth of air is oxygen In addition to nitrogen and oxygen gases air also contains small amount of carbon di oxide water vapour and some other gases like argon helium et The air may also contain some dust particles The composition of air in terms of percentage of its various components can be written as follows The composition of air changes slightly from place to place and also from season to season For example Air over industrial cities usually has a higher amount of carbon-di-oxide in it than the air over open spaces Air in coastal areas may have more water vapour than inland areas Air also contains more water vapour in rainy season The amount of dust in the air is more in windy places than other areas Test for the presence of dust particles in air You might have seen the sunlight entering into a dark room through a narrow slit and making shiny dust particles dancing merrily on the path of sunlight Actually the air in a room always contains some dust particles but they are so small that normally they are not visible to us When a beam of sunlight falls on them the tiny dust particles become visible Shall we do an activity to calculate the amount of dust particles in air from our area Take a graph sheet Using marker pens draw a x cm square on the graph Apply a thin film of grease on the graph sheet This sheet will serve as dust collector Make four or five graph sheets Discuss in the whole class as where to place the dust collectors how long to collect dust particles and place the dust collectors in agreed positions Ensure that the dust collectors do not get blown away After the time scheduled for performing this activity is reached remove the paper and count the number of collected dust particles in the marked area in all the sheets using a magnifying glass at the dust collector We can see something similar to the diagram below Then calculate the mean number of dust particles in the marked are The range of the dust can also be calculated as given below Range Maximum value minimum value Collect details from all the areas where we have kept the dust collector sheets Tabulate the recordings in the table given below Location of dust collector Mean number of dust particles per small square Range Test for water vapour in air Take a few ice cubes in a glass Keep it on the table for a few minutes Observe what happens You could see tiny droplets of water all over the outer surface of the glass From where do these droplets come The water vapour present in the air condenses on the cold surface of the glass This shows that air contains water vapour Burning and Combustion When we burn a candle paper kerosene coal wood or cooking gas LPG oxygen is neede The oxygen needed for the burning of candle paper kerosene coal wood and cooking gas comes from the air around us Thus for burning a substance continuously so as to make fire a continuous supply of fresh air is neede If we cut off the supply of fresh air to a burning substance then the burning substance will not get oxygen necessary for burning to continue and hence the substance will stop burning In rockets as they go high in the atmosphere the availability of oxygen is considerably reduce Therefore in rockets along with the fuel oxygen is also carried for combustion The process of burning of a substance in the presence of oxygen and releasing a large amount of light and heat is called burning If the process does not emit flame then it is called combustionOxygen is necessary for burning Place two candles on a table Ensure that both the candles are of same size and height Mark them as candle and candle using a chalkpiece Light both the candles Now cover candle with glass tumbler as shown in the figure Observe the happenings at both the candles Let us summarize the happenings The candle continues to burn unless it is blown off by strong moving air or any other external force This is because fresh air is continuously available to the candle for its burning process Candle glows for a while and then gets put off When the burning candle is covered with a glass tumbler the candle can use the oxygen available in the air inside the glass tumbler Since only a small amount of air is present inside the glass tumbler only a small portion of oxygen is available for the candle to continue glowing When all the oxygen of the air inside the gas jar is used up then the burning candle gets extinguishe Now repeat the candle glowing experiment taking four containers of different sizes For example you can take a conical flask a bottle a one litre jar a two litre jar Cover the burning candle one by one with these containers and find out how long it takes for the candle to extinguish in each case Record your observations in the following table S No Volume of the container Time taken for candle to extinguish second Importance of air for survival of plants and animals Respiration in plants Plants require energy for their growth and hence respiration also occurs in plants During respiration plants take in oxygen and release carbon di oxide just as animals do Gaseous exchange with air in atmosphere takes place in plants with the help of tiny holes called stomata present on their leaves Photosynthesis Plants manufacture food by a process called photosynthesis During photosynthesis carbon-di-oxide from the air and water from the soil react in the presence of sunlight to produce foo Most plants possess a green pigment called chlorophyll and it is also used-up in the process of photosynthesis The word equation given below explains the process of photosynthesis Sunlight Carbon-di-oxide water Food Oxygen Chlorophyll Plants release oxygen during photosynthesis which is much more than the oxygen consumed by the plants during respiration Respiration in Animals When we breathe in air the oxygen present in the air reacts chemically with digested food within the body to produce carbon-di-oxide gas water vapour and energy This energy is required to carry out many processes in the body such as movement growth and repair This process by which oxygen reacts with digested food to form carbon-di-oxide water vapour and energy is called respiration The process can be represented by a word equation as given below Food Oxygen Carbon-di-oxide water Energy Carbon-di-oxide formed during respiration dissolves in the blood and is exhaled out of the body through the lungs The inhaled and exhaled air thus contain the same substances but in different proportion except nitrogen which is present in the same amount Inhaled air contains more oxygen while the exhaled air contains more carbon-di-oxide Let us have a look at the following table to compare the composition of air in inhaled and exhaled air Component Inhaled air Exhaled air Nitrogen Oxygen Carbon-di oxide Water vapour Variable amount amount increases in exhaled air Noble gases Dust Variable amount none Temperature Room temperature Body temperature Respiration of plants and animals in water The water of ponds lakes rivers and seas have some amount of dissolved air containing oxygen in it The plants and animals that live in water use the oxygen dissolved in water for breathing For example frogs respire through their skin fish respire using their gills When carbon-di-oxide is cooled to C it directly becomes a solid without changing to its liquid state It is called dry ice and is a good r e f r i g e r a t i n g agent Dry ice is used in trucks or freight cars for refrigerating perishable items such as meat and fish while transporting them Uses of Air Air is used by plants and animals for breathing Air is used for burning fuels like wood coal kerosene LPG et Compressed air is used to fill tyres of various kinds of vehicles Air plays an important role in maintaining the water cycle in the nature Ozone layer present in the atmosphere helps in preventing harmful radiations of the sun from reaching the earth’s surface Under extra ordinary conditions such as a patient having breathing difficulties a mountaineer climbing a high mountain a diver going deep into the sea oxygen gas cylinders are used for breathing purposes Blowing air is used to turn the blades of wind mills The wind mills are used to draw water by running pumps run flour mills and to generate electricity Points to Remember Air is every where around us Our earth is surrounded by a huge envelope of air called the atmosphere The process of burning of a substance in the presence of oxygen and releasing a large amount of light and heat is called combustion Priestley helped us in understanding the presence of oxygen in air that is produced by plants during photosynthesis which can be used by animals for respiration Ingenhousz experiment helped us to know the role of sunlight in evolving Oxygen during photosynthesis Air contains Nitrogen Oxygen of carbon-di-oxide water vapour Noble gases and dust particles Composition of air changes slightly from place to place and also from season to season In plants Sunlight Carbon-di-oxide water Food Oxygen Chlorophyll In animals Food Oxygen C a r b o n d i o x i d e water Energy Aquatic plants and animals use oxygen dissolved in water for breathing Ozone layer present in the atmosphere helps in preventing harmful radiations hitting the earth directly ICT Corner Air Through this activity you will be able to understand the atomic level of the process that plants use to convert solar energy into chemical energy Step Use the given URL in the browser Illuminating Photosynthesis page will open Step Three buttons given on the top of the activity window to explore Click the The Cycle button in this window you can open the curtain and water the plant by click on the curtain and the watering pot Step Explore the atomic level process of the photosynthesis by clicking the Atomic Shuffle button Step Click Replay to view the process again and Next to view the next level of the process Illuminating Photosynthesis URL http wwwbbccouk schools scienceclips ages rev irrev changes fssht Evaluation Stomata Chlorophyll Leaves Flowers Nitrogen carbon-di-oxide Oxygen water vapour provides colour to the food provides oxygen to the food adds proteins and minerals to the food keeps the food fresh INitrogen II carbon-di-oxide III Noble gases IV Oxygen Inhaled air contains a large amount of carbon-di-oxide Planting trees help in decreasing global warming The composition of air is always exactly the same Whales come up to the water surface to breathe in oxygen The balance of oxygen in atmosphere is maintained through photosynthesis in animals and respiration in plants Moving Air Photosynthesis Layer in which we live Troposphere Stratosphere Wind Oxygen Ozone layer carbon-di-oxide Combustion Plants manufacture food by a process called photosynthesis Plants require energy for their growth Plants take in oxygen and release carbon-di-oxide just as animals Plants take carbon-di-oxide from the atmosphere use chlorophyll in the presence of sunlight and prepare foo Such oxygen is available to animals and human beings for breathing During this process oxygen is released by plants The Cell CLASSIFICATION OF CELL Types of cells Prokaryotic cells No true nucleus Bacteria Cyanobacteria A true nucleus Eukaryotic cells Plant cells Animal cells To know that all living things are made up of cells To observe the cell structure using microscope To understand the structure of a cell To explain the components of a cell To understand the structural difference between animal and plant cell Introduction Observe the two pictures given above Do you observe any similarity between them Close your eyes and imagine a brick wall What is the basic building block of the wall A single brick of course Like a brick wall your body is composed of basic building blocks and are named as Cells The cell is the basic structural and functional unit of every living organism The cell is self-sufficient to carry out all the fundamental and essential functions of an organism The Cell All living things are made of one or more cells There are variety of cell types however they all have some common characteristic features Can you see a cell with your naked eye Cells are very minute and said to be microscopic and cannot be seen with our naked eyes They can be observed only through a specialized scientific instrument called microscope Now a days an electron microscope is used to magnify and observe the cells Discovery of the cell The Englishman Robert Hooke was a scientist mathematician and inventor He improved microscope which was used in those days and built a compound microscope He placed water-lens beside the microscope to focus the light from an oil-lamp on specimens to illuminate them brightly So that he was able to see the minute parts of the objects clearly One day Hooke made thin sections of the cork and observed them through his microscope He observed many small identical chambers which were hexagonal in shape He was surprise After that he observed many objects like Butterflys wings Bee’s compound eyes etc Flame Water Lens Brightly lit specimen Compound Microscope One day Hooke made thin sections of the cork and observed them through his microscope He observed many small identical chambers which were hexagonal in shape He was surprise After that he observed many objects like Butterflys wings Bee’s compound eyes etc Based on this observations Hooke published a book named Micrographia in the year where he first used the term Cell He described the structure of tissue using the term cell In Latin the word cellua means a small chamber The branch of science that deals with the study of cells is called Cell Biology The Structural Organization Of The Cell A typical cell consists of three major parts An outer cell membrane A liquid cytoplasm A nucleus Analogous to the bodys internal organ like eyes heart lungs etc organelles are specialized structures and perform valuable functions necessary for normal cellular operation Many distinct structures called Organelles lie within the cell Size of the cell The size of cells may vary from a micrometer a million of a metre to a few centimeters Most cells are microscopic and cannot be seen with the naked eye They can be observed only through the Microscope Smallest size of the cell is present in Bacteri The size of the bacterial cell ranges from micrometer to micro meter Aim To observe the structure of a single cell Hen’s egg Materials Needed A Hen’s egg and a plate Method Crack the shell and break open the egg in a plate Observation The egg has a yellow part and a transparent part surrounding it The white transparent part albumin is jelly-like and represents the cell’s cytoplasm while the yellow part yolk is thicker and represents the cell’s nucleus On the internal side of the shell can be seen a thin membrane like structure which represents the cell membrane On the other hand the largest cell is the egg of an ostrich with millimeter width We can see this with the naked eye In Human body the nerve cells are believed to be the longest cells Activity Aim To observe the structure of a single cell Hen’s egg Materials Needed A Hen’s egg and a plate Method Crack the shell and break open the egg in a plate Observation The egg has a yellow part and a transparent part surrounding it The white transparent part albumin is jelly-like and represents the cell’s cytoplasm while the yellow part yolk is thicker and represents the cell’s nucleus On the internal side of the shell can be seen a thin membrane like structure which represents the cell membrane Cell size has no relation to the size of an organism It is not necessary that the cells of say an Elephant be much larger than those of a Mouse Shapes Cells are of different shapes For example some shapes are given in the below pictures Nerve cell Red Blood cell Muscle cell Number The number of cells present in different organisms may vary Organisms may be either unicellular single cell or multicellular Organisms such as Bacteria Amoeba Chlamydomonas and Yeast are unicellular On the other hand organisms such as Spirogyra Mango and Human beings are multicellular ie made up of a few hundreds to millions of cells Approximate number of cells in the Human body is X or Ranges of cell size From small to Large Eukaryote Membrane enclosed nucleus Nucleolus Mitochondrion Ribosomes Cell membrane Virus Bacterium cell Plant cell Egg of Human Egg of Frog Egg of Hen’s Egg of Ostrich TYPES OF CELL Generally cells are classified into two types First one is Prokaryotic cell It has no true nucleus and no nuclear membrane Another one is Eukaryotic cell It has true nucleus consisting of nuclear membrane Prokaryotic cell The unicelluar organisms like Bacteria has Prokaryotic cells It has no true nucleus This type of nucleus is called as nucleoi No nuclear membrane is around this nucleoi These cells were the first form of life on Earth It is ranging from to micro meter in diameter Escherichia coil bacteri Ranges of cell size From small to Large Eukaryote Membrane enclosed nucleus Nucleolus Mitochondrion Ribosomes Cell membrane Virus Bacterium cell Plant cell Egg of Human Egg of Frog Egg of Hen’s Egg of Ostrich Outer Membrane Inner Membrane Chromosome Flagellum Structure of Prokaryotic cell EgEscherichia coli Eukaryotic cell Cell which has true nucleus is called as eukaryotic cell It is bigger than prokaryotic cell It’s organelles are bounded by membrane Ex Plantsanimals most of the fungi and algae Aim To observe onion peel cells under a microscope Materials Required Glass slide cover slip onion iodine solution knife and microscope Procedure Take an onion and cut it into two halves along its length Take out one of its fleshy leaves With the help of a pair of forceps remove a transparent thin peel from the inner surface of the leaf Take a glass slide and put a drop of water at the centre Place the peel on the drop of water Pour a drop of iodine solution on the peel Now place a cover slip over the material Observe under the microscope Observation You will be able to see rectangular cells of the onion peel with a nucleus in each of them Differences between Prokaryotic cell Eukaryotic cell Prokaryotic cell Eukaryotic cell It’s diameter ranges from to micron It’s diameter ranges from t micron Absence of membrane bound organelles Presence of membrane bound organelles Nucleus is not surrounded by nuclear membrane True nucleus is surrounded by nuclear membrane Absence of nucleoli Presence of nucleoli Plant cell and Animal cell Both plant and animals are made up of cells Both cells are eukaryotic in nature having a well defined membrane bound nucleus Plant cell It is usually larger in size It is hard in nature Plant cells have a cell wall in addition to their cell membrane Plant cells have chloroplast which contain chlorophyll Plant cells have large vacuoles Centrioles are absent Animal cell Animal cells are generally smaller than plant cells It is not so hard as plant cell Cell wall is absent Chloroplast is absent An animal cell may have many small vacuoles Centrioles are found in animal cells Dimension cell structure How does a cell look like What is its shape and size The above cell shows a three dimensional view We can see the three sides of the cell structure You can also view the size shape and location on the organelles of the cell D view is appealing because it is more like reality In D view we can see the entire view of the cell It exposes the accurate size and shape and shows the correct location of the cell organelles Activity Aim To rectify the variation between D shape and D shape Materials required Polythene bag water marble ball golli gundu Procedure Take a polythene bag with water Put a marble ball into the polythene bag Then draw a picture in your note book about this task If you draw a picture in round shape It will be called Dimensional picture If you draw a picture in spherical shape it is called Dimensional Result Now you can realize your misconception So the animal cells are spherical in shape and structure not in a round shape Cell Membrane Nucleus Nucleolus Mitochondrion Cytoplasm Golgi Complex Endoplasmic Reticulum Animal Cell Mitochondria Centrioles Golgi apparatus Endoplasmic recticulum Rough Nucleous Nucleus Cytoplasm Plasma membrane Cell components and their functions SNo Cell Components Main Functions Special Name Cell wall Surrounds and protects the cell Make the cell stiff and strong Supporter and protector Cell membrane Holds and protects the cell Controls the movement of materials in and out of the cell Gate of the cell Cytoplasm A watery gel-like material in which cell parts move Area of movement Mitochondria Produce and supply most of the energy for the cell Power house of the cell Chloroplasts Contain green pigment chlorophyll Capture the energy of sunlight and use it to produce food for the cell by photosynthesis Food producers for the cell Plant cell Vacuoles Store food water and chemicals Storage tanks Nucleus Acts as brain of the cell Regulates and controls all the cell activities Control centre Nucleus membrane Surrounds and protects the nucleus control the movement of materials in and out of the nucleus Gate of the nucleus Points to Remember Cells are the basic units of all living organisms There are two major cell types such as prokaryotic and eukaryotic cell Both plant and animal cells have unique organelles which are capable of carrying out specialized functions Plant cells have two unique components such as cell wall and chloroplasts compared to animal cells ICT Corner The Cell Through this activity you will be able to understand the differences between Plant and Animal Cell their organelles and their functions What do Cells do URL http sepuplhsorg high sgi teachers cell simht ICT Corner The Cell Step Use the given URL in the browser What do Cells do Page will open Click the Start Button to begin the activity Step Click continue to proceed to the activity a column with cell organelles is given Your task is to build a plant cell and animal cell Roll the mouse over each organelle to learn about it Step Use the mouse to drag the appropriate organelles to build the cell Step After finishing the animal cell continue the same process to finish the plant cell Step Step Step Evaluation centimeter millimeter micrometer meter a plant cell an animal cell a nerve cell a bacteria cell Cell wall Nucleus Vacuoles Chloroplast Yeast Amoeba Spirogyra Bacteria A cell is the smallest unit of life Nerve cell is the longest cell Prokaryotes were the first form of life on earth The organelles of both plants and animals are made up of cells New cells are produced from the existing cells Control center Cell membrane Food producer Plant cell Mitochondria Gate of the nucleus Nucleus Gate of the cell Chloroplasts Energy producer Nuclear membrane Elephant Cow Bacteria Mango Rose plant Hens Egg Ostrichs egg Insects egg Prokaryote Bacteria Eukaryote Spirogyra Plant cell Amoeba Food producer Chloroplasts Power house Human Organ systems To understand the structure and function of organs and organ systems of human body To gain knowledge of various human body systems and their coordination To understand the importance of the life processes such as Digestion Absorption Respiration Excretion Introduction Organ systems are formed by the association of organs which are organized from tissues This kind of organization helps the organism to perform various activities more efficiently A group of organs that work together to perform a particular function is known as an organ system The Human body has eight major organ systems They are Skeletal System Muscular System Digestive System Respiratory System Circulatory System Nervous System Endocrine System Excretory System In this lesson let us study more about the structure and function of these organ systems of our body Skeletal System The skeletal system consists of bones cartilages and joints Bones provide a frame work for the body Bones along with muscles help in movements such as walking running chewing and dancing etc The adult human skeletal system consists of bones and few cartilages ligaments and tendons Ligaments help in connecting bone to bone Tendons connect bone to muscle The two major divisions of the skeletal system are Axial skeleton and Appendicular skeleton Axial skeleton forms the upright axis of the body which includes Skull Vertebral column Rib cage Appendicular skeleton consist of the bones of the limbs along with their pectoral and pelvic girdles Skull The skull is made up of cranial bones and facial bones It protects the brain and the structures of the face The hyoid bone present at the base of the buccal cavity and the auditory ossicles Malleus Incus and Stapes are also included in the skull Lower jaw bone is the largest and strongest bone in the human face Activity Sit absolutely still Observe the movements taking place in your body You must be blinking your eyes time to time Observe the movements in your body as you breathe Write down the movements in your note book We are able to move a few parts of our body easily in various directions and some only in one direction Why we are not able to move some parts at all directions Skull Vertebral Column Vertebral column extends from the base of the skull It protects the spinal cor It is formed by a number of serially arranged small bones called vertebrae singular vertebra Rib cage The rib cage is made up of pairs of curved flat rib bones It protects the delicate vital organs such as heart and lungs Limbs Man has two pairs of limbs namely upper limbs fore limbs and lower limbs hind limbs Fore limbs are used for holding writing etc while hind limbs are used for walking sitting etc Girdles The fore limbs and hind limbs are attached to the axial skeleton with the help of pectoral and pelvic girdle respectively To show that we can bend or move our body only at those points where the bones meet Materials required A wooden scale and string Method Ask your friend to tie a wooden scale and your arm together So that the elbow is at the centre Even if you try hard you cannot bend your elbow Conclusion A single bone cannot ben The different bones joined together at the elbow help the elbow to ben The smallest bone in our body is present inside the ear It is called Stapes It is only millimeters long average length The longest bone in the body is the thigh bone Femur A new born baby has more than bones As the baby grow some bones are joined together hence the skeleton of an adult has bones Skeletal System Muscular System In the body muscular system along with the skeletal and nervous system is responsible for the body movements Muscles can contract and therefore help in moving other parts of the body It maintains the posture and body position There are three types of muscles namely Skeletal muscle Smooth muscle Cardiac muscle How do muscles work Muscles of the body can only pull and they cannot push Two muscles are required to move a bone at a joint When one muscle contracts the other muscle relaxes For example to move the lower arm up and down two type of muscles called biceps and triceps are require When we raise our lower hand the biceps in front become short by contraction and the triceps at the back stretch to pull up the arm When we lower our arm the triceps at the back contract and biceps stretch to pull the arm down Skeletal Muscles Skeletal muscles of our body are attached to the bones They are called Voluntary muscles because they can be controlled by our will Example Muscles of arm Smooth muscles Smooth muscles are found in the walls of the digestive tract urinary bladder arteries and other internal organs They are called Involuntary muscles because they are not controlled by our will Stomach Pancreas Intestine Move your lower arm up and down gently Feel the contraction and relaxation of your biceps and triceps muscles The muscles present in the upper arm help in the contraction of front biceps muscles become short and thick and also relaxation of rear triceps muscles become long and thin You can feel the muscles on top that go stiff When the arm is moved downwards the front muscles relax and the rear muscles contract Cardiac muscles The walls of the heart is made up of cardiac muscles They are capable of rhythmic contraction continuously and involuntary in nature Biceps Bends the arm at the elbow Triceps Finger flexors Straightens the elbow Bend the fingers Finger extensors behind Straighten the fingers Heart muscular disease Digestive System Digestive system consists of the alimentary canal and associated glands This system is involved in the conversion of complex food substances into simple forms and absorption of digested foo The digestive glands associated with the alimentary canal are salivary glands liver and pancreas They secrete enzymes which help in the process of digestion of food in the digestive tract or alimentary canal The alimentary canal is about meters long Stomach is a major organ for digestion of food materials Absorption of digested food occurs in the small intestine Digestive System Parts of Alimentary canal Mouth Buccal cavity Pharynx Oesophagus or Food pipe Stomach Small Intestine Large Intestine Anus Associated glands for digestion Salivary glands Gastric glands Liver Pancreas Intestinal glands Respiratory System Respiratory system is involved in exchange of respiratory gases and there by helps us to breathe The human respiratory system consists of nostrils nasal cavity pharynx larynx trachea bronchi and lungs It helps in the movement of air in and out of the body Exchange of O and CO occurs between air in the lung and bloo The entry of food into the wind pipe is prevented by a flap like structure called Epiglottis Lungs Lungs are the main respiratory organ They are located within the chest cavity The trachea commonly called windpipe is a tube supported by cartilaginous rings that connects the pharynx and larynx to the lungs allowing the passage of air The trachea divides into right and left bronchi and enter into the lungs They divide further and ends in small air sacs called alveoli The lungs are covered by a double layered pleur Diffusion of gases O and CO occurs across the alveolar membrane Respiratory System Exchange of gases by the respiratory system involves three different processes such as External Respiration Intake of O from the air and releasing of CO from the lungs occurs through nostrils Internal Respiration Taking in of oxygen and giving out CO The circulatory system transports O and CO to and from all parts of the body Hemoglobin in the red blood cells RBCs transport O and CO Cellular Respiration Cells take in O and release CO Circulatory system The circulatory system is one of the important system consisting of heart blood vessels and bloo It transports respiratory gases nutrients hormones and waste materials within the body It protects the body from harmful pathogens and also regulates the body temperature Heart Heart is located in the thoracic cavity between the two lungs The heart is four chambered and is surrounded by a double layered membrane called pericardium The heart pumps blood continuously throughout our life time Blood vessels Three types of blood vessels are present in the body They are arteries veins and capillaries They form a closed network through which the blood is circulate Blood Blood is a fluid connective tissue of red colour containing plasma and blood cells There are three types of blood cells namely Red blood corpuscles RBCs White Blood corpuscles WBCs and Blood Platelets RBCs are produced in the bone marrow Aim To prove that exhaled air is rich in carbon di oxide Materials required Two glass jars with lime water and a straw Procedure Leave the first jar with lime water undisturbed blow air in to the second jar with the help of a straw Observation Lime water turns milky in few seconds in the second jar The CO gas alone can change the lime water into milky white Conclusion Carbon-di-oxide is present in the air that we exhale Each lung has about million air sacs or alveoli Yawning helps us to take in more amount of O and to give out CO Sinus Node Right Atrium Left Atrium Right Ventricle Left Ventricle AV node Place the middle and index fingers of your right hand on the inner side of your left wrist Can you feel a throbbing movement Why do you feel the throbbing This throbbing is called the pulse and it is due to the blood flowing in the arteries Count the number of pulse in one minute How many pulse beats could you count in one minute The number of beats per minute is called the Pulse rate A resting person usually has a pulse rate between to beats per minute Find other places in your body where you can feel the pulse Record your own pulse beats and your classmates as beats per minute Compare the values Donate Blood Hospitals have blood banks where blood can be temporarily stored before it is given to the patients in nee Every healthy person over years of age can donate bloo So that it can be given to persons in need during emergencies of accidents or operations Blood donation saves their life Nervous System Nervous system is well developed in human and is composed of neurons or nerve cells This system includes brain spinal cord sensory organs and nerves The two important functions of the nervous system along with the endocrine system are conduction and co ordination Brain Is the part of the central nervous system that regulates and controls activities throughout the body the site of consciousness and memory Spinal cord Is a bundle of nerves extending from the brain stem through the backbone conducts signals to and from the brain Intercostal nerves Radial nerve Femoral nerve Peripheral nerves Are the network of nerves and ganglion that carry signals to and from the central nervous system Brain The brain is a complex organ which is placed inside the cranium It is protected by a three layered tissue coverings called meninges Brain has three regions namely fore brain mid brain and hind brain It is the controlling centre of the body Spinal cord It is the extension of medulla oblongata of the hind brain and is enclosed within the vertebral column Spinal cord connects the brain to different part of the body through nerves The Functions of the Nervous System Sensory Input The conduction of signals from sensory receptors Cerebrum Pupil Brain is said to store as many as million bits of information in a life time Integration The interpretation of the sensory signals and the formulation of responses Motor output The conduction of signals from the brain and spinal cord to effectors such as muscle and gland cells Sense organs Sense organs are like the windows to the outside worl There are five sense organs in our body such as eyes ears nose tongue and skin They make us aware of our surroundings We are able to see hear smell taste and feel only through sense organs Eyes Eyes help us to see things around us ie their colour shape size whether they are near or far moving or at rest The eyelids and eyelashes keep the eyes safe The eye has three main parts namely cornea iris and pupil Ears Ears help to hear and differentiate sounds around us The ears also help us in maintaining the balance of the body when we are walking running or climbing The ear has three major parts the outer ear the middle ear and the inner ear The outer ear in human beings is made up of an external flap called pinn Skin Skin is the largest sense organ as it covers the whole body The skin helps to feel the things around us by touching that is whether they are hot or cold smooth or rough dry or wet hard or soft Skin covers the body and protects it from germs It also keeps the body moist and regulates the body temperature Functions of the skin Skin forms an effective barrier against infection by microbes and pathogens Skin helps us to synthesize vitamin D using sunlight Endocrine System Endocrine system regulates various functions of the body and maintains the internal environment Endocrine glands are present in the body produce chemical substances called hormones Take Care of Your Sense organs Do not read in very bright or very dim light and also in moving vehicle Avoid exposing eyes to screens of television computer laptop and cell phone for a long time Do not rub your eyes harshly Wash your eyes gently with clean water two or three times a day Ears should be protected from hard blows One should never try to prick ears with toothpicks or hairpins which are dangerous practices because it may puncture the ear drum and cause ear infection One should bath at least once a day to keep skin clean and fresh Excretory System The nitrogenous wastes are removed from the body by the excretory system It is composed of kidneys ureters urinary bladder and urethr Endocrine System Glands Location Pituitary gland At the base of brain Pineal Gland At the base of brain Thyroid Gland Neck Thymus Gland Chest Pancreas Islets of Langerhans Abdomen Adrenal Gland Above the kidney Gonads Pelvic cavity Why do we drink water Our body contains about water Some parts have more water like the grey matter of the brain about and some less like fat cell about We normally consume to litres of water every day in the form of food and water WATER IN SWEAT OUT URINE OUT Kidneys These are bean shaped structures present in the abdominal cavity The functional units of the kidney are called Nephrons which filter the blood and form the urine Excretory System Points to Remember The skeletal system gives shape to the body and protects the soft internal organs There are three types of muscles skeletal muscle voluntary smooth muscle involuntary and cardiac muscle Circulatory system constitutes the heart blood vessels and bloo Diaphragm A large flat muscle forming the floor at the chest cavity Excretory System Digestion is the process of breaking complex food into simple and soluble substances Brain is protected by the skull It has three parts cerebrum cerebellum and medulla oblongat The sense organs are Eyes Ears Nose Tongue and Skin Through this activity you will be able to understand the organ system of the human body The human body systems URL https wwwhealthlinecom health human-body-maps ICT Corner Human Organ systems Step Use the given URL in the browser The human body systems page will open Select any human organ system from the list given to explore Step In the activity window the selected organ system will appear you can zoom it by scrolling the mouse wheel or by clicking the icon given Step The multiple layers of the organ system can be increased or decreased by scroll over the Layers button given Step You can view a particular organ of a system by zooming over or by selecting the organ from the list given in the description below the activity window Blood is produced in the bone marrow All the waste products of the body are excreted through the circulatory system The other name of food pipe is alimentary canal Thin tube like structures which are the component of circulatory system are called blood vessels The brain the spinal cord and nerves form the nervous system Ear Cardiac muscle Skeletal System Flat muscle Diaphragm Sound Heart Air sacs Lungs Protection of internal organs Stomach Large intestine Oesophagus Pharynx Mouth Small Intestine Rectum Anus Urethra Ureter Urinary Bladder Kidney Arteries Carry blood from the heart carry blood to the heart Lungs Respiratory system Circulatory system Enzymes Digestive glandsmEndocrine glands Parts of Computer To know the Input unit CPU and the Output unit To understand the memory unit To differentiate the input and output devices To link the connections in Computer INPUT CPU OUTPUT The input unit helps to send the data and commands for the processing The devices that are used to input data are called input devices Keyboard Mouse Scanner Barcode reader Microphone-Mic Web camera Light Pen are some of the input devices Keyboard Keyboard and mouse are the important input units Keyboard plays an important role in a computer as a input device Numbers and alphabet plays a role of Data in computer Keyboard helps to enter dat Keyboard has two types of keys namely number keys and alphabet keys The keys with numbers are called number keys and key with letters are called alphabet keys Mouse Mouse is an essential part of the computer Mouse has two buttons and a scroll ball in the middle The mouse is used to move the pointer on a computer screen Right button is used to select files and to open the folder Left button is used to carryout corrections in the file The page on the monitor can be moved up and down using the scroll ball Central Processing Unit CPU CPU is the brain of the Computer The data is processed in the CPU The CPU has namely three parts Memory Unit Arithmetic Logic Unit ALU Control Unit Control Unit The control unit controls the functions of all parts of the computer Arithmetic Logic Unit Arithmetic and Logic unit performs all arithmetic computations like addition subtraction multiplication and division Memory Unit The memory unit in the computer saves all data and information temporarily We can classify memory unit into two types namely primary and secondary memory Memory can be expanded externally with the help of Compact Disk CD Pendrive et Output Unit The output unit converts command received by the computer in the form of binary signals into easily understandable characters Monitor Printer Speaker scanner are some of the output devices Of the various output devices monitor is the important output device because it is link to the computer Monitor screen looks like TV screen The input data in the form of Alphabets Numbers Pictures or Cartoons and Videos it will be displayed on a monitor There are two types of monitor namely Cathode Ray Tube Monitors CRT Thin Film Transistor Monitors TFT Now a days computer system has TFT monitor as they occupy less space and emit less heat than CRT monitors Memory Units The data is measured in units which is called as Bit A Bit has a single binary value either or A DVD is capable of storing times more data than a C Classification of Computer The computers can be classified as follows based on their design shape speed efficiency working of the memory unit and their applications Mainframe Computer Mini Computer Micro or Personal Computer Super Computer Mainframe computer Mini computer Micro personal computer Super computer Personal computer and its types Personal computer comes under the microcomputer Based on the memory and efficiency in PC they can be classified as Desktop Laptop Tablet Connecting the Computer You must have seen tube light and fan working by connection through electric wire Likewise various parts of the computer are linked through connecting cables We call computer as system as it is connected with one another Do you know how these parts are connected There are many cables used to connect these parts These cables are called as connecting cables These cables are found in different sizes Each cable has its own specific use Let us see the different types of cables and its uses Types of Cables Video Graphics Array VGA High Definition Multimedia Interface HDMI Universal Serial Bus USB Data cable Power Cord Mic cable Ethernet cable VGA cable It is used to connect the computer monitor with the CPU USB cable cord Devices like Printer Pendrive Scanner Mouse Keyboard web camera and Mobile phone devices are connected with the computer using USB cord or cable HDMI cable HDMI cable transmits high quality and high bandwidth streams of audio and video It connects monitor projector with the computer Data cable Data cable transmits data and it is used to connect tablet mobile phones to the CPU for data transfer Audio jack The audio jack is used to connect the speaker to the computer Power cord Power cord temporarily connects an appliance to the main electricity supply Mic cable To connect the Mic to the CPU Mic wire cord is use Ethernet Ethernet cable helps to establish internet connectivity Wireless Connections Bluetooth Wi-Fiare used to connect to internet without using any connecting cables devices Bluetooth Mouse Keyboard can be connected to the computer using the Bluetooth Using the Bluetooth the data can be shared with nearby devices Wi-FiNet connectivity can be obtained using the Wi-Fiwithout any connecting cables Any data from anywhere can be shared using Wi-Fi VGA Input device Bluetooth Connecting cable Printer LDMI Look at the magic of connecting cables to desktop computer with formu la start from proceed till Now your computer is ready to use By connecting the various parts of a computer we can assemble a computer For the construction activity students have to use formul A system consist of mouse key board monitor CPU power cables and connecting cables Students has to connect the four parts of a computer in row using the cables in row through the power cables in row to construct a system Using the formula we can connect the parts of the computer Mouse Parts Connection cables Power cords Working system VGA USB connecting cable for Keyboard USB connecting cable for CPU A complete computer USB connecting cable for Mouse USB connecting cable for Monitor Keyboard Monitor CPU Atmosphere Arithmetic Logic Unit Audio jack Battery Basic Unit Barcode Reader Bluetooth Combustion Contraction Cortical Expansion Cracking Cell Chemical energy Conductors Composition Compressed air Chloroplast Chlorophyll Compound microscope Cell organelles Circulatory system Control Unit Compact Disk Cord cable Digestive system Data cable Electrical energy Electrical circuit Eukaryotic cell Excretory system system Friction Fuel Flame Freezing Flagella Food production Heat Heat transfer Insulators Inflammable Input unit Kinetic energy Linear Expansion Leucoplast Light Pen Laptop Molecules Mountaineer Muscular system Microphone Memory Unit Monitor Mainframe Computer Mini Computer Micro computer Nerve cell Nucleus Nervous system Output unit Poor conductor Photosynthesis Pyrex glass Primary cell Plasma membrane Prokaryotic cells Parallel circuit Plotter Pen drive Projector Rusting of iron Respiration Respiratory system Secondary cell Series circuit Solvent Solute Sublimation Skeletal system Sense organs Speaker Super Computer Scanner Temperature Thermometer Thermal Equilibrium Thermal Expansion Vapourization Vacuoles Wind Mills Wi-Fi HISTORY Unit Society and Culture in Ancient Tamizhagam The Sangam Age The Sangam Age The word Sangam refers to the association of poets who flourished under the royal patronage of the Pandya kings at Madurai The poems composed by these poets are collectively known as Sangam literature The period in which these poems were composed is called the Sangam Age ArumugaNavalar Jaffna UVSwaminatha Iyer and Damodharam Pillai Jaffna strove hard and spent many years in retrieving and publishing the Tamil classics and the ancient Tamil texts which were originally present as palm leaf manuscripts Inscriptions Hathigumpha Inscription of King Karavela of Kalinga Pugalur near Karur Inscription Ashokan Edicts and inscriptions found at Mangulam Alagarmalai and Kilavalavu all near Madurai Copper Plates Velvikudi and Chinnamanur copper plates Coins Issued by the Cheras Cholas Pandyas and the chieftains of Sangam Age as well as the Roman coins Megalithic Monuments Burials and Hero stones Excavated Materials from Adichanallur Arikamedu Kodumanal Puhar Korkai Alagankulam Uraiyur Literary Sources Tholkappiyam Ettuthogai eight anthologies Pathupattu ten idylls PathinanKeezhkanakku a collection of eighteen poetic works Pattinapalai and Maduraikanji Epics Silapathikaram and Manimegalai Foreign Notices The Periplus of the Erythrean Sea Pliny’s Natural History Ptolemy’s Geography Megasthenes’s Indica Rajavali Mahavamsa and Dipavamsa Tholkappiyam is a work on Tamil grammar It represents the quality of Tamil language and the culture of Tamil people of the Sangam Age George L Hart Professor of Tamil language at the University of California has said that Tamil is as old as Latin The language arose as an entirely independent tradition with no influence of other languages Time Span century BC BCE to century AD CE Tamizhagam Vengadam Tirupathi hill in the north to Kanyakumari Cape Comorin in the south Bounded by sea on the east and the west Age Iron Age Culture Megalithic Polity Monarchy Dynasties ruled The Cheras the Cholas and the Pandyas Cheras Muvendars Three Great Kings controlled the territories of Tamizhagam during the Sangam Age The Tamil word Vendar was used to refer to three dynasties namely the Cheras Cholas and Pandyas The Cheras ruled over the central and north Travancore Cochin south Malabar and Kongu region of Tamil Nadu The Pathitrupathu a collection of ten decades of verses provides information about the Chera kings It is known that the Chera king Senguttuvan went on a military expedition to North Indi He brought stones from the Himalayas for making the idol of Kannagi an epic character from Silappathikaram He introduced pattini cult Cheran Senguttuvan’s younger brother was Ilango Adigal He was the author of Silappathikaram Another Chera king Cheral Irumporai issued coins in his name Some Chera coins bear their emblem of bow and arrow Prominent Chera Rulers Udayan Cheralathan Imayavaramban Netun Cheralathan Cheran Senguttuvan Cheral Irumporai Cholas The Chola kingdom of Sangam period extended upto Venkatam Tirupathi hills The Kaveri delta region remained the central part of the kingdom This area was later known as Cholamandalam KarikalValavan or Karikalan was the most famous of the Chola kings He defeated the combined army of the Cheras Pandyas and the eleven Velir chieftains who supported them at Venni a small village in the Thanjavur region He converted forests into cultivable lands He built Kallanai meaning a dam made of stone across the river Kaveri to develop agriculture Their port Puhar attracted merchants from various regions of the Indian Ocean The Pattinapaalai a poetic work in the Pathinenkeezhkanakku gives elaborate information of the trading activity during the rule of Karikalan Kallanai It was a dyke built with stones It was constructed across the Kaveri to divert water throughout the delta region for irrigation When it was built Kallanai irrigated an area of about acres Prominent Chola Rulers Ilanchetsenni KarikalValavan Kocengannan KilliValavan Perunarkilli Pandyas The Pandyas ruled the present day southern Tamil Nadu The Pandya kings patronized the Tamil poets and scholars Several names of Pandya kings are mentioned in the Sangam literature Nedunchezhiyan is hailed as the most popular warrior He defeated the combined army of the Chera Chola and five Velir Chieftains at Talayalanganam He is praised as the lord of Korkai C H E R A S P A N D I Y A S S R I L A N K A CHOLAS Madurai Kanyakumari Arabian Sea Indian Ocean Bay of Bengal Korkai Alagankulam Nagapattinam Kaveripumpattinam Arikamedu Marakkanam Musiri Urayur Periyar Vaigai Palar S Pennar Kaveri Tamaraparani Not to Scale Cheras Cholas Pandiyas Pandya country was well known for pearl hunting Pandya kings issued many coins Their coins have elephant on one side and fish on another side MudukudimiPeruvazhuthi issued coins to commemorate his performance of many Vedic rituals Prominent Pandya Rulers Nediyon Nanmaran MudukudumiPeruvazhuthi Nedunchezhiyan The Titles Assumed by the Muvendars Adhavan Kuttuvan Vanavan Irumporai PANDIYAS Maran Valuthi Sezhiyan Tennar CHOLAS Senni Sembiyan Killi Valavan Royal Insignia Sceptre drum murasu and white umbrella venkudai were used as the symbols of royal authority Muvendar Garland Port Capital Symbols Cheras Palmyra flower Muziri Tondi Vanchi Karur Bow and arrow Cholas Fig Athi lower Puhar Uraiyur Puhar Tiger Pandyas Margosa neem flower Korkai Madurai Two Fish Minor Chieftains Ay Velir and Kizhar Apart from three great kings there were several brave independent minor chieftains The name Ay is derived from the ancient Tamil word Ayar meaning shepherd Among Ay chiefs of Sangam Age Anthiran Titiran and Nannan were the important names The Velirs Vellalars constituted the ruling and land-owning class in the ancient Tamizhagam The famous Velirs were the seven patrons KadaiyezhuVallalgal They were Pari Kari Ori Pegan Ay Adiyaman and Nalli They were popular for their generous patronage of Tamil poets Kizhar was the village chief Sangam Polity Kingship The kingship was hereditary The king was called kŌ It is the shortened form of Kon Vendan Kon Mannan Kotravan and Iraivan were the other titles by which the king was addresse The eldest son of the reigning king generally succeeded to the throne The coronation ceremony was known as arasukattilerudhal or mudisoottuvil The crown prince was known as komahan while the young ones were known as Ilango Ilanchezhiyan and Ilanjeral King held a daily durbar naal avai at which he heard and resolved all the disputes The income to the state was through taxation Land tax was the main source of revenue and it was called Irai This apart the state collected tolls and customs sungam tributes and fines The kings and soldiers wore the heroic anklet Veera kazhal On the anklet the name and achievement of the wearer were blazone Spies were used not only to find out what was happening within the country but also in foreign countries A wound in the back was considered a disgrace and there are instances of kings fasting unto death because they had suffered such a wound in the battle The Court The king’s court was called Arasavai The king occupied a ceremonious throne in the court called Ariyanai In the court the king was surrounded by officials distinguished visitors and court poets The rulers had five-fold duties They were encouraging learning performing rituals presenting gifts protecting people and punishing the criminals Ambassadors were employed by the kings They played a significant role The king was assisted by a number of officials They were divided into Aimperunguzhu five-member committee and Enberaayam eight-member group Army The king’s army consisted of four divisions namely infantry cavalry elephants and chariot force The army was known as Padai The chief of the army was known as Thanaithalaivan The prominent weapons used during this period were sword kedayam shield tomaram lance spears bows and arrows Tomaram is mentioned as a missile to be thrown at the enemy from a distance The place where the weapons were kept was known as paddaikottil The forts were protected by deep moats and trenches The war drum was worshipped as a deity Law and Justice The king was the final authority for appeal In the capital town the court of justice was called Avai In the villages Mandram served as the place for dispensing justice Punishment was always severe Execution was ordered for theft cases The punishment awarded for other crimes included beheading mutilation of the offending limbs of the body torture and imprisonment and imposition of fines Local Administration The entire kingdom was called Mandalam Mandalam was divided into Nadus Kurram was subdivision of Nadu The Ur was a village classified into perur big village Sirur a small village and Mudur an old village depending upon its population size and antiquity Pattinam was the name for a coastal town and Puhar was the general term for harbour town Important Towns Puhar Uraiyur Korkai Madurai Muziri Vanji or Karur and Kanchi Thinai tract based Sangam Society The land form was divided into five thinais eco-regions Eco-region thinai Landscape Occupation People Deity Kurinji Hilly region Hunting gathering Kuravar kurathiyar Murugan Mullai Forest region Herding Aayar aaichiyar Maayon Marutham Riverine track plains Agriculture Uzhavan uzhathiyar Indiran Neithal Coastal region Fishing saltmaking Parathavar nulathiyar Varunan Palai Parched land Heroic deeds Maravar Marathiyar Kotravai Land was classified according to its fertility Marutham was called menpulam fertile land It produced paddy and sugarcane The rest of the landscape excluding Neithal was called vanpulam hard land and it produced pulses and dry grains Status of Women There was no restriction for women in social life There were learned and wise women Forty women poets had lived and left behind their valuable works Marriage was a matter of self-choice However chastity karpu was considered the highest virtue of women Sons and daughters had equal shares in their parents property Women Poets of Sangam Age Avvaiyar Velli Veethiyar Kakkaipadiniyar Aathi Manthiyar Pon Mudiyar Religious Beliefs and Social Divisions The primary deity of the Tamils was Seyon or Murugan Other gods worshipped during Sangam period were Sivan Mayon Vishnu Indiran Varunan and Kotravai The Hero stone natukkal worship was in practice Buddhism and Jainism also co existe Veerakkal Natukkal The ancient Tamils had a great respect for the heroes who died in the battle fiel The hero stones were erected to commemorate heroes who sacrificed their lives in war Caste did not develop in Tamizhagam as it did in the northern Indi Varuna system occupation-based caste came to the Dravidian south comparatively late Dress and Ornaments The rich people wore muslin silk and fine cotton garments The common people wore two pieces of clothes made of cotton The Sangam literature refers to clothes Kalingam which were thinner than the skin of a snake Women adorned their hair plaits with flowers Both men and women wore a variety of ornaments They were made of gold silver pearls precious stones conch shells and beads The People were fond of using aromatic perfumes Arts There are many references to variety of musical instruments such as drum flute and yazh Karikalan was master of seven notes of music EzhisaiVallavan Singing bards were called panar and viraliyar Dancing was performed by kanigaiyar Koothu folk drama was the most important cultural practice of the people of Sangam Age They developed the concept of Muthamizh Iyal Isai Naatakam Occupation The major occupations of the people were agriculture cattle rearing fishing and hunting Other craftsmen like carpenter blacksmith goldsmith and potters were also part of the population Weaving was the most common part-time occupation of the farmers and a regular full time job for many others Festivals and Entertainments People celebrated several festivals The harvest festival Pongal and the festival of spring kaarthigai were some of them Indira vizha was celebrated in the capital There were many amusements and games This included dances festivals bull fights cock fights dice hunting wrestling and playing in swings Children played with toy cart and with the sand houses made by them Trade Trade existed at three levels local overland and overseas The extensive and lucrative foreign trade that Tamizhagam enjoyed during this period stands testimony to the fact that Tamils had been great seafarers Warehouses for storing the goods were built along the coast The chief ports had light houses which were called KalangaraillanguSudar Caravans of merchants carried their merchandise to different places in oxen-driven carts Barter system was prevalent Malabar Black Pepper When the Mummy of Ramses of the Egypt was uncovered archaeologists found black pepper corns stuffed into his nostrils and in his abdomen as a part of embalming process practised in olden days There were two kinds of markets or bazaars in the leading cities like Puhar and Madurai In Madurai they were Nalangadi the morning market and Allangadi the evening market In these markets large varieties as well as large quantities of goods were sold and purchase Major Ports Musiri Tondi Korkai Main Exports Salt pepper pearls ivory silk spices diamonds saffron precious stones muslin sandal wood Main Imports Topaz tin glass horses Silk supplied by Indian merchants to the Roman Empire was considered so important that the Roman emperor Aurelian declared it to be worth its weight in gol Muziris First Emporium The Roman writer Pliny the Elder writes of Muziris in his Natural History as the first emporium shopping complex of India A temple of Augustus was built at Muziris which had a Roman colony A papyrus document now in Vienna museum of century BC BCE records the agreement between two merchants shippers of Alexandria and Muziris Trade Contact with Overseas Countries Archaeological excavations have confirmed the trading relations between the Tamizhagam and the countries such as Greece Rome Egypt China South East Asia and Sri Lank Kalabhras Towards the end of the century AD CE the Sangam period slowly went into a decline Following the Sangam period the Kalabhras had occupied the Tamil country for about two and half centuries We have very little information about Kalabhras They left neither artefacts nor monuments But there is evidence of their rule in literary texts The literary sources for this period include Tamil Navalar Charithai Yapernkalam and Periapuranam Seevaka Chinthamani and Kundalakesi were also written during this perio In Tamizhagam Jainism and Buddhism became prominent during this perio Introduction of Sanskrit and Prakrit languages had resulted in the development of a new script called Vattezhuththu Many works under Pathinen Keezhkanakku were compose Trade and commerce continued to flourish during this perio So the Kalabhra period is not a dark age as it is portraye Elsewhere Gateway Han Dynasty China BC BCE AD CE Pyramid Mayan Civilisation Central America Colosseum Roman Civilisation Italy BC BCE st AD CE The word Sangam refers to the association of poets who flourished under the royal patronage of the Pandya kings at Madurai Muvendars the Cheras Cholas and the Pandyas controlled the territories of Tamizhagam during the Sangam Age Apart from three great monarchs Tamil country was ruled by several independent minor chieftains Archaeological excavations have confirmed the trading relations between Tamizhagam and many foreign countries Towards the end of the century AD CE the Sangam period slowly started to decline The Kalabhras occupied the Tamil country Evidence of their rule is available in Jain and Buddhist literature GLOSSARY Strove tried hard Dynasty a line of hereditary rulers Commemorate to honour the memory of Royal insignia symbols of power Patronage support given by a patron Blazoned displayed vividly Acquitted released Bards poets singing in praise of princes and brave men Warehouses a large building for keeping goods Portrayed described elaborately Unit The Post-Mauryan India Introduction The break-up of Mauryan Empire resulted in the invasions of Sakas Scythians Parthians Indo-Greeks or Bactrian Greeks and Kushanas from the north-west In the south Satavahanas became independent after Asoka’s death There were Sungas and Kanvas in the north before the emergence of Gupta dynasty Chedis Kalinga declared their independence It has to be noted here that though Magadha ceased to be the premier state of India it continued to be a great centre of Buddhist culture Sources Archaeological Sources Inscriptions Copper Plates Ayodhya Inscription of Dana Deva Persepolis Nakshi Rustam Inscriptions Moga Taxila copper plate Junagadh Girnar Inscription Nasik Eulogy Inscription of Darius I Coins Coins of Satavahanas Coins of Kadphises Roman coins Literary Sources Puranas Gargi Samhita Harshacharita of Banabhatta Mahabhasya of Patanjali Brihastkatha of Gunadhya Madhyamika Sutra of Nagarjuna Buddhacharita of Asvaghosha Malavikagnimitra of Kalidasa Foreign Notice Accounts of Hiuen Tsang the Chinese Buddhist monk and traveller The Sungas and Kanvas in the North The Sungas The last Mauryan emperor Brihadratha was assassinated by his own general Pushyamitra Sunga who established his Sunga dynasty in Magadh Pushyamitra made Pataliputra as his capital Pushyamitra’s kingdom extended westward to include Ujjain and Vidish He successfully repulsed the invasion of Bactria king Menander But Menander managed to keep Kabul and Sindh Pushyamitra thwarted an attack from the Kalinga king Kharavel He also conquered Vidarb He was a staunch follower of Vedic religion He performed two Asvamedha yagnas horse sacrifices to assert his imperial authority During the Sunga period stone was replaced by wood in the railings and the gateways of the Buddhist stupas as seen in Bharhut and Sanchi Pushyamitra was succeeded by his son Agnimitr This Agnimitra is said to be the hero of Kalidasa’s Malavikagnimitr The drama also refers to the victory of Vasumitra Agnimitra’s son over the Greeks on the banks of the Sindhu river The weak successors of Sungas constantly faced threats from the Indo Bactrians and Indo-Parthians The Sunga dynasty lasted for about one hundred years The last Sunga king was Devabhuti He was killed by his own minister Vasudeva Kanv Vasudeva established the rule of Kanva dynasty in Magadh Importance of the Sunga Period The Sungas played an important role in defending the Gangetic Valley from the encroachments of the Bactrian Greeks Pushyamitra and then his successors revived Vedic religious practices and promoted Vaishnavism Sanskrit gradually gained ascendancy and became the court language Patanjali the second grammarian in Sanskrit was patronized by Pushyamitr Though Pushyamitra persecuted Buddhists during his reign the Buddhist monuments at Bharhut and Sanchi were renovated and further improve The expanded Great Stupa of Sanchi and the railings which enclose it belong to the Sunga perio King Kharavela of Kalinga was a contemporary of the Sungas We get information about Kharavela from the Hathigumba Inscription Hathigumba Elephant cave Inscription The Kanvas The Kanva dynasty produced four kings and their rule lasted only for years The history of Magadha after the fall of the Kanvas is devoid of any significance until the emergence of the Gupta dynasty The Kanva rulers were Vasudeva Bhumi Mitra Narayana Susarman The last Kanva ruler Susarman was assassinated by his powerful feudatory chief of Andhra named Simuka who laid the foundation of the Satavahana dynasty Satavahanas in the South The Kushanas in the north and the Satavahanas Andhras in the south flourished for about years and years respectively Simuka the founder of the Satavahana dynasty is said to have ruled for twenty-three years His successor was his brother Krishn The latter and his nephew Satakarni ruled for ten years each establishing an empire holding control over a vast area stretching from Rajasthan in the northwest to Andhra in the southeast and from Gujarat in the west to Kalinga in the east Satakarni is said to have performed two horse sacrifices Asvamedha yagna indicative of his imperial position Coin of Satavahanas Gautamiputra Satakarni was the greatest ruler of the family In the Nasik eulogy published by his mother GautamiBalasri Gautamiputra Satakarni is described as the destroyer of Sakas Yavanas Greeks and Pahlavas Parthians The extent of the empire is also mentioned in the recor Their domain included Maharashtra north Konkan Berar Gujarat Kathiawar and Malw His ship coins are suggestive of Andhras skill in seafaring and their naval power The Bogor inscriptions suggest that South India played an important role in the process of early state formation in Southeast Asi Contributions of Satavahanas Literature The Satavahana king Hala was himself a great scholar of Sanskrit The Kantara school of Sanskrit flourished in the Deccan in second century B Hala is famous as the author of Sattasai Saptasati stanzas in Prakrit Art and Architecture The Satavahana rulers were great builders They began constructing Buddhist stupas in Amaravati A bronze statue of the standing Buddha discovered in Oc-Eo an archaeological site in Vietnam resembles the Amaravati style The later Satavahana kings issued lead or bronze coins depicting ships with two masts A stone seal discovered in NakhonPathom in Thailand has the same design Gandhara Madhura Amaravati Bodh Gaya Sanchi and Bharhut were known for splendid monuments and art The Mathura School of Sculpture produced images and life-size statues of the Buddhist Brahmanical and Jain deities Indo-Greeks Indo-Parthians Sakas and Kushanas Indo-Greeks and Indo-Parthians After the conquest of north-western India and the Punjab region Alexander the Great left the conquered territories under provincial governors Two of its eastern satrapies Bactria and Parthia revolted under their Greek Governors and declared their independence The satrapy of Bactria became independent under the leadership of Diodotus I and Parthia under Arsaces After the decline of the Mauryan empire the Greek rulers of Bactria and Parthia started encroaching into the northwestern border lands of Indi The Bactrian and Parthian settlers gradually inter-married and inter-mixed with the indigenous population This facilitated the establishment of Indo-Greek and Indo Parthian colonies along the north-western part of Indi The world-famous life-size statues of Buddha at Bamyan valley on the mountains of the erstwhile northwestern frontiers of ancient India currently in central Afghanistan and recently destroyed by the Talibans were carved out of the solid rocks by the dedicated artists of the Gandhara School of Art during the post-Mauryan perio Buddha at Bamyan valley Rulers of Indo Greeks Demetrius I He was the son of Greco-Bactrian ruler Euthydemus He was king of Macedonia from to BC BCE Numismatic evidence proves that Demetrius issued bi lingual square coins with Greek on the obverse and Kharosthi on the reverse Scholars are not able to decide which of the three named Demetrius was the initiator of the Yavana era commencing from second century BC BCE in Indi Menander He was one of the best known Indo-Greek kings He is said to have ruled a large kingdom in the north-west of the country His coins were found over an extensive area ranging from Kabul valley and Indus river to western Uttar Pradesh MilindaPanha a Buddhist text is a discourse between Bactrian king Milinda and the learned Buddhist scholar Nagasen This Milinda is identified with Menander Menander is believed to have become a Buddhist and promoted Buddhism Contributions of Indo-Greeks Coinage Indo-Greek rulers introduced a die system and produced properly shaped coins with inscription symbols and engraved figures on them Indians learnt this art from them Sculpture The Gandhara School of Indian Art is heavily indebted to Greek influence The Greeks were good cave builders The Mahayana Buddhists learnt the art of carving out caves from them and became skilled in rock-cut architecture Sakas The Indo-Greek rule in India was ended by the Sakas Sakas as nomads came in huge number and spread all over northern and western Indi The Sakas were against the tribe of Turki nomads Sakas were Scythians nomadic ancient Iranians and known as Sakas in Sanskrit Rulers of Indo-Parthians Pahlavas Indo-Parthians came after the Indo-Greeks and the Indo-Scythians who were in turn defeated by the Kushanas in the second half of the first century AD CE Indo-Parthian kingdom or Gondopharid dynasty was founded by Gondophernes The domain of Indo-Parthians comprised Kabul and Gandhar The name of Gondophernes is associated with the Christian apostle StThomas He came to India and according to Christian tradition visited the court of Gondophernes and embraced Christianity Saka rule was founded by Maos or Mogain in the Gandhara region and his capital was Sirkap His name is mentioned in Mora inscription His coins bear images of Buddha and Siv Rudradaman was the most important and famous king of Sakas His Junagadh Girnar inscription was the first inscription in chaste Sanskrit In India the Sakas were assimilated into Indian society They began to adopt Indian names and practise Indian religious beliefs Junagadh Inscriptions Coin of Rudradaman The Sakas appointed kshatrapas or satraps as provincial governors to administer their territories Kushanas The Kushanas formed a section of the yueh-chi tribes who inhabited north western China in the remote past In the first century BC BCE the yueh-chi tribes were composed of five major sections of which the Kushanas attained political ascendancy over others By the beginning of Christian era all the yueh-chi tribes had acknowledged the supremacy of the Kushanas they had shed their nomadic habits and settled down in the Bactrian and Parthian lands adjacent to the north-western border of Indi The Kushanas overran Bactria and Parthia and gradually established themselves in northern Indi Their concentration was mostly in the Punjab Rajaputana and Kathiawar Kushana rulers were Buddhists Takshashila and Mathura continued to be great centres of Buddhist learning attracting students from China and western Asi The Kushana Kings Kanishka Kanishka was the greatest of all the Kushana emperors He assumed the sovereignty in AD and proclaimed his rule by the foundation of a new era which later became Saka er The Kushana capital initially was Kabul Later it was shifted to Peshavar or Purushpur Rulers Contributions Kadphises I He was the first famous military and political leader of the Kushanas He overthrew the Indo-Greek and Indo-Parthian rulers and established himself as a sovereign ruler of Bactri He extended his power in Kabul Gandhara and upto the Indus Kadphises He maintained friendly relationship with the emperors of China and Rome and encouraged trade and commerce with the foreign countries Some of his coins contained the inscribed figures of Lord Siva and his imperial titles were inscribed in the Kharosthi language Conquests Kanishka conquered and annexed Kashmir He waged a successful war against Magadh He also waged a war against a ruler of Parthia to maintain safety and integrity in his vast empire on the western and south-western border After the conquest of Kashmir and Gandhara he turned his attention towards Chin He defeated the Chinese general Pan-Chiang and safeguarded the northern borders of India from Chinese intrusion His empire extended from Kashmir down to Benaras and the Vindhya mountain in the south It included Kashgar Yarkhand touching the borders of Persia and Parthi Religious Policy Kanishka was an ardent Buddhist Kanishka’s empire was a Buddhist empire Kanishka adopted Buddhism under the influence of Asvaghosha a celebrated monk from Pataliputr Though a great warrior and an empire-builder Kanishka was as equal as the exponent and champion of Mahayanism Kanishka made Buddhism as the state religion and built many stupas and monasteries in Mathura Taxila and many other parts of his kingdom He sent Buddhist missionaries to Tibet China and many countries of Central Asia for the propagation of Buddha’s gospel He organised the fourth Buddhist Council at Kundalavana near Srinagar to sort out the differences between the various schools of Buddhism It was only in this council that Buddhism was split into Hinayanism and Mahayanism Art and Literature Kanishka was a great patron of art and literature His court was adorned with a number of Buddhist saints and scholars like Asvaghosha Vasumitra and Nagarjun Asvaghosha was the celebrated author of the first Sanskrit play Buddhacharit He founded the town of Kanishkapura in Kashmir and furnished the capital of Purushapura with magnificent public buildings The Gandhara School of Art flourished during his time The most favourite subject of the Gandhara artists was the carving of sculptures of Buddh Buddhist learning and culture was taken to China and Mongolia from Takshashil The great Asiatic culture mingled with Indian Buddhist culture during the Kushana’s time Kanishka’s successors were weak and incompetent Kushana empire rapidly disintegrated into number of small principalities The break-up of Mauryan empire resulted in the invasions of Sakas Scythians Parthians Indo-Greeks and Kushanas from the north-west The last Mauryan emperor Brihadratha was assassinated by his own general Pushyamitra Sunga who established Sunga dynasty in Magadh The history of Magadha after the fall of the Kanvas is devoid of any significance until the emergence of the Gupta dynasty The Kushanas in the north and the Satavahanas Andhras in the south flourished for about years and years respectively Rudradaman was the most important and famous king of Sakas The best known of the Kushanas was Kanishka who was an ardent follower of Mahayana form of Buddhism Gandhara Art developed during this perio repulsed driven back by force thwarted prevent from accomplishing something encroachments intrusion on a person’s territory rights etc renovated Restored something old especially a building to a good state of repair assimilate absorb information ideas or culture fully ardent enthusiastic or passionate magnificent impressively beautiful Unit The Age of Empires Guptas and Vardhanas Introduction By the end of the century AD CE the powerful empires established by the Kushanas in the north and Satavahanas in the south had lost their greatness and strength After the decline of Kushanas and Satavahanas Chandragupta carved out a kingdom and establish his dynastic rule which lasted for about two hundred years After the downfall of the Guptas and thereafter and interregnum of nearly years Harsha of Vardhana dynasty ruled North India from to AD CE Sources Archaeological Sources Gold silver and copper coins issued by Gupta rulers Allahabad Pillar Inscription of Samudragupt The Mehrauli Iron Pillar Inscription Udayagiri Cave Inscription Mathura Stone Inscription and Sanchi Stone Inscription of Chandragupta II Bhitari Pillar Inscription of Skandagupt The Gadhwa Stone Inscription Madubhan Copper Plate Inscription Punjab Sonpat Copper Plate Nalanda Inscription on clay seal Literary Sources Vishnu Matsya Vayu and Bhagavata Puranas and Niti Sastras of Narada Visakhadatta’s Devichandraguptam and Mudrarakshasa and Bana’s Harshacharita Dramas of Kalidasa Accounts of Chinese Buddhist monk Fahien who visited India during the reign of Chandragupta II Harsha’s Ratnavali Nagananda Priyadharshika Hiuen-Tsangs Si-Yu-Ki Foundation of the Gupta Dynasty Sri Gupta is considered to be the founder of the Gupta dynasty He is believed to have reigned over parts of present-day Bengal and Bihar He was the first Gupta ruler to be featured on coins He was succeeded by his son Ghatotkach Both are mentioned as Maharajas in inscriptions Chandragupta I AD CE Chandragupta I married Kumaradevi of the famous and powerful Lichchhavi family Having gained the support of this family Chandragupta could eliminate various small states in northern India and crown himself the monarch of a larger kingdom The gold coins attributed to Chandragupta bear the images of Chandragupta Kumaradevi and the legend Lichchhavayah Lichchhavi was an old gana sanga and its territory lay between the Ganges and the Nepal Terai Samudragupta AD CE Samudragupta son of Chandragupta I was the greatest ruler of the dynasty The Prayog Prashasti composed by Samudragupta’s court poet Harisena was engraved on Allahabad Pillar This Allahabad Pillar inscription is the main source of information for Samudragupta’s reign Allahabad Pillar Prashasti Prashasti is a Sanskrit word meaning commendation or in praise of Court poets flattered their kings listing out their achievements These accounts were later engraved on pillars so that the people could read themConsolidation of Gupta Dynasty Samudragupta was a great general and when he became emperor he carried on a vigorous campaign all over the country and even in the south In the southern Pallava kingdom the king who was defeated by Samudragupta was Vishnugop Samudragupta conquered nine kingdoms in northern Indi He reduced rulers of the southern India to the status of feudatories and forced them to pay tribute He received homage from the rulers of East Bengal Assam Nepal the eastern part of Punjab and various tribes of Rajasthan Samudragupta was a devotee of Vishnu He revived the Vedic practice of performing horse sacrifice Performed by kings to prove their imperial sovereignty He issued gold coins and in one of them he is portrayed playing harp veenai Samudragupta was not only a great conqueror but a lover of poetry and music and for this he earned the title Kaviraja Sri Meghavarman the Buddhist king of Ceylon was a contemporary of Samudragupt Chandragupta AD CE Chandragupta was the son of Samudragupt He was also known as Vikramadity He conquered western Malwa and Gujarat by defeating the Saka rulers He maintained friendly relationship with the rulers of southern Indi The iron pillar near Qutub Minar is believed to have been built by Vikramadity Fahien a Buddhist scholar from China visited India during his reign Vikramaditya is said to have assembled the greatest writers and artists Navaratna Nine Jewels in his court Kalidasa is said to be one among them Navaratna in the court of Vikramaditya Kalidasa Sanskrit poet Harisena Sanskrit poet Amarasimha Lexicographer Dhanvantri Physician Kahapanaka Astrologer Sanku Architect Varahamihira Astronomer Varauchi Grammarian and Sanskrit scholar Vittalbhatta Magician The surnames of Chandragupta were Vikramaditya Narendrachandra Simhachandra Narendrasimha Vikrama Devaraja Devagupta and Devasri Chandragupta was succeeded by his son Kumaragupta I who built the famous Nalanda University Kumaragupta’s successor Skandagupta had to face a new threat in the form of the invasion of Huns He defeated them and drove them away But after twelve years they came again and broke the back of the Gupta Empire The last of the great Guptas was Baladitya Fahien During the reign of Chandragupta II the Buddhist monk Fahien visited Indi His travel accounts provided us information about the socio-economic religious and moral conditions of the people of the Gupta age According to Fahien the people of Magadha were happy and prosperous that justice was mildly administered and there was no death penalty Gaya was desolate Kapilavasthu had become a jungle but at Pataliputra people were rich and prosperous assumed to have been Narasimha Gupta I He was himself attracted towards Buddhism He was paying tribute to Mihirakula but was distressed by his hostility towards Buddhism So he stopped paying tribute Though Baladitya succeeded in imprisoning him Mihirakula turned treacherous and drove away Baladitya from Magadh After Baladitya the great Gupta Empire faded away The last recognised king of the Gupta Empire was Vishnugupt Gupta Polity The divine theory of kingship the concept that king is the representative of God on earth and so he is answerable only to God and not to anyone else was practised by the Gupta rulers The Gupta kings wielded enormous power in political administrative military and judicial spheres The Gupta king was assisted by a council of mantris ministers The council consisted of princes high officials and feudatories A large number of officials were employed by the Gupta rulers to carry on the day to-day administration of the country High-ranking officials were called dandanayakas and mahadandanayakas The Gupta Empire was divided into provinces known as deshas or bhuktis They were administered by the governors designated as uparikas The province was divided into districts such as vishyas and they were controlled by the officers known as vishyapatis At the village level there were functionaries such as gramika and gramadhyaksh The extensive empire shows the important role of military organisation Seals and inscriptions mentioned military designations as baladhikrita and mahabaladhikrita commander of infantry and cavalry respectively The system of espionage included spies known as dutakas Society and Economy Land and Peasants Nitisara authored by Kamandaka emphasises the importance of the royal treasury and mentions various sources of revenue The military campaigns of kings like Samudragupta were financed through revenue surpluses Land tax was the main revenue to the government The condition of peasants was patheti They were required to pay various taxes They were reduced to the position of serfs Classification of land during Gupta period Kshetra cultivable land Khila waste land Aprahata jungle or forest land Vasti habitable land Gapata Saraha pastoral land Trade and Commerce The contribution of the traders for the development of Gupta’s economy was very impressive There were two types of traders namely Sresti and Sarthavah Nalanda University Nalanda University flourished under the patronage of the Gupta Empire in the and centuries and later under emperor Harsha of Kanauj At Nalanda Buddhism was the main subject of study Other subjects like Yoga Vedic literature and Medicine were also taught Hiuen Tsang spent many years studying Buddhism in the University Eight Mahapatashalas and three large libraries were situated on the campus Nalanda was ravaged and destroyed by Mamluks Turkish Muslims under Bhaktiyar Khalji Today it is a UNESCO World Heritage Site Nalanda University Who were the Huns Huns were the nomadic tribes who under their great Attila were terrorising Rome and Constantinople Associated with these tribes were the White Huns who came to India through Central Asi They undertook regular invasions and were giving trouble to all Indian frontier states After defeating Skandagupta they spread across Central Indi Their chief Toromana crowned himself as king After him his son Mihirakula ruled the captured territories Finally Yasodharman ruler of Malwa in Central India defeated them and ended their rule Portrayal of Toromana the Hun chief in coins Sresti Sarthavaha Sresti traders usually settled at a standard place Sarthavaha traders were caravan traders who carried their goods to different places Trade items ranged from daily products to valuable and luxury goods The important trade goods were pepper gold copper iron horses and elephants Lending money at a high rate of interest was in practice during Gupta perio The Guptas developed roadways connecting different parts of the country Pataliputra Ujjain Benaras Mathura were the famous trade centres Ports in western Kalyan Mangalore Malabar and eastern Tamralipti in Bengal coasts of India facilitated trade Samudragupta introduced the Gupta monetary system Kushana coins provided inspiration to Samudragupt The Gupta gold coins were known as Dinar Guptas issued many gold coins but comparatively fewer silver and copper coins However the post-Gupta period saw a fall in the circulation of gold coins indicating the decline in the prosperity of the empire Metallurgy Mining and metallurgy were the most flourishing industries during the Gupta perio The most important evidence of development in metallurgy was the Mehrauli Iron Pillar installed by King Chandragupta in Delhi This monolithic iron pillar has lasted through the centuries without rusting The metals used by them were iron gold copper tin lead brass bronze bell metal mica manganese and red chalk Society The society that adhered to four varna system was patriarchal According to laws of Manu which was in force women should be under the protection of their father husband or eldest son Polygamy was widely prevalent The kings and feudatory lords often had more than one wife Inscriptions refer to Kubernaga and Dhrubaswamini as the queens of Chandragupta II Sati was practised during the Gupta rule Slavery Slavery was not institutionalised in India as in the West But there are references to the existence of various categories of slaves during the Gupta age Religion There was revival of Vedic religion and Vedic rites Samudragupta and Kumaragupta I performed Asvamedha Yagna a horse sacrifice ritual We notice the beginning of image worship and the emergence of two sects namely Vaishnavism and Saivism during the Gupta perio Buddhism also continued to flourish though it split into two sects namely Hinayana and Mahayan Art and Architecture The Guptas were the first to construct temples which evolved from the earlier tradition of rock-cut shrines Adorned with towers and elaborate carvings these Mehrauli Iron Pillar temples were dedicated to all Hindu deities The most notable rock-cut caves are found at Ajanta and Ellora Maharashtra Bagh Madhya Pradesh and Udaygiri Odisha The structural temples built during this period resemble the characteristic features of the Dravidian style Two remarkable examples of Gupta metal sculpture are i a copper image of Buddha about feet high at Nalanda and Sultanganj Buddha seven-and-a half feet in height The most important examples of the Gupta paintings are found on the Fresco of the Ajanta caves and the Bagh cave in Gwalior Literature Though the language spoken by the people was Prakrit the Guptas made Sanskrit the official language and all their epigraphic records are in Sanskrit The Gupta period also saw the development of Sanskrit grammar based on the grammar of Panini and Patanjali who wrote Ashtadhyayi and Mahabhashya respectively A Buddhist scholar from Bengal Chandrogomia composed a book on grammar titled Chandravyakaranam Kalidasa’s famous dramas were Sakunthala Malavikagnimitra and Vikramaoorvashiyam Other significant works of Kalidasa were Meghaduta Raghuvamsa Kumarasambava and Ritusamhar Mathematics Astronomy and Medicine Invention of zero and the consequent evolution of the decimal system were the legacy of Guptas to the modern worl Aryabhatta Varahamihira and Brahmagupta were foremost astronomers and mathematicians of the time Aryabhatta in his book Surya Siddhanta explained the true causes of solar and lunar eclipses He was the first Indian astronomer to declare that the earth revolves around its own axis Dhanvantri was a famous scholar in the field of medicine He was a specialist in Ayurved Charaka was a medical scientist Susruta was the first Indian to explain the process of surgery Vardhana Dynasty The founder of the Vardhana or Pushyabhuti dynasty ruled from Thaneswar Pushyabhuti served as a military general under the Guptas and rose to power after the fall of the Guptas With the accession of Prabakaravardhana the Pushyabhuti family became strong and powerful Rajavardhana the eldest son of Prabhakaravardhana ascended the throne after his father’s death Rajavardhanas sister Rajayashris husband Raja of Kanauj was killed by the Gauda ruler Sasanka of Bengal Sasanka also imprisoned Rajayashri Rajavardhana in the process of retrieving his sister was treacherously killed by Sasank This resulted in his younger brother Harshavardhana becoming king of Thaneswar The notables of the Kanauj kingdom also invited Harsha to take its crown After becoming the ruler of the both Thaneswar and Kanauj Harsha shifted his capital from Thaneswar to Kanauj Conquest of Harshavardhana The most popular king of the vardhana dynasty was Harshavardhan Harsha ruled for years His feudatories included those of Jalandhar Kashmir Nepal and Valabhi Sasanka of Bengal remained hostile to him It was Harsha who unified most of northern Indi But the extension of his authority in the south was checked by Chalukya king Pulikesin II The kingdom of Harsha disintegrated rapidly into small states after his death in AD CE He maintained a cordial relationship with the rulers of Iran and Chin Harsha met the Chinese traveller Hiuen Tsang at Kajangala near Rajmahal Jharkhand for the first time Administration The emperor was assisted by a council of ministers The prime minister occupied the most important position in the council of ministers Bhaga Hiranya and Bali were the three kinds of tax collected during Harsha’s reign Criminal law was more severe than that of the Gupta age Life imprisonment was the punishment for violation of the laws and for plotting against the king Perfect law and order prevailed throughout the empire Harsha paid great attention to discipline and strength of the army Harsha built charitable institutions for the stay of the travellers and to care for the sick and the poor Coins of Harsha Religious Policy Harsha was the worshipper of Shiva in the beginning but he embraced Buddhism under the influence of his sister Rajyashri and the Buddhist monk and traveller Hiuen Tsang He belonged to Mahayana school of thought Harsha treated Vedic scholars and Buddhist monks alike and distributed charities equally to them He was the last Buddhist sovereign in Indi As a pious Buddhist Harsha stopped the killing of animals for foo Hiuen Tsang the prince of pilgrims visited India during Harsha’s reign His Si-Yu-Ki provides detailed information about the social economic religious and cultural conditions of India during Harsha’s time Hiuen Tsang tells us how Harsha though a Buddhist went to participate in the great kumbhamela held at Prayag Hiuen Tsang He was noted for his policy of religious toleration and used to worship the images of Buddha Shiva and Sun simultaneously He summoned two Buddhist assemblies one at Kanauj and another at Prayag The assembly at Kanauj was attended by kings A large number of Buddhist Jain and Vedic scholars attended the assembly A golden statue of Buddha was consecrated in a monastery and a small statue of Buddha three feet was carried in a procession In the assembly at Prayag Harsha distributed his wealth among the Buddhists Vedic scholars and poor people Harsha offered fabulous gifts to the Buddhist monks on all the four days of the assembly Art and Literature Harsha himself a poet and dramatist gathered around him a best of poets and artists Harsha’s popular works are Ratnavali Nagananda and Priyadharshik His royal court was adorned by Banabhatta Mayura Hardatta and Jayasen Temples and monasteries functioned as centres of learning Kanauj became a famous city Harsha constructed a large number of viharas monasteries and stupas on the bank of the Ganges The Nalanda University a university and monastery combined was said to have had students and monks in residence when Hiuen Tsang visited the university Chandragupta I was the contemporary of Constantine the Great the Roman Emperor who founded Constantinople Harsha’s time coincided with a early days of Tang Dynasty of Chin Their capital Xi’an was a great centre of art and learning Constantine the Great King of Tang Dynasty Sri Gupta was the founder of Gupta dynasty Chandragupta I Samudragupta and Chandragupta were the great kings of Gupta dynasty Vishnugupta was the last recognised king of Gupta Empire Divine Right Theory of kingship was practised by the Gupta rulers Mining and metallurgy were the most flourishing industries during the Gupta Period The society that adhered to four varna system was patriarchal There was a revival of Vedic religion and Vedic rites The Guptas were the first to construct temples which evolved from the earlier tradition of rock-cut shrines Aryabhatta Varahamihira and Brahmagupta were foremost astronomers and mathematicians of the time Harsha was a prominent ruler of Vardhana dynasty and was elevated to the position of an emperor Harsha was a great artist and dramatist and contributed to the development of literature and art Hiuen Tsang visited Nalanda and wrote his useful travel accounts which help us understand the condition of India during Harsha’s reign Harsha though a strong follower of Buddhism also promoted Vedic religion GLOSSARY Engraved carved inscribed Flattered lavish insincere praise and compliments upon someone especially to further one’s own interest Collapse fall Pathetic pitiful adhered to abide by bound by pastoral land land or farm used for grazing cattle Portrayed depicted in a work of art or literature Desolated made unfit for habitation Assertion A Chandragupta I crowned himself as a monarch of a large kingdom after eliminating various small states in Northern Indi Reason R Chandragupta I married Kumaradevi of Lichchavi family a Both A and R are true and R is the correct explanation of b Both A and R are correct but R is not correct explanation of c A is correct but R is not correct d A is not correct but R is correct Statement I Chandragupta did not have cordial relationship with the rulers of South Indi Statement The divine theory of kingship was practised by the Gupta rulers a Statement I is wrong but statement is correct b Statement is wrong but statement I is correct c Both the statements are correct d Both the statements are wrong Which of the following is arranged in chronological order a Srigupta Chandragupta I Samudragupta Vikramaditya b Chandragupta I Vikramaditya Srigupta Samudragupta c Srigupta Samudragupta Vikramaditya Chandragupta I d Vikramaditya Srigupta Samudragupta Chandragupta I Consider the following statements and find out which of the following statement s is are correct Lending money at high rate of interest was practise Pottery and mining were the most flourishing industries a is correct b is correct c Both and are correct d Both and are wrong Kalidasa Harisena Samudragupta Charak Ratnavali Harshacharita Nagananda Priyadharshik Unit South Indian Kingdoms South Indian Kingdoms By the early century synchronising with the Harsha’s reign in the north the far south had come under the control of the Pallava kings of Kanchipuram Pallava sovereignty included the domains of the Cholas and the Pandyas The latter were then emerging as ruling dynasties in their respective river valley regions Much of the central and eastern Deccan was under the Chalukyas of Badami Vatapi who were then pushed away by the Rashtrakutas The medieval period in India was marked by thee mergence of regional centres of power There was no single imperial power like Mauryas or Guptas who exercised control over the greater part of India in this perio The Pallavas The Pallava kings ruled around the prosperous agrarian settlement and important trade centre of Kanchipuram on the southeast coast of Indi Kanchipuram was well known to Chinese and Roman merchants From the flourishing trade centre of Kanchipuram the later Pallavas extended their sovereignty over all the Tamil-speaking regions during the and centuries The central part of their kingdom however was Thondaimandalam a large political region comprising northern parts of Tamil Nadu and the adjoining Andhra districts Sources Inscriptions Mandagapattu Cave Aihole Inscription of Pulakesin Copper Plates Kasakudi Plates Literature Mattavilasa Prahasana Avanthi Sundarakatha Kalingathu Parani Periya Puranam Nandi Kalambagam Foreign Notice Accounts of Chinese traveller Hiuen Tsang Pallava Genealogy Prominent Kings There were early Pallava rulers who were feudatories of Satavahanas Simhavishnu son of Simhavarman around AD CE created a strong Pallava kingdom after destroying the Kalabhras He defeated many kings in the south including the Cholas and the Pandyas His able son was Mahendravarman I He was succeeded by his son Narasimhavarman I The other prominent Pallava rulers were Narasimhavarman or Rajasimha and Nandivarman II The last Pallava ruler was Aparajit Mahendravarman AD CE contributed to the greatness of the Pallava kingdom Mahendravarman I was a follower of Jainism in the early part of his rule He embraced Saivism by the Saivite saint Appar Tirunavukkarasar He was a great patron of art and architecture He is known for introducing a new style to Dravidian architecture which is referred to as Mahendra style Mahendravarman also wrote plays including MattavilasaPrahasan The Delight of the Drunkards in Sanskrit which denigrates Buddhism Mahendravarman’s reign involved constant battles with the Western Chalukya kingdom of Badami under Pulakesin II Pulakesin seems to have defeated Mahendravarman in one of the battles and taken over a large part of his territory Vengi in the north His son Narasimavarma I avenged the defeat by capturing Vatapi the capital of Chalukyas He set Vatapi on fire killing Pulakesin in the process Narasimhavarman I’s army general was Paranjothi Popularly known as Siruthondar one of the Nayanmars Paranjothi led the Pallava army during the invasion of Vatapi After the victory he had a change of heart and devoted himself to Lord Siva Periya Puranam Narasimhavarman also known as Rajasimha was a great military strategist He exchanged ambassadors with Chin His reign was comparatively free from any political disturbance Therefore he could concentrate on temple-building activities During his reign the famous Kailasanatha temple at Kanchipuram was built Name of the King Title s Adopted Simhavishnu Avanisimha Mahendravarma I Sankirnajati Mattavilasa Gunabhara Chitrakarapuli Vichitra Chitta Narasimhavarma I Mamallan Vatapi Kondan Pallava’s Contribution to Architecture Pallava period is known for architectural splendour The Shore Temple and various other temples carved from granite monoliths and the Varaha cave century at Mamallapuram are illustrious examples of Pallava architecture In Mamallapuram was added to the list of UNESCO World Heritage Sites Pallava architecture can be classified as Rock-Cut temples Mahendravarman style Monolithic Rathas and Sculptural Mandapas Mamallan style Structural Temples Rajasimhan style and Nandivarman style Mahendra Style The best example of MahendraVarma style monuments are cave temples at Mandagapattu Mahendravadi Mamandur Dalavanur Tiruchirapalli Vallam Tirukazhukkundram and Siyamangalam Cave Temple Mandagapattu Mamalla Style The five rathas chariots popularly called Panchapandavar rathas signify five different style of temple architecture Each ratha has been carved out of a single rock So they are called monolithi The popular mandapams pillared pavilions they built are Mahishasuramardhini mandapam Thirumoorthi mandapam and Varaha mandapam Panchapandavar Rathas The most important among the Mamalla style of architecture is the open art gallery Several miniature sculptures such as the figure of lice-picking monkey elephants of huge size and the figure of the ascetic cat have been sculpted beautifully on the wall of a huge rock The fall of the River Ganga from the head of Lord Siva and the Arjuna’s penance are notable among them The Great Penance panel is considered to be the world’s largest open-air bas relief Arjuna’s Penance Rajasimha Style Narasimhavarma II also known as Rajasimha constructed structural temples using stone blocksThe best example for the structural temple is Kailasanatha temple at Kanchipuram This temple was built by using sand stones Kailasanatha temple is called Rajasimheswaram Kanchi Kailasanatha Temple Nandivarma Style The last stage of the Pallava architecture is also represented by structural temples built by the later Pallavas The best example is Vaikunda Perumal temple at Kanchipuram Kanchi Vaikunda Perumal Temple Society and Culture The Pallavas supported Jainism Buddhism and the Vedic faith They were great patrons of music painting and literature Some of the Pallava kings patronised the Azhwars and Nayanmars These exponents of Bhakti Cult preached a new form of Vaishnavism and Saivism Among the Saivites were Appar and Manikkavasakar Among the Vaishnavites were Nammazhvar and Andal The Bhakti movement aimed at preaching a popular faith in which prayers in Tamil were preferred to those in Sanskrit Women were encouraged to participate in the religious congregations The Tamil devotional cult was competitive with Buddhism and Jainism Therefore the latter suffered a gradual decline in most parts of Tamil country Education and Literature Gatika monastery or centre of learning at Kanchi was popular during the Pallava times and it attracted students from all parts of India and abroadVatsyaya who wrote Nyaya Bhashya was a teacher at Kanchi Gatika The treatise on Dakshin Chitram Paintings of South India was compiled during the reign of Mahendravarma I The great Sanskrit scholar Dandin adorned in the court of Narasimhavarma I Dandin composed Dashakumara Charit Bharavi the great Sanskrit scholar lived in the time of Simhavishnu Bharavi wrote Kiratarjuniya an epic in verses Tamil literature had also flourished during the Pallava rule Thevaram composed by Nayanmars and Nalayradivyaprabantham composed by Azhwars which are still chanted by devout people Perundevanar who was patronized by Nandivarman II translated the Mahabharata into Tamil as Bharathavenb Pallava Art The Pallava kings had also patronised fine arts The music inscriptions in Kudumianmalai and Thirumayam temples show Pallavas interest in musi The famous musician Rudracharya lived during Mahendravarma I The sculptures of this period depict many images in dancing postures The Chalukyas The Chalukyas ruled larger parts of west and centre of South India consisting of Maratha country with Vatapi Badami as their capital There were three distinct but closely related and independent Chalukya dynasties They were Chalukyas of Badami Chalukyas of Vengi Eastern Chalukyas Chalukyas of Kalyani Western Chalukyas These Chalukyas held Harsha in the north the Pallavas in the south and Kalinga Odisha in the east Sources Inscriptions Badami Cave Inscription of Mangalesha Kanchi Kailasanatha Temple Inscription Pattadakal Virupaksha Temple Inscription Aihole Inscription of Pulakesin Foreign Notice Accounts of Chinese traveller Hiuen Tsang Aihole Inscription It is found at Meguti Temple in Aihole Bagalkot district Karnataka It is written in Sanskrit by Ravikirti a court poet of Chalukya king Pulakesin II It makes a mention of the defeat of Harsha Vardhana by Pulakesin II The Chalukyas of Vatapi Pulakesin I a petty chieftain of Pattadakal in the Bijapur district took and fortified the hill fort of Vatapi around AD CE He soon conquered the territory between the Krishna and Tungabhadra rivers and the Western Ghats His son Kirtivarman I to brought the Konkan coast under Chalukya control Pulakesin to emerged as the most powerful ruler of the dynasty The Persian Iran king Khusru sent an embassy to the court of Pulakesin II Pulakesin succeeded in seizing parts of Gujarat and Malw He defied the North Indian ruler Harsha and according to an agreed understanding Narmada river was fixed as the boundary between the two About Pulakesin conquered the kingdom of Vengi and gave it to his brother Vishnuvardhana the first Eastern Chalukya ruler During the Pallavas ravaged the Deccan and captured Vatapi but the Chalukyas had recaptured it by Vikramaditya I to and Vikramaditya II the successor of Vikramaditya I captured Kanchipuram but spared the city Kirtivarman II the successor of Vikramaditya was defeated by Dantidurga the founder of the Rashtrakuta dynasty Western Chalukyas of Kalyani They were the descendants of Badami Chalukyas ruled from Kalyani modern day Basavakalyan In Tailapa II a feudatory of the Rashtrakuta ruling from Bijapur region defeated Parmara of Malw Tailapa occupied Kalyani and his dynasty quickly grew into an empire under Somesvara I Somesvara I moved the capital from Manyakheta to Kalyani For over a century the two empires of southern India the Western Chalukyas and the Chola dynasty of Thanjavur fought many fierce battles to control the fertile region of Vengi During the rule of Vikramaditya VI in the late century vast areas between the Narmada River in the north and Kaveri River in the south came under Chalukya control Contributions to Art and Architecture As supporters of both Saivism and Vaishnavism the Chalukyas contributed richly to art and architecture A new style of architecture known as Vesara was develope Vesara is a combination of south Indian Dravida and north Indian Nagara building styles They perfected the art of stone building without mortar They used soft sandstones in construction They built a number of rock-cut cave-temples and structural temples dedicated to Siva Vishnu and Brahm The structural temples of Chalukyas exist at Aihole Badami and Pattadakal The important stone temples are the Vishnu temples at Badami and Aihole and the Virupaksha or Siva Temple at Pattadakal in Bijapur district in present-day Karnatak The Vishnu temple at Badami was built by Mangalesa of the Chalukya Dynasty and contains the Aihole inscription of Vikramaditya II Their cave temples are found at Ajanta Ellora and Nasik The cave temples at Badami contain fine sculptures of Vishnu reclining on Sesha Nag Varaha the Boar Narasimha or the lion-faced man and Vamana the dwarf The Kasi Vishweshvara Temple at Lakkundi the Mallikarjuna Temple at Kuruvatti the Kalleshwara Temple at Bagali and the Mahadeva Temple at Itagi represent well known examples of the architecture of Western Chalukyas of Kalyani Chalukyas adopted the Vakataka style in paintings Some of the frescoes of the caves of Ajantha were created during the reign of Chalukyas The reception given to the Persian embassy by PulakesinII is depicted in a painting at Ajant Pattadakal UNESCO World Heritage Site is a small village in Bagalkot district of Karnatak It has ten temples Out of them four were built in northern style Nagara while the rest six are in the southern Dravida style Virupaksha Temple and Sangameshwara Temple are in Dravida Style and Papanatha temple is in Nagara style The Virupaksha temple is built on the model of Kanchi Kailasanatha temple Sculptors brought from Kanchi were employed in its construction The Rashtrakutas The Rashtrakutas ruled not only the Deccan but parts of the far south and the Ganges plain as well from to century AD CE They were of Kannada origin and their mother tongue was Kannad Dantidurga was the founder of Rashtrakuta dynasty He was an official of high rank under the Chalukyas of Badami Krishna I succeeded Dantidurg He consolidated and extended the Rashtrakuta power He was a great patron of art and architecture The Kailasanatha temple at Ellora was built by him Rashtrakuta Kings The greatest king of the Rashtrakuta dynasty was Amogavarsh He built a new capital at Manyakheta now Malkhed in Karnataka and Broach became the port Amogavarsha was embraced to Jainism by Jinasena a Jain monk Krishna II who succeeded his father Amogavarsha suffered a defeat in the battle of Vallala modern Tiruvallam Vellore district at the hands of Cholas under Parantaka in Krishna was the last able ruler of Rashtrakuta dynasty He defeated the Cholas in the battle of Takkolam presently in Vellore district and captured Thanjavur The Chalukyas under Krishna contested with other ruling dynasties of north India for the control of Kanauj He built Krishneshwara temple at RameshwaramGovinda was the last ruler to hold the empire intact After his death the Rashtrakuta power decline Contribution of Rashtrakutas to literature art and architecture Literature Kannada language became more prominent Kavirajamarga composed by Amogavarsha was the first poetic work in Kannada language Court poets produced eminent works in Kannad The three gems of Kannada literature during the period were Pampa Sri Ponna and Rann Adikavi Pampa was famous for his creative works Adipurana and Vikramarjunavijay The life of Rishabadeva the first Jain Tirthankara is depicted in Adipuran In Vikramarjunavijaya Pampa’s patron Chalukya Arikesari is identified with Arjuna epic hero of Mahabharath Art and architecture The Rashtrakutas made significant contribution to Indian Art The art and architecture of the Rashtrakutas can be found at Ellora and Elephant Kailasanatha Temple Ellora near Aurangabad Maharashtra Kailasanatha Temple was one of the temples carved out of the hill at Ellor It was built during the reign of Krishna I The temple is known for its architectural grandeur and sculptural splendour The temple covers an area of over sq feet and vimanam temple tower rises to a height of feet This temple has resemblance to the shore temple at Mamallapuram The Kailasanatha temple portrays typical Dravidian features Kailasanatha Temple Ellora Elephanta Island Originally known as Sripuri and called Gharapuri by the local people Elephanta is an island near Mumbai The Portuguese named it as Elephanta after seeing the huge image of an elephant The Trimurthi three-faced Siva icon is an illustrative of the sculptural beauty portrayed in the Cave Temple of Elephant There are impressive images of dwarapalakas entrance guards at the entrance of the Temple Elephanta Cave Pattadakal Rashtrakutas built temples in the complex of Pattadakal The Jain Narayana temple and the Kasi Vishwesvara temple were built by Rashtrakutas Jain Narayana Temple Leshan Giant Buddha metre tall Built during Tang dynasty in China and AD CE Baghdad The greatest city of Islamic Empire By the early century South India had come under the control of Pallavas of Kanchi and Chalukyas of Badami Pallava period is known for architectural splendour Pallava architecture can be classified as rock-cut temples structural temples monolithic rathas and mandapams The Chalukyas contributed richly to art and architecture A new style of architecture known as Vesara style developed during their period The Rashtrakutas also made significant contribution to Indian art Their art and architecture can be found at Ellora cave and Elephanta island feudatories being subject to a sovereign ambassador envoy granite a very hard rock ravaged severely damaged descendants offspring reclining leaning back Statement I Pallava art shows transition from rock-cut monolithic structure to stone built temple Statement Kailasanatha temple at Kanchipuram is an example of Pallava art and architecture a Statement I is wrong b Statement is wrong c Both the statements are correct d Both the statements are wrong Consider the following statement s about Pallava Kingdom Statement I Tamil literature flourished under Pallava rule with the rise in popularity of Thevaram composed by Appar Statement Pallava King Mahendravarman was the author of the play Mattavilasa Prahasan Give examples for the structural temples of Pallava perio Ans Name the new style of architecture developed during Chalukya perio Ans What does Aihole inscription mention Ans Who built the Kailasanatha temple at Ellora Ans Name the sculptural mandapas of Mamallan style of architecture Ans Where do structural temples of Chalukya exist Ans Name two Saivite saints and Vaishnavite saints who practised bhakticult during Pallava period Ans Who was the founder of Rashtrakuta dynasty Ans What were the titles adopted by Narasimhavarma I GEOGRAPHY Unit Asia and Europe Students Good morning Teacher Teacher Good morning students Did you celebrate the English New Year well Students Yes madam Teacher Ok English is the native of which country Students Britain Teacher Goo Do you know which continent is it located in Students Europe Teacher Very goo Which is our home continent Students Asi Teacher Exactly In the first term you have learnt about how many continents are in the world and their names In this lesson we are going to learn in detail about Asia and Europe Let us explore these two continents This lesson disscusses about the location boundaries physical and political divisions of Asia and Europe The major rivers climate and natural vegetation are highlighted in this lesson It also explains about how economic activities are determined by the resources The cultural mosaics of Asia and Europe are great eye openers for learners in terms of European and Asian cultures PART ASIA Asia is the largest and the most populous continent in the worl It covers about percent of the world’s land area and about percent of the world’s population Most of the land of Asia lies in the northern hemisphere It has different types of physical and cultural features Lofty mountains plateaus plains islands and peninsulas are the major physiographic features of Asi Many perennial rivers flow through different parts of Asi These river valleys are the cradles of ancient civilizations Indus valley Mesopotamian and Chinese civilizations Let us know more about our home continent Location and Area Asia extends from ˚ South to ˚ North latitudes and from ˚ East to ˚ West longitudes It spreads for an area of million km Boundaries Asia is surrounded by the Arctic Ocean in the north Pacific Ocean in the east Indian Ocean in the south and the Ural Mountains Caucasus Mountains Red Sea Mediterranean Sea Caspian Sea and Black Sea in the west The Suez Canal separates Asia from Afric The narrow Bering Strait separates Asia from North Americ Political Divisions There are forty eight countries in Asi The countries are grouped into several realms based on landscape and political status such as East Asia Southeast Asia South Asia Southwest and Central Asia Physiographic Divisions Asia is the land of long mountain ranges snow capped high mountains vast plateaus extensive plains river valleys and sea coasts These diverse physical features encourage the people of this continent to involve in diverse economic activities The physiography of Asia can be divided into five major groups They are The Northern lowlands The Central High Mountains The Southern Plateaus The Great Plains and The Island Groups The Northern Lowlands The most extensive lowland in Asia is the Siberian plain It extends from the Ural Mountains in the west to the Verkhoyansk Range in the east The Central Highlands The central highlands stretches from Turkey to the Bering Strait There are two knots found in Asi They are The Pamir Knot The Armenian Knot Knot refers to the convergence of mountain ranges The Hindukush range the Sulaiman range the Himalayan range and the Tian Shan range radiate from the Pamir Not to Scale There are landlocked countries in Asi Among these only one is doubly landlocked which means it is surrounded entirely by other landlocked countries Find out the doubly landlocked country Knot The Hindukush range continues westward as the Elburz whereas the Sulaiman range continues south west as the Zagros range The Elburz and the Zagros converge at the Armenian knot The Taurus and the Pontine ranges radiate from the Armenian knot The other important mountain ranges are the great Khingan the Altai the Verkoyansk and the Arakan yom The Himalayan mountain range is the highest mountain range in the worl Mt Everest m is the highest peak in Asia as well as among the worl The lowest point in the world is located in Dead Sea in Asi Intermontane plateaus are found in these mountain ranges The important plateaus are The plateau of Anatolia Pontine to Taurus The plateau of Iran Elburz to Zagros mt The plateau of Tibet Kunlun to Himalayas Tibet is called the Roof of the world and it is also known as the third pole because of its cold weather largest reserve of freshwater and inhospitable environment HOTS The Khyber Pass is located in the Sulaiman range the Bolan Pass is located in Toba Kakar range What is the importance of these two passes The Southern Plateaus The southern plateaus are relatively lower than the northern plateaus The four important southern plateaus are the Arabian Plateau Saudi Arabia Deccan Plateau India Shan Plateau Myanmar and the Yunnan Plateau China Among these plateaus the Arabian Plateau is the largest Plateau The Great Plains The great plains are formed by the major rivers of Asi They are the West Siberian plain Ob and Yenisey Manchurian Plain Amur Great Plain of China Yangtze and Sikiang Indo-Gangetic Plain Indus and Ganga Mesopotamian plain Tigris and Euphrates and the Irrawaddy plain Irrawaddy The Island Groups Numerous islands are found in the Pacific coast of Southeast Asi Kuril Taiwan Singapore and Borneo are the important island groups The Philippines Japan islands and Indonesia are the major archipelagos in Asi Smaller archipelagos are also located in the Indian Ocean such as the islands of Maldives and Lakshadweep in the Arabian Se Bahrain is in the Persian Gulf Sri Lanka is an island which is located in the Bay of Bengal A group of islands is called an archipelago The largest archipelago is Indonesi Drainage The rivers of Asia originate mostly from the central highlands The Ob Yenisey and Lena are the major rivers that flow towards the north and drain into the Arctic Ocean These rivers remain frozen during winter On the other hand South Asia has many perennial rivers Brahmaputra Indus Ganga and Irrawaddy which originate from the snow covered high mountains that do not freeze during winter The Euphrates and Tigris flow in West Asi The Amur Huang He Major Rivers of Asia S No Name of the River Origin Outflow Length in Km Yangtze Tibetan plateau East China sea Hung Ho Tibetan plateau Gulf of Pohai Mekong Tibetan plateau South China sea Yenisey Tannuala Mountain Arctic Ocean Ob Altai Mountain Gulf of Ob Brahmaputra Himalayas Bay of Bengal Indus Himalayas Arabian sea Amur Confluence of Shika and Argun rivers Tatar Strait Ganges Himalayas Bay of Bengal Irrawaddy North Myanmar Bay of Bengal Yangtze and Mekong rivers flow in the south and south eastern parts of Asi Yangtze is the longest river in Asi River Yangtze The Three Gorges dam has been constructed across the river Yangtze It is the largest power station dam in the worl It fulfills ten percent of power needs of Chin Climate Asia exhibits a variety of climate The northern part of Asia experiences severe long winter and cool summer Winter and Summer Precipitation is in the form of snow mm to mm The north eastern part of Asia experiences cold winter and warm summer and a moderate rainfall of mm to mm The south south east and eastern parts of Asia are strongly influenced by monsoon winds Summer is hot and humid while winter is cool and dry The summer monsoon winds bring heavy rainfall to India Bangladesh Indo-China Philippines and Southern China mm to mm In India Mawsynram mm receives the highest rainfall So this place is called the wettest place in the worl The areas found in and around the equator have uniform climate throughout the year There is no winter The average temperature is and the mean rainfall is mm HOTS There is no winter in the equatorial region Why The west and central parts of Asia have hot dry climate The temperature is very high during the day and very low during the night Rainfall varies from mm to mm The West coastal fringe of Asia along the Mediterranean Sea receives rainfall in winter and is warm in summer Deserts are found along the western part of Asi The major hot deserts are the Arabian Saudi Arabia and Thar India and Pakistan deserts The cold deserts of Asia are Gobi and Taklamakan The largest desert in Asia is the Arabian Desert Natural Vegetation Natural vegetation depends upon rainfall temperature and soil As Asia stretches from the equator to poles all types of vegetation are found here Some rare species are found in Asi Such as Orang-Utan Komodo Dragon Giant pand The Asian flora and fauna are listed below The Natural Regions Flora Fauna Climate Location Flora Fauna High Temperature High rainfall Indonesia Malaysia Singapore Sri Lanka Evergreen trees Mahogany Rubber Rosewood Sal Rhinoceros Tiger Babirusa Orangutan Komodo Dragon Summer rainfall Dry winter India Vietnam Cambodia Thailand Southern China Deciduous trees Teak Sandal wood Bamboo Tiger Elephant Indian Cobra viper Extreme temperatures Arabian desert North North West India Cactus Dates Oa sis Thorny shrubs Babul tree Bactrian Camel The Sand grouse desert oryx Dry winter Warm summer East China Japan North and South Korea Cherry Apricot Plum Giant Panda Japanese macaque Warm Summer and winter rainfall Israel Lebanon Turkey Syria Figs Olives Citrus fruits Lynx Jackrabbit Long and dry winter short and cool summer Siberia Himalayas Coniferous trees Pine Fir Spruce Siberian Tiger Brown bear Wolf Permanent snow cover Beyond the snow line Lichen mosses Grass Polar bear Lemming Reindeer Arctic fox Orang-Utan Tiger Bactrian Camel Panda Wolf Lynx Fact DESERT A Desert is a large area that gets very low rainfall and very few plants and animals There are two types of deserts found in Asia Hot and cold deserts Rub-Al Khali desert is the largest continuous sandy desert in the worl It is found in the southeastern part of Saudi Arabi Resource Base and Economic Activities of Asia Mineral Resources Asia has a variety of mineral deposits It holds an important place in the production of Iron Coal Manganese Bauxite Zinc Tungsten Petroleum Tin et Oil and Natural Gas found in the west Asian countries One third of the world’s oil is produced in Asi Among the west Asian countries Iran has a considerable wealth of mineral resources The important minerals found in Asia are Iron Ore Asia has the largest deposits of iron ore in the worl China and India are the important iron ore deposit countries of Asi Turkey Philippines Malaysia Thailand Myanmar etc are a few other countries that have iron ore deposits Coal Coal is a fossil fuel Asia has the largest deposits of coal in the worl China and India are the largest producers of coal in Asi Petroleum Petroleum is a mineral oil The largest petroleum reserves are found in South West Asi The important petroleum producing countries are Saudi Arabia Kuwait Iran Bahrain Qatar and UAE South China Malaysia Brunei Indonesia India Russia are the other important petroleum producing countries in Asi Coal mine in India Bauxite is found in India and Indonesi India is the largest producer of Mica in the worl Tin is found in Myanmar Thailand Malaysia and Indonesi Agriculture Only about percent of the total area is cultivable in Asi Agriculture is the chief occupation of the people here The river valleys in the South South East and East Asia have rich alluvial soil Agriculture is intensively practised in the riverine plains of Asi However some areas are not suitable for agricultural practices India has the largest area of arable lands in Asi Most of the west Asian countries cultivate their crops where the ground water level is nearer to the surface Iraq practices agricultural activities based on the availability of rainfall and supply of water from Euphrates and Tigris rivers Rice and Wheat are the staple food crops in Asi China and India are the leading producers of rice in the worl Other important rice producing countries are Myanmar Japan Bangladesh and Thailan Monsoon Asia is suitable for rice cultivation because of the abundant rainfall fertile plains and availability of labour Thailand is called the Rice bowl of South East Asi Banaue rice terrace The Banaue rice terraces were built year ago by the Ifugaos people in the Philippines It is located approximately about m above sea level Wheat is grown in the temperate regions of Asi Russia India China and Pakistan are the leading producers of wheat in Asi Millets like Bajra Jower Ragi and Sorgham are grown in the drier parts of Asi These are widely cultivated in India Pakistan and a few gulf countries Apart from these pulses spices and oil seeds are also cultivated in various parts of Asi Jute and cotton are the important natural fibres cultivated in Asi One third of the world’s cotton is produced by Asi The major cotton producing countries are India China Russia and Kazakhstan India Pakistan China and Bangladesh are the leading producers of jute The tropical wet and dry climate is suitable for sugarcane cultivation in Asi India Indonesia and Philippines are the major producers of sugarcane Coffee Tea Rubber Palm trees and Cocoa are the important plantation crops India Sri Lanka Thailand Vietnam Malaysia and Indonesia are important an producers of plantation crops Malaysia and Thailand are the leading producers of natural rubber Dates are produced in west Asia among the countries Iran is the largest producer of dates in the worl Cocoa Tree Fishing Fishing is an important economic activity in Asi It is prevalent in open seas as well as inland water bodies China and Japan are the leading fishing nations In Cambodia Tonle Sap lake is one of the world’s richest sources of fresh water fishing Bay of Bengal is the major fishing ground for India Sri Lanka Myanmar and Bangladesh Fishing is the mainstay of the national economy in Maldives Pearl fishing Bahrein is popular in the eastern coast of Arabi Industrial Regions In China Manchurian Shanghai Wuhan Peking Shenyang Guangdone Hongkong regions are the major industrial regions In Japan the major regions are Tokyo Yokohama and Osaka-Kyoto regions In India Mumbai Ahmedabad Coimbatore Bengaluru and Chottanagpur are the important industrial regions Trasport Transport is the backbone of the economic development of a region Many Asian countries are developing their transport network for their economic progress Roadway is the most common mode of transport in Asi Roadways The Asian Highway connects Tokyo in the east to Turkey in the west Russia in the north to Indonesia in the south and the total length of road is km It passes through countries The Asian Highway AH is the longest highway among the Asian Highway Network km It connects Tokyo to Turkey The Asian Highway AH runs from Agra in India to Matara in Sri Lanka km Railways The Trans Siberian Railways km is the longest rail route in the worl It is a transcontinental railway line which connects Leningrad and Vladivostok The Trans Asian Railway links Singapore and Istanbul in Turkey The Shinkansen bullet train is the world famous super express train that runs between Osaka and Tokyo in Japan at a speed of km h The Indian railway network is the second largest railway network in Asi Waterways The Cape of Good Hope route connects Europe to South Asi The Trans Pacific route connects the ports of eastern Asia to the ports of western American countries The Suez Canal route passes through the heart of the world trade route and connects Europe with South and Southeast Asi Tokyo Shanghai Singapore Hong Kong Chennai Mumbai Karachi and Dubai are the important seaports in Asi Shanghai Port CULTURAL MOSAIC OF ASIA Population Asia is the most populated continent in the worl Approximately six-tenth of the world’s population lives in Asi The population is unevenly distributed because of various physical features China and India alone covers three fifth of Asia’s population Apart from these two countries Bangladesh Indonesia Japan Pakistan and Philippines have more than million populations The population density in Asia is persons per Km India Japan Bangladesh and Singapore have high population density River plains and industrial regions have high density of population whereas low density is found in the interior parts of Asi HOTS Few countries in Asia have high population Give reasons ANKORWAT It is a world heritage site It was built by king Suriya Varma in AD CE at Cambodi Ankorwat means the city of temples in Khmer language It is the largest Hindu Temple in the worl Religion Language Hinduism Islam Buddhism Christianity and Sikhism are the major creeds in Asi The minor creeds Zoroastrianism Jainism Shintoism Confucianism and Taoism are also practised in Asi Mandarin English Indonesian Japanese Arabic Korea Vietnamese and Hindi are the most widely spoken languages in Asi Art and Architecture Asia is the home land of three civilizations Mesopotamian Indus valley and Chinese civilizations These three contributed to the architectural works at an early stage Among the seven wonders of the world two are located in Asia The Tajmahal in India The Great wall of China The people of Yemen built a mud skyscraper thousands of years ago Ankorwat in Cambodia Buddhist Temple in East and Southeast Asia Mosques in west Asia and the temples and forts in India are fine examples of Asian architecture Food Rice Wheat Maize and Barley are the staple food in Asi Dairy products fruits and nuts are also consume In East Asia bread and noodles are the staple food where rice is not available Tea Coffee and green tea are the chief beverages In West Asia meat herbs and olive oil are the prime ingredients in their foo Dance and Music kabuki In Asia Yangee Dragon Dance Kabaki are popular in East Asia Ram Thai in Thailand Bhangra Kathak and Bharathanatyam in India are also important dances in Asi Sufimusic and Arabic classical music are common in west Asi Tinikling is the national dance of Philippines Festivals Mid Autumn festival The mid autumn festival moon festival in China Taiwan and Vietnam Holi and Mahara Sankaranthi Pongal in major parts of India and Sukkoth in Israel are the important harvest festivals of Asi The snow sculpture festival Chinese New Year Thaipusam Diwali Taiwan Lantern festival Songkran winter light festival are also some of the famous festivals in Asi Land of contrasts Asia is the biggest continent It has different types of land features such as mountain plateau plain valley bay island et It also has different climatic conditions from the equator to polar region Apart from this many races languages religions and cultures are followed by people who live in Asi So Asia is called the land of contrasts Part B Europe Europe is the sixth largest continent in size and the third largest in population in the worl It has diverse landforms and people It is the birth place of western civilizations Roman and Greek democracy and Industrial Revolution It is the most developed continent in the worl Let us explore the continent Location and size Europe spreads from º North latitude to º North latitude and from º West longitude to º East longitude The Prime Meridian º longitude passes through Greenwich in Englan Europe is found in the northern hemisphere and it covers an area of million sqkm It is surrounded by the Arctic Ocean in the North the Black Sea and Mediterranean Sea in the south the Atlantic Ocean in the west and the Ural mountains in the east So it looks like a giant peninsul HOTS Europe is called as the Peninsula of Peninsulas Justify European Union The European Union EU is an economic and political union of member countries for their welfare It has own flag and the common currency the Euro € Fact The Netherlands About percent of the Netherlands lies below sea level So they have built dikes They have reclaimed new land from the sea with the help of dikes These reclaimed lands are called polders Physical Divisions Europe has diversified physical features such as mountains plains plateaus peninsulas bays islands and river basins It can be divided into four physical divisions The North Western Highlands The Central Plateaus High land The Alpine Mountain system The North European plains The North Western highlands This region includes the mountains and plateaus of Norway Sweden Finland Scotland and Icelan This region has the most beautiful fiord coast It was created by glaciations in the past This region has a lot of lakes which serve as reservoirs for producing hydroelectricity Norway and Sweden are the largest producers of hydroelectricity in the worl Fact Fiord A fjord is a narrow and deep sea inlet between steep cliffs It helps in the following ways It reduces the speed of wind irrespective of its direction The force of sea waves are also controlle Hence areas with fiords are best suited for natural harbours Fiord coast in Norway The Central Plateaus The plateaus are found in east west direction across central Europe Many rivers in Europe such as the Danube the Volga and the Tagus originate from this plateau The important plateaus of this region are The Pennines England The Meseta Spain The Central Massif and Jura France The Black forest Germany in these region has rich mineral resources The Pennines is called the backbone of Englan Black forest The lush and dark coloured fig and pine trees give black colour to this region The Alpine Mountain System The alpine mountain system consists of a chain of young fold mountains found in the southern part of Europe The important mountain ranges are the Sierra Nevada the Pyrenees the Alps the Apennines the Dinaric Alps the Caucasus and the Carpathian The Pyrenees forms a natural boundary between Spain and France The highest peak in Europe is Mt Elburz m in the Caucasus range The Mont Blanc m found in the Alps is the second highest peak in the Alpine System Mont Blanc There are several active volcanoes found in the Alpine mountain system Mt Etna Mt Vesuvius and Mt Stromboli are the important volcanoes found in Europe Earthquakes are common in this region The Stromboli is called the light house of the Mediterranean The Matterhorn The pyramid-shaped Matterhorn mountain is located in the Swiss Alps a height of m It is popular for its shape The North European plain The north European plain stretches from the Atlantic Ocean in the west to the Ural mountains in the east On the north it is surrounded by the Baltic Sea and on the South by the alpine mountain It is narrow in the West and wide towards the East Major European rivers such as the Seine the Rhine the Danube and the Don criss-cross this region and deposit their alluvium The Andalusian Plain The Hungarian Plain and the Wallachian Plain are also found in this region It has rich deposits of coal and iron ore The north European plain is densely populated region and cities like Paris Moscow and Berlin are located here Drainage The rivers play an important role in the development of Europe These rivers are used to irrigate farmland and also help to produce electricity Most of the rivers originate in the Alps and the central plateau of Europe These rivers are useful for inland navigation in central and Eastern Europe The Volga is the longest river in Europe The river Danube passes through Ten countries in Europe River Danube HOTS Why are European rivers suitable for inland navigation Climate The climate of Europe varies from the subtropical to the polar climate The Mediterranean climate of the south has warm summer and rainy winter The western and northwestern parts have a mild generally humid climate influenced by the North Atlantic Drift In central and eastern Europe the climate is humid continental-type In the northeast subarctic and tundra climates are foun The whole of Europe is subject to the moderating influence of prevailing westerly winds from the Atlantic Ocean Climate Divider The Alps mountain separates the Mediterranean climate from the cold climate of the north Fact North Atlantic Drift is a warm ocean current which brings warmth to the western Europe The westerly wind further transports warmth across Europe Natural vegetation The natural vegetation of Europe can be classified as follows Tundra Taiga or Coniferous Mixed Forest Mediterranean Forest Grassland The Arctic and northern Scandinavian highland have Tundra type of vegetation made up of lichens and mosses Coniferous Forest Coniferous or Taiga vegetations are found to the south of the Tundra region in Norway Sweden Finland Germany Poland and Austri Pine fir spruce and larch are the important tree varieties of taiga forest The mixed forest comprising of birch beech poplar oak and maple trees found in the western part of Europe particularly in western France Belgium Denmark Britain et Mediterranean trees like cypress cork oak olive and cedar are found along the borders of the Mediterranean Se Eastern Europe is covered by grasslands Steppe Resources Base and Economic Activities of Europe Availability of resources efficient educated work force research contact with other nations and innovations have transformed Europe into a modern and economically developed continent in the worl Europe is an industrially developed continent in the worl It has great diversity in its topography climate and soil These interact to produce varied patterns of agricultural activities such as Mediterranean agriculture Dairy farming mixed livestock and crop farming and horticulture Truck Farming Tulip Flower Garden Wheat is the dominant crop throughout Europe Barley Oats sugar beet rye potatoes and hay are also common crops Corn maize is an important crop in the lower Danubian lowlands and southwestern European Russia France and Italy Rice northern Italy and citrus fruits olive trees Spain Sicily depend on irrigation Olive tree The northernmost countries grow few cereals mainly oats and concentrate on animal husbandry especially cattle and dairying Mixed farming and the use of well tried crop rotations are widely practise Viticulture is mostly practised in Italy France and Germany Vineyard As for industrial crops European Russia Ukraine and Belarus are large producers of flax and hemp sugar beets and sunflower seeds Tobacco is grown in Belarus and is also important in Bulgaria Italy and Macedonian Greece European Russia Sweden and Finland are the major producers of softwood and hardwoo Fishing is a large industry in Norway Iceland Russia Denmark the United Kingdom the Netherlands etc The Dogger Bank in North Sea is an important fishing ground in Europe Industries Europe produces a significant portion of the world’s steel and iron ore Shipbuilding motor-vehicle and aircraft construction are widely distributed all over Europe Europe is also a large producer of pharmaceutical drugs A wide range of small-scale industries ie those that produce nondurable goods is found throughout Europe Some countries have a reputation for specialty goods as in the case of English Italian and Dutch bicycles Swedish and Finnish glass Parisian perfumes and fashion goods and Swiss precision instruments Cultural Mosaic of Europe Europe is the third most populous continent after Asia and Afric The population of Europe was million in which accounted for of the world’s population The population density in Europe is persons km High population density is often associated with the coalfields of Europe Other populous areas are sustained by mining manufacturing commerce offering large market labour forces and productive agriculture Monaco Malta San Marino and the Netherlands are the most densely populated countries Iceland and Norway have very low density of population In general population is scantiest in the mountain regions some highlands arid parts of Spain and the Arctic regions of Russi Monaco has the highest density of population in Europe persons km as well as in the worl Iceland has a very low density of population persons km Religion Language Europe is a continent of great linguistic and cultural difference English Spanish Portuguese French Italian and Slavic are the broadly spoken languages in Europe Christianity is the major religion in Europe A considerable number of Hindus Muslims and Jews are spread throughout Europe More than percent of the people belong to the Caucasoid race Art and Architecture European art and architecture mostly reveals the ordinary human being and is popular all over the worl Acropolis the Colosseum the statue of David The thinker Eiffel tower Big Ben Pisa Tower and Mona Lisa are some of the master pieces of art and architecture in Europe The Thinker Big Ben in London Eiffel Tower The Colosseum Food and Festivals Bread fish meat potatoes and dairy products are the staple food in Europe The Europeans celebrate both religious and holiday festivals Christmas Easter Good Friday the Saint Day Redentore Tomatina and Carnival are the important festivals of Europe They play Rugby foot ball basket ball ice hockey and skiing Bull fighting in Spain is the worlds attractive game Tomatina Festival A Comparison of Asia and Europe Asia and Europe are integrated geographically and separated politically Europe is the giant peninsula of Asi Both the Himalayas Asia and the Alps Europe were formed during the same geological perio The Steppe grass lands and coniferous forests are spread over several hundred kilometres from Europe to Asi Generally the plains are found in the northern part and the mountains in the southern part in both the continents The two continents are the homeland of ancient civilizations From the ancient period these two continents had trade relationship through the silk route and the spice route Despite the various geographical similarities these two continents have striking differences Asia Europe It is the largest continent both by area and population It is the smallest continent by area and the most develope It extends from S to N latitudes That is from the equatorial region to the polar region It extends from N to N latitudes That is from the sub-tropical region to the polar region It is located on the eastern hemisphere It is located at the centre of the earth The Bering Strait separates Asia and North Americ The Strait of Gibraltar separates Europe from Afric The Arabian Indo China India and Korea are the important peninsulas in Asi The Scandinavian Iberian Italian and Balkan are the important peninsulas in Europe The important parallels such as the Equator Tropic of Cancer Arctic Circle pass through it Only the Arctic Circle passes through it All kinds of climatic conditions are found here It also enjoys the distinctive monsoon type of climate Southern Asia receives summer rainfall It lies largely in the temperate zone It enjoys the distinctive Mediterranean type of climate Southern Europe receives winter rainfall Both hot and cold deserts are located here There are no deserts here It has a variety of mineral deposits Mineral resources are limited except for coal iron Plantation crops such as tea rubber and dates are largely cultivated in Asi Citrus fruits olives and grapes are cultivated mostly in Asi A majority of people in Asia are involved in primary activities A majority of people in Europe are involved in secondary and tertiary activities Recap Asia is the largest and the most populous continent in the worl It is divided into five physical divisions From the equator to the poles all types of climate are found in Asi The treeless polar region to dense equatorial forest are found in Asi Iron ore coal petroleum Bauxite mica tin zinc et are the chief minerals found in Asi Rice wheat sugarcane jute cotton tea coffee and dates are the important crops Asia is the birthplace of all religions Europe is the sixth largest continent It is divided into four physical divisions The European rivers play a Vital role to the country economy Europe experiences a cool temperate climate Mixed farming is the most widely practised type of agriculture in Europe Coal and Iron ore are a cheap minerals found in Europe Christianity is the major religion in Europe Exercise I Choose the correct answer Which is not the western margin of Asia a Black Sea b Mediterranean Sea c Red Sea d Arabian Sea The Intermontane plateau is found between Elbruz and Zagros a Tibet b Iran c Deccan d The Yunnan Glossary Beverage a drink other than water Perennial Continuing throughout the entire year Monsoon wind The seasonal wind of the Indian ocean Tundra A vast flat treeless Arctic Riverine Situated beside a river Staple food food that makes up the dominant part of people’s diet Irrigation The artificial application of water to land Husbandry The care cultivation and breeding of crops and animals Viticulture The cultivation of grapevines Steppes a large area of flat unforested grassland in Siberi Polder A piece of low lying land reclaimed from the sea Race a group of people who have similarities in biological traits Horticulture the art of garden cultivation and management vegetables fruits and flowers Unit Globe Surya and Poovendhan are very good friends who study in the sixth standard and live in a beautiful village called Thirunandriyur Surya lives in South Street while Poovendhan lives in North Street Every day they go to school together One day Surya Why are you coming so late Poovendha Poovendhan Please bear with me Surya Come let’s go Surya What took you so long Poovendhan You live on South Street But I have to come from the North Street which is so far away from here That’s why I’m late Surya Yes that’s true But wherever we live don’t you remember that we all live on planet Earth Poovendhan Yes Yes I do remember Even our Ponni Miss taught us about the Solar System Surya But I have a doubt Poovendhan Tell me what is it Surya We can see our house the things around us the people animals and birds with our eyes But why can’t we see our Earth as a whole Poovendhan Haven’t you seen it Surya No I haven’t Have you ever seen it Poovendhan Yes in our school only Surya Did you say in our school Poovendhan Yes on our Ponni Miss table Big and spherical Surya Oh Yes Like a ball on a stand Poovendhan Exactly That is our Earth Surya But But our teacher said that our Earth is in the Milky Way Galaxy But you say that our Earth is on our teacher’s table I am so confuse Come let’s go and ask Ponni Miss The bell rang as they reached school They attended the morning assembly and went to the classroom During the social science period Surya asks Ponni Miss to clear his doubts Surya Good morning Miss Teacher Good morning Surya Madam you told us on the other day that our Earth is in the Milky Way galaxy Teacher Yes it is true This is the model of the Earth Surya A model of the earth Madam Please explain Teacher Sure Sury The teacher asks all the students to sit down and starts explaining Directions The directions on the ground are always shown with respect to the North If we know the North then it is easy to find the other directions namely South East and West These are the four cardinal directions We know that the Sun rises in the East and sets in the West If we stand facing the sun in the morning then we face the east The west is towards our back The left hand points towards the north and the right hand points towards the south We should always keep this in min Globe We live on the planet Earth which is found third from the Sun Since the Earth is huge and we live on a very small area we are not able to see the Earth as a whole But when we travel to space we can see the Earth as a whole So in order to see the shape of the Earth as a whole and to know its unique features a three dimensional model of the Earth was created with a specific scale The surface area of the Earth is million square kilometres The Earth which is spherical is flat at the poles and bulges at the Equator The Earth cannot be compared with any other geometrical shape as it has a very unique shape Hence its shape is called a geoid earth shaped The Earth moves around the Sun It also rotates from the West to East on its axis at an inclination of The globe is also inclined at an angle of The axis is an imaginary line It is not actually found on the Earth The first globe was created by the Greeks in the year AD CE The Indian astronomer Aryabhatta I has mentioned in his book Aryabhatta Sidhantha The stars in the sky seem to move towards the West because of the Earth’s roation on its axis Lines on the Globe There are imaginary lines which are drawn on the globe horizontally and vertically to find a location and calculate distance and time These imaginary lines are called lines of latitudes and longitudes Ptolemy a Greco Roman mathematician astronomer and geographer was the first person to draw the lines of latitude and longitude on a map In his book Geographia a detailed description about the Earth’s surface its size and circumference and many locations based on the lines of latitude and longitude are given Latitudes The imaginary lines which are drawn horizontally on East West direction on the Earth are called the lines or parallels of latitudes The line of latitude which divides the Earth into two halves is known as the Equator From the Equator parallel lines are drawn towards the North and South poles at equal intervals The latitudinal extent between line of latitude on Earth is km Since the Earth is geoid shaped the length of the lines of latitude decreases from the Equator towards the South and North Poles The North and South Poles are not found as lines but as points The lines of latitude that are drawn horizontally between the Equator and the North Pole are called Northern latitudes and those which are found between the Equator and the South Pole are called Southern Latitudes The lines of latitude consist of parallels in the Northern Hemisphere and parallels in the Southern Hemisphere one at the Equator and the two poles are found as points Totally there are parallels found on earth The Equator is the longest of all lines of latitude Hence it is also known as The Great Circle Activity Draw a circle on a paper Draw a horizontal line across the middle of a circle Keeping this line as draw lines on both sides with an equal interval of with the help of a protractor The lines you have drawn are lines of latitudes Equator Equator North Pole South Pole North Latitude South Northern Hemisphere Equator The area of the Earth found between the Equator and the North Pole N is called the Northern Hemisphere Southern Hemisphere S E Equator N W The area of the Earth from the equator to the South Pole S is called the Southern Hemisphere The location of any country or place is based on this division of the hemispheres HOTS Based on the latitudinal extent in which hemisphere is India located Important lines of latitude The earth rotates on its axis at an inclination of It also revolves around the sun while rotating Based on the angle at which the sun’s rays fall on the earth certain lines of latitude gain significance Arctic Circle o N Antartic Circle o S South Pole o S Equator o Tropic of Cancer o N Tropic of Capricorn o S North Pole o N N and S N and S lines of latitudes are called Low latitudes N and S N and S lines of latitudes are called Middle Latitudes N and S N and S lines of latitudes are called High Latitudes Source A Dictionary of Geography Susan Mayhew Oxford University Press Fifth edition The Sun’s rays do not fall equally on all parts of the earth They fall vertically over the Equator and slanting towards the poles Thus all the places on earth do not have the same amount of temperature Based on the amount of heat received from the Sun the lines of latitude help in dividing the earth into different climatic zones Frigid zone Frigid zone Temperate zone Temperate zone Torrid zone Torrid zone Torrid Zone The region from the Equator towards the Tropic of Cancer N and the Tropic of Capricorn S is called the Torrid Zone The Sun’s rays fall vertically over this region and the average temperature is very high Hence this region is known as the Torrid Zone Temperate Zone From the Tropic of Cancer N to the Arctic Circle N and from the Tropic of Capricorn S to the Antarctic Circle S the Sun’s rays fall slantingly Moderate temperature prevails in this region Hence this region is called Temperate Zone Frigid Zone From the Arctic Circle N to the North Pole N and from the Antarctic Circle S to the South Pole S the Sun’s rays fall further inclined through out the year The temperature is very low Hence this region is known as Frigid Zone Some lines of latitude are also called by the following names in Tamil Latitude ahalangu Longitude nettangu Equator nilanaduvarai Tropic of Cancer kadagavarai Tropic of Capricorn magaravarai Source Ariviyal Kalanjiyam The Tamil University Longitudes The imaginary lines drawn vertically connecting the North Pole and the South Pole are called lines or meridians of longitude These lines of longitude are seen as semi circles The line of longitude is called the Prime Meridian There are lines of longitude towards the East and West from the Prime Meridian So there are totally lines of longitude These lines converge at the poles The W and E line of longitude are the same line North South Prime Meridian The lines of longitude that are found between the Prime Meridian and the East line of longitude are called Eastern Longitudes and the lines of longitude that are found between the Prime Meridian and the West line of longitude are called Western Longitudes Two opposite meridians form a great circle The lines of longitude are found as semi circles covering km at the Equator km at latitude and no space between the lines at the poles Activity Take a ball and a thin iron wire Pierce the ball with the wire from one end to the other end through the middle Remove the wire Draw circles around the points Name the northern most point as North Pole and the southern most point as South Pole The angle of a circle is Mark points on the circle at an interval of using a protractor Then draw lines joining these points on the top and bottom of the ball The lines that you have drawn are lines of longitudes North Pole South Pole East Prime Meridian Prime Meridian West East Longitude West Longitude Eastern Hemisphere Prime Meridian The part of the Earth between the line of longitude and the East line of longitude is known as the Eastern Hemisphere Western Hemisphere Prime Meridian The part of the Earth from line of longitude to West line of longitude is called as Western Hemisphere Activity Based on the longitudinal extent in which hemisphere is our country located Look at the globe and answer Significant Lines of Longitude Greenwich Meridian The Royal Astronomical Observatory is located at Greenwich near London in Englan According to the International Meridian Conference held in in Washington DC in the US all nations agreed on choosing the Greenwich Meridian as the international standard meridian This line of longitude is called the Prime Meridian and it is also known as the Greenwich Meridian because it passes through Greenwich International Date Line The o line of longitude has been fixed as the International Date Line drawn on the Pacific Ocean between Alaska and Russia through Bering Strait If a person crosses this line from the West to East he loses a day On the other hand when he crosses from the East to West he gains a day Based on this the date is fixed for different countries or regions of the worl The International Date Line is not straight If the line is drawn straight two places in the same country would have different dates So the International Date Line is found zigzag in certain places to avoid confusion East Siberian Sea RUSSIA Wrangel Island Chukchi Sea Beaufort Sea Tasman Sea ARCTIC OCEAN USA Bering Sea HAWAIIAN ISLANDS MARSHALL ISLANDS SOLOMON ISLANDS KERMADEC ISLANDS FRENCH POLYNESIA FRANCE FIJI TONGA NEW ZEALAND KIRIBATI GILBERT ISLANDS KIRIBATI LINE ISLANDS NORTH PACIFIC OCEAN NORTH PACIFIC OCEAN Aleuan Islands E W W W Internaonal Date Line Internaonal Date Line N Not to Scale INTERNATIONAL DATE LINE Earth Grid The imaginary lines of latitude and longitude form a grid like pattern on the surface of the earth known as the Earth grid or Geographic grid Earth grid To locate a place exactly on earth the latitudinal and longitudinal extensions are require Longitude and Time As many as lines of longitude are drawn to connect the North and South Poles around the Earth on the Eastern Hemisphere and on the Western Hemisphere Time is calculated on the basis of the lines of longitude Local Time When the sun is overhead on a particular line of longitude it is noon at all the places located on that line of longitude This is called local time The Sun is overhead on a line of longitude only once in a day So the local time differs for every line of longitude When the Sun is overhead the Greenwich Meridian at noon it is the local time of that place The world time is calculated by this standard line of longitude It is known as the Greenwich Mean Time GMT For example if the time is noon at Greenwich Meridian it is pm at E line of longitude and am at W line of longitude So as one moves towards the east from any meridian the time increases And if one moves towards the west from any meridian time decreases The word meridian is derived from the Latin word Meridianus It means mid day Medius Middle dies day So meridian means the position of the Sun found overhead at a place at noon am means anti Meridiem anti before Before Noon pm means post Meridiem Post after later After noon Standard Time Local time is calculated when the sun is overhead at noon Many lines of longitude may pass through a country Countries may or may not observe a common time The standard time of a country or a part of it is calculated keeping a particular meridian as a standard one The meridians are selected in multiples of or It is done in such a way that the variation of standard time from the Greenwich is expressed either as hour or an hour Indian Standard Time INDIAN STANDARD MERIDIAN E N N N N E PAKISTAN CHINA BANGLADESH BAY OF BENGAL ANDAMAN NICOBAR ISLANDS LAKSHADWEEP INDIA ARABIAN SEA INDIAN OCEA N BHUTAN NEPAL Tropic of Cancer EW N S Not to Scale The longitudinal extent of India is from E to E As many as twenty nine lines of longitude pass through Indi Having standard time is not logical Hence E line of longitude is observed as the Prime Meridian to calculate the Indian Standard Time IST The E line of longitude passes through Mirzapur near Allahabad in Uttar Pradesh This is located at an equal distance from Ghuar Mota in Gujarat and Kibithu in Arunachal Pradesh Time Zones The world has time zones Some countries have a great longitudinal extent So they have more than one standard time Example Russia has time zones Activity What is the difference in time between the GMT and IST If it is am at New York City US what would be the time at New Delhi the capital of India If it is Midnight at London what would be the time in India The standard time of Sydney city in Australia is found to be at a difference of hours from that of the GMT Mr Senthamizh travels by flight from Chennai to London He boarded the aeroplane at am After hours of travel at what time GMT would he have reach London We saw about the lines of latitude and longitude drawn on the globe Besides these physical land forms seas oceans countries etc are also found on the globe globe and maps are known as lines of longitude or meridians The line of latitude is called the Equator The line of longitude is called the Greenwich Meridian or the Prime Meridian The part of the Earth from the Equator to North Pole is called the Northern Hemisphere and from the Equator to South Pole is called the Southern Hemisphere The part of the Earth from the Greenwich Meridian to East line of longitude is called the Eastern Hemisphere and from Equator to West line of longitude is called the Western Hemisphere Lines of latitude are circles which are drawn at a distance of about km The poles are shown as points Lines of longitude are drawn as semi circles The distance between the lines of longitude at the Equator is km It is found at a distance of km at latitude and they converge at the poles Lines of latitude do not merge while lines of longitude converge at the poles Time is calculated on the basis of the lines of longitude The line of longitude is the International Date Line Wrap up The imaginary lines drawn horizontally from the East to West on the globe and maps are called lines of latitude or parallels The imaginary lines drawn vertically from the North to South on the Glossary Globe A model of the earth Lines of Latitude Parallels Imaginary lines drawn horizontally on the Earth from the East to West Lines of Longitude Meridians Imaginary line drawn vertically on the Earth from the North to South Geoid The shape of the Earth Hemisphere Dividing the earth on the basis of lines of latitude and longitude with regard to directions Equator The line of latitude drawn horizontally at the centre of the Earth Tropic of Cancer N line of latitude Tropic of Capricorn S line of latitude Arctic Circle N line of latitude Antarctic Circle latitude Unit Understanding Disaster This lesson explains about the various natural disasters and man-made disasters It also deals with the precautionary and mitigation measures taken to avoid the loss of lives and materials Disaster is a very common phenomenon in the human society It has been experienced by people since time immemorial Though its form may be varied it has been a challenge for society The latest development which has been discovered in the World Disaster Reports recently is that the disasters have increased in frequency and intensity India is one of the most disaster prone countries in the worl It has some of the world’s most severe droughts famines cyclones earthquakes chemical disasters rail accidents and road accidents The high density of population in the developing countries especially in the high risk coastal areas results in millions of people getting affected by natural disasters especially in recurring disasters like floods cyclones storm surges et Disaster A disaster is a serious disruption of the functioning of a society involving human and material loss Disaster is broadly classified into natural and man made disasters Natural Disasters Earthquake The sudden shaking of the earth at a place for a short spell of time is called an earthquake The duration of the earthquake may be a few seconds to some minutes The point where an earthquake originates is called its focus The vertical point at the surface from the focus is called epicentre Volcanoes Volcanoes are openings or vents where lava small rocks and steam erupt onto the earth’s surface Tsunami Tsunami are waves generated by earthquake volcanic eruptions and underwater landslides Cyclones A low pressure area which is encircled by high-pressure wind is called a cyclone Floods An overflow of a large amount of water beyond its normal limits especially on the rainfed areas is called a floo Landslide The movement of a mass of rocks debris soil etc downslope is called a landslide Avalanche A large amount of ice snow and rock falling quickly down the side of a mountain is called an Avalanche Thunder and lightning Thunder is a series of sudden electrical discharge resulting from atmospheric conditions This discharge results in sudden flashes of light and trembling sound waves which are commonly known as thunder and lightning Earthquake Volcanic explosion Tsunami Cyclones Floods Landslide Avalanches Thunder lightning Man-made disasters Fire Massive forest fires may start in hot and dry weather as a result of lightning and human carelessness or from other causal factors Destruction of buildings Demolition of buildings by human activites Accidents in industries Chemical biological accidents that occur due to human error Bhopal gas tragedy Accidents in Transport Violation of road rules carelessness cause accidents Terrorism The social unrest or differences in principles leads to terrorism Stampede The term stampede is a sudden rush of a crowd of people usually resulting in injuries and death from suffocation and trampling Tsunami and floods A killer Tsunami hit the south east Asian countries on the of December A massive earthquake with a magnitude of in the Richter scale epicentre in the Indonesian island of Sumatr It triggered one of the biggest Tsunamis the world had ever witnesse The massive waves measuring up to metres that killed more than people of Asi In India over people were killed by this disaster Tamil Nadu alone accounted for deaths All the coastal districts were affected Nagapattinam was the worst hit in the state of Tamil Nadu Fishermen tourists morning walkers children playing in beach and people living on the coast were unprepared for the waves So they lost their life and the most of the loss of lives and damage to property was within metres of the shore After that the Indian government set up a Tsunami Early Warning System at Indian National Centre for Ocean Information Services INCOIS Hyderabad in Fire Destruction of buildings Accidents in industries Accidents in Transport Terrorism Stampede Tsunami Do’s and Don’ts You should find out if your home school etc are in valunarable areas along sea shore Know the height of your street above sea level Plan evacuation routes and practise your evacuation routes Discuss tsunamis with your family Review safety and preparedness measures with your family If you see the sea water receding you must immediately leave the beach and go to higher ground far away from the beach Dont go to the coast to watch the Tsunami Dont try to surf the tsunami waves Be aware facts about tsunami Floods Floods are high stream flows which overlap natural or artificial banks of a river or a stream and are markedly higher than the usual flow as well as inundation of low lan Types of floods Flash floods Such floods that occur within six hours during heavy rainfall River floods Such floods are caused by Precipitation over large catchment areas or by melting of snow or sometimes both Coastal floods Sometimes floods are associated with cyclone high tides and tsunami Causes of floods Torrential Rainfall Encroachment of rivers bank Excessive rainfall in catchment Inefficient engineering design in the construction of embankments dams and canals Effects of floods Destruction of drainage system Water pollution Soil erosion Stagnation of water Loss of agricultural land and cattle Loss of life and spread of contagious diseases Do’s To find out if the settlement area is to be affected by flood or not Keeping radio torch and additional batteries storing drinking water dry foods items salt and sugar Safeguarding materials like kerosene candle match box clothes and valuable things Keeping umbrella and bamboo poles Keeping first aid box and strong ropes to bind things To dig canals from the farm land to drain the excessive water keeping sand bags etc Don’ts Try to connect electricity once it is cut Operate vehicles Swim against floods Avoid going on excursions Neglect flood warning messages During floods Cut off gas connection and electricity Keep sand bags on drainage holes and bathroom holes Leave immediately through the known passage or prescribed passage Drink hot water Use bleaching powder to keep your environment hygieni Before using match sticks and candles ensure that there is no gas leakage Don’t eat more food when you are affected by diarrhoe Don’t try to take anything that floats in floo Disaster Risk Reduction DRR Disaster Risk Reduction The practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters There are four key approaches to public awareness for disaster risk reduction Campaigns participatory learning informal education and formal school based interventions Forecasting and Early Warning Weather forecasting Tsunami early warning system cyclonic forecasting and warning provide necessary information which help in reducing risks during disasters School Disaster Management Committee Village Disaster Management Committee State and Central government institutions take mitigation measures together during disaster Newspaper Radio Television and social media bring updated information and give alerts on the vulnerable area risk preparatory measures and relief measures including medicine Glossary Mitigation The lessening of the adverse impacts of hazards and related disasters Forecast Definite statement or statistical estimate of the likely occurrence of a future event or conditions for a specific are Rainfed Supplied primarily with rainwater Magnitude A measure of the amount of energy released by an earthquake Contagious Transmissible by direct or indirect contact Catchment The action of collecting water especially the collection of rainfall over a natural drainage are Exercise I Answer in brief Define Disaster What are the two types of disasters Give examples Write a short note on Thunder and lightning Chennai Cuddalore and Cauvery delta are frequently affected by floods Give reason Differentiate Landslide Avalanche Answer in a paragraph What is flood Explain the do’s and don’ts during floods Activity Make a flood plan On a piece of paper draw your village town map roughly Locate your homeschool and playground on the map Then draw the rivers stream lake and road located nearest to your village town Answer the questions listed below Which areas and roads would be mostly affected by flood Can you find out evacuation route If you live in a flood-prone area what are the precautionary measures you have to take during heavy rains What are things that you should have in your Go Kit Drive away kit Make a list of emergency numbers Go-Kit A kit prepared by and for an individual or group who expects to develop it in alternative locations during emergency CIVICS Unit Democracy The world will constantly embrace the feet of the great king who rules over his subjects with love The teachers of Nallur Government High School were doing the final preparations for the programme Let’s know the society a monthly event The Singaravelar Hall was filled with students The Headmaster Mr Jeeva welcomed the Chief Guest of the day Advocate Mr Rajasekaran When he brought the chief guest to the hall the students observed silence Mr Britto the history teacher welcomed the gathering The chief guest Mr Rajasekaran stood up to address the students Beloved brothers and sisters I thank you for inviting me to this programme I’m not going to speak on this occasion When he said this and paused everyone looked at him in wonder Democracy should be found everywhere shouldn’t it So I am going to converse with all of you he sai He requested to give a microphone to the students Mr Rajasekar said First let me ask you a question Do you know what kind of society did the early man live in In the beginning they were hunters and gathered foo Later they settled near rivers and practised agriculture said Deepika a sixth standard student Yes when man started to live in groups tribes were forme Every tribe had its own chief These groups fought among themselves for land water and other resources Those who emerged victorious formed kingdoms by uniting the other tribal groups These kingdoms later integrated to form empires Arun questioned So the chief would have become the king wouldn’t he Yes that was how monarchies ruled by kings were formed Suganya asked Was this how monarchy emerged in our country too Yes this was how the system of monarchy formed throughout the worl Also our country was ruled by kings and emperors and then came under the British rule The students answered together After centuries of struggle and many sacrifices we got freedom from British colonialism We adopted democracy as our ruling system when our country got freedom said Rajasekaran Devarajan asked him What is democracy When you start a Sports Club you’ll share the responsibilities Then you would enjoy its benefits but share the income and expenditure wouldn’t you Yes sir Similarly the citizens of a country select their representatives through elections Thus they take part in the direct governance of a country This is termed Democracy In a democratic form of government a considerable amount of power lies with the people of that nation People can participate in the politics of the country and decision making processes There are different types of democracy Types of democracy Yes there are various types of democracy in practice around the worl Among those direct democracy and representative democracy are the most popular forms of government The birth place of democracy is Greece Democracy is a term derived from two the Greek words Demos and cratia Demos means the people and Cratia means the power or rule What is Direct Democracy asked Sirajudeen In a Direct Democracy people have the power to frame laws If we consider your Sports Club as an example you all can discuss and amend laws and rules The perspective of each member is considered and each one expresses his view But how will you take a final decision The choice of the majority will be accepte The others will also give their consent said Selv Yes this system is actually known as Direct Democracy said Rajasekaran What do you mean by Representative Democracy Imagine that your Sports Club has more number of members now Is it possible for hundreds of them to gather and discuss to take various decisions No sir In that case all the members should be represented by a group of representatives shouldn’t they Yes agreed the students in union DEMOCRACY Direct Democracy Switzerland Representative Democracy India USA England Laws Rules Votes The people Laws Rules Elected Representatives Votes The people Those group members will administrate the sports club on behalf of all the other members To select these representatives elections are hel For example many contest for the post of the Head Secretary Treasurer and members of the administration group In the end those who gain the maximum number of votes will be given the posts On behalf of the other members they obtain the power to take decisions in a democratic manner This is termed as Representative Democracy What is meant by democratic decision making questioned Judith In the system of democracy the power to take decisions does not lie with the Hea On the contrary a group holds the power but adheres to the rules and regulations All the members of the group hold open discussions and take final decisions only when everyone is convince This is called democratic way of decision making Are there rules and regulations to govern our country like the rules and regulations of this group Yes In a highly populated country like India if people want to live peacefully they have to follow certain rules and regulations rights and duties properly Hence the constitution of India guides us in all these aspects and plays an important role in maintaining law and order What are the rights given in our Constitution Our Constitution ensures freedom equality and justice to everyone What other features are found in our constitution It defines the political principles the structure of the government institutions and methods to follow these rules and regulations the powers and responsibilities And also it fixes the Rights and Duties and the Directive Principles of the citizens Thus our constitution provides a structure to us Is the constitution of India such a detailed one asked Tamizhselvi in amazement Indian Constitution is the longest written constitution in the worl It is drafted by the Drafting Committee of the Constituent Assembly headed by Dr BR Ambedkar That is why we call him as the Chief Architect of our Constitution Rajasekaran conclude The students clapped with joy and thanked him for the simple explanation of democracy Aims of Democracy Democracy is defined as Government of the people for the people and by the people In a democracy the power is vested in the hands of the people For that the people should have rights to take decisions Everyone cannot participate in decision making So the representative government elected by the people to form a democratic system all those who attain the age of are given the voting rights to elect the representatives At the same time the representatives have the responsibility to protect the welfare of the people World Democracy New zealand is the first country to allow women to vote Voting rights to women were given in and in the UK and USA respectively At the same time the wealthy alone were given the voting rights in Indi Many leaders like Mahatma Gandhi kept insisting on giving voting rights to all Now in India all the people above years of age enjoy Universal Adult Franchise The world statistical data on democracy declares that of the Indian citizens have faith in the democratic system Hence India ranks first among the democratic countries of the worl Sl No Democracy Period Location Significance Greek Democracy century BC BCE Greece Foundation of political philosophy Roman Empires Democracy BC BC BCE Italian Peninsula Rome Loads of expansions of the growth of civilization San Merinos Democracy AD CE Italy Earliest written constitution still in effect The Iceland Democracy AD CE Thingvellir The oldest and longest functioning parliament in the worl The Isle of Man’s Democracy AD CE Between Great Britain and Ireland Self governing possessions of the crown British Democracy Century AD CE England Magna Carta of US Democracy AD CE United States of America The oldest standing democracy Democracy a government formed by the people Election a process by which a representative is chosen Decision to make up one’s mind Government a group of people with a authority to govern a country Government of the people by the people for the people is defined as democracy Direct democracy and Representative democracy are the types of democracy Our constitution ensures freedom equality and justice to everyone Indian constitution is the longest written constitution in the worl In India all the people above years of age enjoy Universal Adult Franchise Unit Local Bodies Rural and Urban Nandhini is in standard VI It was her custom to read the headlines in the newspaper loudly to her parents Mr Namburajan and Mrs Manimegalai They would clear her doubts Sometimes children from their neighbourhood would also join her and each one will read an article loudly As it was a Saturday Johnson Maran and Anwar were also in Nandhini’s house Nandhini started to read an article from the newspaper Avadi as been declared as corporation She was about to read the next heading but she had a doubt and asked her father Father what is a corporation The Government of Tamil Nadu will declare certain municipalities based on above Ten laks population and high revenue That’s how Avadi has declared as a corporation too said her father Namburajan Oh if that is so are there other corporations that exist already Yes there are corporations in Tamil Nadu at present Avadi also include in this list said Namburajan Chennai Madurai Coimbatore Tiruchirapalli Salem Tirunelveli Erode Thoothukudi Tiruppur Vellore Dindigul Thanjavur Nagercoil Hosur Avadi TIRUPPUR COIMBATORE DINDIGUL MADURAI TIRUNELVELI THOOTHUKUDI NAGERCOIL ERODE SALEM VELLORE HOSUR CHENNAI AVADI TIRUCHIRAPALLI Bay of Bengal THANJAVUR Not to Scale The Chennai Corporation which was founded in is the oldest local body in Indi Father what about the place we live in enquired Maran We live in a Panchayat Maran What is a Panchayat There are villages as well as cities in Tamil Nadu aren’t there Yes father Won’t the needs of villages and cities differ Our constitution has provided certain structures to fulfill the needs of the people Accordingly the urban local bodies are categorized into City Minicipal Corporations Municipalities and Town Panchayats while the rural local bodies are categorised into Village Panchayats Panchayat Unions and District Panchyats These are together known as local bodies Oh are there so many divisions Yes I’ll tell you about them Didn’t I tell you about the City Municipal Corporations Yes father Those areas which have a population of more than one lakh and a high amount of revenue and is found in the level below the City Municipal Corporation is called a Municipality Walajahpet Municipality is the first Municipality in Tamil Nadu You mentioned something about towns A Town Panchayat has about population A Town Panchayat is between a village and a city There is something special about the Town Panchayat Can anyone tell me what is it asked Namburajan Everyone was gazing at him But none answere Well I’ll tell the answer myself Tamil Nadu was the first state to introduce a town Panchayat in the whole of India All were amazed on hearing it A City Municipal Corporation has a Commissioner who is an Indian Administrative Service IAS officer Government officials are deputed as Commissioners for the municipalities The administrative officer of a Municipality is an Executive Officer EO You mentioned about Panchayats and Panchayat Unions The Village Panchayats are the local bodies of villages They act as a link between the people and the government Villages are divided into wards based on their population The representatives are elected by the people The Elected Representatives Panchayat President Ward members Councillor District Panchayat Ward Councillor Panchayat Union Many village Panchayats join to form a Panchayat Union A Councillor is elected from each Panchayat isn’t it Those councillors will elect a Panchayat Union Chairperson among themselves A Vice Chairperson is also electe A Block Development Officer BDO is the administrative head of a Panchayat Union The services are provided on the Panchayat Union level The Nilgiris and Perambalur Districts have the lowest number of Panchayat Unions District Panchayat A District Panchayat is formed in every district A district is divided into wards on the basis of population The ward members are elected by the Village Panchayats The members of the District Panchayat elect the District Panchayat Committee Chairperson They provide essential services and facilities to the rural population and the planning and execution of development programmes for the district The local bodies are governed by the representatives elected by the people The constituencies are called wards People elect their ward members The Mayor of the City Municipal Corporation and the Municipal Chairperson are the elected representatives of the people The people elect them The Corporation Deputy Mayor and the Municipal Vice Chairperson are elected by the ward councillors finished Namburajan What are the benefits of local bodies uncle There are many benefits The services provided can be divided as obligatory functions and discretionary functions These are provided by the local bodies Functions of the village Panchayat Obligatory Functions Water supply Street lighting Cleaning roads Drainage sewage pipes system Laying down roads Activation of Central and State Government schemes Discretionary Functions parks Libraries Playgrounds et Functions of the City Municipal Corporation Drinking water supply Street Lighting Maintenance of Clean Environment Primary Health Facilities Laying of Roads Building flyovers Space for markets Drainage System Solid waste management Corporation schools Parks Play grounds Birth and Death registration et So who does all these works As per the decisions taken in the Council meetings the commissioner or officers assign these works to their subordinate officers or other servants Thus they all work in various levels to get these public works done Will the Government provide funds for these services father The Government directly allots funds for these works The local bodies also collect revenue Revenue of the Village Panchayat House tax Professional tax Tax on shops Water charges Specific fees for property tax Specific fees for transfer of immovable property Funds from Central and State Governments et Revenue of the City Municipal Corporation House Tax Water Tax Tax on shopping complexes Professional Tax Entertainment Tax Vehicle Charges Funds by Central and State Government et How are the Grama Sabha meetings Activity Distinguish between rural and urban revenue and functions Find out from your home The taxes paid by your family held uncle asked Maran Grama Sabha meetings In movies I have seen elders sitting under trees and discussing important matters and take decisions said Johnson No no both are different A Grama Sabha is formed in every Village Panchayat It is the only permanent unit in the Panchayat Raj System Grama Sabha meetings are held even in smaller villages The Grama Sabha is the grass root level democratic institution in a Village Panchayat Those who have attained the age of years and whose names are found in the electoral roll of the same Panchayat can take part in a Grama Sabha meeting The Grama Sabha meetings are conducted four times a year Officers like the District Collector the Block Development Officer Panchyat President Vice President and Ward Members etc also participate in this meeting The people can freely express their needs and grievances When are these meetings convened January May August and October Apart from these days the meetings can be convened as per need or during emergency These are called Special Grama Sabha meetings Mahatma Gandhi advocated Panchayat Raj as the foundation of India’s political system as a form of government where each village would be responsible for its own affairs The Panchayat Raj Act was enacted on April April is National Panchayat Raj Day Special features of Panchayat Raj Grama Sabha Three tier local body governance Reservations Panchayat Elections Tenure Finance Commission Account and Audit etc Thank you very much uncle We really learnt a lot about local bodies said the children gratefully I’m very happy that I could share so much with you today That’s enough of reading newspapers Go out and play now said Namburajan The children ran out to play joyously Activity The Central Government gives awards to the best performing Village Panchayats Find out if your village has received such awards Role of women in the Local Self Government All local bodies have a reservation of for women In the Local Bodies election seats were won by women As per the Tamil Nadu Panchayats Amendment Act reservation for women is being fixed in Panchayat Raj institutions Activity Find out about the ward members of your are Talk to the women members and discuss about their participation and experiences Local Body Election The tenure for the representatives of local self Government is years The election to the Local Bodies is held once in five years by the State Election Commission Every state has a State Election Commission The Tamil Nadu State Election Commission is situated in Koyambedu Chennai Local Bodies of Tamil Nadu At present Village Panchayats Panchayat Unions District Panchayats Town Panchayats Municipalities Municipal Corporations Source Tamil Nadu State Election Commission wwwtnsectnnicin Think it over Do you think the above numbers are stable Find out about the recent changes What is the number of votes cast by rural and urban voters in a local body election Works carried out by local bodies durings natural disasters and out break of diseases Town Panchayat Municipality Corporation Village Panchayat Panchayat Union District Panchayat Local bodies are structures to fulfill the needs of people Three types of traffic signs Mandatory Cautionary and Informatory I Mandatory road signs are the ones that give order regarding dos and don’ts and are to be followed strictly These are generally circular in shape No entry One Way No right turn No left turn No U turn Panchayat Panchayat Union and District Panchayat are rural local bodies Town Panchayat Municipality and Corporation are urban local bodies Grama Sabha is the only permanent unit in a village Panchayat Panchayat Raj System strengthened the local bodies The election of local bodies take place in every five years Unit Road Safety Caution and care make accident rare Traffic rules are the laws that govern how when and why you are allowed to drive any vehicle The traffic safety course education plays an important role in shaping the attitude and behaviour of children and young people ensuring to become responsible drivers pas sengers pedestrians and cyclists Keeping the children safe at all times can be tricky when you cannot be with them always Parents and teachers ensure the safety of the children at home and school But who keeps them safe on the road Therefore educating children about road safety is very important Teaching about road safety to children can be started as soon as they are old enough to step out of the home Three types of traffic signs Mandatory Cautionary and Informatory I Mandatory road signs are the ones that give order regarding dos and don’ts and are to be followed strictly These are generally circular in shape Know your signals What do the three colours red amber and green signify RED means STOP Wait behind the stop line If there are no lines stop before the traffic light at the intersection so that traffic light is clearly visible Wait until a green signal appears before proceeding You may turn left while the signal is red if it is not prohibited by a sign But give importance to pedestrians and other traffi AMBER means CAUTION-You may move on if the amber appears after you have already crossed the stop line or when you feel that your stopping may cause accident Anyhow be extra careful GREEN means GO Proceed ahead ensuring that the way is clear You can make a right or left turn if not prohibited by signs but take special care and give way to pedestrians crossing the roa GREEN ARROW means that you can go in the direction shown by the arrow Cross roads and pedestrian crossing Children have a tendency just to sprint across the street as they like Educate the children to never run across or along the roa Children can get distracted easily and leave their parent’s hand to run or sprint away Children should cross only at pedestrian crossing Pedestrian Crossing The pedestrian crossing was instituted in Britain in The roads were marked by dotted lines On the pavement there were striped Belisha beacon light poles named after Britain’s Minister of transport L Horre-Belisha The Zebra crossing with black and white stripes was developed after the Second World War Road signs markings traffic signals and other traffic devices are there to guide the road users and hence are the languages of the roa Every road user whether a pedestrian two-wheeler rider driver of four wheeled vehicle should have knowledge regarding these traffic controlling devices and should be aware of what they signify Traffic signs are there to regulate traffic warn about hazards and to guide the road user Always use pavements Children must use the pavements while walking on the roa Pedestrian Dos Walk on any side of the road if there are footpaths On roads without footpath walk on your extreme rightside facing the oncoming traffi Use zebra crossing foot over bridge subways to cross the roads Where such facilities are not available be extra cautious while crossing the roa Children below years of age should cross the road with the help of elders Cross the road when the vehicles are at a safe distance Wear light coloured dresses during night Don’ts Don’t cross the road hastily by running Don’t cross the road in front of or in between parked vehicles Don’t try to cross the road from blind corners turnings where you are not visible to the vehicle drivers Don’t jump over the railings to cross roa Staying safe on a bicycle Most children use bicycle to go to schools So they should be aware of the road rules and road safety Moreover they should maintain their bicycles in good condition Dos Cycle must be fitted with standard gadgets bell brakes rearview mirror both front and back mudguard painted white reflective tapes affixed at the front and back Cycle on the extreme left side of the road or use service road if available Avoid busy roads Keep a safe distance from fast motorized vehicles Give proper indications before stopping or turning Don’ts Don’t indulge in any kinds of stunts Don’t load the cycle with another person or heavy goods Don’t ride holding onto other fast moving vehicle While commuting in School transportation Dos Get up early and start early from home Board the bus from the designated bus stop in a queue Once inside the bus behave properly Hold on to the railings of the bus Alight only at the designated bus stop Get down only when the bus has stopped completely If the driver is not following the road safety norms bring it to the notice of school authorities parents or traffic helpline Don’ts Do not rush or run to catch your bus Do not stand on the steps of the bus Do not make noise that may distract the driver Do not put any part of the body outside the bus Do not get in or get down from a moving bus As pillion rider co-passengers Always wear helmet seatbelt Do not indulge in talking with the driver Children above years of age should occupy the back seat Play at safe places Do not play on roads Look for a playground or vacant land to play Do not play around a vehicle parked inside your school premises colony or near your residence Exercise I Answer the following Prepare slogans for road safety Identify the following signs Discuss about the statistics of accidents dat Debate Is wearing helmet necessary Draw posters related to road safety Social Science Unit What is history Tamilini enters her house from school Her mother who was reading a book greets Tamilini with a hug She collects her school bag and asks Tamilini to refresh herself She gives Tamilini some snacks to eat She then asks Tamilini about the school activities of that day Mother Tamilini what subject did you study today Tamilini History m Mother Oh nice Did you properly understand what history is Tamilini Yeah I understood something about history Can you please tell me more about history Mother What is your name Tamilini Tamilini Mother Tell me your mother’s name Tamilini Mrs Sumathi Mother Father’s name Tamilini Mr Adhiyaman Mother Tell me the name of your father’s father Tamilini You mean grandpa Mr Chidambaram Mother Do you know the name of great grandp Mr Chidambaram’s father Tamilini Grandma always used to tell me about one great grandpa You want that great grandpa’s name amma mmm Mother Yes Your great grandpa’s name is Mr Ramasamy OK Often your father shows proudly a very old wooden pen and used to tell us that it was his grandpa’s pen Do you remember it Tamilini Yes amma Normally he keeps it in a beautiful wooden case on his table Is that the one Mother You are right Tamilini We cannot write with that pen now But father has kept it as a treasure If you ask your father about that he will show you the diary written by your great grandpa with that old pen From that diary we come to know that your great grandpa was a literate while most of his villagers were illiterates Further we can understand the lifestyle of that period and also about activities from his diary writings Tamilini Can this small diary record so much of news amma Mother Yes Tamilini We understand the period and lifestyles of people of Old Stone Age from used stone tools like what you understand about your grandpa and his time from his diary writing Tamilini What are the other sources that help us understand the lifestyles of Stone Age people Mother We came to know their hunting style through their paintings on the rocks and the walls of the caves Tamilini Rock paintings It sounds really surprising Why did they draw these paintingsMother Some would have stayed back without joining the hunting team So for their benefit these pictures could have been drawn They might have done it as a part of their pastime Tamilini Certainly amm That’s how we identify their lifestyles Isn’t it amma Mother Well said Tamilini The period between the use of first stone tools and the invention of writing systems is pre-history Stone tools excavated materials and rock paintings are the major sources of pre-history Now one can understand the importance of historical research But for the efforts of scholars the greatness of Emperor Ashoka would not have come to light Mother Do you know what proto history is Tamilini That is the period between pre history and history Mother Exactly The period for which records in writing are available but not yet deciphered is called proto history Today we are leading a safe life with all modern equipment But our ancestors did not live in such a safe environment There might have been chances of wild animals entering their caves But they realised that dogs could help them to prevent the entry of such dangerous animals by its sniffing skill Hence they started domesticating dogs for their protection and hunting activities From this we also know how inscriptions monuments copper plates accounts of foreigners or foreign travellers and folk tales play a vital role in constructing and reconstructing history Tamilini Now I completely understand what history is amm Thank you amm Unit Human Evolution Tamilini a school student of Class VI visited a Science Centre accompanied by her grandmother There they saw a time machine The operator of the time machine explained the working of the machine Operator If you press different buttons in the machine it would take you to the chosen period of time Why don’t you enjoy the experience of watching different periods of time using this machine After listening to the operator both Tamilini and her grandmother were excited and decided to have the experience of the time machine Tamilini Can we go forward and see how AD CE would be grandmaGrandma What is so interesting about our future in AD CE Tamil Let’s go backward and see how our past was like Tamilini You sound right grandm Grandma pushed the button to AD CE They saw mostly people walking a few riding bicycles and buses appearing rarely on the roads Slowly they moved back to There were no buses or cycles Carts pulled by mules and bullocks were seen on the roads Horse-drawn cart was a rare occurrence Tamilini then turned the button to years back People were engaged in raising crops and livestock She pushed the button to get a picture of life years ago She saw the humans living in caves They were using tools made of stones and bones for hunting Tamilini was frightened by the hunting scene and pushed the button forward to return to the present Grandma Are you afraid Tamil Grandma urged Tamilini to go further backward to see the ancient humans who lived with the apes But Tamilini was not incline So both of them left the spot Tamilini Grandma will you tell me the story of evolution of humans Grandma Yes certainly Grandma Anthropologists have unearthed the footprints of humans in a country called Tanzania which is in eastern Afric They were found in rock beds submerged under the san Radio carbon dating was used to ascertain the perio It was found out that the foot prints of humans they had discovered were about millions years ol When there is sudden change in nature the living beings adapt themselves to the changes and survive Humans have thus evolved over millions of years adapting themselves to the changing times Tamilini Grandma will you explain it in detailGrandma Human evolution means the process through which the humankind changes and develops towards an advanced stage of life See how the modern human has evolve Humans in erect position and walking on two legs happened much later Changes in thumb so that they can hold things tightly Development of brain Homo sapiens who migrated out of eastern Africa settled in different parts of the worl Their lifestyle also evolved and they made it suitable to the environs in which they live So humans in different places adopted different forms of lifestyle Based on the weather climate and nature of the living place their physique and complexion also differe This resulted in the formation of different races Human procreation resulted in an increase in the population Tamilini Grandma it’s fantasti Grandma Yes it is I shall now explain to you in detail how the Homo sapiens engaged in hunting and gathering Hunting and Food Gathering Tamil you will be surprised to know that millions of years ago our ancestors led a nomadic life They lived in groups in a cave or a mountain range Each group consisted of to people They kept on moving in search of foo They hunted pig deer bison rhino elephant and bear for foo They also ate the animals killed by other wild animals like tiger They learnt the art of fishing They collected honey from beehives plucked fruits from the trees and dug out tubers from the groun They also collected grains from the forest Once the food resource got exhausted in one area they moved to another place in search of foo They wore hides of animals and barks of trees and leaves for protecting their bodies during winter So humans began hunting to satisfy their need for foo Grandma Tamilini do you know the weapons that the early humans used for hunting Tamilini I have no idea grandm Can you tell me about hunting practices Stone Tools and Weapons Grandma Hunting was the main occupation of humans in the past It was difficult for humans to kill a big animal with a stick or a stone So they decided to use sharpened weapons The best stone for the making weapons was chikki mukki kal flint It is known for its strength and durability Humans spent many hours in search of a flint stone They made sharp weapons and tools with the help of the stones and fitted them with wood to grip them Humans created tools like axes with big stones Tamilini Why were axes made grandma Grandma The axes were made to cut trees remove barks dig pits hunt animals and remove the skin of animals Grandma Tamil do you know what the next stage was after making stone tools Tamilini I don’t know grandm What would it be Grandma Humans discovered the use of fire At first humans were afraid of fire and lightning Probably fire caused by lightning had killed many wild animals Humans tasted the flesh of the killed animals which was soft and tasty This made humans aware of the effect of fire They used flint stone to make fire and used it to protect them from predators for cooking food and for creating light during night Thus fire became important for man in olden times Tamilini What next grandma Grandma You will be surprised to know that the next human invention was the wheel This was the first scientific invention of humans using their brain and cognitive skills Invention of the Wheel The invention of wheel by humans is considered to be the foremost invention When humans saw the stones rolling down from the mountains probably they would have got the idea of making the wheel Pot Making Humans learned to make pot with clay The invention of wheel made pot making easier and the pots made were burnt to make it stronger They decorated pots with lot of colours The colour dyes were made from the extracts of roots leaves or barks These natural dyes were used in rock paintings Grandma Can you identify what is in this picture Hunting scene in which men and women are taking part Tamilini Yeah Some blurred tweaks are seen Someone has drawn Grandma No this is our ancestor’s handwork In fact it is the first art of humanity Before the use of language humans expressed their feelings through actions and also recorded it in rock paintings Ancient Rock Paintings In India we can see many paintings in rocks and caves The rock paintings give some information about the past Approximately there are caves in which caves have paintings There are many more undiscovered caves The rock paintings depict hunting pictures of the male and the female dancing pictures and pictures of children playing Tamilini Oh We are able to gain some knowledge about the past lifestyle through these paintings Isn’t it Grandma Grandma You said it rightly Tamil These rock and cave paintings tell us many stories about our ancestors Tamilini Okay grandma Now tell me how humans reached the next stage Grandma There were many dangers involved in hunting Due to large-scale hunting in the mountain areas and in the forests many animals became extinct Non availability of meat forced the humans to look for fruits and vegetables for foo Tamilini Now they would have thought of producing food for themselves Is it not grandmaFrom Nomadic to Settled Life The World’s Earliest Farmers Grandma Very well said Tamil The seed of fruits and the nuts they ate were thrown into the soil During rains the soil gave it life Some days later the saplings sprouted from the soil By observation and logic they learn that a plant grows from a single seed and yields lots of fruits and vegetables seeds that fall in the river beds sprout easily plants grow faster in water fed areas alluvial soil is more suitable for plant growth than any other With the above knowledge they gained they realised that with proper sowing and nurturing they could increase the number of plants more than the ones that grew naturally Thus agriculture and farming came into existence They domesticated the animals and used them in their farming Breeding of animals now became an important part of their life Oxen were used for ploughing Oxen made the practice of agriculture easier Life was becoming organised than it was when they were hunting It enabled them to settle down in a place Now with settlement came the problem of utensils and vessels for cooking and storage The potter’s wheel and fire solved this problem The invention of plough helped the farming practices Farming started with the clearing of land and burning the left-over shrubs They ploughed the land sowed seeds in them and harvested the produce During the pre historic period humans lived in caves and depicted their daily events in drawings Mostly pictures of animals were drawn Once the fertility of the soil decreased they moved to a new place Initially agriculture was done for immediate food requirement Later when they found out ways to increase production they started storing the produce The food products stored were used during the lean harvest periods By their experience they understood that land close to the river side was suitable for farming So they decided to stay there permanently Tamilini How about domestication of animals grandma Grandma Humans thought of ways to better their skills at hunting They found out that the dogs could sniff other animals and chase them away So humans found them useful for hunting Thus dogs became the first animal to be domesticated by humans Following the dogs they started domesticating hen goat and cow Tamilini What next Grandma Humans stayed on the plains for a long time During this period they have not only learnt agriculture but slowly developed skills of handicraft Permanent settlement in a place increased the yield of crops Now they had grains in excess of what they consume The surplus grains were exchanged with other groups for the other things they were in need of This is called the barter system Thus trade and commerce developed and towns and cities emerge Tamilini Thank you grandm The information you have shared with me is very helpful and I would share it with my friends at school tomorrow Grandma Very goo Congratulations Tamilini Unit Indus Civilization Initially people lived in groups Then they formed communities out of these groups Then evolved the societies which in due course become civilisations Why did people settle near rivers People preferred to settle near the rivers for the reasons given below The soil is fertile Fresh water is available for drinking watering livestock and irrigation Easy movement of people and goods is possible Discovery of a lost city Harappa The ruins of Harappa were first described by the British East India Company soldier and explorer Charles Masson in his book When he visited the North-West Frontier Province which is now in Pakistan he came across some mysterious brick mounds He wrote that he saw a ruined brick castle with very high walls and towers built on a hill This was the earliest historical record of the existence of Harapp In when engineers laid a railway line connecting Lahore to Karachi they discovered more burnt bricks Without understanding their significance they used the bricks for laying the rail roa In the s archaeologists began to excavate the cities of Harappa and Mohenjo-Daro They unearthed the remains of these long-forgotten cities In the Director General of ASI Sir John Marshall found many common features between Harappa and Mohenjo-Daro He concluded that they were part of a large civilisation Some slight differences are found in the earthenwares of Harappa and Mohenjo-Daro This made the researchers conclude that Harappa was older than Mohenjo-Daro Sites in Indian borders Archaeologists found major Harappan sites within Indian borders Time Span of Indus Civilisation Geographical range South Asia Period Bronze Age Time to BC BCE determined using the radiocarbon dating method Area lakh sqkm Cities big cities Villages More than Urban Civilization Harappan civilisation is said to be urban because of the following reasons Well-conceived town planning Astonishing masonry and architecture Priority for hygiene and public health Standardised weights and measures Solid agricultural and artisanal base Unique Features of Harappan Civilisation Town planning is a unique feature of the Indus Civilisation The Harappan city had two planned areas Streets and houses The streets are observed to have a grid pattern They were straight running from north to south and east to west and intersected each other at right angles The roads were wide with rounded corners Houses were built on both sides of the street The houses were either one or two storeys Most of the houses had many rooms a courtyard and a well Each house had toilets and bathrooms The houses were built using baked bricks and mortar Sun-dried bricks were also use Most of the bricks were of uniform size Roofs were flat There is no conclusive evidence of the presense of palaces or places of worship Drainage System Many of these cities had covered drains The drains were covered with slabs or bricks Each drain had a gentle slope so that water could flow Holes were provided at regular intervals to clear the drains House drains passed below many lanes before finally emptying into the main drains Every house had its own soak pit which collected all the sediments and allowed only the water to flow into the street drain The Great Bath Mohenjo-daro The great bath was a large rectangular tank in a courtyar It may be the earliest example of a water-proof structure The bath was lined with bricks coated with plaster and made water-tight using layers of natural bitumen There were steps on the north and south leading into the tank There were rooms on three sides Water was drawn from the well located in the courtyard and drained out after use The Great Granary Harappa The granary was a massive building with a solid brick foundation Granaries were used to store food grain The remains of wheat barley millets sesame and pulses have been found there The Assembly Hall The Assembly Hall was another huge public building at Mohenjo-Daro It was a multi-pillared hall pillars in rows to support the roof Trade and Transport Harappans were great traders Standardised weights and measures were used by them They used sticks with marks to measure length They used carts with spokeless solid wheels There is evidence for extensive maritime trade with Mesopotami Indus Seals have been found as far as Mesopotamia Sumer which are modern-day Iraq Kuwait and parts of Syri King Naram-Sin of Akkadian Empire Sumerian bought jewellery from the land of Melukha a region of the Indus Valley was mentioned in an epic regarding Naram-Sin Cylindrical seals similar to those found in Persian Gulf and Mesopotamia have also been found in the Indus are This shows the trade links between these two areas A naval dockyard has been discovered in Lothal in Gujarat It shows the maritime activities of the Indus people Dockyard at Lothal Lothal is situated on the banks of a tributary of Sabarmati river in Gujarat Leader in Mohenjo-Daro A sculpture of a seated male has been unearthed in a building with a head band on the forehead and a smaller ornament on the right upper arm His hair is carefully combed and beard finely trimme Two holes beneath the ears suggest that the head ornament might have been attached till the ear The left shoulder is covered with a shawl-like garment decorated with designs of flowers and rings This shawl pattern is used by people even today in those areas Technology Indus people had developed a system of standardised weights and measures Ivory scale found in Lothal in Gujarat is mm the smallest division ever recorded on a scale of other contemporary civilisations Inscriptions written in a script of those times can provide us information about customs practices and other aspects of any place or time So far the Indus script has not been deciphere Therefore we must look for other clues to know about the Indus people and their lifestyle Apparel Cotton fabrics were in common use Clay spindles unearthed suggest that yarn was spun Wool was also use Love and peace Settlements were built on giant platforms and elevated grounds The Indus Civilisation seems to have been a peaceful one Few weapons were found and there is no evidence of an army They displayed their status with garments and precious jewellery They had an advanced civic sense Ornaments Ornaments were popular among men and women They adorned themselves with necklaces armlets bangles finger rings ear studs and anklets The ornaments were made of gold silver ivory shell copper terracotta and precious stones Who Governed them Historians believe that there existed a central authority that controlled planning of towns and overseas trade maintenance of drainage and peace in the city Occupation The main occupation of the Indus Civilisation people is not known However agriculture handicrafts pottery making jewellery making weaving carpentry and trading were practice There were merchants traders and artisans Rearing of cattle was another occupation People of those times knew how to use the potter’s wheel They reared domesticated animals Pottery Pottery was practiced using the potter’s wheel It was well fire Potteries were red in colour with beautiful designs in black The broken pieces of pottery have animal figures and geometric designs on it Religious Belief We don’t have any evidence pointing to specific deities or their religious practices There might have been worship of Mother Goddess which symbolized fertility which is concluded based upon the excavation of several female figurines Toy Culture Toys like carts cows with movable heads and limbs clay balls tiny doll a small clay monkey terracotta squirrels eating a nut clay dogs and male dancer have been foun They made various types of toys using terracotta which show that they enjoyed playing What happened to Harappans By BCE the Harappan culture had started declining It is assumed that the civilisation met with repeated floods ecological changes invasions natural calamity climatic changes deforestation an epidemi General Facts about Indus Civilisation It is among the oldest in the worl It is also the largest among four ancient civilisations The world’s first planned cities are found in this civilisation The Indus also had advanced sanitation and drainage system There was a high sense of awareness on public health Unit Ancient cities of tamilagam It is a Government Higher Secondary School Reciprocating the greetings of the students of VI Std the Social Science Teacher signals them to get seated Teacher Wow You look pretty in your new dress Tamilini Students Ma’m today is her birthday Teacher Wish you a happy birthday Tamilini Many more happy returns of the day Tamilini Thank you ma’m Teacher Ok children Shall we start todays class from Tamilini’s birthday Students How come ma’m What is the connection between Tamilini’s birthday and today’s class Teacher There is I shall come to that later Let us stand up and wish her first Students Happy birthday Tamil Tamilini Thank you all Teacher Tamil Is Chennai your home town Tamilini No ma’m My home town is Kadavur near Karur Teacher Goo Do you have the habit of visiting your home town Tamilini Yes ma’m Every summer I visit my home town Teacher Excellent Can you tell me the difference between Kadavur and Chennai Tamilini Kadavur is a village Chennai is a city Teacher Excellent Teacher Can you tell what were the earliest planned cities of ancient India Students Harappa and Mohenjo-Daro ma’m Teacher Yes Very good children Today we are going to study about the ancient towns of Tamilagam They are Poompuhar Madurai Kanchi Shall we start Students Ok ma’m Teacher See we have started today’s lesson with Tamilini’s birthday Students Yes mam Teacher Like Harappa and Mohenjo-Daro in ancient India there were famous towns in ancient Tamilagam too Madurai Kanchi and Poompuhar are prominent among them Tamil literature accounts of foreign travellers and archaeological finds provide us information about the ancient towns of Tamilagam Poompuhar Poompuhar is one of the oldest towns in ancient Tamilagam This is the place where well known characters of Silapathikaram Kovalan and Kannagi live It was also a port town along the Bay of Bengal The ports were established for facilitating maritime trade Even in times past countries began to export their surplus products and import the scarce commodities by se Poompuhar is one such historic port that emerged in the wake of increasing maritime trade It is a coastal town near the present-day Mayiladuthurai and is located where the river Cauvery drains into the se Poompuhar Port Poompuhar was also known by names such as Puhar and Kaveripoompattinam It served as the port of the early Chola kingdom One of the popular Sangam Literature Pattinappaalai and Tamil epics Silappathikaram and Manimegalai have references to the brisk sea-borne trade that took place in the port city Puhar Silappathikaram in particular speaks about the greatness of Poompuhar The lead female character of Silappathikaram is Kannagi Her father is Maanaigan Sea traders are known by the name Maanaigan The male character Kovalan’s father is Maasathuvan Massathuvan means a big trader It is clear from the text that Poompuhar was a place where big traders and sea traders had settled down Numerous merchants from foreign countries such as Greece and Rome landed at Poompuhar Due to busy and continuous trade many of them stayed on indefinitely in Poompuhar There are evidences of foreigners settlements in the town People speaking many languages inhabited Poompuhar in its glorious days As loading and unloading of ships took some months the foreign traders began to interact with the local people during that perio This enabled the natives to learn foreign languages for communication Similarly the foreigners also learnt Tamil to communicate with the natives This contact facilitated not only exchange of goods but also languages and ideas resulting in cultural blending The traders of Poompuhar were known for their honesty and integrity They sold goods at legitimate prices Pattinappaalai states that selling any commodity at a higher price was considered bad The author of Pattinappaalai Kadiyalur Uruttirangannanar belonged to century BC BCE This is indicative of Puhar’s antiquity Horses were imported by se Pepper was procured through the land route Gold that came from Vadamalai was polished and exported to the overseas countries Sandal from Western Ghats pearls from southern sea corals from eastern sea and food items from Eelam were importe Poompuhar had been built differently from other towns Each social group had a separate settlement Streets were broad and straight dotted with well-designed houses There was also a dockyar We can learn about the life of the people of Puhar by reading Pattinappaalai and Puhar Kandam of Silappathikaram Puhar was a busy port upto AD CE It might have been either washed away by sea or destroyed by big shore waves The remains of that destruction can still be seen in the present Poompuhar town Madurai Madurai has been one of the oldest cities in Indi Its antiquity can be understood from the sobriquet Sangam Valartha Nagaram it has earne Pandyas the Cholas and later the Kalabras ruled Madurai in the ancient perio During medieval times later Cholas and later Pandyas followed by the Nayaks ruled this historic town This has resulted in cultural blending Trade flourished and evidence for this has been unearthed in archaeological excavation done in Keezhadi near Madurai Madurai is proudly associated with tamil sangam academies which worked for the promotion of Tamil language Forty-nine poets were associated with the last Sangam Ahil fragrant wood was brought from Port Thondi to Madurai King Solomon of ancient Israel imported pearls from Uvari near the Pandyan port Korkai A mint of Roman coins was present at Madurai The coins of other countries were also minted at Madurai which is a proof for the glory of Madurai The fame of Madurai is attested by the accounts of the Greek historian Megasthanese Chanakya Chandragupta’s minister makes a mention of Madurai in his book Arthasastr In the moat around the town tunnels had been constructed in such a way that even elephants could comfortably enter Kanchi A place of learning is called school Several schools were established in great numbers for the first time in Kancheepuram Jains studied in Jainapalli and Buddhists studied in Viharas The greatness of Kanchi as an educational centre can be understood from the fact that the Chinese traveller Hieun Tsang who studied at Naland University visited Kanchi Kadigai to pursue his further studies Poet Kalidasa says Kanchi is the best of the towns Tamil poet saint Thirunavukarasar praises Kanchi as Kalviyil Karaiillatha Kanchi Hieun Tsang remarked that Kanchi can be counted as one among the seven sacred places like Bodh Gaya and Sanchi Kanchi is the oldest town in Thondai Nadu Scholars like Dharmabalar Jothibalar Sumathi and Bodhi Dharmar were born in Kanchi Kanchi is also known as the temples city The famous temple of great architectural beauty Kailasanathar temple was built by later Pallava king Rajasimha at Kanchi During the Pallava period a large number of cave temples were built The Buddhist monk Manimegalai spent the last part of her life at Kanchi speaks highly of that town Water management played an important role in the agrarian society of those times Hundreds of lakes were created for storing water around the town of Kanchi These lakes were well connected with canals During the later period Kanchi came to be known as the district of lakes Water management skills of the ancient Tamils can be understood from the construction of Kallanai in the Chola country and the lakes and canals in Kanchi Apart from Poompuhar Madurai and Kanchi there were other towns too in ancient Tamilagam Korkai Vanchi Thondi Uraiyur Musiri Karuvur Mamallapuram Thanjai Thagadoor and Kaayal are some of them By conducting archaeological research more information can be gathered about these places Thank you students With this we shall complete this lesson now Geography Unit The universe and the solar system Teacher Students do you all know where you reside Students Yes teacher Teacher Points out a student Iniya do you know your address Can you tell me your full address Iniya Yes teacher My address is Iniya Bharathiar street Thirunagar Madurai Teacher Goo Iniya where is Thirunagar Iniya Thirunagar is in Madurai Teacher Children tell me where Madurai is Students It is in Tamil Nadu Teacher Goo Where is Tamil Nadu Students In India teacher Teacher Now tell me where India is Students India is in the continent of Asia teacher Teacher Excellent Can anyone tell me where is the continent of Asia Students Yes teacher It is on the Earth Teacher Ok children tell me where the Earth is located Students Remain silent and after sometime they reply in chorus No We dont know Teacher Now let me explain The Earth is the third planet in the Solar System The solar system is in the galaxy It is named as the Milkyway Galaxy There are millions of such galaxies in the Universe Iniya Teacher shall I say the address of our Earth Teacher Address of our Earth Its interesting Iniy Tell us the address Iniya Miss Earth No Solar System Milkyway Galaxy Universe Everyone clapped and the teacher appreciates Iniy Teacher That was very good Iniy Now let us know about the solar system galaxy the Universe and all other bodies in detail in this lesson Numerous stars and celestial bodies came into existence by a massive explosion called the Big Bang These celestial bodies together are called the Universe It is also referred to as the Cosmos The stars that you see are so far away that they appear to be small but they are really huge in size Universe The Universe is a vast expanse of space Most astronomers believe that the Universe came into existence after the Big Bang explosion that took place about billion years ago The universe consists of billions of galaxies stars planets comets asteroids meteoroids and natural satellites These are collectively called as celestial bodies which are located far away from each other A Light year is the unit used to measure the distance between the celestial bodies Galaxy A galaxy is a huge cluster of stars which are held together by gravitational force Most of the galaxies are scattered in space but some remain in groups The Milky Way Galaxy was formed about billion years after the Big Bang explosion Our solar system is a part of the Milky Way galaxy Andromeda galaxy is the nearest to the Earth apart from the Magellanic Clouds galaxy The Solar System The word solar is derived from the Roman word sol which means Sun God The solar system is believed to have formed about billion years ago The solar system is a gravitationally bound system which comprises of the Sun the eight planets dwarf planets satellites comets asteroids and meteoroids The Sun The Sun is at the centre of the solar system Each member of the solar system revolves around the Sun The Sun is so huge that it accounts for percent of the entire mass of the solar system The Sun is made up of extremely hot gases like Hydrogen and Helium The Sun is a star It is self-luminous it gives light on its own The surface temperature of the Sun is about It is the source of light and heat energy to the entire solar system Sunlight takes about minutes to reach the Earth Planets The word planet means wanderer There are eight planets in the solar system They are Mercury Venus Earth Mars Jupiter Saturn Uranus and Neptune All the planets rotate anti-clockwise from west to east on their own axes except Venus and Uranus The elliptical path in which the planets move around the Sun is known as orbit The eight planets revolve in their respective orbits because of the gravitational pull of the Sun They do not move out of their paths or away from the solar system The four planets nearer to the Sun are called Inner or Terrestrial Planets Mercury Venus Earth and Mars The inner planets are comparatively smaller in size and are composed of rocks The surface of inner planets has mountains volcanoes and craters The last four planets are called as Outer Planets or Jovian Planets Jupiter Saturn Uranus and Neptune They are also called Gaseous Giants An asteroid belt is found between Mars and Jupiter Mercury The Nearest Planet Mercury is the smallest and closest planet to the Sun It is named after the Roman deity Mercury the messenger to the Gods It is an airless and waterless planet It does not have an atmosphere and so experiences extremes of temperature It has no natural satellites Mercury can be viewed in the morning and evening with the naked eye Venus The Hottest Planet Venus is the second planet from the Sun It is called the Earth’s twin as it is almost the same size as the Earth It has the longest rotation period days among the planets in the Solar system It rotates in the opposite direction to all other planets except Uranus It has no natural satellites like Mercury It is named after the Roman goddess of love and beauty It is often visible in the mornings and the evenings and so it is frequently called as the Morning Star and the Evening Star After the Moon it is the brightest natural object in the night sky Earth The Living Planet The Earth is the third planet from the Sun and the fifth largest planet in the solar system It is called the blue planet or watery planet because three-fourth of the Earth is covered by water The Earth is the only planet in the solar system which is not named after any Greek or Roman deity It is the only planet known to support life Life is possible on Earth because of the Venus Earth presence of land air and water The polar diameter of the Earth is km and the equatorial diameter is km The Earth revolves around the Sun at a speed of about km per secon The only natural satellite of the Earth is the Moon The distance between the Sun and the Earth is about million kilometre A flight flying at a speed of km per hour from the Earth would take years to reach the Sun Mars The Red Planet Mars is the fourth planet from the Sun and the second smallest planet in the solar system after Mercury It is named after the Roman God of war It appears red in colour due to the presence of iron oxide on its surface So it is often described as the Red Planet It has a thin atmosphere It also has polar ice caps like the Earth Mars has two natural satellites namely Phobos and Deimos Many orbiters and rovers have been launched to explore this planet Jupiter the Largest Planet Jupiter is the fifth planet from the Sun and the largest planet in the solar system It is named after the king of the Roman gods It is the third brightest object in the night sky after moon and Venus It is the fastest spinning planet in the solar system It is called a gas giant planet Its atmosphere is mostly made up of Hydrogen and Helium like the Sun It has the largest number of natural satellites Io Europa and Callisto are a few large satellites of Jupiter Saturn The Ringed Planet Saturn is the sixth planet from the Sun and the second largest planet in the solar system after Jupiter It is named after the Roman god of agriculture Saturn has many rings around it These rings are huge and are mostly made up of ice rocks and dust particles Saturn has natural satellites around it Titan Saturn’s largest moon is the only Jupiter satellite in the solar system that has clouds and a dense atmosphere composed of nitrogen and methane The specific gravity of Saturn is less than that of water Uranus The Somersaulting Planet Uranus is the seventh planet from the Sun It was the first to be discovered with a telescope by the astronomer William Herschel in It appears green due to the presence of methane gas It is named after the Greek god of the sky It rotates on its axis from east to west like Venus Its axis is tilted so much that it appears to orbit the Sun on its sides like a rolling ball Uranus has natural satellites of which Titania is the largest Neptune The Coldest Planet Neptune is the eighth and the farthest planet from the Sun There are strong winds in this planet It is named after the Roman god of se Neptune has natural satellites the largest being Triton Because of its distance from the Sun Neptune is one of the coldest planets in the solar system The striking blue and white features of Neptune help to distinguish it from Uranus The Dwarf Planets Dwarf planets are small celestial bodies found beyond the planet Neptune They are extremely cold and dark They are almost spherical in shape but unlike planets they can share their orbit with other dwarf planets The five dwarf planets of the solar system are Pluto Ceres Eris Makemake and Haume The Moon Earth’s Satellite Satellites are celestial objects which revolve around the planets The moon is the Earth’s only satellite It revolves around the Earth once in every days and hours It takes about the same time for it to complete one rotation around its axis It has no atmosphere The surface of the moon is characterized by craters created by the impact of meteors The distance between the moon and the Earth is about km The size of the moon is one-quarter of the Earth The Moon is the only celestial body where humans have lande Asteroids Asteroids are small solid objects that move around the Sun They are found as a belt between Mars and Jupiter They are too small to be called as planets They are also known as Planetoids or Minor Planets Comets A comet is a celestial object made up of a head and a tail The head of a comet consists of solid particles held together by ice and the tail is made up of gases Halley’s Comet is the most famous comet which comes close to the Earth every years It appeared in and will appear in Meteors and Meteorites A meteor is a stone like or metallic body When entering into the Earth’s atmosphere most of them burn As they often appear as streaks of light in the sky they are also known as Shooting Stars Meteors which strike the Earth’s surface are called meteorites Motions of the Earth Have you noticed the Sun in the morning afternoon or evening Is it in the same place throughout the day No It is seen in the east in the morning overhead in the afternoon and in the west in the evening Have you ever thought of the reason behind it This is because of the constant moving of the Earth around the Sun It seems that the Sun is moving but it is not so This is similar to what you experience when you are travelling in a bus or train When you look out of the window the trees lamp posts and other objects seem to be moving but actually it is you who are moving To understand the motions of the Earth better you need to be familiar with the shape and inclination of the Earth Shape and Inclination of the Earth The Earth is spherical in shape It rotates on its axis which is an imaginary line that runs from the North Pole to the South Pole passing through the centre of the Earth The Earth’s axis is always tilted or inclined from the vertical by an angle of It makes an angle of with the plane of the Earth’s orbit Rotation It is the spinning movement of the Earth on its axis The Earth rotates from west to east anti-clockwise and takes hours minutes and seconds to complete one rotation The time taken by the Earth to complete one rotation is called a day The rotation of the Earth causes day and night As the Earth is spherical in shape only one half of it is illuminated by the Sun at a time The other half remains dark The illuminated portion of the Earth experiences day whereas the darkened part of the Earth experiences night The line which divides the surface of the Earth into a lighted half and a dark half is called the Terminator Line Revolution It is the movement of the Earth around the Sun on its elliptical path The Earth takes ¼ days to complete one revolution It revolves around the Sun at a speed of km per secon For the sake of convenience we take it as days and call it a year The remaining quarter day is added once in every four years in the month of February That is why February has days once in four years It is called a Leap Year The inclination of the Earth on its axis and its revolution around the Sun cause different seasons The Northern Hemisphere is inclined towards the Sun for six months from st March to September while the Southern Hemisphere is tilted away from the Sun From Sep to March st the southern hemisphere is inclined towards the Sun and the northern hemisphere faces away from the Sun The changing position of the Earth in its orbit during revolution gives the impression that the Sun is continuously moving north and south of the equator The equator faces the Sun directly on March and September These two days are called Equinoxes during which the day and night are equal throughout the Earth On st June the Tropic of Cancer faces the Sun This is known as Summer Solstice It is the longest day in the Northern Hemisphere and longest night shortest day in the Southern Hemisphere On December the Tropic of Capricorn faces the Sun It is called as Winter Solstice It is the longest day in the Southern Hemisphere and longest night shortest day in the Northern Hemisphere Spheres of the Earth The Earth is the most suitable planet to support life It has three major components that we call as the realms of the Earth lithosphere hydrosphere and atmosphere The three components along with suitable climate make life possible on Earth All living things exist in a narrow zone called the biosphere Now let us have a close look at each of the spheres Lithosphere The word lithosphere is derived from the Greek word Lithos which means rocky The Lithosphere is the land on which we live It is the solid outer layer of the Earth consisting of rocks and soil Hydrosphere The word Hydro means water in Greek The hydrosphere consists of water bodies such as oceans seas rivers lakes ice caps on mountains and water vapour in the atmosphere Atmosphere The word Atmo means air in Greek Atmosphere is the envelope of air that surrounds the Earth Different types of gases make up the atmosphere The major gases are Nitrogen and Oxygen The other gases like Carbon dioxide Hydrogen Helium Argon and Ozone are present in meager amounts Biosphere The narrow belt of interaction among the lithosphere the hydrosphere and the atmosphere where life exists is known as Biosphere Bio means life in Greek It consists of distinct zones Each zone has its own climate plant and animal life These zones are known as ecosystems Geography Unit Lands and oceans The teacher enters the classroom with giant-sized envelopes The students are enthusiastic to know about the content of the envelopes The teacher asks the children to sit in groups and explains the activity Each group is given an envelope which contains seven jig-saws and a chart paper The teacher asks them to paste the jig-saws continents close to each other leaving no gap between them The teacher asks them to colour the remaining places in blue A group pastes the continents and comes first with the chart without any gaps in between the continents The teacher then puts the chart on the board and the children applau What kind of picture is this Once I have seen one like this in the atlas says Yazhini You are right This is Pangea the Super Continent and the Sea around is Panthalas It was million years ago when these landmasses moved away from each other to gain the present position as continents and oceans says the teacher What makes it to move madam asks Nil Nothing other than the internal heat of the Earth says the teacher and continues this lesson deals about the continents and oceans in detail The Earth is covered by water which occupies percent and land that occupies percent of the Earth’s surface The surface of the Earth is not even because it has lofty mountains deep oceans and other landforms These landforms can be classified as First order landforms Continents and oceans are grouped as first order landforms The vast land masses on Earth are called Continents and huge water bodies are called Oceans There are seven continents They are Asia Africa North America South America Antarctica Europe and Australi Asia is the largest continent whereas Australia is the smallest one Apart from continents there are five oceans located on the Earth’s surface They are the Pacific Atlantic Indian Southern and Arctic Oceans Among these oceans the Pacific Ocean is the largest and the Arctic Ocean is the smallest Second order landforms The second order landforms are categorised as mountains plateaus and plains Mountains A landform that rises metre above its surroundings and has steep slopes is called a mountain Mountains are found in isolation or in groups If the mountains extend for a larger area continuously it is called a mountain range These ranges stretch for hundreds or thousands of kilometre The Himalayas of Asia the Rocky Mountains of North America and the Andes of South America are such examples The Andes mountain in South America is the longest mountain range km in the worl The highest point of a mountain is known as its peak Mt Everest is the highest peak m in the worl Which country is Mt Everest located in Mountains are the sources of rivers They provide shelter to flora and faun Here tourism is an important activity During summer people go to mountain regions to enjoy the pleasing cool weather Udhagamandalam Kodaikanal Kolli hills Yercaud and Yelagiri are some of the hill stations found in Tamil Nadu Plateaus Plateaus are the elevated portions of the Earth that have flat surfaces bounded by steep slopes The elevation of plateaus may be a few hundred or several thousand metres Tibetan Plateau is the highest plateau in the worl So it is called as the Roof of the world The flat topped part of the plateau is called Tablelan The plateaus are generally rich in minerals The Chotanagpur Plateau is one of the mineral rich plateaus in Indi Therefore mining is one of the major activities of the people living here The Deccan Plateau in peninsular India is of volcanic origin Plains Plains are flat and relatively low-lying lands Plains are usually less than metre above sea level Sometimes they may be rolling or undulating Most plains are formed by rivers and their tributaries and distributaries These plains are used extensively for agriculture due to the availability of water and fertile soil They are most suitable for human inhabitation Hence they are the highly populated regions of the worl The oldest civilisations like the Mesopotamian and the Indus civilisations developed in river plains The Indo-Gangetic plain in North India is one of the largest plains in the worl The plains formed by river Cauvery and Vaigai are important plains found in Tamil Nadu Coastal plains are the low lying lands adjacent to oceans and seas Third order landforms Third order landforms are formed on mountains plateaus and plains mainly by erosional and depositional activities of rivers glaciers winds and waves Valleys Oceans The Earth looks blue when we see it from space This is because two-thirds of it is covered by water The water is found in oceans and seas Oceans are vast expanse of water Seas are water bodies partially or fully enclosed by lan As you have studied previously there are five main oceans in the worl The Pacific Ocean The Pacific Ocean is the largest and deepest ocean on the Earth It covers about one-third of the Earth’s total area and spreads for about million sqkm It is bounded by Asia and Australia in its west and North America and South America in its east It stretches from the Arctic Ocean in the north to the Southern Ocean in the south This ocean’s shape is roughly triangular with its apex in the north at the Bering Strait which connects the Pacific Ocean with the Arctic Ocean The Bering Sea the China Sea the Sea of Japan Tasman Sea and the Philippine Sea are some of the marginal seas of the Pacific Ocean Indonesia Philippines Japan Hawaii New Zealand are some of the islands located in this Ocean The deepest point Mariana Trench is m and is located in the Pacific Ocean A chain of volcanoes is located around the Pacific Ocean called the Pacific Ring of Fire The Atlantic Ocean The Atlantic Ocean is the second largest ocean on Earth It covers one sixth of the Earth’s total area and spreads for about million sqkm It is bounded by North America and South America in the west and Europe and Africa in the east Like the Pacific it stretches from the Arctic Ocean in the north to the Southern Ocean in the south The shape of the Atlantic Ocean resembles the letter S The Strait of Gibraltar connects the Atlantic Ocean with the Mediterranean Se The Atlantic Ocean is the busiest shipping route between the Eastern and Western hemispheres The deepest point is the Milwaukee Deep in the Puerto Rica Trench It has a depth of about m- The Caribbean Sea the Gulf of Mexico the North Sea the Gulf of Guinea and the Mediterranean Sea are important marginal seas of the Atlantic Ocean St Helena Newfoundland Iceland and Falkland are some of the islands found in this ocean The Indian Ocean The Indian Ocean is the third largest ocean on the Earth’s surface It covers an area of about million sqkm It is named after Indi It is triangular in shape and bounded by Africa in the west Asia in the north and Australia in the east The Andaman and Nicobar Islands Lakshadweep Maldives Sri Lanka Mauritius and the Reunion Islands are some of the islands located in the Indian Ocean Malacca strait connects the Indian Ocean and the Pacific Ocean The Bay of Bengal the Arabian Sea the Persian Gulf and the Red Sea are some of the important marginal seas of the Indian Ocean The Java trench m is the deepest point in the Indian Ocean The Southern Ocean The Southern Ocean surrounds the continent of Antarctica and is enclosed by the S latitude It covers an area of million sqkm It is bordered by the southern parts of the Pacific the Atlantic and the Indian Oceans The Ross Sea the Weddell Sea and the Davis Sea are the marginal seas of this Ocean Farewell Island Bowman Island and Hearst Island are some of the islands located in this ocean The water in this ocean is very col Much of it is covered by sea ice The deepest point in this ocean is South Sandwich Trench with a depth of m- The Arctic Ocean The Arctic Ocean is the smallest ocean It covers an area of million sqkm It lies within the Arctic Circle It remains frozen for most of the year The Norwegian Sea the Greenland Sea the East Siberian sea and the Barents Sea are some of the marginal seas of this ocean Greenland New Siberian Island and Novaya Zemlya Island are some of the islands located in the Arctic Ocean The North Pole is situated in the middle of the Arctic Ocean The Eurasian Basin is the deepest point in the Arctic Ocean which is about m in depth Civics Unit Understanding diversity Understanding diversity Take a look around your class Do you see any of your classmates who looks similar Look at the table From the below table we understand that the three students are different from one another This shows that people speak different languages eat different kinds of food celebrate their own festivals and practice a culture different from one another Similarly people who live in different parts of our country differ in their ways of life These differences make us unique as Indians We come from different backgrounds belong to different cultures worship in different ways yet we live together This is known as diversity Diversity in India India is a home to a civilisation that is years ol Different groups of people from different parts of the world were attracted towards India over the years because of its wealth Some came for trade with the local people and others were keen on invading its territory So diverse races of people migrated into India by land and sea routes over time Thus the Dravidians Negroids Aryans Alpines and Mongoloids became part of the modern Indian race Then the people who migrated to India also moved to other parts of the country This movement and migration of people is the reason for India’s rich diversity We will now study the diversity in India under the following broad headings land forms and lifestyles diversity social diversity religious diversity linguistic diversity and cultural diversity Land Forms and Lifestyle Diversity A continent is a very large area of land with various physical features such as mountains plateaus plains rivers and seas and various types of weather patterns India has all of them India is known as a sub-continent These features have an underlying influence upon the people who live in different landforms of the country Physical and climatic features determine the economic activities of a region People living in the plains thrive on agriculture while people in the coastal areas take to fishing for their livelihoo In mountainous regions rearing of animals is undertaken Hilly landscapes are supported by favourable climatic conditions for the cultivation of coffee and te Diversity in landforms also impacts the flora and fauna of a region The plant and animal wealth of a place depends upon the natural habitat and the climate that prevails in that region Food clothing occupation and livelihood of the people is closely connected with the region’s natural surroundings and climate Social Diversity Interdependence and Co-existence A community is a place where people live together with a common interest or heritage Our community is made up of peasants labourers artisans parents teachers students and many others For a comfortable livelihood communities depend on each other Family and Society Families constitute the fundamental unit of a society There are two types of families joint families and nuclear families Families live in a harmonious neighbourhoo Many of neighbourhoods collectively form a village and many of them group together in a city The needs of people and the interdependence of communities for amenities such as water food electricity education housing and so on bring us together to live in harmony Though we are diverse in our cultural practices we are united and interdependent socially Religious Diversity India is a secular country It does not declare any religion as state religion The freedom of religion is our fundamental right India is the birth place of many religions Toda tribal people and has become the home of many others Hinduism Islam Christianity Sikhism Buddhism Jainism and Zoroastrianism flourish in Indi India is a land of festivals where people from different religions engage in many colourful celebrations in different parts of the country and co-exist harmoniously The wide variety of festivals celebrated in India is a true manifestation of its rich culture and traditions Festivals like Pongal Deepavali Holi Vijayadhasami AyudhaPuja Navaratri Durga Puja Dussehra Ganesh Chaturthi Bihu Kumbamela Onam Miladi Nabi Ramzan Christmas Buddha Poornima Mahavir Jayanthi Guru Nanak Jayanthi and Rakshabandhan are some of the festivals that denote the cultural diversity of Indi Linguistic Diversity According to census of India India has major languages and other languages Four major Indian language families are Indo-Aryan Dravidian Austroasiatic and Sino Tibetian Tamil is the oldest Dravidian language Historically the Portuguese the Dutch the British the Danish and the French came to India for trade and their occupation of India or some parts of it has left behind a certain impact upon the culture and language of the people Because the British ruled over the entire country for over three hundred years before independence in the English language gained prominence in Indi In due course English has emerged as an important language and a medium of instruction in schools and colleges It is widely used in official communication and daily life Cultural Diversity The term culture refers to customs and practices of people their language their dress code cuisine religion social habits music art and architecture The culture of a group of people is reflected in their social behaviour and interactions The group identity fostered by social patterns is unique to a group Art and architecture are an integral part of every community It develops as a part of culture and tradition of a Popular Dances and Music of India In ancient times dance was considered as a way to celebrate worship and also as a gesture of thanks giving and joy Dances of India reflect its cultural richness Music and dance go hand in han There are several styles of music practiced in Indi The Hindustani music Karnatic music Classical Tamil Music Folk Music Lavani Ghazl are some of them There are songs from various languages composed by blending these different forms of musi Unity in Diversity Though diversity is visible in every aspect of life in India we are united by the spirit of patriotism Symbols such as the National Flag and National Anthem remind us of our great nation and the need to stay unite Celebration of landmark events such as Independence Day Republic Day and Gandhi Jayanthi every year bring us together and keep the spirit of one nation alive within us India has a multi-cultural society India evolved as a single nation through common beliefs customs and cultural practices The freedom struggle and the drafting of our Constitution stands as ample evidence to the spirit of unity of Indi Unit Achieving Equality The society that we live in comprises people from various social groups who are different in many ways Since we believe in Unity in Diversity we should have been living peacefully with one another irrespective of those differences Often we see that diversity is not accepted and people show attitudes of hostility towards those who are different from them They form opinions about the other groups and this often leads to tension in the society Such opinions are often prejudiced Prejudice Prejudice means to judge other people in a negative or inferior manner without knowing much about them It happens when people have false belief and ideas The word prejudice refers to prejudgement Prejudices can be based on many things like people’s religious beliefs the region they come from the colour of their skin language their accent or the clothes they wear The types of prejudice are gender prejudice racial prejudice class prejudice disability prejudice and so on For example urban people are more civilised than rural people in attitudes and behaviour is one such prejudice Causes for Prejudice Some common social factors that contributes to the rise of prejudice are Socialisation Conforming behaviours Economic benefits Authoritarian personality Ethno centrism Group closure Conflicts Stereotypes When prejudice gets stronger it develops into a stereotype Stereotype is a false view or idea about something For example girls are not good at sports Stereotype is learned at a very early age and children grow to have very strong ideas or opinions about things groups or ideologies As children grow up the lines of like and hate for other things people cultures beliefs languages become sharper Example Ragu was hit in his eye with a soft ball and to everyone’s surprise he started to cry The others started to laugh at him Mani felt sad for him but started laughing along with others In the above example we have a general opinion that girls cry and boys don’t cry When Ragu cried out of pain others laughed at him Now we understand that when we fix people in our image we create a stereotype Gender-based stereotypes are often portrayed in films advertisements and TV serials Almost all the advertisements related to detergents washing machines dishwashers and others show a woman as the main lead or user of that product On the other hand all the stunts shown in a bike advertisement is performed by ferocious looking men Inequality and Discrimination Inequality means difference in treatment The different forms of inequalities such as caste inequality religious inequality race inequality or gender inequality give rise to discrimination Discrimination can be defined as negative actions towards people Inequality and untouchability are caused by discriminations based on caste religion and gender Treating dark-skinned people differently from fair-skinned people and denying equal status rights and opportunities on the basis of colour caste gender religion et are the formidable discriminatory trends afflicting Indi Article of the Constitution states that the State shall not discriminate against any citizen on grounds of religion race caste sex place of birth Caste Discrimination Caste system is the most dominant reason for inequality and discrimination in Indi The caste system originated in the Varna system of the Vedic Aryan society In the beginning Varna was an occupation based flexible social division In the Later Vedic Society the Varna system was expanded into a rigid discriminatory birth based graded caste divisions Many people in India have fought against caste oppression The most prominent among them was Dr BR Ambedkar He belonged to a such depressed family and suffered discrimination throughout his childhoo He fought actively for the annihilation of caste so as to ensure equality among all the citizens of Indi Gender Discrimination Gender discrimination refers to health education economic and political inequalities between men and women For example A girl is not allowed to go to college after finishing her schooling Similarly most of the girls are not allowed to select a career of their choice rather they are forced into marriage In some families girls are not allowed to wear modern dresses while boys in such families often wear modern dresses Religious Discrimination Religious discrimination is unequal treatment of an individual or group based on their beliefs Religious discrimination has been around for a long time There have been problems between people of different religions for thousands of years Our Constitution has provided equality for all irrespective of their caste religion language place of birth et Yet discriminations are still in practice even in worship places on the basis of caste religion gender and language Our great social thinkers have been crusading against such discriminations and inequalities Socio-Economic Inequality In the socio-economic field the benefits of growth have not been spread evenly The low-income districts are associated with low industrial development low agricultural productivity and low human development Similarly the Districts with low literacy rate are found to be with lower sex ratio Remedial Measures for Abolishing Inequality and Discrimination The remedial measures for abolishing inequality and discrimination in Indian society are as follows Wider access to quality basic services like healthcare and education for all Be aware of current gender bias Make women more visible in public life and institution to eradicate gender disparity Be open to learning about other religions Promoting community dining in the classroom may help the students to sit together without any bias of caste religion or gender Socialise with people of all types outside home Effective implementation of laws Constitution of India and Equality A Constitution is a set of rules and regulations guiding the administration of a country Article of the constitution of India provides equality before the law or equal protection within the territory of India and prohibits the unreasonable discrimination between persons Our Constitution says ours is a land of diversity therefore equality has to be ensured for all Two significant parameters to ensure equality in society are respecting diversity and ensuring freedom The different kinds of freedom are freedom to follow their religion speak their language celebrate their festivals and express their views freely The Constitution is a legal framework of rules and regulations by which a nation would function Equality is where untouchability is seen as a crime In India as per the Article of the Indian Constitution untouchability is totally abolished and its any form is forbidden Even today different types of discrimination are reported across the country Women peasants tribes and people from lower social classes are still striving for equality in Indi Unit Vedic Culture in North India and Megalithic Culture in South India Vedic Age The first phase of urbanisation in India came to an end with the decline of Indus Civilisation A new era called Vedic Age began with the arrival of Aryans Vedic Age It is a period in the History of India between BC BCE BC BCE It gets its name from four Vedas Who were the Aryans The Aryans were Indo Aryan language speaking semi nomadic pastoralists They came from Central Asia in several waves of migration through Khyber Pass of Hindu Kush Mountains Though cattle rearing was their main occupation they also practised slash and burn agriculture Slash and burn agriculture It is a farming method that involves clearing the land by cutting and burning all the trees and plants on it Cultivation is done there for a short time and then abandone People then move to a new piece of land for cultivation Time Spread and Sources Geographical range North India Period Iron Age Time BC BCE BC BCE Sources Vedic Literature Nature of Civilisation Rural Aryans and their Home in India Aryans of the Rig Vedic Period were semi nomadi They were basically pastoral people with cattle as their main source of wealth In the Rig Vedic times the Aryan homeland was the Punjab which was at that time called Sapta Sindhu the land of seven rivers Around BC BCE Aryans in India moved eastward and settled in Indo-Gangetic Plain Use of iron axes and ploughs became widesprea Four Vedas Rig Yajur Sama Atharva Sources Vedic literature Vedic literature can be classified into two broad categories Shrutis The Shrutis comprise the four Vedas the Brahmanas the Aranyakas and the Upanishads They are considered sacred eternal and an unquestionable truth Shruti means listening or unwritten ones that were transmitted orally through generations Smritis A body of texts containing teachings on religion such as Ithihasas Puranas Tantras and Agamas Smritis are not eternal They are constantly revise Smriti means definite and written literature National Motto Satyameva Jayate Truth alone triumphs is taken from Mundaka Upanisha Archaeological Sources Material remains such as iron implements and pottery from the archaeological sites in Punjab Uttar Pradesh and Rajasthan along the Indus and the Ganges Classification of Vedic Age Two phases of Vedic Age Early Rig Vedic Period BC BCE Later Vedic Period BC BCE Vedic Culture Polity and Society The Rig Vedic polity was kinship base Kula clan was the basic unit of the polity It was under a head called Kulapati Several families joined together to form a Grama village Grama was headed by Gramani A group of villages was called Vis clan and was headed by Vishayapati Rajan was the head of the Jana tribe and he was addressed as Janasyagopa guardian of the people There were several tribal kingdoms Rashtras during Rig Vedic period Bharatas Matsyas Puras King The main responsibility of the Rajan was to protect his tribe His powers were limited by tribal assemblies namely Vidhata Sabha Samiti and Gan Of these Vidhata the tribal assembly was the oldest Sabha a council of elders Samiti assembly of people The king appointed a purohit chief priest to assist him In economic political and military matters the king was assisted by the Senani army chief Gramani was the leader of the village When the Aryans moved east ward into Ganges-Yamuna-Doab regions the early settlements were replaced by territorial kingdoms Hereditary kingship began to emerge In the monarchical form of government the power of the king increased and he performed various rituals and sacrifices to make his position strong Many Janas or Tribes were amalgamated to form Janapadas or Rashtras in later Vedic perio The importance of Samithi and Sabha diminished and the Vidhata completely disappeare New states emerge Bali was a voluntary contribution of the people to the King In the later Vedic period bali was treated as tax and collected regularly The Kuru and Panchala kingdoms flourished and large cities like Ayodhya Indraprastha and Mathura also emerged during this perio Bali a tax consisting of of the agricultural produce or cattle for a person Social Organization The Vedic family was patriarchal The fair complexioned Aryans distinguished themselves from dark complexioned non-Aryans whom they called Dasyus and Dasas Within the early Vedic Society there were three divisions Treyi the general public were called Vis the warrior class was called Kshatriyas and the Priestly class was named Brahmanas At a later stage when the Aryans had to accommodate non-Aryan skilled workers in their social arrangement a rigid four-fold Varna system was developed ie the priestly Brahmanas the warrior Kshatriyas the land owning Vysyas and the skilled workers sudras Thus a graded social order emerge Although the Vedic Age is evidenced by good number of texts it does not have adequate amount of material evidences Status of women In Rig Vedic society women relatively enjoyed some freedom The wife was respected as the mistress of the househol She could perform rituals along with her husband in their house Child marriage and sati were unknown There was no bar on the remarriage of widows Nevertheless the women were denied right to inherit property from their parents They played no role in public affairs In the later Vedic period the role of women in society as well as their status even within the family decline Women could no longer perform rituals in the family The rules of marriage became much more complex and rigi Polygamy became common Widow remarriage was not encourage Education was denied to women Intercaste marriages were spurne Economic Life Economy in the Vedic period was sustained by a combination of pastoralism and agriculture Though occupation of Rig Vedic Aryans was cattle rearing there were carpenters chariot makers potters smiths weavers and leather workers Ochre Coloured Pottery OCP was attributed to this perio Horses cows goats sheep oxen and dogs were domesticate When Aryans permanently settled in Sindh and the Punjab regions they began to practise agriculture The staple crop was yava barley There is no mention of wheat or cotton in the Rig-Veda though both were cultivated by the Indus people Two crops a year were raise In the later Vedic period the Aryans tamed elephants apart from cow goat sheep and horse In addition to craftsmen of early Vedic period there were also jewellers dyers and smelters Pottery of this period was Painted Grey Ware Culture Use of iron plough and axe helped to put more areas of land under cultivation Crops of wheat rice and barley were cultivate With the growth of agriculture the idea of private possession of land came into existence New crafts and arts developed leading to surplus production of commodities for sale Trade became extensive Barter system was prevalent exchange of goods They used Nishka Satmana gold coins and Krishnala silver coins for business transactions Metals Known to Rig Vedic People Gold Hiranya Iron Shyama Copper Bronze Ayas Religion Rig Vedic Aryans worshipped mostly the earthly and celestial gods like Prithvi Earth Agni fire Vayu wind Varuna rain Indra Thunder There were also lesser female deities like Aditi goddess of eternity and Usha appearance of dawn Their religion was Yajna centere The mode of prayer was recitation of Vedic hymns People prayed for the welfare of Praja children Pasu cattle and Dhana wealth Cow was considered a sacred animal There were no temples Idol worship had not yet come into existence Lateron priesthood became a profession and a hereditary one New gods were perhaps adopted from non-Aryans Indra and Agni lost their importance Prajapathi the creator Vishnu the protector and Rudra the destroyer became prominent Sacrifices and rituals became more elaborate Education Gurukula System of Education The gurukula system is an ancient learning metho The word Gurukula is a combination of the Sanskrit Word Guru teacher or master and Kula family or home The shishyas resided with their guru and served them and simultaneously learnt and gained knowledge The students received education through oral tradition meaning The subjects of the study included the four Vedas Ithihasas Puranas grammar logic ethics astrology maths and military science The students were also trained to lead a disciplined life Only Dvijas could be Shishyas No women could have formal education Age based Ashramas Towards the end of the later Vedic period the concept of four stages in life the four ashramas develope Brahmacharya Student Life Grihastha Married Life Vanaprastha Going to the forest to meditate Sanyasa Leading a life of an ascetic so as to attain Swarga CONTEMPORARY CULTURE IN SOUTH INDIA AND TAMIL NADU The early Vedic culture in northern India coincided with Chalcolithic cultures that prevailed in other parts of the sub-continent Since people used copper chalco and stone lithic it was called Chalcolithic perio Though Chalcolithic culture of India was contemporary to the mature phase of Harappan culture they continued to exist even after the decline of the latter The later Vedic culture in north India and the Iron Age in south India belong to the same perio Towards the end of Iron Age people stepped into what is known as Megalithic Culture BC BCE and AD CE Megalithic Period in ancient Tamilakam synchronised with the pre Sangam perio The Black and Red Ware Pottery became the characteristic of the Megalithic perio MEGALITHIC IRON AGE IN TAMILNADU The term Megalith is derived from Greek Megas means great and lithos means stone Using big stone slabs built upon the places of burial is known as Megalith Some of the Megalithic Iron Age Archaeological Sites in Tamil Nadu Adichanallur Thoothukudi District Among the artefacts unearthed were Urns pottery of various kinds Red Ware Black Ware iron implements daggers swords spears and arrows some stone beads and a few gold ornaments Bronze objects representing domestic animals and wild animals like tiger antelope and elephant have been unearthe The people were skilful in making pottery and in working stone and woo Keezhadi Sivagangai District The Archaeological Survey of India ASI excavated an ancient town dating to Sangam Age in Keezhadi village at Thiruppuvanam taluk Excavations have produced evidence for brick buildings and well laid out drainage system Tamil Brahmi inscription on pottery beads of glass carnelian and quartz pearl gold ornaments and iron objects shell bangles ivory dice have been unearthe In ASI sent two samples of these for Radio carbon dating to Beta Analytic Florida US They dated samples as BC BCE The Roman artefacts found at the site add to the evidence of ancient Indo Roman trade relations Finds at Porunthal Periplus mentions the steel imported to Rome from Peninsular India was subjected to duty in the port of Alexandri Porunthal Dindigul District Finds Grave goods glass beads in red white yellow blue and green iron swords pottery with Tamil Brahmi scripts pots filled with rice semi-precious metals such as quartz carnelian bangles made of glass and shell The discovery of iron sickle pike and tip of ploughs provide evidences that they had the practice of rice cultivation in Tamil Nadu A pot of rice from Porunthal site proves that rice was people’s staple foo Paiyampalli Vellore District Archaeological Finds Iron artefacts along with Megalithic Black and Red Ware Pottery have been foun Evidence for iron smelting has come to light at Paiyampalli The date of this culture based on radio carbon dating is BC BCE Kodumanal Erode District It is identified with the Kodumanam of Pathitrupathu More than pottery inscriptions in Tamil Brahmi have been discovered there Archaeologists have also discovered spindles whorls used for making thread from cotton and pieces of cloth along with tools weapons ornaments beads particularly carnelian A Menhir found at burial site is assigned to the Megalithic perio Megalithic Monuments in Tamil Nadu The people who lived during the last stages of the New Stone Age began to follow the Megalithic system of burial According to this system the dead body was placed in a big pot along with burial goods The Megalithic monuments bear witness to a highly advanced state of civilisation with the knowledge of iron and community living Dolmens are Megalithic tombs made of two or more upright stones with a single stone lying across the burial site Megalithic Dolmens have been found in Veeraraghavapuram village Kanchipuram district Kummalamaruthupatti Dindigul district and in Narasingampatti Madurai district Menhir In Breton Language Men means stone and hir long They are monolithic pillars planted vertically into the ground in memory of the dea Menhir at Singaripalayam in Tirupur District and at Vembur in Theni District points to the existence of an ancient settlement along the banks of River Uppar Menhirs are found at Narasingampatti Madurai district Kumarikalpalayam and Kodumanal in Erode district Hero Stones A Hero Stone is a memorial stone raised in remembrance of the honourable death of a hero in a battle or those who lost their lives while defending their village from animals or enemies Hero stones are found at Maanur village near Palani Dindigul district Vellalankottai Tuticorin district and Pulimankombai Dindigul district The Aryans migrated to India around BC BCE The Vedic texts form an important source of this perio Rig Vedic polity was kinship-base When the Aryans moved east ward the early settlements were replaced by their territorial kingdom Use of iron plough and axe helped more areas of land under cultivation New crafts and arts develope It paved the way for urbanisation in the Gangetic plain The later Vedic society in North India and the Iron Age society in South India belong to the same perio Eternal existing for ever Kinship blood relationship Patriarchal a system of society controlled by men Deity a god or goddess Contemporary living or occurring at the same time Metallurgy the branch of science and technology concerned with the properties of metals and their production Archaeological Sites Archaeological Finds Fact Adichanallur The Tamil Brahmi script Existence of Pre-historic culture Keeladi Roman artefacts Paiyampalli Iron implements Porunthal Pot filled with rice Kodumanal Spindle whorl A pass   Text containing teachings on religion A group of villages A tribal assembly Assembly of people Fire Gold coin Period of Vedic Age Megalithic tomb Unit Great Thinkers and New Faiths The Sixth Century BC BCE is regarded as an important period in the history of ancient Indi As a land mark period in the intellectual and spiritual development in India historian Will Durant has rightly called it the shower of stars Sources Literary sources Angas Jain texts Tripitakas and Jatakas Buddhist texts Causes for the Rise of Intellectual Awakening and the Birth of Buddhism and Jainism There were several reasons for the rise of new intellectual awakening Some of the exploitative practices that paved way for new faiths include Learning Objectives To learn the causes for the rise of new faiths in the sixth century BC BCE To have knowledge in the teachings of Mahavira and Buddh To know the similarities and dissimilarities between Jainism and Buddhism To understand the differences between Hinayana and Mahayana Buddhism To know the influence of Jainism and Buddhism in Tamil Nadu Unit Great Thinkers and New Faiths The complex rituals and sacrifices advocated in the later Vedic period Expensive sacrificial ceremonies Superstitious beliefs and practices that confused the common man Upanishads taught as alternative to sacrificial rites were too philosophical which a layperson could not understan Slavery caste system gender discrimination also contributed to the new awakening Origin of Jainism Jainism is one of the world’s oldest living religions Jainism grounds itself in Tirthankaras A Tirthankara is the one who revealed religious truth at different times The first Tirthankara was Rishabha and the last one was Mahavir Jainism gainedIntellectual Awakening The Sixth Century BC BCE is regarded as an important period in the history of ancient Indi As a land mark period in the intellectual and spiritual development in India historian Will Durant has rightly called it the shower of stars Thereafter he became Jina meaning one who conquered worldly pleasure and attachment His followers are called Jains Mahavira reviewed the ancient Sramanic traditions and came up with new doctrines Therefore he is believed to be the real founder of Jainism Unique Teachings of Jainism Jainism denies God as the creator of Universe Basic philosophy of Jainism is Ahimsa or non Violence Ultimate aim of Jainism is attaining moksha or ending the cycle of birth death rebirth Jains reject the belief in Last judgement where God a supreme being decides who goes to heaven or hell Jainism advocates that the goodness or quality of one’s life is determined by one’s karm What is Karma The belief that a person’s actions in this life determine the quality of his or her later part of the current life and the next incarnation Tri rathnas or Three Jewels Mahavira exhorted the three fold path for the attainment of moksha and for the liberation from Karm They are Right Faith Right Knowledge Right action Moksha Liberation from the cycle of birth and deathSources Literary sources Angas Jain texts Tripitakas and Jatakas Buddhist texts Causes for the Rise of Intellectual Awakening and the Birth of Buddhism and Jainism There were several reasons for the rise of new intellectual awakening Some of the exploitative practices that paved way for new faiths include Original name Vardhamana Place of Birth Kundhagrama near Vaishali Bihar Parents Siddharth Trishala Place of Death Pavapuri Bihar prominence under the aegis of Mahavira during the sixth century BC BCE The word Jain derives from the Sanskrit word Jina which means conquering self and the external worl Mahavira The Great Hero Vardhamana meaning prosperous was a kshatriya prince However at the age of he renounced his princely status to adopt an ascetic life He undertook intense meditation After twelve and a half years of rigorous penance Vardhamana attained omniscience or supreme knowledge known as Keval Omniscience It is the ability to know everything or be infinitely wise Jain Code of Conduct Mahavira asked his followers to live a virtuous life In order to live a life filled with sound morals he preached five major principles to follow They are Ahimsa not to injure any living beings Satya to speak truth Asteya not to steal Aparigraha not to own property Brahmacharya Celibacy Gautama Swami a chief disciple of Mahavira compiled the teachings of Mahavira called Agama sidhanth Digambaras and Svetambaras Jainism split into two sects Digambaras Digambaras are orthodox and conservative followers Monks of the digambara sect do not wear any clothing and live nake They are forbidden to have any kind of possessions Digambaras believe that women cannot achieve nirvana or liberation directly Svetambaras The Svetambaras are considered progressive Monks of Svetambaras sect wear white robes They are permitted to have Rajoharana broom with wollen threads begging bowl and book Svetambaras believe that women are equally capable of achieving liberation as men Reasons for the Spread of Jainism The following are the main reasons for the wide acceptance of Jainism in India Use of people’s language Intelligible teachings Support from rulers and traders Perseverance of Jain monks Influence of Jainism Samanam in Tamil Nadu In ancient Tamil literature Jainism is referred to as Samanam There is a Samanar Hill or Samanar Malai in Keelakuyilkudi village km away from Madurai The images of Tirthankaras created by Jain monks are found in the hill It is a protected monument of Archaeological Survey of Indi In Arittapatti a small village km from Madurai on one side of Kalinjamalai hill there are Jain caves called Pandavar Padukkai Pandavar Padukkai is the bed of Jain saints There is a reference to Aravor Palli place of living for Jain monks in Manimegalai According to Silapathikaram when Kovalan and Kannagi were on their way to Madurai Gownthiyadigal a female jain monk blessed the couple and accompanied them Puhar Uraiyur Madurai Vanchi Karuvur Kanchi all had Jain monasteries Jina Kanchi Thiruparthikundram a village in Kanchipuram has two ancient Jain temples This village was once called Jina Kanchi Buddhism Gautama Buddha Gautama Buddha was the founder of Buddhism His real name was Siddharth Like Mahavira he was also a Kshatriya prince belonging to the ruling Sakya clan When Siddhartha was only seven days old his mother die So he was raised by his step mother Gautami Four Great Sights At the age of Siddhartha saw four sorrowful sights They were Thiruparthikundram Sittannavasal Chitharalmalai temple Original name Siddhartha Place of Birth Lumbini Garden Nepal Parents Suddhodana Maya devi Place of Death Kushi Nagar UP An uncared old man in rags with his bent back An sick man suffering from an incurable disease A man’s corpse being carried to the burial ground by weeping relatives An ascetic Enlightenment Buddha the Awakened or Enlightened One realised that the human life was full of misery and unhappiness So at the age of he left his palace and became a hermit He sacrificed six years of his life towards penance Nonetheless deciding that self mortification was not a path to salvation Buddha sat under a Pipal tree and undertook a deep meditation near Gay On the day he finally attained enlightenment From that moment onwards he was called Buddha or the Enlightened One He was also known as Sakya Muni or Sage of Sakya clan Buddha delivered his first sermon at Deer Park in Sarnath near Benaras This was called Dharma Chakra Pravartana or the Turning of the Wheel of Law Buddha’s Four Noble Truths Life is full of sorrow and misery Desire is the cause of misery Sorrows and sufferings can be removed by giving up one’s desire The desire can be overcome by following the right path Noble eight fold path Eight Fold Path Right view Right Thought Right Speech Right Action Right Livelihood Right Effort Right Knowledge Right Meditation The teachings of Lord Buddha were simple and taught in a language which people used for communication Since the teachings addressed the everyday concern of the people they could relate to them He was opposed to rituals and sacrifices Teachings of Buddha Buddhas teachings are referred to as dhamm Buddhism accepted the Theory of Karma meaning that the quality of man’s life depends on his dee Buddha neither accepted nor denied the existence of God but believed in the laws of universe Buddha asserted that attaining nirvana is the ultimate aim of life Buddha advocated ahimsa or non violence Buddha had rejected the caste system The Wheel of life represents the Buddhist view of the worl Buddhist Sangha Buddha laid foundation for a missionary organization called Sangha meaning association for the propagation of his faith The members were called bhikshus monks They led a life of austerity Chaitya A Buddhist shrine or a meditation hall Viharas Monastries living quarters for monks Stupas Built over the remains of Buddha’s body they are monuments of great artistic value Buddhist Sects Hinayana Mahayana Did not worship idols or images of Buddh Practiced austerity Believed that Salvation of the individual as its goal Used Prakrit language Hinayana is also known as Theravad Spread to Sri Lanka Myanmar Burma and South East Asian Countries Worshiped images of Buddh Observed elaborate rituals Believed that salvation of all beings as its objective Used Sanskrit language Spread to Central Asia Tibet China and Japan where middle path was accepte Causes for the Spread of Buddhism Simplicity of the teachings of Buddha in local language appealed to people Buddhism rejected elaborate religious customs whereas the practice of orthodox Vedic religion insisted on expensive rituals and sacrifices Buddha’s emphasis was on observance of Dhamm Buddhist Sanghas played an important role in spreading the messages of Buddh Royal patronage under Ashoka Kanishka and Harsha also helped the causes of Buddhism Viharas or the Buddhist monasteries became great centres of education One such centre was Nalanda where Hiuen Tsang the Chinese pilgrim studied for many years Middle path It refers to neither indulging in extreme attachment to worldly pleasure nor committing severe penance Jainism and Buddhism Similarities and Dissimilarities Similarities Dissimilarities JAINISM BUDDHISM Both Mahavira and Buddha hailed from royal families Yet they renounced royal privileges and chose to adopt an ascetic life Denied the authority of Vedas Taught in the language of the common people Admitted disciples from all the castes and from both the genders Opposed blood sacrifices Believed in the doctrine of Karm Emphasized on right conduct and right knowledge instead of performing religious ceremonials and rituals as the means to achieve salvation It followed extreme path It remained in India only It does not believe in the existence of god but believes life in every living being It followed middle path It spread across many parts of the worl It emphasises on ANATMA no eternal soul and ANITYA impernance There is an elaborate description about Kanchipuram in classical epic Manimegalai Kanchipuram was a famous Buddhist Centre from where Dinnaga the famous Buddhist logician and Dharmapala a great scholar of Nalanda University haile Hieun Tsang who visited Kanchipuram in the seventh century AD CE noticed the presence of feet stupa built by Ashoka there Buddhist Councils First Rajagriha Second Vaishali Third Pataliputra Fourth Kashmir Influence of Buddhism in Tamilnadu Buddhism spread to Tamil Nadu much later than Jainism Manimekalai one of the epics of the post-Sangam age is a Buddhist literature Jataka Story The Jatakas are popular stories about the previous birth and life of Buddha as human and as an animal They teach morals The Woodpecker and the Lion A Jataka Story Once upon a time there lived a woodpecker and a lion One day the lion hunted a big bison and sat down to eat it It so happened that while having his meal a big bone got stuck in the lion’s throat He was not able to remove it and was in great pain A kind hearted woodpecker offered to help the lion The woodpecker however told the lion that he would only take out the bone if the lion promised not to eat him while removing the bone The lion gladly agreed and opened his mouth in front of the woodpecker The woodpecker hopped inside the lion’s mouth and easily pulled out the bone The lion kept his promise and let the woodpecker fly away Soon the lion recovered completely and killed another bison The woodpecker also thought of joining the lion and asked for a small share of meat To her utter disappointment the lion blatantly refused to share his meal with her The Lion said How dare you ask me for more favours I have already done so much for you The woodpecker did not understand what the lion was talking about The lion then clarified You should be thankful to me that I did not devour you when you were taking out the bone from my throat Now do not expect anything else from me and go away The woodpecker said to himself It was indeed a mistake to help such an ungrateful creature Nevertheless it is not worth being angry or holding grudge against someone as unworthy as him Elsewhere in the world Century BC BCE Summary The Sixth century BC BCE was an important period of the intellectual and spiritual development in Indi Jainism was a doctrine developed by Tirthankaras Mahavira exhorted the three-fold path Right faith Right knowledge Right action Gautama Buddha was the founder of Buddhism Buddha’s teachings are referred to as dhamm Buddhism crossed the frontiers of Indian sub-continent but Jainism was confined to Indi Basic philosophy of Jainism and Buddhism is ahimsa or non-violence GLOSSARY Superstitious beliefs belief in things that are not real or possible Preceptor a teacher or instructor Doctrine set of principles or beliefs Virtuous having high moral standards Sacred book holy book Frescoes a painting done in water colour on wet plaster Corpse a dead body Nirvana A state of freedom from suffering and rebirth Confucianism in China Confucius Kung Fu Tse Zoroastrianism in Persia Zoroaster XII Answer Grid The Jain monks who wear white clothes are called Ans What is the meaning of Buddha Ans Who is the Tirthankara of Jainism Ans Who delivered Dharmachakra Pravartana Ans How many noble truths are there in Buddhism Ans Which religion’s teachings include four noble truth and eight-fold path Ans Name the earliest Buddhist literature which deals with the stories of various births of Buddha Ans Name any four places where Jain monasteries were located in Tamil Nadu Ans Name one of the twin Indians Epics Unit From Chiefdoms to Empires Importance of Sixth Century BC BCE During the sixth Century BC BCE many territorial states emerge This Led to the transformation of socio economic and political life of the people in the Gangetic plains A new intellectual awakening began to develop in northern Indi Mahavira and Gautama Buddha represented this new awakening Role of iron in a changing society Iron played a significant role in this transformation of society The fertile soil of the Gangetic Valley and the use of iron ploughshares improved agricultural productivity In addition iron facilitated craft production Agrarian surplus and increase in craft products resulted in the emergence of trading and exchange centres This in turn paved the way for the rise of towns and cities Thus knowledge in the use of iron gave Magadha an advantage over other Mahajanapadas Thus the Magadha could establish an empire of its own Gana sanghas and Kingdoms There were two kinds of government in north India during the sixth century BC BCE Gana sanghas non monarchical states Kingdoms monarchies The term gana means people of equal status Sangha means assembly The gana sanghas covered a small geographical area ruled by an elite group The gana sanghas practiced egalitarian traditions A kingdom means a territory ruled by a king or queen In a kingdom monarchy a family which rules for a long period becomes a dynasty Usually these kingdoms adhered to orthodox Vedic traditions Janapadas and Mahajanapadas Janapadas were the earliest gathering places of men Later Janapadas became republics or smaller kingdoms The wide spread use of iron in Gangetic plain created conditions for the formation of larger territorial units transforming the janapadas into Mahajanapadas Sixteen Mahajanapadas Great Countries Sixteen Mahajanapadas dotted the Indo Gangetic plain in the sixth century BC BCE It was a transition from a semi nomadic kinship based society to an agrarian society with networks of trade and exchange Hence an organized and a strong system of governance required a centralised state apparatus Mahajanapadas Kuru Panchala Anga Magadha Vajji Malla Kasi Kosala Avanti Chedi Vatsa Machcha Surasena Assaka Gandhara and Kamboj There were four major Mahajanapadas They were Magadha in Bihar Avanti in Ujjain Kosala in Eastern Uttar Pradesh and Vatsa in Kausambi Allahaba Among the four Mahajanapadas Magadha emerged as an empire The Causes for the Rise of Magadha Magadha was located on the lower part of the Gangetic plain The plain was fertile which ensured the rich agricultural yiel This provided regular and substantial income to the state The thick forests supplied timber for construction of buildings and elephants for army Abundance of natural resources especially iron enabled them to equip themselves with weapons made of iron Growing trade and commerce facilitated movement of people as well as settlement of people in centres of arts and crafts The outcome was urbanization and emergence of Magadha as an empire Dynasties of Ancient Magadha Four dynasties ruled over Magadha Empire The Haryanka dynasty The Shishunaga dynasty The Nanda dynasty The Maurya dynasty Haryanka Dynasty Magadha’s gradual rise to political supremacy began with Bimbisara of Haryanka dynasty Bimbisara extended the territory of Magadhan Empire by conquests and by matrimonial alliances with Lichchhavis Madra and Kosal His son Ajatasatru a contemporary of Buddha convened the first Buddhist Council at Rajagrih Udayin the successor of Ajatasatru laid the foundation of the new capital at Pataliputr Shishunaga Dynasty Haryanka dynasty was succeeded by the Shishunaga dynasty Kalasoka a king of Shishunaga dynasty shifted the capital from Rajagriha to Pataliputr He convened the second Buddhist Council at Vaishali Nanda Dynasty Nandas were the first empire builders of Indi The first Nanda ruler was Mahapadm Mahapadma Nanda was succeeded by his eight sons They were known as Navanandas nine Nandas Dhana Nanda the last Nanda ruler was overthrown by Chandragupta Maury Nalanda UNESCO World Heritage Site Nalanda was a large Buddhist monastery in ancient kingdom of Magadh It became the most renowned seat of learning during the reign of Guptas The word Nalanda is a Sanskrit combination of three words Na alam daa meaning no stopping of the gift of knowledge Mauryan Empire Sources Archaeo logical sources Punch Marked Coins Inscriptions Edicts of Ashoka Junagath Inscription Secular Literature Kautilya’s Arthasastra Visakadatta’s Mudrarakshasa Mamulanar’s poem in Agananuru Religious Literature Jain Buddhist texts and Puranas Foreign Notices Dipavamsa Mahavamsa and Indica Megasthenese He was the ambassador of the Greek ruler Seleucus in the court of Chandra Gupt He stayed in India for years His book Indica is one of the main sources for the study of Mauryan Empire Mauryan Empire India’s First Empire Capital Pataliputra present day Patna Bihar Government Monarchy Historical era BC BCE BC BCE Important Kings Chandragupta Bindusara Ashoka Grandeur of Pataliputra The great capital city in the Mauryan Empire which had gates to the city with watch towers Chandragupta Maurya The Mauryan Empire was the first largest empire in Indi Chandragupta Maurya established the empire in Magadh Bhadrabahu a Jain monk took Chandragupta Maurya to the southern Indi Chandragupta performed Sallekhana Jaina rituals in which a person fasts unto his death in Sravanbelgola Karnataka Bindusara Real name of Bindusara was Simhasen He was the son of Chandragupta Maury Greeks called Bindusara as Amitragatha meaning slayer of enemies During Bindusara’s reign Mauryan Empire spread over large parts of Indi He appointed his son Ashoka as a governor of Ujjain After his death Ashoka ascended the throne of Magadh Ashoka Ashoka was the most famous of the Mauryan kings He was known as Devanam Piya meaning beloved of the Gods Ashoka fought the Kalinga war in BC BCE He won the war and captured Kaling The horror of war was described by the king himself in the Rock Edict XIII Ashoka shines and shines brightly like a bright star even unto this day H G Wells Historian Lion Capital of Ashoka The Emblem of the Indian Republic has been adopted from the Lion Capital of one of Ashokas pillars located at Sarnath The wheel from the circular base the Ashoka Chakra is a part of the National Flag Chandasoka Ashoka the wicked to Dhammasoka Ashoka the righteous After the battle of Kalinga Ashoka became a Buddhist He undertook tours Dharmayatras to different parts of the country instructing people on policy of Dhamm The meaning of Dhamma is explained in Ashoka’s Pillar Edict It contained the noblest ideas of humanism forming the essence of all religions He laid stress on Compassion Charity Purity Saintliness Self-control Truthfulness Obedience and respect for parents preceptors and elders Ashoka sent his son Mahinda and Sanghamitta to Srilanka to propagate Buddhism He also sent missionaries to West Asia Egypt and Eastern Europe to spread the message of Dhamm The Dhamma-mahamattas were a new cadre of officials created by Ashok Their job was to spread dhamma all over the empire Ashoka held the third Buddhist Council at his capital Pataliputr Edicts of Ashoka The Edicts on the pillars as well as boulders and cave walls made by the Emperor Ashoka describe in detail Ashoka’s belief in peace righteousness justice and his concern for the welfare of his people The script of the inscriptions At Sanchi Brahmi At Kandahar Greek and Aramaic At North Western part Kharoshthi The Rock Edicts and X of Ashoka refer to the names of the three dynasties namely Pandyas Cholas the Keralaputras and the Sathyaputras Mauryan Administration Centralized administration King The king was the supreme and sovereign authority of the Mauryan Empire Council of ministers known as mantriparishad assisted the King Assembly of ministers included a Purohit a Senapathi a Maha mantri and the Yuvaraj King had an excellent spy system Revenue system The land was the most important source of revenue for the state Ashokan inscription at Lumbini mentions bali and bagha as taxes collected from people The land tax bhaga collected was of the total produce Revenue from taxes on forests mines salt and irrigation provided additional revenue to the government Much of the State revenue was spent on paying the army the officials of the royal government on charities and on different public works such as irrigation project road construction et Judicial System The king was the head of the Judiciary He was the highest court of appeal King appointed many judges subordinate to him The punishments were harsh Military Administration The king was the supreme commander of the army A board of members divided into six committees with five members on each monitored Navy Armoury transport and supply Infantry Cavalry The war chariots The war elephants Municipal Administration Cities and Towns Board of members divided into six committees Each had members to manage the administration of the city Town administration was under Nagarik He was assisted by Sthanika and Gop The Junagarh Girnar Inscription of Rudradaman records that the construction of a water reservoir known as Sudarshana Lake was begun during the time of Chandragupta Maurya and completed during Ashoka’s reign Currency Money was not only used for trade even the government paid its officers in cash The punch marked silver coins panas which carry the symbols of the peacock and the hill and crescent copper coins called Mashakas formed the imperial currency Trade and Urbanization Trade flourished particularly with Greece Hellenic Malaya Ceylon and Burm The Arthasastra refers to the regions producing specialized textiles Kasi Benares Vanga Bengal Kamarupa Assam and Madurai in Tamilnadu Main Exports Main Imports Spices Pearls Diamonds Cotton textiles Ivory Works Conch Shells Horses Gold Glassware Linen Mauryan Art and Architecture Mauryan art can be divided into two Indigenous Art Statues of Yakshas and Yakshis Royal Art Palaces and Public buildings Monolithic Pillars Rock cut Architecture Stupas Yakshas were deities connected with water fertility trees the forest and wilderness Yakshis were their female counterpart Stupas Sanchi near Bhopal MP A Stupa is a semi spherical dome like structure constructed on brick or stone The Buddha’s relics were placed in the centre of the dome Monolithic Pillar Sarnath The crowning element in this pillar is Dharma chakr Beginning of Rock cut Architecture Rock Cut Caves of Barabar and Nagarjuna Hills There are several caves to the north of Bodh Gay Three caves in Barabar hills have dedicative inscription of Ashok And three in Nagarjuna hills have inscriptions of Dasharatha Maurya grand son of Ashoka Reasons for the Decline of the Mauryan Empire Ashoka’s successors were very weak Continuous revolts in different parts of the empire Invasion by the Bactrian Greeks weakened the empire Last Maurya ruler Brihadratha was killed by his commander Pushyamitra Sungha who established Sungha dynasty Ancient name Its Modern name Rajagriha Rajgir Pataliputra Patna Kalinga Odisha Elsewhere in the world Summary Sixth century BC BCE forms an important landmark as it witnessed the emergence of sixteen Mahajanapadas Among the sixteen Mahajanapadas Magadha emerged as an empire Magadha was ruled by four dynasties The Haryanka the Shishunaga the Nanda and the Maurya dynasty Chandragupta Maurya established the Mauryan empire Ashoka was the most famous of the Mauryan kings Ashoka’s pillar and Rock Edicts enlighten us on his ideas of Dhamm GLOSSARY Egalitarian a person who advocates the principle of equality for all சமத்துவம் Monastery a building in which monks live and worship மடாலயம் Treatise a written work dealing systematically with a subject ஆய்வுக்கட்டுரை Horror a feeling of fear and anxiety பேரச்சமும் நடுக்கமும் It is an ancient series of fortification During third century BC BCE emperor Qin-Shi Huang linked these walls on Northern border to protect his empire An ancient temple in Olympia Greece dedicated to the god Zeus constructed during fifth century BC BCE It is one of the seven wonders of the ancient worl The Great Wall of China Temple of Zeus at Olympia GEOGRAPHY Unit RESOURCES Learning Objectives To introduce the meaning of resources To familiarize with the different types of resources To understand the need for conservation of resources To understand the meaning of economic activities manufacture a few more solar panels because they have some urgent orders Kuzhali He should have told me last night My progress report has to be signe Amma Enough of that Now go have your bath I’ll sign your report this time Kuzhali Amma thank you m One more question What does he Pathway Kuzhali was lying in her bed to see if her father would enter her room She wanted her report card to be signe There was no symptom of coming of her father She jumped out of her bed and ran to her mother in the kitchen Kuzhali Amma where is Appa Amma Today he has overtime and he has left early Kuzhali Overtime what is that Amma Your father’s boss wants him to Amma Let me explain for you to understan Silicon extracted from sand a natural resource is used in making PV cells These convert solar energy into electrical energy Kuzhali Natural resource what do you mean by it Amma All things useful to man is resource And if it is directly from nature we call it natural resource Kuzhali Then what kind of work is Appa doing Amma He is a manufacturer He uses natural resources for manufacturing Kuzhali Then manufactured things be called as resources Amma Yes they are called as man made resources Kuzhali Ok amm It’s getting late Let me get ready Resource is anything that fulfills human needs When anything is of some use it becomes valuable All resources have value The value can be either commercial or non-commercial Commercial resources have great economic value Petroleum The Non-commercial resources are very abundant in availability Air HOTS Do all the items in your shopping list have commercial value Anything becomes a resource only when its use is discovere The needs of human beings are ever changing According to the ever changing needs resources keep changing Time and Technology are two important factors that determine whether a substance is a resource or not for example Sun’s energy to generate electricity was made possible after the invention of solar panels technology and the receding of coal and petrol was in need of an inexhaustible resource time Solar panel HOTS Is the tilt of the solar panels same everywhere on Earth Resources can be natural man-made and human resources NATURAL RESOURCES All resources that have been directly provided by nature are called Natural resources The air water soil minerals natural vegetation and wild life around us are all natural resources The use of any natural resource depends on the place it is available the form in which it is available and the technology necessary to avail it CLASSIFICATION OF NATURAL RESOURCES Natural resources can be classified into different groups depending on origin development renewability distribution ownership et AON THE BASIS OF ORIGIN On the basis of origin resources can be classified into biotic and abiotic resources i All living resources are biotic resources plants animals and other micro organisms are biotic resources ii Abiotic resources are non-living things Land water air and minerals are abiotic resources Sun The biotic resources were mere substances till they were recognized by humans According to the human needs the substances were collected by the ancient men and preserved for use In the beginning man had only three basic needs food clothing and shelter He collected things through primary activities such as hunting food gathering fishing and forestry Later when food became scarce they had to cultivate and that became agriculture and the cattle were also reared on their farms to fulfill their basic needs The abiotic resources were also sought after by the early men They went in search of better landforms where they had enough water resources for agriculture and their cattle They were in need of tools right from hunting to agriculture Primarily the tools were only made of stones Later man dug the earth for better abiotic resources and found copper first and iron later He also mined precious metals simultaneously for making ornaments Later mining became one of the leading primary activities and still holds an important place among the economic activities BON THE BASIS OF DEVELOPMENT Based on the level of development resources can be divided into actual and potential resources i Actual resources are resources that are being used and the quantity available is known Coal at Neyveli ii Potential resources are resources that are not being used in the present and its quantity and location are not known The technology to extract such resources is also yet to be develope Marine yeast found in the Bay of Bengal and Arabian Se Marine yeast have greater potential than the terrestrial yeast They can be used in baking brewing wine bio-ethanol and pharmaceutical protein production ON THE BASIS OF EXHAUSTIBILITY On the basis of renewability resources can be classified as renewable resources and non-renewable resources i Resources once consumed can be renewed with the passage of time are called renewable resources Air Water Sunlight Misuse of such resources can also limit its available quantity So they have to be used wisely ii Natural resources which are limited can be called non-renewable resources They become exhausted after use and the time they take to replace does not match the life cycle Coal petroleum natural gas and other minerals Neyveli lignite corporation The resources which cannot renew themselves are either scarce or totally absent So man is in search of new resources and is conducting several researches He confirms that a substance is a resource only after research He tries to harness it and also searches the regions where it may be found in They are potential resources Wind energy is one such example The places where the wind energy can be utilized are still unknown HOTS How did coal originate ON THE BASIS OF DISTRIBUTION On the basis of distribution resources can be classified into localized resources and universal resources i When resources are present in specific regions they are called localized resources Minerals ii Some resources are present everywhere Such resources are called universal resources Sunlight and air EON THE BASIS OF OWNERSHIP Based on ownership resources can be classified into Individual resources Community-owned resources National resources and International resources i Individual resources are resources privately owned by individuals Apartments ii Community-owned resources are resources which can be utilised by all the members of the community Public parks National resources are resources within the political boundaries and oceanic area of a country Tropical forest regions of Indi iv International resources are all oceanic resources found in the open ocean Resources found in this region can be utilized only after an international agreement Ambergris Activity Which region continent does each of these animals belong to Tropical rain forests are called the World’s largest Pharmacy as of the natural vegetation are medicinal plants Cinchon Apartments MAN-MADE RESOURCES Natural resources are modified or processed by technology into man-made resources sugarcane processed to get sugar All structures built by man can also be called man-made resources Bridges Houses Roads This transforming of raw materials into finished goods is called Secondary Activities Man’s skills and ideas are the basic requirements for these activities HUMAN RESOURCE Human resources are groups of individuals who use nature to create more resources Though human beings are basically natural resources we classify Activity What natural resources are necessary to lay a road Man-Made resources Ambergris human beings separately Education health knowledge and skill have made them a valuable resource Doctors Teachers Scientists Tertiary activities are basically concerned with the distribution of primary and secondary products through a system of transport and trade Banking Trade and Communications The quantity and quality of institutions and organizations involved in making the professionals decide the human resource of a country Gandhian thought on Resources There is enough for everybody’s need and not for anybody’s gree Mahatma Gandhi blamed human beings for depletion of resources because of i over exploitation of resources Unlimited needs of human beings So conservation is very important Resource planning Management Resource planning is a technique or skill of proper utilization of resources Resource planning is necessary because i Resources are limited their planning is quite necessary so that we can use them properly and at the same time we can save them for our future generation Resources are not only limited but also they are unevenly distributed over the different parts of the Worl It is essential for the production of resource to protect them from over exploitation CONSERVATION OF RESOURCES Careful use of resources is called conservation of resources Resources are being used at a very fast rate due to the rapid increase in population So natural resources are depleting fast wisely using resources can control the depleting ratios Development is necessary without affecting he needs of the future generations If the present needs of resources are met and the conserving of resources for the future are balanced we call it sustainable development Sustainable development can take place when i The reasons of depletion are identifie Wastage and excess consumption is prevente Reusable resources are recycle Pollution is prevente v Environment is protecte vi Natural vegetation and wild life are preserve vii Alternative resources are use The easiest way to conserve resources is to follow the Rs Reduce Reuse and Recycle Anything that fulfills human needs can be called a resource Resources provided directly by nature are natural resources All living things are biotic resources All non-living things are abiotic resources Collection of resources directly from nature is called primary activities Actual resources are being used at present Potential resources are not utilized at present After consumption resources can be renewed with the period of time is called renewable resources Non-renewable resources are resources that have limited stock Resources that found everywhere are Universal resources Resources found in specific regions are called localized resources Natural resources when processed to meet man’s needs are called man made resources People are also referred to as resources Tertiary activities are those which render services to production and distribution of goods Careful use of resources is conservation of resources when the present populations needs are fullfilled the future generations needs will be met without damaging the environment sustainable development take place Manufacture production Solar panel A plate that can absorb solar energy PV cells Photo voltic cells Localized Limited to specific areas Universal found everywhere Open ocean areas of ocean that does not belong to any country Depleting reducing Conservation saving for future use Sustainable able to be maintaine Tertiary third level Natural resource Minerals International resource Sustainable development Reduce Reuse Recycle Air Non-renewable Manufacturing Universal resource Ambergris Secondary activities Forest Statement Solar energy is the best substitute for thermal energy in tropical regions Inference Coal and petroleum resources are receding Inference Solar energy will never deplete Now choose the right answer a Only conclusion follows b Only conclusion follows c Neither nor follows d Both and follow Statement If you don’t conserve resources human race may become extinct Inference You need not conserve resources Inference You need to conserve resources CIVICS Unit NATIONAL SYMBOLS Path way This lesson deals with the natural national symbols and the other national symbols It also explains about the different national festivals Velan and Ponni went on a forest trip to Pulivanam The thought that they were going to visit the forest made them ecstatic and they were filled with excitement and adventurous spirit Veena a wildlife reasearcher was with them That forest had a legendary river running across The forest also had metre high mountain As per the plan they had reached the forest area by a vehicle We are waiting for you said the forest officer Manimaran smilingly to the enthusiastic young researchers Veena introduced Velan and Ponni to the officer The personal vehicles had to be stopped there as they were restricted to go further After that they had to travel only by vehicles run on battaries that are pollution free These vehicles also called as Jeep were covered with glass A jeep was waiting for them The forest officer Manimaran Veena and the team boarded the vehicle I think you are eagerly waiting to watch the tiger but it is possible only when you are lucky enough Though it is the tiger’s habitat there are many birds insects reptiles aquatic life and amphibians which make the eco-system So please don’t wait only for the tigers but enjoy watching other animals too And remember you shouldn’t speak loudly said Manimaran In a few minutes they had a chance to see a beautiful pond with lotus The vehicle was moving slowly The lotuses were smiling back at them Lotuses are of different types Those which are pink are called pink lotuses The lotus has a very special structure said Veen Just behind a big tree near the pond a peacock was fanning out its feathers gracefully Without making noise Velan and Ponni were admiring it Uncle Manimaran usually peacocks do this during rainy days Will it rain now said Ponni Maybe It dances only during rainy days But once a chieftain Began wondered whether the peacock was shivering in cold and covered the peacock with his shawl This chieftain belonged to the classical Sangam age of Tamils and also revered as one of the seven most generous personalities of ancient Tamil lan You know very well that the peacock is our national bir For a long time the Peacock has a significant place in our culture art and heritage It’s beauty stately appearance and its even distribution all over India makes it our national bird said Manimaran The vehicle moved forward silently They admired the beauty on either side even without blinking We have come very close to the bank of the river Now we have to go along the river I am going to show you a different animal You have to remain silent only then you can see it Please take your binoculars said Manimaran Veena had instructed the team to bring their binoculars on the visit Velan and Ponni had borrowed the binoculars from their neighbours They focused their binoculars towards the gap between the bushes That gave them a view of the river Veena said Look there is something black like a Gharial crocodile moving They could not see the animal clearly due to the glare caused by the morning sun Manimaran said Turn away from the Sun’s rays and watch carefully It is not a Gharial Veena said No it does not look like a fish It looks like an aquatic mammal a river dophin Velan and Ponni exclaimed What Is it a dolphin Marine acrobatic animal How can it live in a river Manimaran said There are river dolphins in our country The dolphins that live in the rivers have a long snout similar to the Gharial crocodiles Just like bats they use the ultrasound waves to catch their prey They are essentially blin Velan said That was an interesting detail Do you know the name of the river beside which we are now on The rich harvests of the fertile plains of Ganges was mentioned in one of Bharathiyar’s famous songs Am I on the same banks of Ganges My father asked me to collect some information about this place before visiting it said Ponni No doubt about it Do you know that this river is km long and is the longest river in India said Velan stunning everyone aroun Though Brahmaputra is km long it does not flow across Indi So What Velan said is right said Veen Manimaran said We have seen a lot of things Now let us relax Come let us have these pieces of mangoes These mangoes are very tasty what kind of mangoes are these asked Veena eagerly This kind of mango is known as Imam pasand a variety of mango that was cultivated during the Mughal reign for the royal family This is occasionally found in the forest Even this was picked from the mango grove at the fringes of this forest said Manimaran Eveyone got into the vehicle and were ready to go Now we are going to see another wonder said Manimaran and drove the vehicle around a big banyan tree with countless roots aroun He travelledaround it for a few minutes and came back to the starting point Such a big banyan tree exclaimed Ponni and Velan This is a very big banyan tree and is the oldest in this forest It is the habitat of thousands of birds It is as famous as the banyan tree in the Indian Botanical Garden in Howrah Calcutta said Manimaran There is another big banyan in Adyar Chennai It is as big as that I saw that when I visited the Theosophical Society and wondered at it said Ponni Let us now go slowly because there is a herd of elephants climbing the mountains right behind the banyan tree said Manimaran Velan replied at once Oh Aren’t the wild elephants ferocious Are we in danger Manimaran said First and foremost we are not supposed to trouble the wild animals because the forest is their home We can admire them without disturbing them Manimaran continued We should know how to safeguard ourselves from the encounters of the wild animals That is the reason why we try to explore the forests with the guides who belong to the forest tribal community Even though the animals are quite huge they will not harm you unless you hurt them Let us also climb the hills along with the elephants There is another surprise waiting for you on the top of the hills said Manimaran After climbing the hill they came across a plain He parked the vehicle and asked the team to see something using their binoculars Look there There was a cone-shaped nest built with dried leaves Manimaran asked Can you guess which animal’s nest is that I know that birds build nests on the ground but this seems a bit strange said Veen It is a snake’s nest the nest of king cobra What Snakes build nests said Velan This is the only reptile that builds a nest of its own and reproduces Thus snake’s average length is feet and is the longest of the poisonous snakes said Manimaran We have explored the forest and climbed the hills but we have not seen a tiger till now said Ponni Don’t worry Ponni We have come across many wonders The Tiger is a very shy animal While descending down the hills we may see one on the rocky area on the slope said Manimaran They had seen many unusual things that day But they were very disappointed because they had not seen ever a tiger I have visited several forests but they are not identical I got some new information from MrManimaran and the tribals I have visited forestes many times regarding my research But I was not able to see the tiger Don’t worry we will see a tiger some time later comforted Veen anyan tree It is a symbol of pride and has many medicinal values Though it grows in muddy water it blooms with beauty It is the largest cat species India has of tigers population in the worl It is a perennial river and many royal capitals flourished on the banks of this river It is the world’s longest venomous snake and lives in the rain forests and plains of Indi It is native to mainland Asia and plays a critical role in maintaining the regions forests It is the reliable indicator of the health of the entire river eco-system It is in the endangered list They are friendly bacteriaThey are a major part of the lactic and bacteria group It is a rich source of vitamins AC and D and mainly cultivated in the plains Lotus Peacock Tiger River Ganges Elephant River Dolphin King cobra Ophiophagus hannah Mango NATURAL NATIONAL SYMBOLS They descended down the hill and came to the same place where they had watched the river dolphins They parked the vehicle and rested for a while Ponni came out of the vehicle and watched through the binoculars She noticed something strange She couldn’t control herself she whispered Uncle look there All of them quickly turned to look with their binoculars They saw a tigress with her three cubs drinking water from the river Veena captured the beautiful scene with her camer Nobody dared to see anything other than the tigress till it left the river bank and vanished away This is the real king of the forest said Manimaran Tamil Nadu’s Natural Symbols Animal Nilgiri Tahr Bird Emerald dove Flower Gloriosa Superba Tree Palmyrah tree It is absolutely true said Veen They all got back to the vehicle and were returning Veena asked the team a question Do you know there is something common between all the wonders you have seen today What is common asked Velan Please tell us quickly We are very eager to know said Ponni All that we saw today are our natural national symbols said Veena You are right Veen This didn’t strike me said Manimaran Other Symbols of our Country National flag The tricolour flag is our National flag The three colours are of the same width and are arranged horizontally The saff ron at the top represents valour and sacrifice The green at the bottom represents fertility and prosperity The white band in between represents honesty peace and purity The Ashoka chakra or the wheel in navy blue represents truth and peace Out National Flag’s length and width proportion is respectively and the Ashoka’s chakra has spokes in it National Emblem The four lions on top of the Ashoka Kodi Kaatha Kumaran T i r u p u r Kumaran was born in Chennimalai of Erode district As a youth he actively participated in the freedom struggle for Indi In when Gandhiji was arrested protests were held against the arrest all over the country When protests were held for Gandhiji’s release Tirupur Kumaran took active part in it He lost his life when the police attacked violently He held on to the tricolor flag even when he die He was honoured with the title Kodi Kaatha Kumaran The Government of India has released a postal stamp on his centenary year to remember Tirupur Kumaran’s sacrifice and dedication to the nation  The National flag was designed by Pingali Venkayya from Andhra Pradesh The first Indian Flag was woven at Gudiyatham in Vellore district of Tamilnadu This flag was hoisted by Pandit Jawaharlal Nehru on August at Red Fort Delhi This flag is now an exhibit at the StGeorge’s Fort Museum Chennai Pillar at Sarnath was chosen to be our National emblem The national emblem was accepted on January Satyameva Jayate has been inscribed at its bottom It means Truth alone triumphs The National emblem consists of two parts the upper and the lower parts The upper part has four lions facing the North South East and West This is on a circular pedestal One can only see three lions at a time The lower part has an elephant energy a horse speed a bull hardwork and a lion majestic The Wheel of righteousness is placed between them This emblem is found at the top of the government communication Indian currency and passport The four lions chosen from the Sarnath pillar of Ashoka as our emblem is now placed in the Sarnath Museum National Anthem Jana Gana Mana is our National anthem It symbolises the sovereignty and intergrity of our nation This anthem was written by Rabindranath Tagore in Bengali This was transcripted in Hindi and was accepted by the Constituent Assembly on January The rules to be observed while singing the Anthem This anthem has to be sung at a duration of seconds Everyone should stand erect while singing the national anthem One should understand the meaning while singing On December this National anthem was sung for the first time during the Congress committee meet held at Kolkat National song The song Vande Mataram composed by Bankim Chandra Chatterjee was a source of inspiration to the people of India in their struggle for freedom It has an equal status with Jana Gana Man On January the then President Dr Rajendra Prasad came up with a statement in the Constituent Assembly the song Vande Mataram which has played a historic part in the struggle for Indian freedom shall be honoured equally with Jana Gana Mana and shall have equal status with it The song was a part of Bankim Chandra’s most famous novel Anand Math National pledge India is my country All Indians are my brothers and sisters is our national pledge The pledge was written by Pydimarri Venkata Subba Rao in Telugu National Micro organism The curd which we consume every day is curdled from milk by a micro organism called lacto bacillus delbrueckii This was accepted as our national micro organism in the year This micro organism makes the milk undergo a chemical reaction and changes the protein content of the milk Curd is known for its digestive quality and cooling capacity Currency of India INR ` The Indian currency is the Indian Rupees The currency released by SherShah Sur in the sixteenth century was Rupiya This rupiya has been transformed into Rupees The symbol of rupees is ` This was designed by Udhayakumar from Tamil Nadu in the year National Calender During the reign of Emperor Kanishka he began following a new calendar in the year CE A The year begins from the spring equinox which falls on March n During a leap year it begins on March st Our country follows this calendar The famous astronomer Meghnad Saha headed the Calendar Reformation Committee on March It was then accepted by the committee as our national calendar The National symbols help in uniting the diversified sections of India and to instill patriotism National Holidays Independence Day Every year August is celebrated as the Independence Day to commemorate India’s freedom from British rule This auspicious day is also marked as a birth of the world’s biggest democracy Indi On the day India gained independence Mahakavi Bharathiyar’s poem Aaduvome Pallu Paduvome and it was sung over the AIR All India Radio by TKPattammal a famous singer of Carnatic Musi The celebration of Independence Day continues every year The Prime Minister unfurls the National Flag on the Independence Day at the Red Fort New Delhi Republic Day On January India was declared as a democratic state Every year this day is commemorated as the Republic Day The constitution commenced on January From August to January the Queen of Britain was the honorary head of Indi The day India was declared as a democratic state the President became the first citizen of Indi On Republic Day the President of India hoists the National flag at the Red Fort New Delhi On January the third day of the Republic day the celebrations are brought to an end with the Beating Reteat ceremony This is performed by the bands of Indian Army Navy and Airforce The President of India is the chief guest of this day Rashtrapati Bhavan will be illuminated at pm as a part of the celebration Gandhi Jayanthi The birthday of Mahatma Gandhi the Father of our Nation was declared one of the National festivals It falls on October In the United Nations declared October as the International Day of Non-violence Tiger Elephant River dolphin of Ganges Peacock King Cobra Banyan tree mango The Ganges and lotus are the natural national symbols The constitutional Assembly accepted the tricolour flag as the national flag on July The National Flag the National emblem the National Anthem and the National song etc are the other national symbols Independence Day Republic day Gandhi Jayanthi are our important National festivals Independence Freedom from control of another country or organization Republic A country in which the Head of State is an elected person Heritage The art buildings traditions and beliefs that a society considers important to its history and culture Aquatic Growing or living in or near water Astrophysicist An expert in astrophysics Unit THE CONSTITUTION OF INDIA Pathway The Lesson speaks about the formation of the constitution of Indi It gives guidelines to govern the country while ensuring the fundamental rights and duties of the citizens and how it protects them Yazhinian and Sudaroli are brothers Yazh is student of standard six and Sudar is in standard four Yazh was preparing for his class test Sudar after completing his home assignments was watching an animated series on television Sudar was watching it but the noise level disturbed Yazh Sudar was totally engrossed in the series and laughed and clapped loudly Yazh could not concentrate on his lessons So he asked Sudar to reduce the volume But Sudar was not ready to adhere to his elder brother’s advice Inspite of Yazh’s continuous request Sudar did not reduce the volume Yazh complained to his father that Sudar did not decrease the volume of the television in spite of requesting him several times Yazh made it clear that he had a class test the following day Isn’t your brother preparing for his class test Weren’t you wrong in troubling him continued his father I was watching the TV Yazh kept disturbing and stopped me from watching it said Sudar Studying for the test and watching television are not the same said his father But Sudar was not ready to accept the fact Sudar was consistent that he had all rights to watch a film as much as Yazh had the right to study His father admitted that both had equal rights But one must not hinder another’s freedom Sudar didn’t realise the fact that he was very stubborn Look Sudar You have all rights to watch the film said his father Yes dad Similarly Yazh also has the right to listen to his favourite song on TV Coundn’t he How can that happen When I watch the television he cannot do that When you can watch a film by increasing its volume Yazh can also hear music loudly said father How will I watch the movie How will Yazh study Oh I didn’t think of it Okay dad I will not watch the movie while Yazh studies No my chil You can watch the movie without causing trouble to anyone Don’t be angry Yazh You study and I promise I will not disturb you Yazh smiled and patted Sudar’s back and left the place Sudar’s mother was watching everything silently She said Even to run a small family don’t we need to follow so many rules and regulations How much more of that will we need to administer a country she exclaime It is an ocean Deep In order to administer people who follow different religions speak different languages and belong to different castes and culture and treat everyone equally we need to have a good code of laws and guidelines which we call as The Constitution of India The next day Sudar and Yazh went to school It was the Republic Day also The celebration was a jubilant The students and teachers were standing in line around the flag post Immediately after the hoisting of the flag a discussion was held with the chief guest for the day Mr Arumugam an expert in social sciences Wish you a happy Republic Day wished Mr Arumugam Wish you the same Sir Do you know why do we celebrate the Republic Day Our Constitution was framed and came into existence from January That is why every year we observe this day as the Republic Day said the history teacher Malarmathi Yes it is true There are other reasons why this constitution came into existence on January When the Congress met at Lahore in the members of the Congress unofficially declared the same day as the Day of Poorna Swaraj or the Day of complete self governance The next year January was celebrated as the Independence Day That day has been observed as our Republic Day What do you mean by the Constitution of India asked Nathar Before that let me ask a few questions You answer me Then I will explain in detail about the constitution of India All right sir The students were prepared to answer the questions Are you following any rules and regulation at home Yes sir Are you following any rules at school Yes sir Are both of them the same or different Mostly they are different Is it necessary to follow certain rules in public places Yes Sir Why is it necessary We should not disturb anybody in public said Tamilselvi It’s true Also no one should disturb us said Selva Yes I do accept it But what if someone compels you to follow some rules How would you feel It would be difficult to do so How do you feel when you are asked to make your own rules We would be proud and pleased to obey our own rules Everyone agreed and nodded their heads The Constitution is an authentic document containing the basic ideas principles and laws of a country It also defines the rights and duties of citizens The laws governing a country originate from the consitutition Every country is ruled on the basis of its constitution What are the things that make the constitution of India asked Deepik The constitution of India is the ultimate law We have to abide by it It explains the fundamental concepts of structure methods powers and the duties of Government bodies It also lists the fundamental rights and duties of the citizens Directive Principles are also mentioned in the constitution So it is holistic in nature When did they begin to frame the constitution asked Christopher In nearly members of the constituent Assembly who belonged to different parties from different places came together to frame the Constitution of Indi The Chairman of the committee was Mr Rajendra Prasad Who were the other significant members in the Constituent Assembly Jawaharlal Nehru Sardar Vallabai Patel Moulana Azad S Radhakrishnan Viajalakshmi Pandit and Sarojini Naidu were the members in the Constituent Assembly How many women members were there in the Constituent Assembly women members were in the Constituent Assembly The Father of the Constitution of India is DrBR Ambedkar The Drafting committee was formed with eight members and its Chairman was BR Ambedkar BNRao was appointed as an advisor The committee met for the first time on December On the same day the drafting of constitution of India started How did they form the Indian constitution The constitutions of nearly countries including the UK USAformer USSR France Switzerland etc were thoroughly examined and their best features have been adopted by our constitution Did they draft it in a short span of time No nearly amendments were made before the draft was finalised When did they complete this work It took a period of years months and days It was completed on November The constitution was accepted by the Constituent Assembly So November is celebrated as the Day of the Constitution isn’t it said Karthikeyan Yes said Mr Arumugam How much was spent to frame the constitution of India asked Nathar They spent almost lakhs What are the objectives of the Constitution The Preamble of our constitution stresses on the justice liberty equality and fraternity What is a Preamble The preface of the constitution is the Preamble According to it India is a Sovereign socialist Secular democratic republic What does it mean by Sovereign The constitution has granted the people the right to rule The members of the parliament and the legislative assembly are elected by the people The right to decide is only in the hands of the representatives Sovereignty refers to the ultimate power of the country What is the meaning of Secular Law allows all the citizens of a country the right to follow different faith and religious beliefs All citizens enjoy the freedom of worship The country does not have a religion of its own All the religions in our country hold the same status The Government of India rules through the Parliament doesn’t it Yes the Constitution of India provides a Parliamentary form of Government both at the centre and the state In a Parliamentary System the Executive is collectively responsible to the Legislature The party which has the majority forms the government What are fundamental rights Fundamental rights are the basic human rights of all citizens What are they Cultural and Educational Rights Fundamental rights Right to Equality Right to freedom Right against exploitation Right to freedom of Religion Right to Constitutional Remedies They are Right to Equality Right to freedom Right against exploitation Right to freedom of Religion Cultural and Educational Rights and Right to Constitutional Remedies You mentioned about Directive Principles What do you mean by that There are certain guidelines to be followed while the governments frame law Though these are not mandatory they should be taken into account What is Universal Adult Franchise Every Indian citizen has the right to vote when they attain years of age irrespective of any caste religion gender or economic status Like fundamental rights every citizen will have duties too wont they Yes There are duties respecting the National flag and National Anthem respect and protect the Constitution follow our great leaders who fought for our freedom to protect our country readiness to serve our country if necessary treating everyone as brothers irrespective of their castes religions languages races etc to conserve our ancient heritage and conserve natural elements like forests rivers and lakes and fauna to develop science humanity and feelings of reformation to avoid non violence and protect government property parents or guardians providing educational opportunities to children between years etc have been added as our duties Mr Arumugam concluded his discussion FACTS Dr BR Ambedkar N Gopalasamy KM Munshi Syed Mohammad sadullah N Madhava Rao TT Krishnamachari Alladi Krishnaswamy were the legal experts of the Drafting Committee The Chairman of the Drafting Committee Dr BR Ambedkar was considered the Chief architect When the ConsWtitution was drafted there were articles in parts and schedules At present our Indian Cons titution contains articles in parts and schedules amendments were made till The original copies of the Cons titution of India Hindi English are preserved in special Helium filled cases in the Library of the Parliament of Indi Democracy a type of government in which representatives are elected by the people of that country Drafting Committee a Committee set up to prepare the draft of the Constitution Preamble an introduction to a book or a written document Republic a country with an elected head of state Secular a state which does not discriminate anyone on religious grounds Socialist equal distribution of a country’s wealth and equal opportunities in all fields Sovereign an independent country not subject to any external power or influence January is observed as our Republic Day The Constitution is an authentic document containing the basic ideas principles and laws of our country The father of the Constitution of India is Dr R Ambedkar The Preamble of our Constitution stresses on justice liberty equality and fraternity According to the Preamble India is a sovereign socialist secular democratic republic All citizens enjoy the freedom of worship The Executive is collectively responsible for the legislature Fundamental rights are the basic human rights of all citizens Directive principles are certain guidelines which are not mandatory Universal Adult Franchise is every Indian citizen’s right to vote when they attain years of age Every citizen has certain duties too ECONOMICS Unit Economics An Introduction The laughter of children echoed throughout the children’s park of that apartment Some slided down joyfully down the slide and some went up and down in the see saw shouting cheerfully Others were swinging so high and fast in the swings as if they were about to reach the sky Some children were waiting near the swings to play next Kavin did not join with any of these children He sat alone in a corner staring somewhere His uncle Mohan noticed Kavin and came near him Kavin are you going to play with your friends asked his uncle as he sat next to Kavin Uncle everyone teases me calling me a villager said Kavin with tears rolling down his eyes Even our Vimalan laughs along with them I came here for the holidays with so much of excitement Now I regret my presence here I want to go back to our village uncle sobbed Kavin Is it so Where is Vimalan asked his uncle and started to search for his son in the crow Vimalan called him in loud voice On hearing his father’s voice Vimalan enquired Did you call me dad and came near him Did everyone tease Kavin asked Mohan Vimalan didn’t utter a wor He stood quietly Even though I live in this big city I also hail from the same village My roots are still there said his father worriedly Then he added Go and bring your friends I have to tell something to you Saying this he sat near Kavin When Vimalan brought his friends his father made them all sit down together Mohan asked the children Let me come to the point directly Do you know from where do we get all the food The rice and pulses we eat We buy them from shops said Anandhan HOTS Imagine if money disappears one day Tell me where do the shopkeepers get these things from I guess they would buy them from another shop I think they would buy them from those who grow crops uncle said Inb Correct We call those people who raise crops as farmers Farming is the main occupation in villages The children looked at each other in surprise The farmers grow various crops like pulses grains vegetables etc and send them to the shops in cities We buy and consume them Uncle I have a doubt said Kavin Tel me Kavin In villages I have seen people selling all kinds of things in a place Why do they call it Sandhai instead of shops Yes Kavin In villages once in a week or month all things are sold in a particular place at a specific time to meet the needs of the people That is called ˋSandhaiˊ Do you all know from where do they bring these things to Sandhai We don’t know uncle said the children I told you already that the things which are produced in villages are brought to sandhai Fine Kavin Do you know what activities are carried out in a sandhai Buying and selling said Kavin Very good Kavin Apart from going to the sandhai with your mother you have also noticed what’s happening around you Hearing this Kavin smile All the children said in unison Without knowing the importance of villages we teasted kavin Forgive us uncle we won’t hurt anyone herafter We wish to know more about this The finished goods which are bought from the market to fulfill the daily needs of the consumers is called consumer goods Example rice clothes bicycles et Consumer Goods Sure I will tell you said Mohan Small traders and other people buy things from sandhai explained Mohan Do you know in olden days we had a system of exchanging goods for other goods called barter system For example exchange a bag of rice for enough clothes A person who has rice in surplus and a person who has cloth in surplus will exchange on the basis of their needs But here the problem is that the person who has clothes should have the willingness to buy rice Only then the exchange through barter system will take place When they exchange commodities they may lead to certain problems when comparing the differences in the value of commodity To solve this problem people invented a tool called money Really Is it so exclaimed the children You know that early man who hunted and gathered food later learnt to cultivate crops When they found rivers which provided them water settled down Plan for a model Sandhai Ask the students to bring vegetables and fruits to the classroom One student one vegetable fruit Ask them to display like Sandhai and stick the prices of the vegetables Other class students can buy the vegetables Through this activity the students can get an experience of the value of goods buying selling and a knowledge of profit loss demand and supply Probably the Sandhai should be profitable The students learn to fix the selling price through which they can earn profit Activity Issues faced in Barter system The amount from the income which is left for future needs after consumption is called savings permanently near the rivers These permanent settlements were called villages Agriculture remains to be the root of our economy even today Man has no limits for his demand and desire Based on this man started to learn new occupations Those who are involved in farming and grazing are called farmers or cultivators Is agriculture the primary occupation Yes there are certain other primary activities like farming Agriculture and industries are helpful in the economic development of our country Our country’s economy is based on three economic activities They are concerned with the production of raw materials for food stuff and industrial use Primary activities include Agriculture Cattle rearing Fishing Mining Collection of fruits nuts honey rubber resin medicinal herbs and lumbering Is agriculture confined only to villages What other works do the villagers do What will a village look like uncle interrupted Inb Agriculture is the primary occupation There won’t be any kind of facilities like our cities At the same time they get their basic needs fulfilled easily There are small shops Vegetables are grown in abundance just like rice and pulses Though the sugar that is added in our milk coffee and tea is produced in sugar mills the raw material sugarcane is cultivated in villages From chilies to mustard all those provisions used for food are grown in villages Wow My mother told me that these things are very expensive Therefore the villagers must be so wealthy said Adithy No not like that They are just producers Their products are bought and sold by some mediators So the farmers get very little money What a pity But the villages are the real shadows of cities exclaimed Anandhan Even Gandhiji has said that the villages are the backbone of our country Yes what a wonderful saying said Kavin excitedly At that time the mobile phone rang Mohan attended the phone Vimalan’s mother Ponni had calle What are you chatting about with the children for so long The food is ready Bring them home saying so she cut the call Children come let’s go home Food is ready Mohan got up and the children followed him with joy Inba asked Uncle you said how villages are important Aren’t cities important No Inb Both cities and villages are important on their own If it is so tell us about the importance of cities asked Inba again That is goo I will tell you More than percentage of the world’s populations live in cities In our state Tamil Nadu percentage of the people are in cities Wow they exclaime Not only that Tamil Nadu is well developed in secondary and tertiary activities as well These are city centered activities We feel very proud to hear this uncle Tell us about those activities Uncle Mohan said Well apart from this employment opportunities are more in cities than villages People involved in small scale industries and unorganized sector are mostly found in cities We don’t understand In villages there are only a few saloons and laundry shops But in cities the number of such small scale workers are more This results in additional income in cities SECONDARY ACTIVITIES The raw materials obtained from the primary activities are converted into finished products through machinery on a large scale These activities are called secondary activities Industries are classified on the basis of the availability of raw materials capital and ownership On the basis of raw materials industries are classified as Agro based industries Cotton textiles Sugar mills and Food processing Forest based industries Paper mills Furniture making Building Materials Mineral based industries Cement Iron Aluminium Industries Marine based industries Sea food processing Farmer Teacher Tailor Engineer Bank Manager Really Yes well paved roads ports airports and railway stations support trade Many branches of banks help in the circulation of money and boost the country’s economy All these are termed as tertiary activities Vimalan exclaimed Even being in the city I never knew about all these Inba said We really got to know more information uncle Good will you compare cities and villages in the future TERTIARY ACTIVITIES I already told you that industries produce goods and distribute them to the people For this purpose some services are require These services are called tertiary activities or service sectors The service sector serves the people to fulfill their daily needs like Transport roadways railways waterways airways Communication Post Telephone Information Technology etc Trade Procurement of goods selling Banking Money transactions banking services Never we won’t say such a thing If anyone talks like that we will explain whatever we have learnt from you replied the children Come lets go and have our lunch Said Mohan Children said that they will come after playing for some more time Holding Kavin’s hand they all ran towards the park Mohan an economics teacher felt proud of their unity and satisfied of clarifying something good to the children Children understand the meaning of Sandhai Get clear idea about the barter system Gain knowledge of the various kinds of occupation Consumer the one who uses the products Commodity products Occupation work Job Settlement living place of human being Eternal Kinship Contemporary Metallurgy Preceptor Doctrine Virtuous Corpse Monastery Treatise Manufacture Deplete Sustainable Tertiary Resource Biotic Abiotic Independence Republic Heritage Aquatic Astrophysicist Democracy Drafting Committee Preamble Secular Socialist Sovereign Consumer Commodity Occupation Settlement HISTORY Unit Society and Culture in Ancient Tamizhagam The Sangam Age The Sangam Age The word Sangam refers to the association of poets who flourished under the royal patronage of the Pandya kings at Madurai The poems composed by these poets are collectively known as Sangam literature The period in which these poems were composed is called the Sangam Age ArumugaNavalar Jaffna UVSwaminatha Iyer and Damodharam Pillai Jaffna strove hard and spent many years in retrieving and publishing the Tamil classics and the ancient Tamil texts which were originally present as palm leaf manuscripts Inscriptions Hathigumpha Inscription of King Karavela of Kalinga Pugalur near Karur Inscription Ashokan Edicts and inscriptions found at Mangulam Alagarmalai and Kilavalavu all near Madurai Copper Plates Velvikudi and Chinnamanur copper plates Coins Issued by the Cheras Cholas Pandyas and the chieftains of Sangam Age as well as the Roman coins Megalithic Monuments Burials and Hero stones Excavated Materials from Adichanallur Arikamedu Kodumanal Puhar Korkai Alagankulam Uraiyur Literary Sources Tholkappiyam Ettuthogai eight anthologies Pathupattu ten idylls PathinanKeezhkanakku a collection of eighteen poetic works Pattinapalai and Maduraikanji Epics Silapathikaram and Manimegalai Foreign Notices The Periplus of the Erythrean Sea Pliny’s Natural History Ptolemy’s Geography Megasthenes’s Indica Rajavali Mahavamsa and Dipavamsa Tholkappiyam is a work on Tamil grammar It represents the quality of Tamil language and the culture of Tamil people of the Sangam Age George L Hart Professor of Tamil language at the University of California has said that Tamil is as old as Latin The language arose as an entirely independent tradition with no influence of other languages Time Span century BC BCE to century AD CE Tamizhagam Vengadam Tirupathi hill in the north to Kanyakumari Cape Comorin in the south Bounded by sea on the east and the west Age Iron Age Culture Megalithic Polity Monarchy Dynasties ruled The Cheras the Cholas and the Pandyas Cheras Muvendars Three Great Kings controlled the territories of Tamizhagam during the Sangam Age The Tamil word Vendar was used to refer to three dynasties namely the Cheras Cholas and Pandyas The Cheras ruled over the central and north Travancore Cochin south Malabar and Kongu region of Tamil Nadu The Pathitrupathu a collection of ten decades of verses provides information about the Chera kings It is known that the Chera king Senguttuvan went on a military expedition to North Indi He brought stones from the Himalayas for making the idol of Kannagi an epic character from Silappathikaram He introduced pattini cult Cheran Senguttuvan’s younger brother was Ilango Adigal He was the author of Silappathikaram Another Chera king Cheral Irumporai issued coins in his name Some Chera coins bear their emblem of bow and arrow Prominent Chera Rulers Udayan Cheralathan Imayavaramban Netun Cheralathan Cheran Senguttuvan Cheral Irumporai Cholas The Chola kingdom of Sangam period extended upto Venkatam Tirupathi hills The Kaveri delta region remained the central part of the kingdom This area was later known as Cholamandalam KarikalValavan or Karikalan was the most famous of the Chola kings He defeated the combined army of the Cheras Pandyas and the eleven Velir chieftains who supported them at Venni a small village in the Thanjavur region He converted forests into cultivable lands He built Kallanai meaning a dam made of stone across the river Kaveri to develop agriculture Their port Puhar attracted merchants from various regions of the Indian Ocean The Pattinapaalai a poetic work in the Pathinenkeezhkanakku gives elaborate information of the trading activity during the rule of Karikalan Kallanai It was a dyke built with stones It was constructed across the Kaveri to divert water throughout the delta region for irrigation When it was built Kallanai irrigated an area of about acres Prominent Chola Rulers Ilanchetsenni KarikalValavan Kocengannan KilliValavan Perunarkilli Pandyas The Pandyas ruled the present day southern Tamil Nadu The Pandya kings patronized the Tamil poets and scholars Several names of Pandya kings are mentioned in the Sangam literature Nedunchezhiyan is hailed as the most popular warrior He defeated the combined army of the Chera Chola and five Velir Chieftains at Talayalanganam He is praised as the lord of Korkai C H E R A S P A N D I Y A S S R I L A N K A CHOLAS Madurai Kanyakumari Arabian Sea Indian Ocean Bay of Bengal Korkai Alagankulam Nagapattinam Kaveripumpattinam Arikamedu Marakkanam Musiri Urayur Periyar Vaigai Palar S Pennar Kaveri Tamaraparani Not to Scale Cheras Cholas Pandiyas Pandya country was well known for pearl hunting Pandya kings issued many coins Their coins have elephant on one side and fish on another side MudukudimiPeruvazhuthi issued coins to commemorate his performance of many Vedic rituals Prominent Pandya Rulers Nediyon Nanmaran MudukudumiPeruvazhuthi Nedunchezhiyan The Titles Assumed by the Muvendars Adhavan Kuttuvan Vanavan Irumporai PANDIYAS Maran Valuthi Sezhiyan Tennar CHOLAS Senni Sembiyan Killi Valavan Royal Insignia Sceptre drum murasu and white umbrella venkudai were used as the symbols of royal authority Muvendar Garland Port Capital Symbols Cheras Palmyra flower Muziri Tondi Vanchi Karur Bow and arrow Cholas Fig Athi lower Puhar Uraiyur Puhar Tiger Pandyas Margosa neem flower Korkai Madurai Two Fish Minor Chieftains Ay Velir and Kizhar Apart from three great kings there were several brave independent minor chieftains The name Ay is derived from the ancient Tamil word Ayar meaning shepherd Among Ay chiefs of Sangam Age Anthiran Titiran and Nannan were the important names The Velirs Vellalars constituted the ruling and land-owning class in the ancient Tamizhagam The famous Velirs were the seven patrons KadaiyezhuVallalgal They were Pari Kari Ori Pegan Ay Adiyaman and Nalli They were popular for their generous patronage of Tamil poets Kizhar was the village chief Sangam Polity Kingship The kingship was hereditary The king was called kŌ It is the shortened form of Kon Vendan Kon Mannan Kotravan and Iraivan were the other titles by which the king was addresse The eldest son of the reigning king generally succeeded to the throne The coronation ceremony was known as arasukattilerudhal or mudisoottuvil The crown prince was known as komahan while the young ones were known as Ilango Ilanchezhiyan and Ilanjeral King held a daily durbar naal avai at which he heard and resolved all the disputes The income to the state was through taxation Land tax was the main source of revenue and it was called Irai This apart the state collected tolls and customs sungam tributes and fines The kings and soldiers wore the heroic anklet Veera kazhal On the anklet the name and achievement of the wearer were blazone Spies were used not only to find out what was happening within the country but also in foreign countries A wound in the back was considered a disgrace and there are instances of kings fasting unto death because they had suffered such a wound in the battle The Court The king’s court was called Arasavai The king occupied a ceremonious throne in the court called Ariyanai In the court the king was surrounded by officials distinguished visitors and court poets The rulers had five-fold duties They were encouraging learning performing rituals presenting gifts protecting people and punishing the criminals Ambassadors were employed by the kings They played a significant role The king was assisted by a number of officials They were divided into Aimperunguzhu five-member committee and Enberaayam eight-member group Army The king’s army consisted of four divisions namely infantry cavalry elephants and chariot force The army was known as Padai The chief of the army was known as Thanaithalaivan The prominent weapons used during this period were sword kedayam shield tomaram lance spears bows and arrows Tomaram is mentioned as a missile to be thrown at the enemy from a distance The place where the weapons were kept was known as paddaikottil The forts were protected by deep moats and trenches The war drum was worshipped as a deity Law and Justice The king was the final authority for appeal In the capital town the court of justice was called Avai In the villages Mandram served as the place for dispensing justice Punishment was always severe Execution was ordered for theft cases The punishment awarded for other crimes included beheading mutilation of the offending limbs of the body torture and imprisonment and imposition of fines Local Administration The entire kingdom was called Mandalam Mandalam was divided into Nadus Kurram was subdivision of Nadu The Ur was a village classified into perur big village Sirur a small village and Mudur an old village depending upon its population size and antiquity Pattinam was the name for a coastal town and Puhar was the general term for harbour town Important Towns Puhar Uraiyur Korkai Madurai Muziri Vanji or Karur and Kanchi Thinai tract based Sangam Society The land form was divided into five thinais eco-regions Eco-region thinai Landscape Occupation People Deity Kurinji Hilly region Hunting gathering Kuravar kurathiyar Murugan Mullai Forest region Herding Aayar aaichiyar Maayon Marutham Riverine track plains Agriculture Uzhavan uzhathiyar Indiran Neithal Coastal region Fishing saltmaking Parathavar nulathiyar Varunan Palai Parched land Heroic deeds Maravar Marathiyar Kotravai Land was classified according to its fertility Marutham was called menpulam fertile land It produced paddy and sugarcane The rest of the landscape excluding Neithal was called vanpulam hard land and it produced pulses and dry grains Status of Women There was no restriction for women in social life There were learned and wise women Forty women poets had lived and left behind their valuable works Marriage was a matter of self-choice However chastity karpu was considered the highest virtue of women Sons and daughters had equal shares in their parents property Women Poets of Sangam Age Avvaiyar Velli Veethiyar Kakkaipadiniyar Aathi Manthiyar Pon Mudiyar Religious Beliefs and Social Divisions The primary deity of the Tamils was Seyon or Murugan Other gods worshipped during Sangam period were Sivan Mayon Vishnu Indiran Varunan and Kotravai The Hero stone natukkal worship was in practice Buddhism and Jainism also co existe Veerakkal Natukkal The ancient Tamils had a great respect for the heroes who died in the battle fiel The hero stones were erected to commemorate heroes who sacrificed their lives in war Caste did not develop in Tamizhagam as it did in the northern Indi Varuna system occupation-based caste came to the Dravidian south comparatively late Dress and Ornaments The rich people wore muslin silk and fine cotton garments The common people wore two pieces of clothes made of cotton The Sangam literature refers to clothes Kalingam which were thinner than the skin of a snake Women adorned their hair plaits with flowers Both men and women wore a variety of ornaments They were made of gold silver pearls precious stones conch shells and beads The People were fond of using aromatic perfumes Arts There are many references to variety of musical instruments such as drum flute and yazh Karikalan was master of seven notes of music EzhisaiVallavan Singing bards were called panar and viraliyar Dancing was performed by kanigaiyar Koothu folk drama was the most important cultural practice of the people of Sangam Age They developed the concept of Muthamizh Iyal Isai Naatakam Occupation The major occupations of the people were agriculture cattle rearing fishing and hunting Other craftsmen like carpenter blacksmith goldsmith and potters were also part of the population Weaving was the most common part-time occupation of the farmers and a regular full time job for many others Festivals and Entertainments People celebrated several festivals The harvest festival Pongal and the festival of spring kaarthigai were some of them Indira vizha was celebrated in the capital There were many amusements and games This included dances festivals bull fights cock fights dice hunting wrestling and playing in swings Children played with toy cart and with the sand houses made by them Trade Trade existed at three levels local overland and overseas The extensive and lucrative foreign trade that Tamizhagam enjoyed during this period stands testimony to the fact that Tamils had been great seafarers Warehouses for storing the goods were built along the coast The chief ports had light houses which were called KalangaraillanguSudar Caravans of merchants carried their merchandise to different places in oxen-driven carts Barter system was prevalent Malabar Black Pepper When the Mummy of Ramses of the Egypt was uncovered archaeologists found black pepper corns stuffed into his nostrils and in his abdomen as a part of embalming process practised in olden days There were two kinds of markets or bazaars in the leading cities like Puhar and Madurai In Madurai they were Nalangadi the morning market and Allangadi the evening market In these markets large varieties as well as large quantities of goods were sold and purchase Major Ports Musiri Tondi Korkai Main Exports Salt pepper pearls ivory silk spices diamonds saffron precious stones muslin sandal wood Main Imports Topaz tin glass horses Silk supplied by Indian merchants to the Roman Empire was considered so important that the Roman emperor Aurelian declared it to be worth its weight in gol Muziris First Emporium The Roman writer Pliny the Elder writes of Muziris in his Natural History as the first emporium shopping complex of India A temple of Augustus was built at Muziris which had a Roman colony A papyrus document now in Vienna museum of century BC BCE records the agreement between two merchants shippers of Alexandria and Muziris Trade Contact with Overseas Countries Archaeological excavations have confirmed the trading relations between the Tamizhagam and the countries such as Greece Rome Egypt China South East Asia and Sri Lank Kalabhras Towards the end of the century AD CE the Sangam period slowly went into a decline Following the Sangam period the Kalabhras had occupied the Tamil country for about two and half centuries We have very little information about Kalabhras They left neither artefacts nor monuments But there is evidence of their rule in literary texts The literary sources for this period include Tamil Navalar Charithai Yapernkalam and Periapuranam Seevaka Chinthamani and Kundalakesi were also written during this perio In Tamizhagam Jainism and Buddhism became prominent during this perio Introduction of Sanskrit and Prakrit languages had resulted in the development of a new script called Vattezhuththu Many works under Pathinen Keezhkanakku were compose Trade and commerce continued to flourish during this perio So the Kalabhra period is not a dark age as it is portraye Elsewhere Gateway Han Dynasty China BC BCE AD CE Pyramid Mayan Civilisation Central America Colosseum Roman Civilisation Italy BC BCE st AD CE The word Sangam refers to the association of poets who flourished under the royal patronage of the Pandya kings at Madurai Muvendars the Cheras Cholas and the Pandyas controlled the territories of Tamizhagam during the Sangam Age Apart from three great monarchs Tamil country was ruled by several independent minor chieftains Archaeological excavations have confirmed the trading relations between Tamizhagam and many foreign countries Towards the end of the century AD CE the Sangam period slowly started to decline The Kalabhras occupied the Tamil country Evidence of their rule is available in Jain and Buddhist literature GLOSSARY Strove tried hard Dynasty a line of hereditary rulers Commemorate to honour the memory of Royal insignia symbols of power Patronage support given by a patron Blazoned displayed vividly Acquitted released Bards poets singing in praise of princes and brave men Warehouses a large building for keeping goods Portrayed described elaborately Unit The Post-Mauryan India Introduction The break-up of Mauryan Empire resulted in the invasions of Sakas Scythians Parthians Indo-Greeks or Bactrian Greeks and Kushanas from the north-west In the south Satavahanas became independent after Asoka’s death There were Sungas and Kanvas in the north before the emergence of Gupta dynasty Chedis Kalinga declared their independence It has to be noted here that though Magadha ceased to be the premier state of India it continued to be a great centre of Buddhist culture Sources Archaeological Sources Inscriptions Copper Plates Ayodhya Inscription of Dana Deva Persepolis Nakshi Rustam Inscriptions Moga Taxila copper plate Junagadh Girnar Inscription Nasik Eulogy Inscription of Darius I Coins Coins of Satavahanas Coins of Kadphises Roman coins Literary Sources Puranas Gargi Samhita Harshacharita of Banabhatta Mahabhasya of Patanjali Brihastkatha of Gunadhya Madhyamika Sutra of Nagarjuna Buddhacharita of Asvaghosha Malavikagnimitra of Kalidasa Foreign Notice Accounts of Hiuen Tsang the Chinese Buddhist monk and traveller The Sungas and Kanvas in the North The Sungas The last Mauryan emperor Brihadratha was assassinated by his own general Pushyamitra Sunga who established his Sunga dynasty in Magadh Pushyamitra made Pataliputra as his capital Pushyamitra’s kingdom extended westward to include Ujjain and Vidish He successfully repulsed the invasion of Bactria king Menander But Menander managed to keep Kabul and Sindh Pushyamitra thwarted an attack from the Kalinga king Kharavel He also conquered Vidarb He was a staunch follower of Vedic religion He performed two Asvamedha yagnas horse sacrifices to assert his imperial authority During the Sunga period stone was replaced by wood in the railings and the gateways of the Buddhist stupas as seen in Bharhut and Sanchi Pushyamitra was succeeded by his son Agnimitr This Agnimitra is said to be the hero of Kalidasa’s Malavikagnimitr The drama also refers to the victory of Vasumitra Agnimitra’s son over the Greeks on the banks of the Sindhu river The weak successors of Sungas constantly faced threats from the Indo Bactrians and Indo-Parthians The Sunga dynasty lasted for about one hundred years The last Sunga king was Devabhuti He was killed by his own minister Vasudeva Kanv Vasudeva established the rule of Kanva dynasty in Magadh Importance of the Sunga Period The Sungas played an important role in defending the Gangetic Valley from the encroachments of the Bactrian Greeks Pushyamitra and then his successors revived Vedic religious practices and promoted Vaishnavism Sanskrit gradually gained ascendancy and became the court language Patanjali the second grammarian in Sanskrit was patronized by Pushyamitr Though Pushyamitra persecuted Buddhists during his reign the Buddhist monuments at Bharhut and Sanchi were renovated and further improve The expanded Great Stupa of Sanchi and the railings which enclose it belong to the Sunga perio King Kharavela of Kalinga was a contemporary of the Sungas We get information about Kharavela from the Hathigumba Inscription Hathigumba Elephant cave Inscription The Kanvas The Kanva dynasty produced four kings and their rule lasted only for years The history of Magadha after the fall of the Kanvas is devoid of any significance until the emergence of the Gupta dynasty The Kanva rulers were Vasudeva Bhumi Mitra Narayana Susarman The last Kanva ruler Susarman was assassinated by his powerful feudatory chief of Andhra named Simuka who laid the foundation of the Satavahana dynasty Satavahanas in the South The Kushanas in the north and the Satavahanas Andhras in the south flourished for about years and years respectively Simuka the founder of the Satavahana dynasty is said to have ruled for twenty-three years His successor was his brother Krishn The latter and his nephew Satakarni ruled for ten years each establishing an empire holding control over a vast area stretching from Rajasthan in the northwest to Andhra in the southeast and from Gujarat in the west to Kalinga in the east Satakarni is said to have performed two horse sacrifices Asvamedha yagna indicative of his imperial position Coin of Satavahanas Gautamiputra Satakarni was the greatest ruler of the family In the Nasik eulogy published by his mother GautamiBalasri Gautamiputra Satakarni is described as the destroyer of Sakas Yavanas Greeks and Pahlavas Parthians The extent of the empire is also mentioned in the recor Their domain included Maharashtra north Konkan Berar Gujarat Kathiawar and Malw His ship coins are suggestive of Andhras skill in seafaring and their naval power The Bogor inscriptions suggest that South India played an important role in the process of early state formation in Southeast Asi Contributions of Satavahanas Literature The Satavahana king Hala was himself a great scholar of Sanskrit The Kantara school of Sanskrit flourished in the Deccan in second century B Hala is famous as the author of Sattasai Saptasati stanzas in Prakrit Art and Architecture The Satavahana rulers were great builders They began constructing Buddhist stupas in Amaravati A bronze statue of the standing Buddha discovered in Oc-Eo an archaeological site in Vietnam resembles the Amaravati style The later Satavahana kings issued lead or bronze coins depicting ships with two masts A stone seal discovered in NakhonPathom in Thailand has the same design Gandhara Madhura Amaravati Bodh Gaya Sanchi and Bharhut were known for splendid monuments and art The Mathura School of Sculpture produced images and life-size statues of the Buddhist Brahmanical and Jain deities Indo-Greeks Indo-Parthians Sakas and Kushanas Indo-Greeks and Indo-Parthians After the conquest of north-western India and the Punjab region Alexander the Great left the conquered territories under provincial governors Two of its eastern satrapies Bactria and Parthia revolted under their Greek Governors and declared their independence The satrapy of Bactria became independent under the leadership of Diodotus I and Parthia under Arsaces After the decline of the Mauryan empire the Greek rulers of Bactria and Parthia started encroaching into the northwestern border lands of Indi The Bactrian and Parthian settlers gradually inter-married and inter-mixed with the indigenous population This facilitated the establishment of Indo-Greek and Indo Parthian colonies along the north-western part of Indi The world-famous life-size statues of Buddha at Bamyan valley on the mountains of the erstwhile northwestern frontiers of ancient India currently in central Afghanistan and recently destroyed by the Talibans were carved out of the solid rocks by the dedicated artists of the Gandhara School of Art during the post-Mauryan perio Buddha at Bamyan valley Rulers of Indo Greeks Demetrius I He was the son of Greco-Bactrian ruler Euthydemus He was king of Macedonia from to BC BCE Numismatic evidence proves that Demetrius issued bi lingual square coins with Greek on the obverse and Kharosthi on the reverse Scholars are not able to decide which of the three named Demetrius was the initiator of the Yavana era commencing from second century BC BCE in Indi Menander He was one of the best known Indo-Greek kings He is said to have ruled a large kingdom in the north-west of the country His coins were found over an extensive area ranging from Kabul valley and Indus river to western Uttar Pradesh MilindaPanha a Buddhist text is a discourse between Bactrian king Milinda and the learned Buddhist scholar Nagasen This Milinda is identified with Menander Menander is believed to have become a Buddhist and promoted Buddhism Contributions of Indo-Greeks Coinage Indo-Greek rulers introduced a die system and produced properly shaped coins with inscription symbols and engraved figures on them Indians learnt this art from them Sculpture The Gandhara School of Indian Art is heavily indebted to Greek influence The Greeks were good cave builders The Mahayana Buddhists learnt the art of carving out caves from them and became skilled in rock-cut architecture Sakas The Indo-Greek rule in India was ended by the Sakas Sakas as nomads came in huge number and spread all over northern and western Indi The Sakas were against the tribe of Turki nomads Sakas were Scythians nomadic ancient Iranians and known as Sakas in Sanskrit Rulers of Indo-Parthians Pahlavas Indo-Parthians came after the Indo-Greeks and the Indo-Scythians who were in turn defeated by the Kushanas in the second half of the first century AD CE Indo-Parthian kingdom or Gondopharid dynasty was founded by Gondophernes The domain of Indo-Parthians comprised Kabul and Gandhar The name of Gondophernes is associated with the Christian apostle StThomas He came to India and according to Christian tradition visited the court of Gondophernes and embraced Christianity Saka rule was founded by Maos or Mogain in the Gandhara region and his capital was Sirkap His name is mentioned in Mora inscription His coins bear images of Buddha and Siv Rudradaman was the most important and famous king of Sakas His Junagadh Girnar inscription was the first inscription in chaste Sanskrit In India the Sakas were assimilated into Indian society They began to adopt Indian names and practise Indian religious beliefs Junagadh Inscriptions Coin of Rudradaman The Sakas appointed kshatrapas or satraps as provincial governors to administer their territories Kushanas The Kushanas formed a section of the yueh-chi tribes who inhabited north western China in the remote past In the first century BC BCE the yueh-chi tribes were composed of five major sections of which the Kushanas attained political ascendancy over others By the beginning of Christian era all the yueh-chi tribes had acknowledged the supremacy of the Kushanas they had shed their nomadic habits and settled down in the Bactrian and Parthian lands adjacent to the north-western border of Indi The Kushanas overran Bactria and Parthia and gradually established themselves in northern Indi Their concentration was mostly in the Punjab Rajaputana and Kathiawar Kushana rulers were Buddhists Takshashila and Mathura continued to be great centres of Buddhist learning attracting students from China and western Asi The Kushana Kings Kanishka Kanishka was the greatest of all the Kushana emperors He assumed the sovereignty in AD and proclaimed his rule by the foundation of a new era which later became Saka er The Kushana capital initially was Kabul Later it was shifted to Peshavar or Purushpur Rulers Contributions Kadphises I He was the first famous military and political leader of the Kushanas He overthrew the Indo-Greek and Indo-Parthian rulers and established himself as a sovereign ruler of Bactri He extended his power in Kabul Gandhara and upto the Indus Kadphises He maintained friendly relationship with the emperors of China and Rome and encouraged trade and commerce with the foreign countries Some of his coins contained the inscribed figures of Lord Siva and his imperial titles were inscribed in the Kharosthi language Conquests Kanishka conquered and annexed Kashmir He waged a successful war against Magadh He also waged a war against a ruler of Parthia to maintain safety and integrity in his vast empire on the western and south-western border After the conquest of Kashmir and Gandhara he turned his attention towards Chin He defeated the Chinese general Pan-Chiang and safeguarded the northern borders of India from Chinese intrusion His empire extended from Kashmir down to Benaras and the Vindhya mountain in the south It included Kashgar Yarkhand touching the borders of Persia and Parthi Religious Policy Kanishka was an ardent Buddhist Kanishka’s empire was a Buddhist empire Kanishka adopted Buddhism under the influence of Asvaghosha a celebrated monk from Pataliputr Though a great warrior and an empire-builder Kanishka was as equal as the exponent and champion of Mahayanism Kanishka made Buddhism as the state religion and built many stupas and monasteries in Mathura Taxila and many other parts of his kingdom He sent Buddhist missionaries to Tibet China and many countries of Central Asia for the propagation of Buddha’s gospel He organised the fourth Buddhist Council at Kundalavana near Srinagar to sort out the differences between the various schools of Buddhism It was only in this council that Buddhism was split into Hinayanism and Mahayanism Art and Literature Kanishka was a great patron of art and literature His court was adorned with a number of Buddhist saints and scholars like Asvaghosha Vasumitra and Nagarjun Asvaghosha was the celebrated author of the first Sanskrit play Buddhacharit He founded the town of Kanishkapura in Kashmir and furnished the capital of Purushapura with magnificent public buildings The Gandhara School of Art flourished during his time The most favourite subject of the Gandhara artists was the carving of sculptures of Buddh Buddhist learning and culture was taken to China and Mongolia from Takshashil The great Asiatic culture mingled with Indian Buddhist culture during the Kushana’s time Kanishka’s successors were weak and incompetent Kushana empire rapidly disintegrated into number of small principalities The break-up of Mauryan empire resulted in the invasions of Sakas Scythians Parthians Indo-Greeks and Kushanas from the north-west The last Mauryan emperor Brihadratha was assassinated by his own general Pushyamitra Sunga who established Sunga dynasty in Magadh The history of Magadha after the fall of the Kanvas is devoid of any significance until the emergence of the Gupta dynasty The Kushanas in the north and the Satavahanas Andhras in the south flourished for about years and years respectively Rudradaman was the most important and famous king of Sakas The best known of the Kushanas was Kanishka who was an ardent follower of Mahayana form of Buddhism Gandhara Art developed during this perio repulsed driven back by force thwarted prevent from accomplishing something encroachments intrusion on a person’s territory rights etc renovated Restored something old especially a building to a good state of repair assimilate absorb information ideas or culture fully ardent enthusiastic or passionate magnificent impressively beautiful Unit The Age of Empires Guptas and Vardhanas Introduction By the end of the century AD CE the powerful empires established by the Kushanas in the north and Satavahanas in the south had lost their greatness and strength After the decline of Kushanas and Satavahanas Chandragupta carved out a kingdom and establish his dynastic rule which lasted for about two hundred years After the downfall of the Guptas and thereafter and interregnum of nearly years Harsha of Vardhana dynasty ruled North India from to AD CE Sources Archaeological Sources Gold silver and copper coins issued by Gupta rulers Allahabad Pillar Inscription of Samudragupt The Mehrauli Iron Pillar Inscription Udayagiri Cave Inscription Mathura Stone Inscription and Sanchi Stone Inscription of Chandragupta II Bhitari Pillar Inscription of Skandagupt The Gadhwa Stone Inscription Madubhan Copper Plate Inscription Punjab Sonpat Copper Plate Nalanda Inscription on clay seal Literary Sources Vishnu Matsya Vayu and Bhagavata Puranas and Niti Sastras of Narada Visakhadatta’s Devichandraguptam and Mudrarakshasa and Bana’s Harshacharita Dramas of Kalidasa Accounts of Chinese Buddhist monk Fahien who visited India during the reign of Chandragupta II Harsha’s Ratnavali Nagananda Priyadharshika Hiuen-Tsangs Si-Yu-Ki Foundation of the Gupta Dynasty Sri Gupta is considered to be the founder of the Gupta dynasty He is believed to have reigned over parts of present-day Bengal and Bihar He was the first Gupta ruler to be featured on coins He was succeeded by his son Ghatotkach Both are mentioned as Maharajas in inscriptions Chandragupta I AD CE Chandragupta I married Kumaradevi of the famous and powerful Lichchhavi family Having gained the support of this family Chandragupta could eliminate various small states in northern India and crown himself the monarch of a larger kingdom The gold coins attributed to Chandragupta bear the images of Chandragupta Kumaradevi and the legend Lichchhavayah Lichchhavi was an old gana sanga and its territory lay between the Ganges and the Nepal Terai Samudragupta AD CE Samudragupta son of Chandragupta I was the greatest ruler of the dynasty The Prayog Prashasti composed by Samudragupta’s court poet Harisena was engraved on Allahabad Pillar This Allahabad Pillar inscription is the main source of information for Samudragupta’s reign Allahabad Pillar Prashasti Prashasti is a Sanskrit word meaning commendation or in praise of Court poets flattered their kings listing out their achievements These accounts were later engraved on pillars so that the people could read themConsolidation of Gupta Dynasty Samudragupta was a great general and when he became emperor he carried on a vigorous campaign all over the country and even in the south In the southern Pallava kingdom the king who was defeated by Samudragupta was Vishnugop Samudragupta conquered nine kingdoms in northern Indi He reduced rulers of the southern India to the status of feudatories and forced them to pay tribute He received homage from the rulers of East Bengal Assam Nepal the eastern part of Punjab and various tribes of Rajasthan Samudragupta was a devotee of Vishnu He revived the Vedic practice of performing horse sacrifice Performed by kings to prove their imperial sovereignty He issued gold coins and in one of them he is portrayed playing harp veenai Samudragupta was not only a great conqueror but a lover of poetry and music and for this he earned the title Kaviraja Sri Meghavarman the Buddhist king of Ceylon was a contemporary of Samudragupt Chandragupta AD CE Chandragupta was the son of Samudragupt He was also known as Vikramadity He conquered western Malwa and Gujarat by defeating the Saka rulers He maintained friendly relationship with the rulers of southern Indi The iron pillar near Qutub Minar is believed to have been built by Vikramadity Fahien a Buddhist scholar from China visited India during his reign Vikramaditya is said to have assembled the greatest writers and artists Navaratna Nine Jewels in his court Kalidasa is said to be one among them Navaratna in the court of Vikramaditya Kalidasa Sanskrit poet Harisena Sanskrit poet Amarasimha Lexicographer Dhanvantri Physician Kahapanaka Astrologer Sanku Architect Varahamihira Astronomer Varauchi Grammarian and Sanskrit scholar Vittalbhatta Magician The surnames of Chandragupta were Vikramaditya Narendrachandra Simhachandra Narendrasimha Vikrama Devaraja Devagupta and Devasri Chandragupta was succeeded by his son Kumaragupta I who built the famous Nalanda University Kumaragupta’s successor Skandagupta had to face a new threat in the form of the invasion of Huns He defeated them and drove them away But after twelve years they came again and broke the back of the Gupta Empire The last of the great Guptas was Baladitya Fahien During the reign of Chandragupta II the Buddhist monk Fahien visited Indi His travel accounts provided us information about the socio-economic religious and moral conditions of the people of the Gupta age According to Fahien the people of Magadha were happy and prosperous that justice was mildly administered and there was no death penalty Gaya was desolate Kapilavasthu had become a jungle but at Pataliputra people were rich and prosperous assumed to have been Narasimha Gupta I He was himself attracted towards Buddhism He was paying tribute to Mihirakula but was distressed by his hostility towards Buddhism So he stopped paying tribute Though Baladitya succeeded in imprisoning him Mihirakula turned treacherous and drove away Baladitya from Magadh After Baladitya the great Gupta Empire faded away The last recognised king of the Gupta Empire was Vishnugupt Gupta Polity The divine theory of kingship the concept that king is the representative of God on earth and so he is answerable only to God and not to anyone else was practised by the Gupta rulers The Gupta kings wielded enormous power in political administrative military and judicial spheres The Gupta king was assisted by a council of mantris ministers The council consisted of princes high officials and feudatories A large number of officials were employed by the Gupta rulers to carry on the day to-day administration of the country High-ranking officials were called dandanayakas and mahadandanayakas The Gupta Empire was divided into provinces known as deshas or bhuktis They were administered by the governors designated as uparikas The province was divided into districts such as vishyas and they were controlled by the officers known as vishyapatis At the village level there were functionaries such as gramika and gramadhyaksh The extensive empire shows the important role of military organisation Seals and inscriptions mentioned military designations as baladhikrita and mahabaladhikrita commander of infantry and cavalry respectively The system of espionage included spies known as dutakas Society and Economy Land and Peasants Nitisara authored by Kamandaka emphasises the importance of the royal treasury and mentions various sources of revenue The military campaigns of kings like Samudragupta were financed through revenue surpluses Land tax was the main revenue to the government The condition of peasants was patheti They were required to pay various taxes They were reduced to the position of serfs Classification of land during Gupta period Kshetra cultivable land Khila waste land Aprahata jungle or forest land Vasti habitable land Gapata Saraha pastoral land Trade and Commerce The contribution of the traders for the development of Gupta’s economy was very impressive There were two types of traders namely Sresti and Sarthavah Nalanda University Nalanda University flourished under the patronage of the Gupta Empire in the and centuries and later under emperor Harsha of Kanauj At Nalanda Buddhism was the main subject of study Other subjects like Yoga Vedic literature and Medicine were also taught Hiuen Tsang spent many years studying Buddhism in the University Eight Mahapatashalas and three large libraries were situated on the campus Nalanda was ravaged and destroyed by Mamluks Turkish Muslims under Bhaktiyar Khalji Today it is a UNESCO World Heritage Site Nalanda University Who were the Huns Huns were the nomadic tribes who under their great Attila were terrorising Rome and Constantinople Associated with these tribes were the White Huns who came to India through Central Asi They undertook regular invasions and were giving trouble to all Indian frontier states After defeating Skandagupta they spread across Central Indi Their chief Toromana crowned himself as king After him his son Mihirakula ruled the captured territories Finally Yasodharman ruler of Malwa in Central India defeated them and ended their rule Portrayal of Toromana the Hun chief in coins Sresti Sarthavaha Sresti traders usually settled at a standard place Sarthavaha traders were caravan traders who carried their goods to different places Trade items ranged from daily products to valuable and luxury goods The important trade goods were pepper gold copper iron horses and elephants Lending money at a high rate of interest was in practice during Gupta perio The Guptas developed roadways connecting different parts of the country Pataliputra Ujjain Benaras Mathura were the famous trade centres Ports in western Kalyan Mangalore Malabar and eastern Tamralipti in Bengal coasts of India facilitated trade Samudragupta introduced the Gupta monetary system Kushana coins provided inspiration to Samudragupt The Gupta gold coins were known as Dinar Guptas issued many gold coins but comparatively fewer silver and copper coins However the post-Gupta period saw a fall in the circulation of gold coins indicating the decline in the prosperity of the empire Metallurgy Mining and metallurgy were the most flourishing industries during the Gupta perio The most important evidence of development in metallurgy was the Mehrauli Iron Pillar installed by King Chandragupta in Delhi This monolithic iron pillar has lasted through the centuries without rusting The metals used by them were iron gold copper tin lead brass bronze bell metal mica manganese and red chalk Society The society that adhered to four varna system was patriarchal According to laws of Manu which was in force women should be under the protection of their father husband or eldest son Polygamy was widely prevalent The kings and feudatory lords often had more than one wife Inscriptions refer to Kubernaga and Dhrubaswamini as the queens of Chandragupta II Sati was practised during the Gupta rule Slavery Slavery was not institutionalised in India as in the West But there are references to the existence of various categories of slaves during the Gupta age Religion There was revival of Vedic religion and Vedic rites Samudragupta and Kumaragupta I performed Asvamedha Yagna a horse sacrifice ritual We notice the beginning of image worship and the emergence of two sects namely Vaishnavism and Saivism during the Gupta perio Buddhism also continued to flourish though it split into two sects namely Hinayana and Mahayan Art and Architecture The Guptas were the first to construct temples which evolved from the earlier tradition of rock-cut shrines Adorned with towers and elaborate carvings these Mehrauli Iron Pillar temples were dedicated to all Hindu deities The most notable rock-cut caves are found at Ajanta and Ellora Maharashtra Bagh Madhya Pradesh and Udaygiri Odisha The structural temples built during this period resemble the characteristic features of the Dravidian style Two remarkable examples of Gupta metal sculpture are i a copper image of Buddha about feet high at Nalanda and Sultanganj Buddha seven-and-a half feet in height The most important examples of the Gupta paintings are found on the Fresco of the Ajanta caves and the Bagh cave in Gwalior Literature Though the language spoken by the people was Prakrit the Guptas made Sanskrit the official language and all their epigraphic records are in Sanskrit The Gupta period also saw the development of Sanskrit grammar based on the grammar of Panini and Patanjali who wrote Ashtadhyayi and Mahabhashya respectively A Buddhist scholar from Bengal Chandrogomia composed a book on grammar titled Chandravyakaranam Kalidasa’s famous dramas were Sakunthala Malavikagnimitra and Vikramaoorvashiyam Other significant works of Kalidasa were Meghaduta Raghuvamsa Kumarasambava and Ritusamhar Mathematics Astronomy and Medicine Invention of zero and the consequent evolution of the decimal system were the legacy of Guptas to the modern worl Aryabhatta Varahamihira and Brahmagupta were foremost astronomers and mathematicians of the time Aryabhatta in his book Surya Siddhanta explained the true causes of solar and lunar eclipses He was the first Indian astronomer to declare that the earth revolves around its own axis Dhanvantri was a famous scholar in the field of medicine He was a specialist in Ayurved Charaka was a medical scientist Susruta was the first Indian to explain the process of surgery Vardhana Dynasty The founder of the Vardhana or Pushyabhuti dynasty ruled from Thaneswar Pushyabhuti served as a military general under the Guptas and rose to power after the fall of the Guptas With the accession of Prabakaravardhana the Pushyabhuti family became strong and powerful Rajavardhana the eldest son of Prabhakaravardhana ascended the throne after his father’s death Rajavardhanas sister Rajayashris husband Raja of Kanauj was killed by the Gauda ruler Sasanka of Bengal Sasanka also imprisoned Rajayashri Rajavardhana in the process of retrieving his sister was treacherously killed by Sasank This resulted in his younger brother Harshavardhana becoming king of Thaneswar The notables of the Kanauj kingdom also invited Harsha to take its crown After becoming the ruler of the both Thaneswar and Kanauj Harsha shifted his capital from Thaneswar to Kanauj Conquest of Harshavardhana The most popular king of the vardhana dynasty was Harshavardhan Harsha ruled for years His feudatories included those of Jalandhar Kashmir Nepal and Valabhi Sasanka of Bengal remained hostile to him It was Harsha who unified most of northern Indi But the extension of his authority in the south was checked by Chalukya king Pulikesin II The kingdom of Harsha disintegrated rapidly into small states after his death in AD CE He maintained a cordial relationship with the rulers of Iran and Chin Harsha met the Chinese traveller Hiuen Tsang at Kajangala near Rajmahal Jharkhand for the first time Administration The emperor was assisted by a council of ministers The prime minister occupied the most important position in the council of ministers Bhaga Hiranya and Bali were the three kinds of tax collected during Harsha’s reign Criminal law was more severe than that of the Gupta age Life imprisonment was the punishment for violation of the laws and for plotting against the king Perfect law and order prevailed throughout the empire Harsha paid great attention to discipline and strength of the army Harsha built charitable institutions for the stay of the travellers and to care for the sick and the poor Coins of Harsha Religious Policy Harsha was the worshipper of Shiva in the beginning but he embraced Buddhism under the influence of his sister Rajyashri and the Buddhist monk and traveller Hiuen Tsang He belonged to Mahayana school of thought Harsha treated Vedic scholars and Buddhist monks alike and distributed charities equally to them He was the last Buddhist sovereign in Indi As a pious Buddhist Harsha stopped the killing of animals for foo Hiuen Tsang the prince of pilgrims visited India during Harsha’s reign His Si-Yu-Ki provides detailed information about the social economic religious and cultural conditions of India during Harsha’s time Hiuen Tsang tells us how Harsha though a Buddhist went to participate in the great kumbhamela held at Prayag Hiuen Tsang He was noted for his policy of religious toleration and used to worship the images of Buddha Shiva and Sun simultaneously He summoned two Buddhist assemblies one at Kanauj and another at Prayag The assembly at Kanauj was attended by kings A large number of Buddhist Jain and Vedic scholars attended the assembly A golden statue of Buddha was consecrated in a monastery and a small statue of Buddha three feet was carried in a procession In the assembly at Prayag Harsha distributed his wealth among the Buddhists Vedic scholars and poor people Harsha offered fabulous gifts to the Buddhist monks on all the four days of the assembly Art and Literature Harsha himself a poet and dramatist gathered around him a best of poets and artists Harsha’s popular works are Ratnavali Nagananda and Priyadharshik His royal court was adorned by Banabhatta Mayura Hardatta and Jayasen Temples and monasteries functioned as centres of learning Kanauj became a famous city Harsha constructed a large number of viharas monasteries and stupas on the bank of the Ganges The Nalanda University a university and monastery combined was said to have had students and monks in residence when Hiuen Tsang visited the university Chandragupta I was the contemporary of Constantine the Great the Roman Emperor who founded Constantinople Harsha’s time coincided with a early days of Tang Dynasty of Chin Their capital Xi’an was a great centre of art and learning Constantine the Great King of Tang Dynasty Sri Gupta was the founder of Gupta dynasty Chandragupta I Samudragupta and Chandragupta were the great kings of Gupta dynasty Vishnugupta was the last recognised king of Gupta Empire Divine Right Theory of kingship was practised by the Gupta rulers Mining and metallurgy were the most flourishing industries during the Gupta Period The society that adhered to four varna system was patriarchal There was a revival of Vedic religion and Vedic rites The Guptas were the first to construct temples which evolved from the earlier tradition of rock-cut shrines Aryabhatta Varahamihira and Brahmagupta were foremost astronomers and mathematicians of the time Harsha was a prominent ruler of Vardhana dynasty and was elevated to the position of an emperor Harsha was a great artist and dramatist and contributed to the development of literature and art Hiuen Tsang visited Nalanda and wrote his useful travel accounts which help us understand the condition of India during Harsha’s reign Harsha though a strong follower of Buddhism also promoted Vedic religion GLOSSARY Engraved carved inscribed Flattered lavish insincere praise and compliments upon someone especially to further one’s own interest Collapse fall Pathetic pitiful adhered to abide by bound by pastoral land land or farm used for grazing cattle Portrayed depicted in a work of art or literature Desolated made unfit for habitation Assertion A Chandragupta I crowned himself as a monarch of a large kingdom after eliminating various small states in Northern Indi Reason R Chandragupta I married Kumaradevi of Lichchavi family a Both A and R are true and R is the correct explanation of b Both A and R are correct but R is not correct explanation of c A is correct but R is not correct d A is not correct but R is correct Statement I Chandragupta did not have cordial relationship with the rulers of South Indi Statement The divine theory of kingship was practised by the Gupta rulers a Statement I is wrong but statement is correct b Statement is wrong but statement I is correct c Both the statements are correct d Both the statements are wrong Which of the following is arranged in chronological order a Srigupta Chandragupta I Samudragupta Vikramaditya b Chandragupta I Vikramaditya Srigupta Samudragupta c Srigupta Samudragupta Vikramaditya Chandragupta I d Vikramaditya Srigupta Samudragupta Chandragupta I Consider the following statements and find out which of the following statement s is are correct Lending money at high rate of interest was practise Pottery and mining were the most flourishing industries a is correct b is correct c Both and are correct d Both and are wrong Kalidasa Harisena Samudragupta Charak Ratnavali Harshacharita Nagananda Priyadharshik Unit South Indian Kingdoms South Indian Kingdoms By the early century synchronising with the Harsha’s reign in the north the far south had come under the control of the Pallava kings of Kanchipuram Pallava sovereignty included the domains of the Cholas and the Pandyas The latter were then emerging as ruling dynasties in their respective river valley regions Much of the central and eastern Deccan was under the Chalukyas of Badami Vatapi who were then pushed away by the Rashtrakutas The medieval period in India was marked by thee mergence of regional centres of power There was no single imperial power like Mauryas or Guptas who exercised control over the greater part of India in this perio The Pallavas The Pallava kings ruled around the prosperous agrarian settlement and important trade centre of Kanchipuram on the southeast coast of Indi Kanchipuram was well known to Chinese and Roman merchants From the flourishing trade centre of Kanchipuram the later Pallavas extended their sovereignty over all the Tamil-speaking regions during the and centuries The central part of their kingdom however was Thondaimandalam a large political region comprising northern parts of Tamil Nadu and the adjoining Andhra districts Sources Inscriptions Mandagapattu Cave Aihole Inscription of Pulakesin Copper Plates Kasakudi Plates Literature Mattavilasa Prahasana Avanthi Sundarakatha Kalingathu Parani Periya Puranam Nandi Kalambagam Foreign Notice Accounts of Chinese traveller Hiuen Tsang Pallava Genealogy Prominent Kings There were early Pallava rulers who were feudatories of Satavahanas Simhavishnu son of Simhavarman around AD CE created a strong Pallava kingdom after destroying the Kalabhras He defeated many kings in the south including the Cholas and the Pandyas His able son was Mahendravarman I He was succeeded by his son Narasimhavarman I The other prominent Pallava rulers were Narasimhavarman or Rajasimha and Nandivarman II The last Pallava ruler was Aparajit Mahendravarman AD CE contributed to the greatness of the Pallava kingdom Mahendravarman I was a follower of Jainism in the early part of his rule He embraced Saivism by the Saivite saint Appar Tirunavukkarasar He was a great patron of art and architecture He is known for introducing a new style to Dravidian architecture which is referred to as Mahendra style Mahendravarman also wrote plays including MattavilasaPrahasan The Delight of the Drunkards in Sanskrit which denigrates Buddhism Mahendravarman’s reign involved constant battles with the Western Chalukya kingdom of Badami under Pulakesin II Pulakesin seems to have defeated Mahendravarman in one of the battles and taken over a large part of his territory Vengi in the north His son Narasimavarma I avenged the defeat by capturing Vatapi the capital of Chalukyas He set Vatapi on fire killing Pulakesin in the process Narasimhavarman I’s army general was Paranjothi Popularly known as Siruthondar one of the Nayanmars Paranjothi led the Pallava army during the invasion of Vatapi After the victory he had a change of heart and devoted himself to Lord Siva Periya Puranam Narasimhavarman also known as Rajasimha was a great military strategist He exchanged ambassadors with Chin His reign was comparatively free from any political disturbance Therefore he could concentrate on temple-building activities During his reign the famous Kailasanatha temple at Kanchipuram was built Name of the King Title s Adopted Simhavishnu Avanisimha Mahendravarma I Sankirnajati Mattavilasa Gunabhara Chitrakarapuli Vichitra Chitta Narasimhavarma I Mamallan Vatapi Kondan Pallava’s Contribution to Architecture Pallava period is known for architectural splendour The Shore Temple and various other temples carved from granite monoliths and the Varaha cave century at Mamallapuram are illustrious examples of Pallava architecture In Mamallapuram was added to the list of UNESCO World Heritage Sites Pallava architecture can be classified as Rock-Cut temples Mahendravarman style Monolithic Rathas and Sculptural Mandapas Mamallan style Structural Temples Rajasimhan style and Nandivarman style Mahendra Style The best example of MahendraVarma style monuments are cave temples at Mandagapattu Mahendravadi Mamandur Dalavanur Tiruchirapalli Vallam Tirukazhukkundram and Siyamangalam Cave Temple Mandagapattu Mamalla Style The five rathas chariots popularly called Panchapandavar rathas signify five different style of temple architecture Each ratha has been carved out of a single rock So they are called monolithi The popular mandapams pillared pavilions they built are Mahishasuramardhini mandapam Thirumoorthi mandapam and Varaha mandapam Panchapandavar Rathas The most important among the Mamalla style of architecture is the open art gallery Several miniature sculptures such as the figure of lice-picking monkey elephants of huge size and the figure of the ascetic cat have been sculpted beautifully on the wall of a huge rock The fall of the River Ganga from the head of Lord Siva and the Arjuna’s penance are notable among them The Great Penance panel is considered to be the world’s largest open-air bas relief Arjuna’s Penance Rajasimha Style Narasimhavarma II also known as Rajasimha constructed structural temples using stone blocksThe best example for the structural temple is Kailasanatha temple at Kanchipuram This temple was built by using sand stones Kailasanatha temple is called Rajasimheswaram Kanchi Kailasanatha Temple Nandivarma Style The last stage of the Pallava architecture is also represented by structural temples built by the later Pallavas The best example is Vaikunda Perumal temple at Kanchipuram Kanchi Vaikunda Perumal Temple Society and Culture The Pallavas supported Jainism Buddhism and the Vedic faith They were great patrons of music painting and literature Some of the Pallava kings patronised the Azhwars and Nayanmars These exponents of Bhakti Cult preached a new form of Vaishnavism and Saivism Among the Saivites were Appar and Manikkavasakar Among the Vaishnavites were Nammazhvar and Andal The Bhakti movement aimed at preaching a popular faith in which prayers in Tamil were preferred to those in Sanskrit Women were encouraged to participate in the religious congregations The Tamil devotional cult was competitive with Buddhism and Jainism Therefore the latter suffered a gradual decline in most parts of Tamil country Education and Literature Gatika monastery or centre of learning at Kanchi was popular during the Pallava times and it attracted students from all parts of India and abroadVatsyaya who wrote Nyaya Bhashya was a teacher at Kanchi Gatika The treatise on Dakshin Chitram Paintings of South India was compiled during the reign of Mahendravarma I The great Sanskrit scholar Dandin adorned in the court of Narasimhavarma I Dandin composed Dashakumara Charit Bharavi the great Sanskrit scholar lived in the time of Simhavishnu Bharavi wrote Kiratarjuniya an epic in verses Tamil literature had also flourished during the Pallava rule Thevaram composed by Nayanmars and Nalayradivyaprabantham composed by Azhwars which are still chanted by devout people Perundevanar who was patronized by Nandivarman II translated the Mahabharata into Tamil as Bharathavenb Pallava Art The Pallava kings had also patronised fine arts The music inscriptions in Kudumianmalai and Thirumayam temples show Pallavas interest in musi The famous musician Rudracharya lived during Mahendravarma I The sculptures of this period depict many images in dancing postures The Chalukyas The Chalukyas ruled larger parts of west and centre of South India consisting of Maratha country with Vatapi Badami as their capital There were three distinct but closely related and independent Chalukya dynasties They were Chalukyas of Badami Chalukyas of Vengi Eastern Chalukyas Chalukyas of Kalyani Western Chalukyas These Chalukyas held Harsha in the north the Pallavas in the south and Kalinga Odisha in the east Sources Inscriptions Badami Cave Inscription of Mangalesha Kanchi Kailasanatha Temple Inscription Pattadakal Virupaksha Temple Inscription Aihole Inscription of Pulakesin Foreign Notice Accounts of Chinese traveller Hiuen Tsang Aihole Inscription It is found at Meguti Temple in Aihole Bagalkot district Karnataka It is written in Sanskrit by Ravikirti a court poet of Chalukya king Pulakesin II It makes a mention of the defeat of Harsha Vardhana by Pulakesin II The Chalukyas of Vatapi Pulakesin I a petty chieftain of Pattadakal in the Bijapur district took and fortified the hill fort of Vatapi around AD CE He soon conquered the territory between the Krishna and Tungabhadra rivers and the Western Ghats His son Kirtivarman I to brought the Konkan coast under Chalukya control Pulakesin to emerged as the most powerful ruler of the dynasty The Persian Iran king Khusru sent an embassy to the court of Pulakesin II Pulakesin succeeded in seizing parts of Gujarat and Malw He defied the North Indian ruler Harsha and according to an agreed understanding Narmada river was fixed as the boundary between the two About Pulakesin conquered the kingdom of Vengi and gave it to his brother Vishnuvardhana the first Eastern Chalukya ruler During the Pallavas ravaged the Deccan and captured Vatapi but the Chalukyas had recaptured it by Vikramaditya I to and Vikramaditya II the successor of Vikramaditya I captured Kanchipuram but spared the city Kirtivarman II the successor of Vikramaditya was defeated by Dantidurga the founder of the Rashtrakuta dynasty Western Chalukyas of Kalyani They were the descendants of Badami Chalukyas ruled from Kalyani modern day Basavakalyan In Tailapa II a feudatory of the Rashtrakuta ruling from Bijapur region defeated Parmara of Malw Tailapa occupied Kalyani and his dynasty quickly grew into an empire under Somesvara I Somesvara I moved the capital from Manyakheta to Kalyani For over a century the two empires of southern India the Western Chalukyas and the Chola dynasty of Thanjavur fought many fierce battles to control the fertile region of Vengi During the rule of Vikramaditya VI in the late century vast areas between the Narmada River in the north and Kaveri River in the south came under Chalukya control Contributions to Art and Architecture As supporters of both Saivism and Vaishnavism the Chalukyas contributed richly to art and architecture A new style of architecture known as Vesara was develope Vesara is a combination of south Indian Dravida and north Indian Nagara building styles They perfected the art of stone building without mortar They used soft sandstones in construction They built a number of rock-cut cave-temples and structural temples dedicated to Siva Vishnu and Brahm The structural temples of Chalukyas exist at Aihole Badami and Pattadakal The important stone temples are the Vishnu temples at Badami and Aihole and the Virupaksha or Siva Temple at Pattadakal in Bijapur district in present-day Karnatak The Vishnu temple at Badami was built by Mangalesa of the Chalukya Dynasty and contains the Aihole inscription of Vikramaditya II Their cave temples are found at Ajanta Ellora and Nasik The cave temples at Badami contain fine sculptures of Vishnu reclining on Sesha Nag Varaha the Boar Narasimha or the lion-faced man and Vamana the dwarf The Kasi Vishweshvara Temple at Lakkundi the Mallikarjuna Temple at Kuruvatti the Kalleshwara Temple at Bagali and the Mahadeva Temple at Itagi represent well known examples of the architecture of Western Chalukyas of Kalyani Chalukyas adopted the Vakataka style in paintings Some of the frescoes of the caves of Ajantha were created during the reign of Chalukyas The reception given to the Persian embassy by PulakesinII is depicted in a painting at Ajant Pattadakal UNESCO World Heritage Site is a small village in Bagalkot district of Karnatak It has ten temples Out of them four were built in northern style Nagara while the rest six are in the southern Dravida style Virupaksha Temple and Sangameshwara Temple are in Dravida Style and Papanatha temple is in Nagara style The Virupaksha temple is built on the model of Kanchi Kailasanatha temple Sculptors brought from Kanchi were employed in its construction The Rashtrakutas The Rashtrakutas ruled not only the Deccan but parts of the far south and the Ganges plain as well from to century AD CE They were of Kannada origin and their mother tongue was Kannad Dantidurga was the founder of Rashtrakuta dynasty He was an official of high rank under the Chalukyas of Badami Krishna I succeeded Dantidurg He consolidated and extended the Rashtrakuta power He was a great patron of art and architecture The Kailasanatha temple at Ellora was built by him Rashtrakuta Kings The greatest king of the Rashtrakuta dynasty was Amogavarsh He built a new capital at Manyakheta now Malkhed in Karnataka and Broach became the port Amogavarsha was embraced to Jainism by Jinasena a Jain monk Krishna II who succeeded his father Amogavarsha suffered a defeat in the battle of Vallala modern Tiruvallam Vellore district at the hands of Cholas under Parantaka in Krishna was the last able ruler of Rashtrakuta dynasty He defeated the Cholas in the battle of Takkolam presently in Vellore district and captured Thanjavur The Chalukyas under Krishna contested with other ruling dynasties of north India for the control of Kanauj He built Krishneshwara temple at RameshwaramGovinda was the last ruler to hold the empire intact After his death the Rashtrakuta power decline Contribution of Rashtrakutas to literature art and architecture Literature Kannada language became more prominent Kavirajamarga composed by Amogavarsha was the first poetic work in Kannada language Court poets produced eminent works in Kannad The three gems of Kannada literature during the period were Pampa Sri Ponna and Rann Adikavi Pampa was famous for his creative works Adipurana and Vikramarjunavijay The life of Rishabadeva the first Jain Tirthankara is depicted in Adipuran In Vikramarjunavijaya Pampa’s patron Chalukya Arikesari is identified with Arjuna epic hero of Mahabharath Art and architecture The Rashtrakutas made significant contribution to Indian Art The art and architecture of the Rashtrakutas can be found at Ellora and Elephant Kailasanatha Temple Ellora near Aurangabad Maharashtra Kailasanatha Temple was one of the temples carved out of the hill at Ellor It was built during the reign of Krishna I The temple is known for its architectural grandeur and sculptural splendour The temple covers an area of over sq feet and vimanam temple tower rises to a height of feet This temple has resemblance to the shore temple at Mamallapuram The Kailasanatha temple portrays typical Dravidian features Kailasanatha Temple Ellora Elephanta Island Originally known as Sripuri and called Gharapuri by the local people Elephanta is an island near Mumbai The Portuguese named it as Elephanta after seeing the huge image of an elephant The Trimurthi three-faced Siva icon is an illustrative of the sculptural beauty portrayed in the Cave Temple of Elephant There are impressive images of dwarapalakas entrance guards at the entrance of the Temple Elephanta Cave Pattadakal Rashtrakutas built temples in the complex of Pattadakal The Jain Narayana temple and the Kasi Vishwesvara temple were built by Rashtrakutas Jain Narayana Temple Leshan Giant Buddha metre tall Built during Tang dynasty in China and AD CE Baghdad The greatest city of Islamic Empire By the early century South India had come under the control of Pallavas of Kanchi and Chalukyas of Badami Pallava period is known for architectural splendour Pallava architecture can be classified as rock-cut temples structural temples monolithic rathas and mandapams The Chalukyas contributed richly to art and architecture A new style of architecture known as Vesara style developed during their period The Rashtrakutas also made significant contribution to Indian art Their art and architecture can be found at Ellora cave and Elephanta island feudatories being subject to a sovereign ambassador envoy granite a very hard rock ravaged severely damaged descendants offspring reclining leaning back Statement I Pallava art shows transition from rock-cut monolithic structure to stone built temple Statement Kailasanatha temple at Kanchipuram is an example of Pallava art and architecture a Statement I is wrong b Statement is wrong c Both the statements are correct d Both the statements are wrong Consider the following statement s about Pallava Kingdom Statement I Tamil literature flourished under Pallava rule with the rise in popularity of Thevaram composed by Appar Statement Pallava King Mahendravarman was the author of the play Mattavilasa Prahasan Give examples for the structural temples of Pallava perio Ans Name the new style of architecture developed during Chalukya perio Ans What does Aihole inscription mention Ans Who built the Kailasanatha temple at Ellora Ans Name the sculptural mandapas of Mamallan style of architecture Ans Where do structural temples of Chalukya exist Ans Name two Saivite saints and Vaishnavite saints who practised bhakticult during Pallava period Ans Who was the founder of Rashtrakuta dynasty Ans What were the titles adopted by Narasimhavarma I GEOGRAPHY Unit Asia and Europe Students Good morning Teacher Teacher Good morning students Did you celebrate the English New Year well Students Yes madam Teacher Ok English is the native of which country Students Britain Teacher Goo Do you know which continent is it located in Students Europe Teacher Very goo Which is our home continent Students Asi Teacher Exactly In the first term you have learnt about how many continents are in the world and their names In this lesson we are going to learn in detail about Asia and Europe Let us explore these two continents This lesson disscusses about the location boundaries physical and political divisions of Asia and Europe The major rivers climate and natural vegetation are highlighted in this lesson It also explains about how economic activities are determined by the resources The cultural mosaics of Asia and Europe are great eye openers for learners in terms of European and Asian cultures PART ASIA Asia is the largest and the most populous continent in the worl It covers about percent of the world’s land area and about percent of the world’s population Most of the land of Asia lies in the northern hemisphere It has different types of physical and cultural features Lofty mountains plateaus plains islands and peninsulas are the major physiographic features of Asi Many perennial rivers flow through different parts of Asi These river valleys are the cradles of ancient civilizations Indus valley Mesopotamian and Chinese civilizations Let us know more about our home continent Location and Area Asia extends from ˚ South to ˚ North latitudes and from ˚ East to ˚ West longitudes It spreads for an area of million km Boundaries Asia is surrounded by the Arctic Ocean in the north Pacific Ocean in the east Indian Ocean in the south and the Ural Mountains Caucasus Mountains Red Sea Mediterranean Sea Caspian Sea and Black Sea in the west The Suez Canal separates Asia from Afric The narrow Bering Strait separates Asia from North Americ Political Divisions There are forty eight countries in Asi The countries are grouped into several realms based on landscape and political status such as East Asia Southeast Asia South Asia Southwest and Central Asia Physiographic Divisions Asia is the land of long mountain ranges snow capped high mountains vast plateaus extensive plains river valleys and sea coasts These diverse physical features encourage the people of this continent to involve in diverse economic activities The physiography of Asia can be divided into five major groups They are The Northern lowlands The Central High Mountains The Southern Plateaus The Great Plains and The Island Groups The Northern Lowlands The most extensive lowland in Asia is the Siberian plain It extends from the Ural Mountains in the west to the Verkhoyansk Range in the east The Central Highlands The central highlands stretches from Turkey to the Bering Strait There are two knots found in Asi They are The Pamir Knot The Armenian Knot Knot refers to the convergence of mountain ranges The Hindukush range the Sulaiman range the Himalayan range and the Tian Shan range radiate from the Pamir Not to Scale There are landlocked countries in Asi Among these only one is doubly landlocked which means it is surrounded entirely by other landlocked countries Find out the doubly landlocked country Knot The Hindukush range continues westward as the Elburz whereas the Sulaiman range continues south west as the Zagros range The Elburz and the Zagros converge at the Armenian knot The Taurus and the Pontine ranges radiate from the Armenian knot The other important mountain ranges are the great Khingan the Altai the Verkoyansk and the Arakan yom The Himalayan mountain range is the highest mountain range in the worl Mt Everest m is the highest peak in Asia as well as among the worl The lowest point in the world is located in Dead Sea in Asi Intermontane plateaus are found in these mountain ranges The important plateaus are The plateau of Anatolia Pontine to Taurus The plateau of Iran Elburz to Zagros mt The plateau of Tibet Kunlun to Himalayas Tibet is called the Roof of the world and it is also known as the third pole because of its cold weather largest reserve of freshwater and inhospitable environment HOTS The Khyber Pass is located in the Sulaiman range the Bolan Pass is located in Toba Kakar range What is the importance of these two passes The Southern Plateaus The southern plateaus are relatively lower than the northern plateaus The four important southern plateaus are the Arabian Plateau Saudi Arabia Deccan Plateau India Shan Plateau Myanmar and the Yunnan Plateau China Among these plateaus the Arabian Plateau is the largest Plateau The Great Plains The great plains are formed by the major rivers of Asi They are the West Siberian plain Ob and Yenisey Manchurian Plain Amur Great Plain of China Yangtze and Sikiang Indo-Gangetic Plain Indus and Ganga Mesopotamian plain Tigris and Euphrates and the Irrawaddy plain Irrawaddy The Island Groups Numerous islands are found in the Pacific coast of Southeast Asi Kuril Taiwan Singapore and Borneo are the important island groups The Philippines Japan islands and Indonesia are the major archipelagos in Asi Smaller archipelagos are also located in the Indian Ocean such as the islands of Maldives and Lakshadweep in the Arabian Se Bahrain is in the Persian Gulf Sri Lanka is an island which is located in the Bay of Bengal A group of islands is called an archipelago The largest archipelago is Indonesi Drainage The rivers of Asia originate mostly from the central highlands The Ob Yenisey and Lena are the major rivers that flow towards the north and drain into the Arctic Ocean These rivers remain frozen during winter On the other hand South Asia has many perennial rivers Brahmaputra Indus Ganga and Irrawaddy which originate from the snow covered high mountains that do not freeze during winter The Euphrates and Tigris flow in West Asi The Amur Huang He Major Rivers of Asia S No Name of the River Origin Outflow Length in Km Yangtze Tibetan plateau East China sea Hung Ho Tibetan plateau Gulf of Pohai Mekong Tibetan plateau South China sea Yenisey Tannuala Mountain Arctic Ocean Ob Altai Mountain Gulf of Ob Brahmaputra Himalayas Bay of Bengal Indus Himalayas Arabian sea Amur Confluence of Shika and Argun rivers Tatar Strait Ganges Himalayas Bay of Bengal Irrawaddy North Myanmar Bay of Bengal Yangtze and Mekong rivers flow in the south and south eastern parts of Asi Yangtze is the longest river in Asi River Yangtze The Three Gorges dam has been constructed across the river Yangtze It is the largest power station dam in the worl It fulfills ten percent of power needs of Chin Climate Asia exhibits a variety of climate The northern part of Asia experiences severe long winter and cool summer Winter and Summer Precipitation is in the form of snow mm to mm The north eastern part of Asia experiences cold winter and warm summer and a moderate rainfall of mm to mm The south south east and eastern parts of Asia are strongly influenced by monsoon winds Summer is hot and humid while winter is cool and dry The summer monsoon winds bring heavy rainfall to India Bangladesh Indo-China Philippines and Southern China mm to mm In India Mawsynram mm receives the highest rainfall So this place is called the wettest place in the worl The areas found in and around the equator have uniform climate throughout the year There is no winter The average temperature is and the mean rainfall is mm HOTS There is no winter in the equatorial region Why The west and central parts of Asia have hot dry climate The temperature is very high during the day and very low during the night Rainfall varies from mm to mm The West coastal fringe of Asia along the Mediterranean Sea receives rainfall in winter and is warm in summer Deserts are found along the western part of Asi The major hot deserts are the Arabian Saudi Arabia and Thar India and Pakistan deserts The cold deserts of Asia are Gobi and Taklamakan The largest desert in Asia is the Arabian Desert Natural Vegetation Natural vegetation depends upon rainfall temperature and soil As Asia stretches from the equator to poles all types of vegetation are found here Some rare species are found in Asi Such as Orang-Utan Komodo Dragon Giant pand The Asian flora and fauna are listed below The Natural Regions Flora Fauna Climate Location Flora Fauna High Temperature High rainfall Indonesia Malaysia Singapore Sri Lanka Evergreen trees Mahogany Rubber Rosewood Sal Rhinoceros Tiger Babirusa Orangutan Komodo Dragon Summer rainfall Dry winter India Vietnam Cambodia Thailand Southern China Deciduous trees Teak Sandal wood Bamboo Tiger Elephant Indian Cobra viper Extreme temperatures Arabian desert North North West India Cactus Dates Oa sis Thorny shrubs Babul tree Bactrian Camel The Sand grouse desert oryx Dry winter Warm summer East China Japan North and South Korea Cherry Apricot Plum Giant Panda Japanese macaque Warm Summer and winter rainfall Israel Lebanon Turkey Syria Figs Olives Citrus fruits Lynx Jackrabbit Long and dry winter short and cool summer Siberia Himalayas Coniferous trees Pine Fir Spruce Siberian Tiger Brown bear Wolf Permanent snow cover Beyond the snow line Lichen mosses Grass Polar bear Lemming Reindeer Arctic fox Orang-Utan Tiger Bactrian Camel Panda Wolf Lynx Fact DESERT A Desert is a large area that gets very low rainfall and very few plants and animals There are two types of deserts found in Asia Hot and cold deserts Rub-Al Khali desert is the largest continuous sandy desert in the worl It is found in the southeastern part of Saudi Arabi Resource Base and Economic Activities of Asia Mineral Resources Asia has a variety of mineral deposits It holds an important place in the production of Iron Coal Manganese Bauxite Zinc Tungsten Petroleum Tin et Oil and Natural Gas found in the west Asian countries One third of the world’s oil is produced in Asi Among the west Asian countries Iran has a considerable wealth of mineral resources The important minerals found in Asia are Iron Ore Asia has the largest deposits of iron ore in the worl China and India are the important iron ore deposit countries of Asi Turkey Philippines Malaysia Thailand Myanmar etc are a few other countries that have iron ore deposits Coal Coal is a fossil fuel Asia has the largest deposits of coal in the worl China and India are the largest producers of coal in Asi Petroleum Petroleum is a mineral oil The largest petroleum reserves are found in South West Asi The important petroleum producing countries are Saudi Arabia Kuwait Iran Bahrain Qatar and UAE South China Malaysia Brunei Indonesia India Russia are the other important petroleum producing countries in Asi Coal mine in India Bauxite is found in India and Indonesi India is the largest producer of Mica in the worl Tin is found in Myanmar Thailand Malaysia and Indonesi Agriculture Only about percent of the total area is cultivable in Asi Agriculture is the chief occupation of the people here The river valleys in the South South East and East Asia have rich alluvial soil Agriculture is intensively practised in the riverine plains of Asi However some areas are not suitable for agricultural practices India has the largest area of arable lands in Asi Most of the west Asian countries cultivate their crops where the ground water level is nearer to the surface Iraq practices agricultural activities based on the availability of rainfall and supply of water from Euphrates and Tigris rivers Rice and Wheat are the staple food crops in Asi China and India are the leading producers of rice in the worl Other important rice producing countries are Myanmar Japan Bangladesh and Thailan Monsoon Asia is suitable for rice cultivation because of the abundant rainfall fertile plains and availability of labour Thailand is called the Rice bowl of South East Asi Banaue rice terrace The Banaue rice terraces were built year ago by the Ifugaos people in the Philippines It is located approximately about m above sea level Wheat is grown in the temperate regions of Asi Russia India China and Pakistan are the leading producers of wheat in Asi Millets like Bajra Jower Ragi and Sorgham are grown in the drier parts of Asi These are widely cultivated in India Pakistan and a few gulf countries Apart from these pulses spices and oil seeds are also cultivated in various parts of Asi Jute and cotton are the important natural fibres cultivated in Asi One third of the world’s cotton is produced by Asi The major cotton producing countries are India China Russia and Kazakhstan India Pakistan China and Bangladesh are the leading producers of jute The tropical wet and dry climate is suitable for sugarcane cultivation in Asi India Indonesia and Philippines are the major producers of sugarcane Coffee Tea Rubber Palm trees and Cocoa are the important plantation crops India Sri Lanka Thailand Vietnam Malaysia and Indonesia are important an producers of plantation crops Malaysia and Thailand are the leading producers of natural rubber Dates are produced in west Asia among the countries Iran is the largest producer of dates in the worl Cocoa Tree Fishing Fishing is an important economic activity in Asi It is prevalent in open seas as well as inland water bodies China and Japan are the leading fishing nations In Cambodia Tonle Sap lake is one of the world’s richest sources of fresh water fishing Bay of Bengal is the major fishing ground for India Sri Lanka Myanmar and Bangladesh Fishing is the mainstay of the national economy in Maldives Pearl fishing Bahrein is popular in the eastern coast of Arabi Industrial Regions In China Manchurian Shanghai Wuhan Peking Shenyang Guangdone Hongkong regions are the major industrial regions In Japan the major regions are Tokyo Yokohama and Osaka-Kyoto regions In India Mumbai Ahmedabad Coimbatore Bengaluru and Chottanagpur are the important industrial regions Trasport Transport is the backbone of the economic development of a region Many Asian countries are developing their transport network for their economic progress Roadway is the most common mode of transport in Asi Roadways The Asian Highway connects Tokyo in the east to Turkey in the west Russia in the north to Indonesia in the south and the total length of road is km It passes through countries The Asian Highway AH is the longest highway among the Asian Highway Network km It connects Tokyo to Turkey The Asian Highway AH runs from Agra in India to Matara in Sri Lanka km Railways The Trans Siberian Railways km is the longest rail route in the worl It is a transcontinental railway line which connects Leningrad and Vladivostok The Trans Asian Railway links Singapore and Istanbul in Turkey The Shinkansen bullet train is the world famous super express train that runs between Osaka and Tokyo in Japan at a speed of km h The Indian railway network is the second largest railway network in Asi Waterways The Cape of Good Hope route connects Europe to South Asi The Trans Pacific route connects the ports of eastern Asia to the ports of western American countries The Suez Canal route passes through the heart of the world trade route and connects Europe with South and Southeast Asi Tokyo Shanghai Singapore Hong Kong Chennai Mumbai Karachi and Dubai are the important seaports in Asi Shanghai Port CULTURAL MOSAIC OF ASIA Population Asia is the most populated continent in the worl Approximately six-tenth of the world’s population lives in Asi The population is unevenly distributed because of various physical features China and India alone covers three fifth of Asia’s population Apart from these two countries Bangladesh Indonesia Japan Pakistan and Philippines have more than million populations The population density in Asia is persons per Km India Japan Bangladesh and Singapore have high population density River plains and industrial regions have high density of population whereas low density is found in the interior parts of Asi HOTS Few countries in Asia have high population Give reasons ANKORWAT It is a world heritage site It was built by king Suriya Varma in AD CE at Cambodi Ankorwat means the city of temples in Khmer language It is the largest Hindu Temple in the worl Religion Language Hinduism Islam Buddhism Christianity and Sikhism are the major creeds in Asi The minor creeds Zoroastrianism Jainism Shintoism Confucianism and Taoism are also practised in Asi Mandarin English Indonesian Japanese Arabic Korea Vietnamese and Hindi are the most widely spoken languages in Asi Art and Architecture Asia is the home land of three civilizations Mesopotamian Indus valley and Chinese civilizations These three contributed to the architectural works at an early stage Among the seven wonders of the world two are located in Asia The Tajmahal in India The Great wall of China The people of Yemen built a mud skyscraper thousands of years ago Ankorwat in Cambodia Buddhist Temple in East and Southeast Asia Mosques in west Asia and the temples and forts in India are fine examples of Asian architecture Food Rice Wheat Maize and Barley are the staple food in Asi Dairy products fruits and nuts are also consume In East Asia bread and noodles are the staple food where rice is not available Tea Coffee and green tea are the chief beverages In West Asia meat herbs and olive oil are the prime ingredients in their foo Dance and Music kabuki In Asia Yangee Dragon Dance Kabaki are popular in East Asia Ram Thai in Thailand Bhangra Kathak and Bharathanatyam in India are also important dances in Asi Sufimusic and Arabic classical music are common in west Asi Tinikling is the national dance of Philippines Festivals Mid Autumn festival The mid autumn festival moon festival in China Taiwan and Vietnam Holi and Mahara Sankaranthi Pongal in major parts of India and Sukkoth in Israel are the important harvest festivals of Asi The snow sculpture festival Chinese New Year Thaipusam Diwali Taiwan Lantern festival Songkran winter light festival are also some of the famous festivals in Asi Land of contrasts Asia is the biggest continent It has different types of land features such as mountain plateau plain valley bay island et It also has different climatic conditions from the equator to polar region Apart from this many races languages religions and cultures are followed by people who live in Asi So Asia is called the land of contrasts Part B Europe Europe is the sixth largest continent in size and the third largest in population in the worl It has diverse landforms and people It is the birth place of western civilizations Roman and Greek democracy and Industrial Revolution It is the most developed continent in the worl Let us explore the continent Location and size Europe spreads from º North latitude to º North latitude and from º West longitude to º East longitude The Prime Meridian º longitude passes through Greenwich in Englan Europe is found in the northern hemisphere and it covers an area of million sqkm It is surrounded by the Arctic Ocean in the North the Black Sea and Mediterranean Sea in the south the Atlantic Ocean in the west and the Ural mountains in the east So it looks like a giant peninsul HOTS Europe is called as the Peninsula of Peninsulas Justify European Union The European Union EU is an economic and political union of member countries for their welfare It has own flag and the common currency the Euro € Fact The Netherlands About percent of the Netherlands lies below sea level So they have built dikes They have reclaimed new land from the sea with the help of dikes These reclaimed lands are called polders Physical Divisions Europe has diversified physical features such as mountains plains plateaus peninsulas bays islands and river basins It can be divided into four physical divisions The North Western Highlands The Central Plateaus High land The Alpine Mountain system The North European plains The North Western highlands This region includes the mountains and plateaus of Norway Sweden Finland Scotland and Icelan This region has the most beautiful fiord coast It was created by glaciations in the past This region has a lot of lakes which serve as reservoirs for producing hydroelectricity Norway and Sweden are the largest producers of hydroelectricity in the worl Fact Fiord A fjord is a narrow and deep sea inlet between steep cliffs It helps in the following ways It reduces the speed of wind irrespective of its direction The force of sea waves are also controlle Hence areas with fiords are best suited for natural harbours Fiord coast in Norway The Central Plateaus The plateaus are found in east west direction across central Europe Many rivers in Europe such as the Danube the Volga and the Tagus originate from this plateau The important plateaus of this region are The Pennines England The Meseta Spain The Central Massif and Jura France The Black forest Germany in these region has rich mineral resources The Pennines is called the backbone of Englan Black forest The lush and dark coloured fig and pine trees give black colour to this region The Alpine Mountain System The alpine mountain system consists of a chain of young fold mountains found in the southern part of Europe The important mountain ranges are the Sierra Nevada the Pyrenees the Alps the Apennines the Dinaric Alps the Caucasus and the Carpathian The Pyrenees forms a natural boundary between Spain and France The highest peak in Europe is Mt Elburz m in the Caucasus range The Mont Blanc m found in the Alps is the second highest peak in the Alpine System Mont Blanc There are several active volcanoes found in the Alpine mountain system Mt Etna Mt Vesuvius and Mt Stromboli are the important volcanoes found in Europe Earthquakes are common in this region The Stromboli is called the light house of the Mediterranean The Matterhorn The pyramid-shaped Matterhorn mountain is located in the Swiss Alps a height of m It is popular for its shape The North European plain The north European plain stretches from the Atlantic Ocean in the west to the Ural mountains in the east On the north it is surrounded by the Baltic Sea and on the South by the alpine mountain It is narrow in the West and wide towards the East Major European rivers such as the Seine the Rhine the Danube and the Don criss-cross this region and deposit their alluvium The Andalusian Plain The Hungarian Plain and the Wallachian Plain are also found in this region It has rich deposits of coal and iron ore The north European plain is densely populated region and cities like Paris Moscow and Berlin are located here Drainage The rivers play an important role in the development of Europe These rivers are used to irrigate farmland and also help to produce electricity Most of the rivers originate in the Alps and the central plateau of Europe These rivers are useful for inland navigation in central and Eastern Europe The Volga is the longest river in Europe The river Danube passes through Ten countries in Europe River Danube HOTS Why are European rivers suitable for inland navigation Climate The climate of Europe varies from the subtropical to the polar climate The Mediterranean climate of the south has warm summer and rainy winter The western and northwestern parts have a mild generally humid climate influenced by the North Atlantic Drift In central and eastern Europe the climate is humid continental-type In the northeast subarctic and tundra climates are foun The whole of Europe is subject to the moderating influence of prevailing westerly winds from the Atlantic Ocean Climate Divider The Alps mountain separates the Mediterranean climate from the cold climate of the north Fact North Atlantic Drift is a warm ocean current which brings warmth to the western Europe The westerly wind further transports warmth across Europe Natural vegetation The natural vegetation of Europe can be classified as follows Tundra Taiga or Coniferous Mixed Forest Mediterranean Forest Grassland The Arctic and northern Scandinavian highland have Tundra type of vegetation made up of lichens and mosses Coniferous Forest Coniferous or Taiga vegetations are found to the south of the Tundra region in Norway Sweden Finland Germany Poland and Austri Pine fir spruce and larch are the important tree varieties of taiga forest The mixed forest comprising of birch beech poplar oak and maple trees found in the western part of Europe particularly in western France Belgium Denmark Britain et Mediterranean trees like cypress cork oak olive and cedar are found along the borders of the Mediterranean Se Eastern Europe is covered by grasslands Steppe Resources Base and Economic Activities of Europe Availability of resources efficient educated work force research contact with other nations and innovations have transformed Europe into a modern and economically developed continent in the worl Europe is an industrially developed continent in the worl It has great diversity in its topography climate and soil These interact to produce varied patterns of agricultural activities such as Mediterranean agriculture Dairy farming mixed livestock and crop farming and horticulture Truck Farming Tulip Flower Garden Wheat is the dominant crop throughout Europe Barley Oats sugar beet rye potatoes and hay are also common crops Corn maize is an important crop in the lower Danubian lowlands and southwestern European Russia France and Italy Rice northern Italy and citrus fruits olive trees Spain Sicily depend on irrigation Olive tree The northernmost countries grow few cereals mainly oats and concentrate on animal husbandry especially cattle and dairying Mixed farming and the use of well tried crop rotations are widely practise Viticulture is mostly practised in Italy France and Germany Vineyard As for industrial crops European Russia Ukraine and Belarus are large producers of flax and hemp sugar beets and sunflower seeds Tobacco is grown in Belarus and is also important in Bulgaria Italy and Macedonian Greece European Russia Sweden and Finland are the major producers of softwood and hardwoo Fishing is a large industry in Norway Iceland Russia Denmark the United Kingdom the Netherlands etc The Dogger Bank in North Sea is an important fishing ground in Europe Industries Europe produces a significant portion of the world’s steel and iron ore Shipbuilding motor-vehicle and aircraft construction are widely distributed all over Europe Europe is also a large producer of pharmaceutical drugs A wide range of small-scale industries ie those that produce nondurable goods is found throughout Europe Some countries have a reputation for specialty goods as in the case of English Italian and Dutch bicycles Swedish and Finnish glass Parisian perfumes and fashion goods and Swiss precision instruments Cultural Mosaic of Europe Europe is the third most populous continent after Asia and Afric The population of Europe was million in which accounted for of the world’s population The population density in Europe is persons km High population density is often associated with the coalfields of Europe Other populous areas are sustained by mining manufacturing commerce offering large market labour forces and productive agriculture Monaco Malta San Marino and the Netherlands are the most densely populated countries Iceland and Norway have very low density of population In general population is scantiest in the mountain regions some highlands arid parts of Spain and the Arctic regions of Russi Monaco has the highest density of population in Europe persons km as well as in the worl Iceland has a very low density of population persons km Religion Language Europe is a continent of great linguistic and cultural difference English Spanish Portuguese French Italian and Slavic are the broadly spoken languages in Europe Christianity is the major religion in Europe A considerable number of Hindus Muslims and Jews are spread throughout Europe More than percent of the people belong to the Caucasoid race Art and Architecture European art and architecture mostly reveals the ordinary human being and is popular all over the worl Acropolis the Colosseum the statue of David The thinker Eiffel tower Big Ben Pisa Tower and Mona Lisa are some of the master pieces of art and architecture in Europe The Thinker Big Ben in London Eiffel Tower The Colosseum Food and Festivals Bread fish meat potatoes and dairy products are the staple food in Europe The Europeans celebrate both religious and holiday festivals Christmas Easter Good Friday the Saint Day Redentore Tomatina and Carnival are the important festivals of Europe They play Rugby foot ball basket ball ice hockey and skiing Bull fighting in Spain is the worlds attractive game Tomatina Festival A Comparison of Asia and Europe Asia and Europe are integrated geographically and separated politically Europe is the giant peninsula of Asi Both the Himalayas Asia and the Alps Europe were formed during the same geological perio The Steppe grass lands and coniferous forests are spread over several hundred kilometres from Europe to Asi Generally the plains are found in the northern part and the mountains in the southern part in both the continents The two continents are the homeland of ancient civilizations From the ancient period these two continents had trade relationship through the silk route and the spice route Despite the various geographical similarities these two continents have striking differences Asia Europe It is the largest continent both by area and population It is the smallest continent by area and the most develope It extends from S to N latitudes That is from the equatorial region to the polar region It extends from N to N latitudes That is from the sub-tropical region to the polar region It is located on the eastern hemisphere It is located at the centre of the earth The Bering Strait separates Asia and North Americ The Strait of Gibraltar separates Europe from Afric The Arabian Indo China India and Korea are the important peninsulas in Asi The Scandinavian Iberian Italian and Balkan are the important peninsulas in Europe The important parallels such as the Equator Tropic of Cancer Arctic Circle pass through it Only the Arctic Circle passes through it All kinds of climatic conditions are found here It also enjoys the distinctive monsoon type of climate Southern Asia receives summer rainfall It lies largely in the temperate zone It enjoys the distinctive Mediterranean type of climate Southern Europe receives winter rainfall Both hot and cold deserts are located here There are no deserts here It has a variety of mineral deposits Mineral resources are limited except for coal iron Plantation crops such as tea rubber and dates are largely cultivated in Asi Citrus fruits olives and grapes are cultivated mostly in Asi A majority of people in Asia are involved in primary activities A majority of people in Europe are involved in secondary and tertiary activities Recap Asia is the largest and the most populous continent in the worl It is divided into five physical divisions From the equator to the poles all types of climate are found in Asi The treeless polar region to dense equatorial forest are found in Asi Iron ore coal petroleum Bauxite mica tin zinc et are the chief minerals found in Asi Rice wheat sugarcane jute cotton tea coffee and dates are the important crops Asia is the birthplace of all religions Europe is the sixth largest continent It is divided into four physical divisions The European rivers play a Vital role to the country economy Europe experiences a cool temperate climate Mixed farming is the most widely practised type of agriculture in Europe Coal and Iron ore are a cheap minerals found in Europe Christianity is the major religion in Europe Exercise I Choose the correct answer Which is not the western margin of Asia a Black Sea b Mediterranean Sea c Red Sea d Arabian Sea The Intermontane plateau is found between Elbruz and Zagros a Tibet b Iran c Deccan d The Yunnan Glossary Beverage a drink other than water Perennial Continuing throughout the entire year Monsoon wind The seasonal wind of the Indian ocean Tundra A vast flat treeless Arctic Riverine Situated beside a river Staple food food that makes up the dominant part of people’s diet Irrigation The artificial application of water to land Husbandry The care cultivation and breeding of crops and animals Viticulture The cultivation of grapevines Steppes a large area of flat unforested grassland in Siberi Polder A piece of low lying land reclaimed from the sea Race a group of people who have similarities in biological traits Horticulture the art of garden cultivation and management vegetables fruits and flowers Unit Globe Surya and Poovendhan are very good friends who study in the sixth standard and live in a beautiful village called Thirunandriyur Surya lives in South Street while Poovendhan lives in North Street Every day they go to school together One day Surya Why are you coming so late Poovendha Poovendhan Please bear with me Surya Come let’s go Surya What took you so long Poovendhan You live on South Street But I have to come from the North Street which is so far away from here That’s why I’m late Surya Yes that’s true But wherever we live don’t you remember that we all live on planet Earth Poovendhan Yes Yes I do remember Even our Ponni Miss taught us about the Solar System Surya But I have a doubt Poovendhan Tell me what is it Surya We can see our house the things around us the people animals and birds with our eyes But why can’t we see our Earth as a whole Poovendhan Haven’t you seen it Surya No I haven’t Have you ever seen it Poovendhan Yes in our school only Surya Did you say in our school Poovendhan Yes on our Ponni Miss table Big and spherical Surya Oh Yes Like a ball on a stand Poovendhan Exactly That is our Earth Surya But But our teacher said that our Earth is in the Milky Way Galaxy But you say that our Earth is on our teacher’s table I am so confuse Come let’s go and ask Ponni Miss The bell rang as they reached school They attended the morning assembly and went to the classroom During the social science period Surya asks Ponni Miss to clear his doubts Surya Good morning Miss Teacher Good morning Surya Madam you told us on the other day that our Earth is in the Milky Way galaxy Teacher Yes it is true This is the model of the Earth Surya A model of the earth Madam Please explain Teacher Sure Sury The teacher asks all the students to sit down and starts explaining Directions The directions on the ground are always shown with respect to the North If we know the North then it is easy to find the other directions namely South East and West These are the four cardinal directions We know that the Sun rises in the East and sets in the West If we stand facing the sun in the morning then we face the east The west is towards our back The left hand points towards the north and the right hand points towards the south We should always keep this in min Globe We live on the planet Earth which is found third from the Sun Since the Earth is huge and we live on a very small area we are not able to see the Earth as a whole But when we travel to space we can see the Earth as a whole So in order to see the shape of the Earth as a whole and to know its unique features a three dimensional model of the Earth was created with a specific scale The surface area of the Earth is million square kilometres The Earth which is spherical is flat at the poles and bulges at the Equator The Earth cannot be compared with any other geometrical shape as it has a very unique shape Hence its shape is called a geoid earth shaped The Earth moves around the Sun It also rotates from the West to East on its axis at an inclination of The globe is also inclined at an angle of The axis is an imaginary line It is not actually found on the Earth The first globe was created by the Greeks in the year AD CE The Indian astronomer Aryabhatta I has mentioned in his book Aryabhatta Sidhantha The stars in the sky seem to move towards the West because of the Earth’s roation on its axis Lines on the Globe There are imaginary lines which are drawn on the globe horizontally and vertically to find a location and calculate distance and time These imaginary lines are called lines of latitudes and longitudes Ptolemy a Greco Roman mathematician astronomer and geographer was the first person to draw the lines of latitude and longitude on a map In his book Geographia a detailed description about the Earth’s surface its size and circumference and many locations based on the lines of latitude and longitude are given Latitudes The imaginary lines which are drawn horizontally on East West direction on the Earth are called the lines or parallels of latitudes The line of latitude which divides the Earth into two halves is known as the Equator From the Equator parallel lines are drawn towards the North and South poles at equal intervals The latitudinal extent between line of latitude on Earth is km Since the Earth is geoid shaped the length of the lines of latitude decreases from the Equator towards the South and North Poles The North and South Poles are not found as lines but as points The lines of latitude that are drawn horizontally between the Equator and the North Pole are called Northern latitudes and those which are found between the Equator and the South Pole are called Southern Latitudes The lines of latitude consist of parallels in the Northern Hemisphere and parallels in the Southern Hemisphere one at the Equator and the two poles are found as points Totally there are parallels found on earth The Equator is the longest of all lines of latitude Hence it is also known as The Great Circle Activity Draw a circle on a paper Draw a horizontal line across the middle of a circle Keeping this line as draw lines on both sides with an equal interval of with the help of a protractor The lines you have drawn are lines of latitudes Equator Equator North Pole South Pole North Latitude South Northern Hemisphere Equator The area of the Earth found between the Equator and the North Pole N is called the Northern Hemisphere Southern Hemisphere S E Equator N W The area of the Earth from the equator to the South Pole S is called the Southern Hemisphere The location of any country or place is based on this division of the hemispheres HOTS Based on the latitudinal extent in which hemisphere is India located Important lines of latitude The earth rotates on its axis at an inclination of It also revolves around the sun while rotating Based on the angle at which the sun’s rays fall on the earth certain lines of latitude gain significance Arctic Circle o N Antartic Circle o S South Pole o S Equator o Tropic of Cancer o N Tropic of Capricorn o S North Pole o N N and S N and S lines of latitudes are called Low latitudes N and S N and S lines of latitudes are called Middle Latitudes N and S N and S lines of latitudes are called High Latitudes Source A Dictionary of Geography Susan Mayhew Oxford University Press Fifth edition The Sun’s rays do not fall equally on all parts of the earth They fall vertically over the Equator and slanting towards the poles Thus all the places on earth do not have the same amount of temperature Based on the amount of heat received from the Sun the lines of latitude help in dividing the earth into different climatic zones Frigid zone Frigid zone Temperate zone Temperate zone Torrid zone Torrid zone Torrid Zone The region from the Equator towards the Tropic of Cancer N and the Tropic of Capricorn S is called the Torrid Zone The Sun’s rays fall vertically over this region and the average temperature is very high Hence this region is known as the Torrid Zone Temperate Zone From the Tropic of Cancer N to the Arctic Circle N and from the Tropic of Capricorn S to the Antarctic Circle S the Sun’s rays fall slantingly Moderate temperature prevails in this region Hence this region is called Temperate Zone Frigid Zone From the Arctic Circle N to the North Pole N and from the Antarctic Circle S to the South Pole S the Sun’s rays fall further inclined through out the year The temperature is very low Hence this region is known as Frigid Zone Some lines of latitude are also called by the following names in Tamil Latitude ahalangu Longitude nettangu Equator nilanaduvarai Tropic of Cancer kadagavarai Tropic of Capricorn magaravarai Source Ariviyal Kalanjiyam The Tamil University Longitudes The imaginary lines drawn vertically connecting the North Pole and the South Pole are called lines or meridians of longitude These lines of longitude are seen as semi circles The line of longitude is called the Prime Meridian There are lines of longitude towards the East and West from the Prime Meridian So there are totally lines of longitude These lines converge at the poles The W and E line of longitude are the same line North South Prime Meridian The lines of longitude that are found between the Prime Meridian and the East line of longitude are called Eastern Longitudes and the lines of longitude that are found between the Prime Meridian and the West line of longitude are called Western Longitudes Two opposite meridians form a great circle The lines of longitude are found as semi circles covering km at the Equator km at latitude and no space between the lines at the poles Activity Take a ball and a thin iron wire Pierce the ball with the wire from one end to the other end through the middle Remove the wire Draw circles around the points Name the northern most point as North Pole and the southern most point as South Pole The angle of a circle is Mark points on the circle at an interval of using a protractor Then draw lines joining these points on the top and bottom of the ball The lines that you have drawn are lines of longitudes North Pole South Pole East Prime Meridian Prime Meridian West East Longitude West Longitude Eastern Hemisphere Prime Meridian The part of the Earth between the line of longitude and the East line of longitude is known as the Eastern Hemisphere Western Hemisphere Prime Meridian The part of the Earth from line of longitude to West line of longitude is called as Western Hemisphere Activity Based on the longitudinal extent in which hemisphere is our country located Look at the globe and answer Significant Lines of Longitude Greenwich Meridian The Royal Astronomical Observatory is located at Greenwich near London in Englan According to the International Meridian Conference held in in Washington DC in the US all nations agreed on choosing the Greenwich Meridian as the international standard meridian This line of longitude is called the Prime Meridian and it is also known as the Greenwich Meridian because it passes through Greenwich International Date Line The o line of longitude has been fixed as the International Date Line drawn on the Pacific Ocean between Alaska and Russia through Bering Strait If a person crosses this line from the West to East he loses a day On the other hand when he crosses from the East to West he gains a day Based on this the date is fixed for different countries or regions of the worl The International Date Line is not straight If the line is drawn straight two places in the same country would have different dates So the International Date Line is found zigzag in certain places to avoid confusion East Siberian Sea RUSSIA Wrangel Island Chukchi Sea Beaufort Sea Tasman Sea ARCTIC OCEAN USA Bering Sea HAWAIIAN ISLANDS MARSHALL ISLANDS SOLOMON ISLANDS KERMADEC ISLANDS FRENCH POLYNESIA FRANCE FIJI TONGA NEW ZEALAND KIRIBATI GILBERT ISLANDS KIRIBATI LINE ISLANDS NORTH PACIFIC OCEAN NORTH PACIFIC OCEAN Aleuan Islands E W W W Internaonal Date Line Internaonal Date Line N Not to Scale INTERNATIONAL DATE LINE Earth Grid The imaginary lines of latitude and longitude form a grid like pattern on the surface of the earth known as the Earth grid or Geographic grid Earth grid To locate a place exactly on earth the latitudinal and longitudinal extensions are require Longitude and Time As many as lines of longitude are drawn to connect the North and South Poles around the Earth on the Eastern Hemisphere and on the Western Hemisphere Time is calculated on the basis of the lines of longitude Local Time When the sun is overhead on a particular line of longitude it is noon at all the places located on that line of longitude This is called local time The Sun is overhead on a line of longitude only once in a day So the local time differs for every line of longitude When the Sun is overhead the Greenwich Meridian at noon it is the local time of that place The world time is calculated by this standard line of longitude It is known as the Greenwich Mean Time GMT For example if the time is noon at Greenwich Meridian it is pm at E line of longitude and am at W line of longitude So as one moves towards the east from any meridian the time increases And if one moves towards the west from any meridian time decreases The word meridian is derived from the Latin word Meridianus It means mid day Medius Middle dies day So meridian means the position of the Sun found overhead at a place at noon am means anti Meridiem anti before Before Noon pm means post Meridiem Post after later After noon Standard Time Local time is calculated when the sun is overhead at noon Many lines of longitude may pass through a country Countries may or may not observe a common time The standard time of a country or a part of it is calculated keeping a particular meridian as a standard one The meridians are selected in multiples of or It is done in such a way that the variation of standard time from the Greenwich is expressed either as hour or an hour Indian Standard Time INDIAN STANDARD MERIDIAN E N N N N E PAKISTAN CHINA BANGLADESH BAY OF BENGAL ANDAMAN NICOBAR ISLANDS LAKSHADWEEP INDIA ARABIAN SEA INDIAN OCEA N BHUTAN NEPAL Tropic of Cancer EW N S Not to Scale The longitudinal extent of India is from E to E As many as twenty nine lines of longitude pass through Indi Having standard time is not logical Hence E line of longitude is observed as the Prime Meridian to calculate the Indian Standard Time IST The E line of longitude passes through Mirzapur near Allahabad in Uttar Pradesh This is located at an equal distance from Ghuar Mota in Gujarat and Kibithu in Arunachal Pradesh Time Zones The world has time zones Some countries have a great longitudinal extent So they have more than one standard time Example Russia has time zones Activity What is the difference in time between the GMT and IST If it is am at New York City US what would be the time at New Delhi the capital of India If it is Midnight at London what would be the time in India The standard time of Sydney city in Australia is found to be at a difference of hours from that of the GMT Mr Senthamizh travels by flight from Chennai to London He boarded the aeroplane at am After hours of travel at what time GMT would he have reach London We saw about the lines of latitude and longitude drawn on the globe Besides these physical land forms seas oceans countries etc are also found on the globe globe and maps are known as lines of longitude or meridians The line of latitude is called the Equator The line of longitude is called the Greenwich Meridian or the Prime Meridian The part of the Earth from the Equator to North Pole is called the Northern Hemisphere and from the Equator to South Pole is called the Southern Hemisphere The part of the Earth from the Greenwich Meridian to East line of longitude is called the Eastern Hemisphere and from Equator to West line of longitude is called the Western Hemisphere Lines of latitude are circles which are drawn at a distance of about km The poles are shown as points Lines of longitude are drawn as semi circles The distance between the lines of longitude at the Equator is km It is found at a distance of km at latitude and they converge at the poles Lines of latitude do not merge while lines of longitude converge at the poles Time is calculated on the basis of the lines of longitude The line of longitude is the International Date Line Wrap up The imaginary lines drawn horizontally from the East to West on the globe and maps are called lines of latitude or parallels The imaginary lines drawn vertically from the North to South on the Glossary Globe A model of the earth Lines of Latitude Parallels Imaginary lines drawn horizontally on the Earth from the East to West Lines of Longitude Meridians Imaginary line drawn vertically on the Earth from the North to South Geoid The shape of the Earth Hemisphere Dividing the earth on the basis of lines of latitude and longitude with regard to directions Equator The line of latitude drawn horizontally at the centre of the Earth Tropic of Cancer N line of latitude Tropic of Capricorn S line of latitude Arctic Circle N line of latitude Antarctic Circle latitude Unit Understanding Disaster This lesson explains about the various natural disasters and man-made disasters It also deals with the precautionary and mitigation measures taken to avoid the loss of lives and materials Disaster is a very common phenomenon in the human society It has been experienced by people since time immemorial Though its form may be varied it has been a challenge for society The latest development which has been discovered in the World Disaster Reports recently is that the disasters have increased in frequency and intensity India is one of the most disaster prone countries in the worl It has some of the world’s most severe droughts famines cyclones earthquakes chemical disasters rail accidents and road accidents The high density of population in the developing countries especially in the high risk coastal areas results in millions of people getting affected by natural disasters especially in recurring disasters like floods cyclones storm surges et Disaster A disaster is a serious disruption of the functioning of a society involving human and material loss Disaster is broadly classified into natural and man made disasters Natural Disasters Earthquake The sudden shaking of the earth at a place for a short spell of time is called an earthquake The duration of the earthquake may be a few seconds to some minutes The point where an earthquake originates is called its focus The vertical point at the surface from the focus is called epicentre Volcanoes Volcanoes are openings or vents where lava small rocks and steam erupt onto the earth’s surface Tsunami Tsunami are waves generated by earthquake volcanic eruptions and underwater landslides Cyclones A low pressure area which is encircled by high-pressure wind is called a cyclone Floods An overflow of a large amount of water beyond its normal limits especially on the rainfed areas is called a floo Landslide The movement of a mass of rocks debris soil etc downslope is called a landslide Avalanche A large amount of ice snow and rock falling quickly down the side of a mountain is called an Avalanche Thunder and lightning Thunder is a series of sudden electrical discharge resulting from atmospheric conditions This discharge results in sudden flashes of light and trembling sound waves which are commonly known as thunder and lightning Earthquake Volcanic explosion Tsunami Cyclones Floods Landslide Avalanches Thunder lightning Man-made disasters Fire Massive forest fires may start in hot and dry weather as a result of lightning and human carelessness or from other causal factors Destruction of buildings Demolition of buildings by human activites Accidents in industries Chemical biological accidents that occur due to human error Bhopal gas tragedy Accidents in Transport Violation of road rules carelessness cause accidents Terrorism The social unrest or differences in principles leads to terrorism Stampede The term stampede is a sudden rush of a crowd of people usually resulting in injuries and death from suffocation and trampling Tsunami and floods A killer Tsunami hit the south east Asian countries on the of December A massive earthquake with a magnitude of in the Richter scale epicentre in the Indonesian island of Sumatr It triggered one of the biggest Tsunamis the world had ever witnesse The massive waves measuring up to metres that killed more than people of Asi In India over people were killed by this disaster Tamil Nadu alone accounted for deaths All the coastal districts were affected Nagapattinam was the worst hit in the state of Tamil Nadu Fishermen tourists morning walkers children playing in beach and people living on the coast were unprepared for the waves So they lost their life and the most of the loss of lives and damage to property was within metres of the shore After that the Indian government set up a Tsunami Early Warning System at Indian National Centre for Ocean Information Services INCOIS Hyderabad in Fire Destruction of buildings Accidents in industries Accidents in Transport Terrorism Stampede Tsunami Do’s and Don’ts You should find out if your home school etc are in valunarable areas along sea shore Know the height of your street above sea level Plan evacuation routes and practise your evacuation routes Discuss tsunamis with your family Review safety and preparedness measures with your family If you see the sea water receding you must immediately leave the beach and go to higher ground far away from the beach Dont go to the coast to watch the Tsunami Dont try to surf the tsunami waves Be aware facts about tsunami Floods Floods are high stream flows which overlap natural or artificial banks of a river or a stream and are markedly higher than the usual flow as well as inundation of low lan Types of floods Flash floods Such floods that occur within six hours during heavy rainfall River floods Such floods are caused by Precipitation over large catchment areas or by melting of snow or sometimes both Coastal floods Sometimes floods are associated with cyclone high tides and tsunami Causes of floods Torrential Rainfall Encroachment of rivers bank Excessive rainfall in catchment Inefficient engineering design in the construction of embankments dams and canals Effects of floods Destruction of drainage system Water pollution Soil erosion Stagnation of water Loss of agricultural land and cattle Loss of life and spread of contagious diseases Do’s To find out if the settlement area is to be affected by flood or not Keeping radio torch and additional batteries storing drinking water dry foods items salt and sugar Safeguarding materials like kerosene candle match box clothes and valuable things Keeping umbrella and bamboo poles Keeping first aid box and strong ropes to bind things To dig canals from the farm land to drain the excessive water keeping sand bags etc Don’ts Try to connect electricity once it is cut Operate vehicles Swim against floods Avoid going on excursions Neglect flood warning messages During floods Cut off gas connection and electricity Keep sand bags on drainage holes and bathroom holes Leave immediately through the known passage or prescribed passage Drink hot water Use bleaching powder to keep your environment hygieni Before using match sticks and candles ensure that there is no gas leakage Don’t eat more food when you are affected by diarrhoe Don’t try to take anything that floats in floo Disaster Risk Reduction DRR Disaster Risk Reduction The practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters There are four key approaches to public awareness for disaster risk reduction Campaigns participatory learning informal education and formal school based interventions Forecasting and Early Warning Weather forecasting Tsunami early warning system cyclonic forecasting and warning provide necessary information which help in reducing risks during disasters School Disaster Management Committee Village Disaster Management Committee State and Central government institutions take mitigation measures together during disaster Newspaper Radio Television and social media bring updated information and give alerts on the vulnerable area risk preparatory measures and relief measures including medicine Glossary Mitigation The lessening of the adverse impacts of hazards and related disasters Forecast Definite statement or statistical estimate of the likely occurrence of a future event or conditions for a specific are Rainfed Supplied primarily with rainwater Magnitude A measure of the amount of energy released by an earthquake Contagious Transmissible by direct or indirect contact Catchment The action of collecting water especially the collection of rainfall over a natural drainage are Exercise I Answer in brief Define Disaster What are the two types of disasters Give examples Write a short note on Thunder and lightning Chennai Cuddalore and Cauvery delta are frequently affected by floods Give reason Differentiate Landslide Avalanche Answer in a paragraph What is flood Explain the do’s and don’ts during floods Activity Make a flood plan On a piece of paper draw your village town map roughly Locate your homeschool and playground on the map Then draw the rivers stream lake and road located nearest to your village town Answer the questions listed below Which areas and roads would be mostly affected by flood Can you find out evacuation route If you live in a flood-prone area what are the precautionary measures you have to take during heavy rains What are things that you should have in your Go Kit Drive away kit Make a list of emergency numbers Go-Kit A kit prepared by and for an individual or group who expects to develop it in alternative locations during emergency CIVICS Unit Democracy The world will constantly embrace the feet of the great king who rules over his subjects with love The teachers of Nallur Government High School were doing the final preparations for the programme Let’s know the society a monthly event The Singaravelar Hall was filled with students The Headmaster Mr Jeeva welcomed the Chief Guest of the day Advocate Mr Rajasekaran When he brought the chief guest to the hall the students observed silence Mr Britto the history teacher welcomed the gathering The chief guest Mr Rajasekaran stood up to address the students Beloved brothers and sisters I thank you for inviting me to this programme I’m not going to speak on this occasion When he said this and paused everyone looked at him in wonder Democracy should be found everywhere shouldn’t it So I am going to converse with all of you he sai He requested to give a microphone to the students Mr Rajasekar said First let me ask you a question Do you know what kind of society did the early man live in In the beginning they were hunters and gathered foo Later they settled near rivers and practised agriculture said Deepika a sixth standard student Yes when man started to live in groups tribes were forme Every tribe had its own chief These groups fought among themselves for land water and other resources Those who emerged victorious formed kingdoms by uniting the other tribal groups These kingdoms later integrated to form empires Arun questioned So the chief would have become the king wouldn’t he Yes that was how monarchies ruled by kings were formed Suganya asked Was this how monarchy emerged in our country too Yes this was how the system of monarchy formed throughout the worl Also our country was ruled by kings and emperors and then came under the British rule The students answered together After centuries of struggle and many sacrifices we got freedom from British colonialism We adopted democracy as our ruling system when our country got freedom said Rajasekaran Devarajan asked him What is democracy When you start a Sports Club you’ll share the responsibilities Then you would enjoy its benefits but share the income and expenditure wouldn’t you Yes sir Similarly the citizens of a country select their representatives through elections Thus they take part in the direct governance of a country This is termed Democracy In a democratic form of government a considerable amount of power lies with the people of that nation People can participate in the politics of the country and decision making processes There are different types of democracy Types of democracy Yes there are various types of democracy in practice around the worl Among those direct democracy and representative democracy are the most popular forms of government The birth place of democracy is Greece Democracy is a term derived from two the Greek words Demos and cratia Demos means the people and Cratia means the power or rule What is Direct Democracy asked Sirajudeen In a Direct Democracy people have the power to frame laws If we consider your Sports Club as an example you all can discuss and amend laws and rules The perspective of each member is considered and each one expresses his view But how will you take a final decision The choice of the majority will be accepte The others will also give their consent said Selv Yes this system is actually known as Direct Democracy said Rajasekaran What do you mean by Representative Democracy Imagine that your Sports Club has more number of members now Is it possible for hundreds of them to gather and discuss to take various decisions No sir In that case all the members should be represented by a group of representatives shouldn’t they Yes agreed the students in union DEMOCRACY Direct Democracy Switzerland Representative Democracy India USA England Laws Rules Votes The people Laws Rules Elected Representatives Votes The people Those group members will administrate the sports club on behalf of all the other members To select these representatives elections are hel For example many contest for the post of the Head Secretary Treasurer and members of the administration group In the end those who gain the maximum number of votes will be given the posts On behalf of the other members they obtain the power to take decisions in a democratic manner This is termed as Representative Democracy What is meant by democratic decision making questioned Judith In the system of democracy the power to take decisions does not lie with the Hea On the contrary a group holds the power but adheres to the rules and regulations All the members of the group hold open discussions and take final decisions only when everyone is convince This is called democratic way of decision making Are there rules and regulations to govern our country like the rules and regulations of this group Yes In a highly populated country like India if people want to live peacefully they have to follow certain rules and regulations rights and duties properly Hence the constitution of India guides us in all these aspects and plays an important role in maintaining law and order What are the rights given in our Constitution Our Constitution ensures freedom equality and justice to everyone What other features are found in our constitution It defines the political principles the structure of the government institutions and methods to follow these rules and regulations the powers and responsibilities And also it fixes the Rights and Duties and the Directive Principles of the citizens Thus our constitution provides a structure to us Is the constitution of India such a detailed one asked Tamizhselvi in amazement Indian Constitution is the longest written constitution in the worl It is drafted by the Drafting Committee of the Constituent Assembly headed by Dr BR Ambedkar That is why we call him as the Chief Architect of our Constitution Rajasekaran conclude The students clapped with joy and thanked him for the simple explanation of democracy Aims of Democracy Democracy is defined as Government of the people for the people and by the people In a democracy the power is vested in the hands of the people For that the people should have rights to take decisions Everyone cannot participate in decision making So the representative government elected by the people to form a democratic system all those who attain the age of are given the voting rights to elect the representatives At the same time the representatives have the responsibility to protect the welfare of the people World Democracy New zealand is the first country to allow women to vote Voting rights to women were given in and in the UK and USA respectively At the same time the wealthy alone were given the voting rights in Indi Many leaders like Mahatma Gandhi kept insisting on giving voting rights to all Now in India all the people above years of age enjoy Universal Adult Franchise The world statistical data on democracy declares that of the Indian citizens have faith in the democratic system Hence India ranks first among the democratic countries of the worl Sl No Democracy Period Location Significance Greek Democracy century BC BCE Greece Foundation of political philosophy Roman Empires Democracy BC BC BCE Italian Peninsula Rome Loads of expansions of the growth of civilization San Merinos Democracy AD CE Italy Earliest written constitution still in effect The Iceland Democracy AD CE Thingvellir The oldest and longest functioning parliament in the worl The Isle of Man’s Democracy AD CE Between Great Britain and Ireland Self governing possessions of the crown British Democracy Century AD CE England Magna Carta of US Democracy AD CE United States of America The oldest standing democracy Democracy a government formed by the people Election a process by which a representative is chosen Decision to make up one’s mind Government a group of people with a authority to govern a country Government of the people by the people for the people is defined as democracy Direct democracy and Representative democracy are the types of democracy Our constitution ensures freedom equality and justice to everyone Indian constitution is the longest written constitution in the worl In India all the people above years of age enjoy Universal Adult Franchise Unit Local Bodies Rural and Urban Nandhini is in standard VI It was her custom to read the headlines in the newspaper loudly to her parents Mr Namburajan and Mrs Manimegalai They would clear her doubts Sometimes children from their neighbourhood would also join her and each one will read an article loudly As it was a Saturday Johnson Maran and Anwar were also in Nandhini’s house Nandhini started to read an article from the newspaper Avadi as been declared as corporation She was about to read the next heading but she had a doubt and asked her father Father what is a corporation The Government of Tamil Nadu will declare certain municipalities based on above Ten laks population and high revenue That’s how Avadi has declared as a corporation too said her father Namburajan Oh if that is so are there other corporations that exist already Yes there are corporations in Tamil Nadu at present Avadi also include in this list said Namburajan Chennai Madurai Coimbatore Tiruchirapalli Salem Tirunelveli Erode Thoothukudi Tiruppur Vellore Dindigul Thanjavur Nagercoil Hosur Avadi TIRUPPUR COIMBATORE DINDIGUL MADURAI TIRUNELVELI THOOTHUKUDI NAGERCOIL ERODE SALEM VELLORE HOSUR CHENNAI AVADI TIRUCHIRAPALLI Bay of Bengal THANJAVUR Not to Scale The Chennai Corporation which was founded in is the oldest local body in Indi Father what about the place we live in enquired Maran We live in a Panchayat Maran What is a Panchayat There are villages as well as cities in Tamil Nadu aren’t there Yes father Won’t the needs of villages and cities differ Our constitution has provided certain structures to fulfill the needs of the people Accordingly the urban local bodies are categorized into City Minicipal Corporations Municipalities and Town Panchayats while the rural local bodies are categorised into Village Panchayats Panchayat Unions and District Panchyats These are together known as local bodies Oh are there so many divisions Yes I’ll tell you about them Didn’t I tell you about the City Municipal Corporations Yes father Those areas which have a population of more than one lakh and a high amount of revenue and is found in the level below the City Municipal Corporation is called a Municipality Walajahpet Municipality is the first Municipality in Tamil Nadu You mentioned something about towns A Town Panchayat has about population A Town Panchayat is between a village and a city There is something special about the Town Panchayat Can anyone tell me what is it asked Namburajan Everyone was gazing at him But none answere Well I’ll tell the answer myself Tamil Nadu was the first state to introduce a town Panchayat in the whole of India All were amazed on hearing it A City Municipal Corporation has a Commissioner who is an Indian Administrative Service IAS officer Government officials are deputed as Commissioners for the municipalities The administrative officer of a Municipality is an Executive Officer EO You mentioned about Panchayats and Panchayat Unions The Village Panchayats are the local bodies of villages They act as a link between the people and the government Villages are divided into wards based on their population The representatives are elected by the people The Elected Representatives Panchayat President Ward members Councillor District Panchayat Ward Councillor Panchayat Union Many village Panchayats join to form a Panchayat Union A Councillor is elected from each Panchayat isn’t it Those councillors will elect a Panchayat Union Chairperson among themselves A Vice Chairperson is also electe A Block Development Officer BDO is the administrative head of a Panchayat Union The services are provided on the Panchayat Union level The Nilgiris and Perambalur Districts have the lowest number of Panchayat Unions District Panchayat A District Panchayat is formed in every district A district is divided into wards on the basis of population The ward members are elected by the Village Panchayats The members of the District Panchayat elect the District Panchayat Committee Chairperson They provide essential services and facilities to the rural population and the planning and execution of development programmes for the district The local bodies are governed by the representatives elected by the people The constituencies are called wards People elect their ward members The Mayor of the City Municipal Corporation and the Municipal Chairperson are the elected representatives of the people The people elect them The Corporation Deputy Mayor and the Municipal Vice Chairperson are elected by the ward councillors finished Namburajan What are the benefits of local bodies uncle There are many benefits The services provided can be divided as obligatory functions and discretionary functions These are provided by the local bodies Functions of the village Panchayat Obligatory Functions Water supply Street lighting Cleaning roads Drainage sewage pipes system Laying down roads Activation of Central and State Government schemes Discretionary Functions parks Libraries Playgrounds et Functions of the City Municipal Corporation Drinking water supply Street Lighting Maintenance of Clean Environment Primary Health Facilities Laying of Roads Building flyovers Space for markets Drainage System Solid waste management Corporation schools Parks Play grounds Birth and Death registration et So who does all these works As per the decisions taken in the Council meetings the commissioner or officers assign these works to their subordinate officers or other servants Thus they all work in various levels to get these public works done Will the Government provide funds for these services father The Government directly allots funds for these works The local bodies also collect revenue Revenue of the Village Panchayat House tax Professional tax Tax on shops Water charges Specific fees for property tax Specific fees for transfer of immovable property Funds from Central and State Governments et Revenue of the City Municipal Corporation House Tax Water Tax Tax on shopping complexes Professional Tax Entertainment Tax Vehicle Charges Funds by Central and State Government et How are the Grama Sabha meetings Activity Distinguish between rural and urban revenue and functions Find out from your home The taxes paid by your family held uncle asked Maran Grama Sabha meetings In movies I have seen elders sitting under trees and discussing important matters and take decisions said Johnson No no both are different A Grama Sabha is formed in every Village Panchayat It is the only permanent unit in the Panchayat Raj System Grama Sabha meetings are held even in smaller villages The Grama Sabha is the grass root level democratic institution in a Village Panchayat Those who have attained the age of years and whose names are found in the electoral roll of the same Panchayat can take part in a Grama Sabha meeting The Grama Sabha meetings are conducted four times a year Officers like the District Collector the Block Development Officer Panchyat President Vice President and Ward Members etc also participate in this meeting The people can freely express their needs and grievances When are these meetings convened January May August and October Apart from these days the meetings can be convened as per need or during emergency These are called Special Grama Sabha meetings Mahatma Gandhi advocated Panchayat Raj as the foundation of India’s political system as a form of government where each village would be responsible for its own affairs The Panchayat Raj Act was enacted on April April is National Panchayat Raj Day Special features of Panchayat Raj Grama Sabha Three tier local body governance Reservations Panchayat Elections Tenure Finance Commission Account and Audit etc Thank you very much uncle We really learnt a lot about local bodies said the children gratefully I’m very happy that I could share so much with you today That’s enough of reading newspapers Go out and play now said Namburajan The children ran out to play joyously Activity The Central Government gives awards to the best performing Village Panchayats Find out if your village has received such awards Role of women in the Local Self Government All local bodies have a reservation of for women In the Local Bodies election seats were won by women As per the Tamil Nadu Panchayats Amendment Act reservation for women is being fixed in Panchayat Raj institutions Activity Find out about the ward members of your are Talk to the women members and discuss about their participation and experiences Local Body Election The tenure for the representatives of local self Government is years The election to the Local Bodies is held once in five years by the State Election Commission Every state has a State Election Commission The Tamil Nadu State Election Commission is situated in Koyambedu Chennai Local Bodies of Tamil Nadu At present Village Panchayats Panchayat Unions District Panchayats Town Panchayats Municipalities Municipal Corporations Source Tamil Nadu State Election Commission wwwtnsectnnicin Think it over Do you think the above numbers are stable Find out about the recent changes What is the number of votes cast by rural and urban voters in a local body election Works carried out by local bodies durings natural disasters and out break of diseases Town Panchayat Municipality Corporation Village Panchayat Panchayat Union District Panchayat Local bodies are structures to fulfill the needs of people Three types of traffic signs Mandatory Cautionary and Informatory I Mandatory road signs are the ones that give order regarding dos and don’ts and are to be followed strictly These are generally circular in shape No entry One Way No right turn No left turn No U turn Panchayat Panchayat Union and District Panchayat are rural local bodies Town Panchayat Municipality and Corporation are urban local bodies Grama Sabha is the only permanent unit in a village Panchayat Panchayat Raj System strengthened the local bodies The election of local bodies take place in every five years Unit Road Safety Caution and care make accident rare Traffic rules are the laws that govern how when and why you are allowed to drive any vehicle The traffic safety course education plays an important role in shaping the attitude and behaviour of children and young people ensuring to become responsible drivers pas sengers pedestrians and cyclists Keeping the children safe at all times can be tricky when you cannot be with them always Parents and teachers ensure the safety of the children at home and school But who keeps them safe on the road Therefore educating children about road safety is very important Teaching about road safety to children can be started as soon as they are old enough to step out of the home Three types of traffic signs Mandatory Cautionary and Informatory I Mandatory road signs are the ones that give order regarding dos and don’ts and are to be followed strictly These are generally circular in shape Know your signals What do the three colours red amber and green signify RED means STOP Wait behind the stop line If there are no lines stop before the traffic light at the intersection so that traffic light is clearly visible Wait until a green signal appears before proceeding You may turn left while the signal is red if it is not prohibited by a sign But give importance to pedestrians and other traffi AMBER means CAUTION-You may move on if the amber appears after you have already crossed the stop line or when you feel that your stopping may cause accident Anyhow be extra careful GREEN means GO Proceed ahead ensuring that the way is clear You can make a right or left turn if not prohibited by signs but take special care and give way to pedestrians crossing the roa GREEN ARROW means that you can go in the direction shown by the arrow Cross roads and pedestrian crossing Children have a tendency just to sprint across the street as they like Educate the children to never run across or along the roa Children can get distracted easily and leave their parent’s hand to run or sprint away Children should cross only at pedestrian crossing Pedestrian Crossing The pedestrian crossing was instituted in Britain in The roads were marked by dotted lines On the pavement there were striped Belisha beacon light poles named after Britain’s Minister of transport L Horre-Belisha The Zebra crossing with black and white stripes was developed after the Second World War Road signs markings traffic signals and other traffic devices are there to guide the road users and hence are the languages of the roa Every road user whether a pedestrian two-wheeler rider driver of four wheeled vehicle should have knowledge regarding these traffic controlling devices and should be aware of what they signify Traffic signs are there to regulate traffic warn about hazards and to guide the road user Always use pavements Children must use the pavements while walking on the roa Pedestrian Dos Walk on any side of the road if there are footpaths On roads without footpath walk on your extreme rightside facing the oncoming traffi Use zebra crossing foot over bridge subways to cross the roads Where such facilities are not available be extra cautious while crossing the roa Children below years of age should cross the road with the help of elders Cross the road when the vehicles are at a safe distance Wear light coloured dresses during night Don’ts Don’t cross the road hastily by running Don’t cross the road in front of or in between parked vehicles Don’t try to cross the road from blind corners turnings where you are not visible to the vehicle drivers Don’t jump over the railings to cross roa Staying safe on a bicycle Most children use bicycle to go to schools So they should be aware of the road rules and road safety Moreover they should maintain their bicycles in good condition Dos Cycle must be fitted with standard gadgets bell brakes rearview mirror both front and back mudguard painted white reflective tapes affixed at the front and back Cycle on the extreme left side of the road or use service road if available Avoid busy roads Keep a safe distance from fast motorized vehicles Give proper indications before stopping or turning Don’ts Don’t indulge in any kinds of stunts Don’t load the cycle with another person or heavy goods Don’t ride holding onto other fast moving vehicle While commuting in School transportation Dos Get up early and start early from home Board the bus from the designated bus stop in a queue Once inside the bus behave properly Hold on to the railings of the bus Alight only at the designated bus stop Get down only when the bus has stopped completely If the driver is not following the road safety norms bring it to the notice of school authorities parents or traffic helpline Don’ts Do not rush or run to catch your bus Do not stand on the steps of the bus Do not make noise that may distract the driver Do not put any part of the body outside the bus Do not get in or get down from a moving bus As pillion rider co-passengers Always wear helmet seatbelt Do not indulge in talking with the driver Children above years of age should occupy the back seat Play at safe places Do not play on roads Look for a playground or vacant land to play Do not play around a vehicle parked inside your school premises colony or near your residence Exercise I Answer the following Prepare slogans for road safety Identify the following signs Discuss about the statistics of accidents dat Debate Is wearing helmet necessary Draw posters related to road safety English Unit Festivals Reading How wonderful and beautiful was the morning of Eid The trees looked greener the field more festive the sky had a lovely pink glow The sun seemed brighter and more dazzling than before to wish the world a very happy Eid The village was filled with excitement Everyone was up early to go to the Eidgah The boys were more excited than the others They had been talking about it all the time Finally the day had come And now they were impatient They were taking their treasure out of their pockets counting and recounting it before putting it back Mahmood counted One two ten twelve he had twelve coins Mohsin had One two three eight nine fifteen coins With this money they would buy countless things toys sweets paper-pipes rubber balls and much more The happiest of the boys was Hamid He was only four thin and poorly dressed Last year his father had died of cholera Then his mother also died From then Hamid lived with his old Granny Ameena and was as happy as a lark She told him that his father had gone to earn money And that his mother had gone to Allah to get lovely gifts for him This made Hamid very happy Hamid had no shoes on his feet the cap on his head was soiled and tattered He knew that his father would come back with sacks full of silver and his mother with gifts from Allah Then he would have more than Mahmood Mohsin Noorey and Sammi Hamid’s Granny Ameena was sad It was Eid and she did not have even a handful of grains If only her son were there it would have been a different kind of Eid Hamid went to his grandmother and said Granny I will be the first to get back Don’t worry Ameena was worried Other boys were going out with their fathers How could she let him go to the fair all by himself Hamid left with the other boys Hamid was like one with wings on his feet They ran on ahead of the elders and waited for them under a tree They reached the suburbs of the town On both sides of the road were big houses of the rich In the gardens mango and leechee trees were full of fruits Then they came across the stores of the sweets vendors All decorated so gaily Every store had sweets piled up in heaps like mountains Take turns and read this section aloud Soon the roads began to get crowded Some people were on tongas and ekkas some in motorcars all wearing perfume all bursting with excitement The children were a calm and contented lot For village children everything in the town was wonderful Whatever caught their eye they stood and gaped at it with wonder At last the Eidgah came into view There were row upon row of worshippers as far as the eye could see Newcomers lined themselves behind the ones already there The prayer was over Men embraced each other They descended on the sweet and toy-vendors stores like an army moving to attack There was the merry-go-round with wooden elephants horses and camels You paid one paisa and had twenty-five rounds of fun Mahmood and Mohsin and Noorey and other boys mounted the horses and camels Hamid watched them from a distance All he had were three paisas He couldn’t part with a third of his treasure for a few miserable rounds They were soon done with their rides Then it was time for the toys There was a row of stalls on one side with all kinds of toys soldiers and milkmaids kings and ministers water-carriers and washer-women and holy men Mahmood bought a policeman in khaki with a red turban on his head and a gun on his shoulder Mohsin bought a water-carrier while Noorey got a lawyer Those toys cost two paisa each Hamid had only three paisas How could he buy such expensive toys If they dropped out of his hand they would be smashed to bits If a drop of water fell on them the colour would run But he looked at them hungrily and wished he could hold them in his hands for just a moment or two After the toys it was sweets Someone bought sesame seed candy others gulab-jamuns or halva They smacked their lips with relish Only Hamid was left out Read this section in pairs Next to the sweet-shops there were a few hardware stores and jewellery shops The boys were not interested in anything there So they walked ahead except Hamid It occurred to Hamid that his granny did not have a pair of tongs Each time she cooked chappatis the iron pan burnt her hands If he bought her a pair of tongs she would be very pleased She would never again burn her fingers It would be a really useful thing to have in the house So Hamid stopped to look at a pile of tongs at the hardware shop and asked the shopkeeper How much for this pair of tongs The shopkeeper looked at him and replied It’s not for you Is it for sale or not Why should it not be for sale It will cost you six paisa Hamid’s heart sank Tell me the correct price he said All right it will be five paisa take it or leave it Hamid said Will you give it to me for three Then he walked away afraid that the shopkeeper would scream at him But the shopkeeper did not scream On the contrary he called Hamid back and gave him the pair of tongs Hamid carried it on his shoulder as if it were a gun to show it to his friends Mohsin laughed and said Are you crazy What will you do with the tongs Hamid flung the tongs on the ground and replied Try and throw your water carrier on the ground It will break Mahmood said Are these tongs some kind of toy Why not replied Hamid Place them across your shoulders and it is a gun carry them in your hands and it is like the musical instrument carried by singing monks My tongs are like a tiger among toys Sammi who had bought a small tambourine asked Will you exchange them for my tambourine It is worth eight paisas But Hamid would not The pair of tongs won every one over to its side By eleven the village was again filled with excitement All those who had gone to the fair were back at home Hamid too returned home As soon as she heard his voice Granny Ameena ran out of the house picked him up and kissed him Suddenly she noticed the tongs in his hand Where did you find these tongs I bought them How much did you pay for them Three paisas You are a stupid child It is almost noon and you haven’t had anything to eat or drink Couldn’t you find anything better in the fair than this pair of iron tongs Hamid replied in an injured tone You burn your fingers on the iron pan so I bought them Granny was deeply moved by Hamid’s selflessness She started crying For the wretched woman the pair of tongs was as precious as sacks of silver Poem The computer swallowed grandma The computer swallowed grandma Yes honestly it's true She pressed Control and Enter And disappeared from view It devoured her completely The thought just makes me squirm She must have caught a virus Or been eaten by a worm I’ve searched through the recycle bin And files of every kind I’ve even used the Internet But nothing did I find In desperation I asked Jeeves My searches to refine The reply from him was negative Not a thing was found Online So if inside your Inbox My Grandma you should see Please Copy Scan and Paste her In an email back to me Supplementary On Monday morning Monday morning found Tom Sawyer miserable Monday morning always found him so because it began another week’s slow suff ering in school He generally began that day with wishing he had had no holiday in between it made the going into prison again so much worse Tom lay thinking Presently it occurred to him that he wished he was sick then he could stay home from school He examined himself No sickness was found and he investigated again This time he could detect stomach ache but it soon grew feeble and presently died wholly away He reflected further Suddenly he discovered something One of his upper front teeth was loose This was lucky he was about to begin to groan as a starter as he called it when it occurred to him that if he came into court with that argument his aunt would pull it out and that would hurt So he thought he would hold the tooth in reserve for the present and seek further Nothing off ered for some little time and then he remembered hearing the doctor tell about a certain thing that laid up a patient for two or three weeks and threatened to make him lose a finger So the boy eagerly drew his sore toe from under the sheet and held it up for inspection But now he did not know the necessary symptoms However it seemed well worthwhile to chance it so he fell groaning with considerable spirit But Sid slept on unconscious Tom groaned louder and fancied that he began to feel pain in the toe No result from Sid Tom was panting with his exertions by this time He took a rest and then swelled himself up and fetched a succession of admirable groans Sid snored on Tom was aggravated He said Sid Sid and shook him This course worked well and Tom began to groan again Sid yawned stretched then brought himself up on his elbow with a snort and began to stare at Tom Tom went on groaning Sid said Tom Say Tom No response Here TOM What is the matter Tom And he shook him and looked in his face anxiously Tom moaned out Oh don’t Sid Don’t shake me Why what’s the matter Tom I must call auntie No never mind It’ll be over by and by maybe Don’t call anybody But I must Don’t groan so Tom it’s awful How long you been this way Hours Ouch Oh don’t stir so Sid you’ll kill me Tom why didn’t you wake me sooner Oh Tom DON’T It makes my flesh crawl to hear you What is the matter I forgive you for everything Sid Groan Everything you’ve ever done to me When I’m gone-- Oh Tom you aren’t dying are you Don’t Tom oh don’t Maybe I forgive everybody Sid Groan Tell em so Sid And Sid you give my window-sash and my cat with one eye to that new girl that’s come to town and tell her- But Sid had snatched his clothes and gone Tom was suffering in reality now his imagination was working well and so his groans had gathered quite a genuine tone Sid flew down-stairs and said Oh Aunt Polly come Tom’s dying Dying Yes’m Don’t wait Come quick Rubbish I don’t believe it But she fled upstairs nevertheless with Sid and Mary at her heels And her face grew white too and her lip trembled When she reached the bedside she said You Tom Tom what’s the matter with you Oh auntie I’m What’s the matter with you What is the matter with you child Oh auntie my sore toe’s dying The old lady sank down into a chair and laughed a little then cried a little then did both together This made her feel better and she said Tom what a turn you did give me Now you shut up that nonsense and climb out of this The groans stopped and the pain vanished from the toe The boy felt a little foolish and he said Aunt Polly it seemed dying and it hurt so I never minded my tooth at all Your tooth indeed What’s the matter with your tooth One of them is loose and it aches perfectly awful There there now don’t begin that groaning again Open your mouth Well Your tooth is loose but you’re not going to die from that Mary get me a silk thread and a chunk of fire out of the kitchen Tom said Oh please auntie don’t pull it out It won’t hurt any more I wish I may never stir if it does Please don’t auntie I don’t want to stay home from school Oh you don’t don’t you So all this row was because you l thought you’d get to stay home from school and go fishing Tom Tom I love you so and you seem to try every way you can to break my old heart with your mischief By this time the dental instruments were ready The old lady made one end of the silk thread fast to Tom’s tooth with a loop and tied the other to the bedpost Then she caught hold of the chunk of fire and suddenly pushed it almost into the boy’s face The tooth was hanging loosely by the bedpost now Unit The wind on haunted hill Reading Who Whoo Whooo cried the wind as it swept down from the Himalayan snows It hurried over the hills and passes and hummed and moaned in the tall pines and deodars On Haunted Hill there was little to stop the wind–only a few stunted trees and bushes and the ruins of what had once been a small settlement On the slopes of the next hill there was a small village People kept large stones on their tin roofs to prevent them from blowing away There was nearly always a wind in these parts Even on sunny days doors and windows rattled chimneys choked clothes blew away Three children stood beside a low stone wall spreading clothes out to dry On each garment they placed a rock Even then the clothes fluttered like flags and pennants Usha dark haired and rose cheeked struggled with her grandfather’s long loose shirt She was eleven or twelve Her younger brother Suresh was doing his best to hold down a bed-sheet while Binya a slightly older girl Usha’s friend and neighbour was handing them the clothes one at a time Once they were sure everything was on the wall firmly held down by rocks they climbed up on the flat stones and sat there for a while in the wind and the sun staring across the fields at the ruins on Haunted Hill I must go to the bazaar today said Usha I wish I could come too said Binya But I have to help with the cows and the housework Mother isn’t well I can come said Suresh He was always ready to visit the bazaar which was three miles away on the other side of Haunted Hill No you can’t said Usha You must help Grandfather chop wood Their father was in the army posted in a distant part of the country and Suresh and his grandfather were the only men in the house Suresh was eight chubby and almond-eyed Won’t you be afraid to come back alone he asked Why should I be afraid There are ghosts on the hill I know but I will be back before it gets dark Ghosts don’t appear during the day Are there many ghosts in the ruins asked Binya Grandfather says so He says that many years ago over a hundred years ago English people lived on the hill But it was a bad spot always getting struck by lightning and they had to move to the next range and build another place But if they went away why should there be any ghosts Because Grandfather says during a terrible storm one of the houses was hit by lightning and everyone in it was killed Everyone including the children Were there many children There were two of them A brother and sister Grandfather says he has seen them many times when he has passed through the ruins late at night He has seen them playing in the moonlight Wasn’t he frightened No Old people don’t mind seeing ghosts Usha set out on her walk to the bazaar at two in the afternoon It was about an hour’s walk She went through the fields now turning yellow with flowering mustard then along the saddle of the hill and up to the ruins The path went straight through the ruins Usha knew it well she had often taken it while going to the bazaar to do the weekly shopping or to see her aunt who lived in the town Wild flowers grew in the crumbling walls A wild plum tree grew straight out of the floor of what had once been a large hall Its soft white blossoms had begun to fall Lizards scuttled over the stones while a whistling-thrush its deep purple plumage glistening in the soft sunshine sat in an empty window and sang its heart out Usha sang to herself as she tripped lightly along the path Soon she had left the ruins behind The path dipped steeply down to the valley and the little town with its straggling bazaar Usha took her time in the bazaar She bought soap and matches spices and sugar none of these things could be had in the village where there was no shop and a new pipe stem for her grandfather’s hookah and an exercise book for Suresh to do his sums in As an afterthought she bought him some marbles Then she went to a mochi’s shop to have her mother’s slippers repaired The mochi was busy so she left the slippers with him and said she’d be back in half an hour She had two rupees of her own saved up and she used the money to buy herself a necklace of amber-coloured beads from an old Tibetan lady who sold charms and trinkets from a tiny shop at the end of the bazaar Usha met her Aunt Lakshmi who took her home for tea Usha spent an hour in Aunt Lakshmi’s little flat above the shops listening to her aunt talk about the ache in her left shoulder and the stiff ness in her joints She drank two cups of sweet hot tea and when she looked out of the window she saw that dark clouds had gathered over the mountains Usha ran to the cobbler’s and collected her mother’s slippers The shopping bag was full She slung it over her shoulder and set out for the village Take turns and read this section aloud Strangely the wind had dropped The trees were still not a leaf moved The crickets were silent in the grass The crows flew round in a circle then settled down for the night in an oak tree I must get home before dark said Usha to herself as she hurried along the path But already the sky was darkening The clouds black and threatening looked over Haunted Hill This was March the month for storms A deep rumble echoed over the hills and Usha felt the first heavy drop of rain hit her cheek She had no umbrella with her the weather had seemed so fine just a few hours ago Now all she could do was tie an old scarf over her head and pull her shawl tight across her shoulders Holding the shopping bag close to her body she quickened her pace She was almost running But the raindrops were coming down faster now Big heavy pellets of rain A sudden flash of lightning lit up the hill The ruins stood out in clear outline Then all was dark again Night had fallen I won’t get home before the storm breaks thought Usha I’ll have to shelter in the ruins She could only see a few feet ahead but she knew the path well and she began to run Suddenly the wind sprang up again and brought the rain with a rush against her face It was cold stinging rain She could hardly keep her eyes open The wind grew in force It hummed and whistled Usha did not have to fight against it It was behind her now and helped her along up the steep path and on to the brow of the hill There was another flash of lightning followed by a peal of thunder The ruins looked up before her grim and forbidding She knew there was a corner where a piece of old roof remained It would give some shelter It would be better than trying to go on In the dark in the howling wind she had only to stay off the path to go over a rocky cliff edge Who whoo whooo howled the wind She saw the wild plum tree swaying bent double its foliage thrashing against the ground The broken walls did little to stop the wind Usha found her way into the ruined building helped by her memory of the place and the constant flicker of lightning She began moving along the wall hoping to reach the sheltered corner She placed her hands flat against the stones and moved sideways Her hand touched something soft and furry She gave a startled cry and took her hand away Her cry was answered by another cry half snarl half screech and something leapt away in the darkness It was only a wild cat Usha realized this when she heard it The cat lived in the ruins and she had often seen it But for a moment she had been very frightened Now she moved quickly along the wall until she heard the rain drumming on the remnant of the tin roof Once under it crouching in the corner she found some shelter from the wind and the rain Above her the tin sheets groaned and clattered as if they would sail away at any moment But they were held down by the solid branch of a straggling old oak tree Usha remembered that across this empty room stood an old fireplace and that there might be some shelter under the blocked-up chimney Perhaps it would be drier than it was in her corner but she would not attempt to find it just now She might lose her way altogether Her clothes were soaked and the water streamed down from her long black hair to form a puddle at her feet She stamped her feet to keep them warm She thought she heard a faint cry was it the cat again or an owl but the sound of the storm blotted out all other sounds There had been no time to think of ghosts but now that she was in one place without any plans for venturing out again she remembered Grandfather’s story about the lightning blasted ruins She hoped and prayed that lightning would not strike her as she sheltered there Thunder boomed over the hills and the lightning came quicker now only a few seconds between each burst of lightning Then there was a bigger flash than most and for a second or two the entire ruin was lit up A streak of blue sizzled along the floor of the building in at one end and out at the other Usha was staring straight ahead As the opposite wall was lit up she saw crouching in the disused fireplace two small figures they could only have been children The ghostly figures looked up staring back at Usha And then everything was dark again Read this section carefully Usha’s heart was in her mouth She had seen without a shadow of a doubt two ghostly creatures at the other side of the room and she wasn’t going to remain in that ruined building a minute longer She ran out of her corner ran towards the big gap in the wall through which she had entered She was halfway across the open space when something someone fell against her She stumbled got up and again bumped into something She gave a frightened scream Someone else screamed And then there was a shout a boy’s shout and Usha instantly recognized the voice Suresh Usha Binya It’s me It’s us They fell into each other’s arms so surprised and relieved that all they could do was laugh and giggle and repeat each other’s names Then Usha said I thought you were ghosts We thought you were a ghost said Suresh Come back under the roof said Usha They huddled together in the corner chattering excitedly When it grew dark we came looking for you said Binya And then the storm broke Shall we run back together asked Usha I don’t want to stay here any longer We’ll have to wait said Binya The path has fallen away at one place It won’t be safe in the dark in all this rain Then we may have to wait till morning said Suresh And I’m feeling hungry The wind and rain continued and so did the thunder and lightning but they were not afraid now They gave each other warmth and confidence Even the ruins did not seem so forbidding After an hour the rain stopped and although the wind continued to blow it was now taking the clouds away so that the thunder grew more distant Then the wind too moved on and all was silent Towards dawn the whistling-thrush began to sing Its sweet broken notes flooded the rain washed ruins with music Let’s go said Usha Come on said Suresh I’m hungry As it grew lighter they saw that the plum tree stood upright again although it had lost all its blossoms They stood outside the ruins on the brow of the hill watching the sky grow pink A light breeze had sprung up When they were some distance from the ruins Usha looked back and said Can you see something there behind the wall It’s like a hand waving I can’t see anything said Suresh It’s just the top of the plum tree said Binya They were on the path leading across the saddle of the hill Goodbye goodbye Voices on the wind Who said goodbye asked Usha Not I said Suresh Not I said Binya I heard someone calling It’s only the wind Usha looked back at the ruins The sun had come up and was touching the top of the walls The leaves of the plum tree shone The thrush sat there singing Come on said Suresh I’m hungry Goodbye goodbye goodbye goodbye Poem The listeners Is there anybody there said the Traveller Knocking on the moonlit door And his horse in the silence champed the grasses Of the forest’s ferny floor And a bird flew up out of the turret Above the Traveller’s head And he smote upon the door again a second time Is there anybody there he said But no one descended to the Traveller No head from the leaf-fringed sill Leaned over and looked into his grey eyes Where he stood perplexed and still But only a host of phantom listeners That dwelt in the lone house then Stood listening in the quiet of the moonlight To that voice from the world of men Stood thronging the faint moonbeams on the dark stair That goes down to the empty hall Hearkening in an air stirred and shaken By the lonely Traveller’s call Walter de la Mare Supplementary The red- headed league Dr Watson visits the apartment of his friend Sherlock Holmes He finds detective Holmes talking to a client with bright red hair Mr Jabez Wilson Holmes asks Dr Watson to hear the unusual story of the client Wilson says that he runs a pawnshop One day in his shop his assistant Vincent Spaulding showed an advertisement in the newspaper that announced an opening in the Red-Headed League The announcement promised a salary of four pounds a week Spaulding urged Wilson to apply The timid red haired pawnbroker did so Wilson was accepted into the League by Mr Duncan Ross the head of the League He learned that the nominal duties consisted only of his coming to the office from am until pm each day and copying out the Encyclopaedia Britannica in longhand This he did for eight weeks until one day he arrived at the office to find it closed with a notice on the door that the Red-Headed League had been dissolved He was so disturbed by the thought that someone had been playing a practical joke on him that he came to Holmes for a solution Holmes promises to look into the case and Wilson leaves Holmes and Dr Watson move to Wilson’s shop in Saxe-Coburg Square at once Let’s read this play extract to know the happenings Outside Wilson’s shop in Saxe-Coburg Square Holmes is walking up and down Now and then he hits the ground outside the shop with his walking stick Then he knocks on the door of the shop Spaulding opens the shop door The legs of his trousers are dirty Spaulding Can I help you Scene Holmes Yes How can I get to the Strand Spaulding Third on the right and fourth on the left He goes back into the shop and closes the door Holmes He’s a clever young man Watson Watson Is he Why did you ask about the Strand You know London very well You wanted to see him Holmes Did you notice his trousers Watson His trousers No But I saw you hit the ground with your stick Holmes My dear Watson this is not the time for discussion I must go and look at the road behind Saxe-Coburg Square You had to go to work Watson Yes to the hospital Holmes Right but I want your help tonight Come at ten o’clock Scene The strong room at a bank with many boxes and crates in it Holmes Watson Jones and a policeman are on stage hiding behind some boxes Holmes Is everything ready upstairs Mr Jones Jones My men are waiting at the front door of the bank and near the shop Holmes Good Now we must be quiet and wait He puts out the light The strong room is dark but we can see the men waiting behind the crates Nothing happens Watson looks at his watch Watson whispering It’s Holmes When Holmes Sshh Don’t spoil our investigation They see a light coming through the stone floor Suddenly the stones give way First a hand with a gun comes out of the ground then another hand Spaulding comes out followed by Ross Spaulding to Ross Now have you got With his light Holmes comes out from behind his box and hits Spaulding’s arm Now the gun is on the ground Ross quickly gets back into the tunnel Jones wants to stop him but he cannot Holmes You can’t get away John Clay Spaulding No But Ross My friend Holmes There are three men waiting for him at the other end Spaulding You think of everything Mr Holmes You’re very clever Holmes So are you John Clay Your Red-Headed League was clever Scene Sherlock Holmes’s study Holmes and Watson are sitting on chairs Holmes There was never any red-headed league The villains wanted Wilson away from the shop for some hours every day Then Clay saw the colour of Ross’s hair and thought of a Red-Headed League So when Wilson went to work in their office every day they had time to make their tunnel Very clever Watson So Spaulding is John Clay the notorious thief When did you first know that Holmes I suspected when Spaulding was happy to work for half-wages Why I thought Spaulding often went down to the cellar What’s he doing down there I thought Tunnels Is Spaulding making a tunnel I thought To another building Watson you saw me hitting the ground with my stick outside the shop Watson Yes now I understand You wanted to know if the cellar was in front of the shop Holmes Yes I did And it wasn’t The cellar was behind the shop Then I saw the man Spaulding I recognized him immediately Did you see his trousers They were dirty Watson Why Because making a tunnel is dirty work Watson Very clever Holmes Holmes Then I went into the next street at the back of the shop And what did I see The Bank Watson The bank yes Of course Holmes Why is that young man making a tunnel I thought To get into the bank’s strong room of course Watson But why tonight How did you know Holmes Because they closed the offices of the Red-Headed League The tunnel must be ready I thought And Saturday is a good day The bank does not open on Sunday It would have given the thieves enough time to get away Watson laughing But they didn’t get away Holmes You’re very clever Holmes in a serious tone That’s very true Watson Unit Listen to your teacher delivering the speech It is a great occasion for the batch of graduating teachers It is also a great day for the faculty and administration to have given the world another set of people whose impact is going to be proportionately large I am honoured to be here with all of you to share your joy your hopes As teachers on behalf of all the lives you will touch I have a few things to ask of you It is going to be a long and somewhat unusual list so I seek your indulgence Here goes my list First I pray to you that you teach me the value of inclusion The people who write my textbooks and the ones who prescribe the syllabi will not tell you how important inclusion is for me to do well in life Without the sense of inclusion I will not know that boundaries are meant to be pushed not to be lived in Take for example the fact that I clean my house but empty my garbage on the road That is because the road is not included in what I feel is my own I feed my own child but do not ask if the maid has eaten today Her hunger is not included in my hunger I take my child to the movie but do not ask him to call the neighbour’s child That child is outside my zone of parenting So Teacher teach me inclusion I pray to you to teach me to communicate As I get caught in the rat race of the common entrance tests and cut throat competition everyone will tell me that my survival depends on my power to impress The more I want to impress the less I will communicate Teach me to speak and be able to write so that I am able to convey what I feel the simplicity of a child and the nakedness of a flower those who cannot speak or hear people less gifted less privileged than I am those who have come before me and those who will follow things animate and inanimate Teach me to communicate with I pray to you to make me learn More than that Teacher teach me how I can learn to learn As you prepare me for the wide world in which I need to fend for myself and for others one-time learning will not be good enough I will have to have the ability to learn newer and more difficult things Some of it I will need to learn very quickly In all this what will become critical is the process of learning itself more than just what I am able to learn Help me to learn newer ways to learn And that will make learning a joy for me As I learn to learn from unusual sources I pray that you teach me to appreciate the interconnected nature of things Teach me not just about the way the waves rise but what causes them to fall Teach me to appreciate that the trees I fell the small creatures I kill with indiscriminate use of fertilizers and pesticides on the ground the urban decay I cause with my consumerism all add to awesome imbalances in the natural state of things that cause death and destruction and can one day engulf me and mine Each time I see a scavenging bird on my city’s skyline teacher tell me why the singing birds are going away And tell me how I can see them perched on my window sill again you to teach me not just the ability to answer but also the power to question Everyone is telling me to do as I am told Before I know it I am enslaved It is because we do not ask questions Only if we ask questions can we get answers If we get the answers we can explore how to establish a better order of things If we ask questions we will also learn to be accountable We will be more willing to accept that when we ask the questions we can be questioned too In that exchange truth will emerge As I learn the power of humility teach me about how all things that sustain life on earth come free Teacher I will live in an increasingly commercial world I will be judged on how much value I can create by buying and selling things My personal success will be determined by my ability to consume I will not be able to always question the ways of the world but do tell me how all things that truly support life come without payment pray to you to teach me the power of silence teach me also to raise my voice to protect the truth In a world where every moment is going to be full of noise teach me to be quiet Teach me to appreciate the sound of silence For in silence I can contemplate the power within Teach me to make my point without having to raise my voice And teach me to raise my voice teacher when my silence can hurt another life Finally I pray to you to teach me to develop a world view of things Teach me to appreciate that poverty disease and hunger have no nationality For hundreds of years I have lived in a world with narrow domestic walls In that world patriotism was founded on religious bigotry racial intolerance and man’s remarkably short view of time It was bounded by barbed wires and smoking guns In the future that I want to create I want you to teach me the power of loving my fellow human beings Teach me to appreciate diversity and dialogue Teach me tolerance and teach me to remove the word foreign and foreigner from my vocabulary This is my world teacher In this world I do not want to be a foreigner to anyone and I do not want to treat anyone like a foreigner With these thoughts allow me to conclude my convocation address May this day remain with you forever and may your path be illuminated with the power of a thousand Suns Thank You and Good Luck Poem Your Space Speak gently It is better far To rule by love than fear Speak gently let not harsh words mar The good we might do here Speak gently Love doth whisper low The vows that true hearts bind And gently Friendship’s accents flow Aff ection’s voice is kind Speak gently to the little child Its love be sure to gain Teach it in accents soft and mild It may not long remain Speak gently to the young for they Will have enough to bear Pass through this life as best they may T is full of anxious care Speak gently to the aged one Grieve not the care-worn heart The sands of life are nearly run Let such in peace depart Speak gently kindly to the poor Let no harsh tone be heard They have enough they must endure Without an unkind word Speak gently to the erring know They may have toiled in vain Perchance unkindness made them so Oh win them back again Speak gently He who gave his life To bend man’s stubborn will When elements were in fierce strife Said to them Peace be still Speak gently tis a little thing Dropped in the heart’s deep well The good the joy which it may bring Eternity shall tell Supplementary Taking the bully by horns Meena Anu and Ajay are in Class Anu is the shortest in their class and Ajay is always making fun of her height He calls her by nick names which draw attention to her size and is constantly patting her on the head to show how short she is Anu already self conscious feels hurt but she doesn’t say anything Meena sometimes laughs with Ajay when he is mocking Anu but she also feels sorry for her Have you or someone you know ever been in a similar situation While growing up it is common for children to tease each other But when someone purposely makes fun of another or forces them to do things even if they make it clear they don’t want to it is called bullying We like to have fun together with friends Sometimes we may even want to do something only because our friends are doing them even if we know it will get us into trouble or is wrong For example Meena knows that Anu feels hurt when Ajay teases her But she does not want to say anything because she is Ajay’s friend and does not want to upset him Ajay knows that Anu is upset but continues to bully her because it gives him a feeling of control Also he enjoys the attention he is getting from others who laugh instead of telling him to stop But is making someone feel unhappy about themselves a sign of strength Actually children who bully others tend to have a low opinion about themselves This means that there maybe things about themselves that they don’t like or feel ashamed about They therefore want to humiliate or put another person down in order to feel better about who they are They think they will fit in with the crowd if they show up another’s difference even if it means picking on the other person Maybe Ajay is unhappy with his performance in the exams maybe Meena doesn’t like her big ears and doesn’t want anyone to notice them So they turn their attention to Anu who is quiet and doesn’t respond Seeing her reactions to the way they treat her makes them feel better about their own problems Bullying needn’t always be violent like hitting someone or verbally abusing them If a group of children always refuse to include a particular child in their games that’s bullying too Or if you spread stories about someone and it is causing them sadness It’s quite simple if through your actions you target someone repeatedly to hurt them it is bullying Ragging is another word for bullying Everyone usually knows who the bullies in a school class or neighbourhood are usually They either avoid them out of fear or silently support them because they want to be part of the group But it is important to know that our actions always have consequences Have you heard of the term peer pressure Our peers are people like ourselves usually by age or common interest Your classmates and friends are your peers Sometimes you can find yourself disagreeing with something that everyone is doing but you also end up doing it because you don’t want to be the odd one out It can be something silly like praising a movie everyone’s excited about but you’re not Or it can be something more serious like ragging another child as a group even if you don’t want to There’s huge pressure to act like everyone else and you give in Have you ever bullied anyone Has anyone bullied you Children who are bullied feel dejected and it’s easy to see why Nobody likes to be singled out and insulted in front of others They can lose their confidence feel lonely and isolated Bullies often focus on their target’s appearance Why are you so fat clothes Your clothes are always so loose abilities You can’t even throw a ball and family or social circle Why do you spend so much time with those show-off s Sometimes such comments can aff ect the bullied person so much that it can even have an eff ect on their health and their routine They may not feel like eating fall sick more often get nightmares or find it difficult to fall asleep Concentrating on their studies can be difficult They can even get injured if the bully uses physical force on them Being bullied can also make them develop other problems with their own behaviour They could become very withdrawn stop talking with people around them or they could display extreme anger suddenly Sometimes a child who is bullied can end up bullying someone else just to feel better Is there something you can do to stop bullying If you are being bullied or if you know someone who is getting bullied the best way to stop it is to inform a responsible adult This can be a parent a teacher or anyone who is in a position to do something about the problem The adult can intervene and help the child who is bullying to reflect and understand their inappropriate and unacceptable behaviour Taking a stand is difficult and not all of us can do it But you can speak to your peers about not supporting a bully Because not participating in doing something wrong also matters You can also show your support for the targeted person in small ways include them in your games share things with them speak to them more make them feel included The keyword to stopping bullying is empathy Empathy means the ability to experience the feelings of a person in a situation not as an onlooker but as someone who is also experiencing the situation The more you feel for others the less you will want to bully Sometimes children hesitate to speak up because of a sense of loyalty Will complaining to an adult about peers who are bullying get them into trouble For example if Meena were to tell their teacher about what Ajay does to Anu would it be wrong Meena may feel that she will lose Ajay’s friendship but she will feel better by doing the right thing of standing up for Anu It’s important to learn to distinguish between situations which require intervention and those that don’t And remember she will also be helping Ajay It is not healthy growing up being a bully and Ajay too needs help Many schools and colleges and even work places have strict rules to prevent bullying but it can still happen If you notice it taking place around you make sure you report it so it is stopped You would have then contributed to a safer and more peaceful world This story is by Tulir Centre for the Prevention and Healing of Child Sexual Abuse Chennai Promotes reading and vocabulary skills Promotes use of higher-level thinking skills Promotes creative writing Develops drawing skill Encourages to create comic strips Helps to visualise things Listen to the teacher reading out the material and gathers information from it Read aloud the stories and recites poems with appropriate pause information and pronunciation Answers questions orally and in writing after reading the text Thinks critically compares and contrasts character enters ideas themes and relates them to life Shares his her experiences on his her visit to art exhibition in writing Summarize orally and in writing the given text Locates details sequence of ideas and indentify the main idea Understands the rules of grammar through a variety of situations and pictures and uses them in real life situations Infers the meaning of unfamiliar words by reading there in context Refers dictionary the source to find meaning of new words while reading and writing Adventures of Don Quixote Warm Up My Hand of Imagination Trace around your hand on a white paper Make list of your fi ve choices Draw a picture to indicate what would your fi nger becomes Erase one to fi nger at a time and draw your choice in it’s place Write and share in the class Adventures of Don Quixote Once upon a time in a village  called  La  Mancha  in  Spain  there lived a man who loved  to read about knights Every  day  he  would  read  about  courageous  knights  and  the  incredible adventures  they  had  He  was  so  absorbed  in these stories that he hardly  remembered  to  eat  or sleep The days of Knight  and  Squires  of  exciting  adventures  and  romances  come  alive  in  the hilarious account  of  Don  Quixote's  travels As years passed Don  Quixote  imagines  himself  placed in the world of knights  He convinces Sancho Panza  a  peasant  from  the  same  village to be his squire Don sets on a journey in search of a squire He meets Sanchopanza Sancho how would you like to become my servant and accompany me on a great adventure Your servant An island Are you serious I vow it upon my honour as a knight So will you come with me Your servant Yes if you serve me faithfully and honestly I will reward you with an island Yes Master I will come with you The two men set out on a journey together On the hill in front of them they could see a large old windmill When he saw it Don Quixote’s eyes began to sparkle Look Sancho how dare that hideous ogre block our path What An ogre Where Master that’s a windmill I tell you these are ogres and if you are afraid of them go aside and say your prayers while I engage them in combat Unfortunately Sancho’s shouts and warnings passed unheardDon Quixote and Rocinante charged the windmill at full speed Don Quixote flew towards the windmill and collided with it Master are you alright See I told you it was just a windmill Did I not give you a fair warning Look Sancho The ogre is more seriously wounded than I am Huh Prepare to face my spear Ogre Master that’s a windmill You are absolutely right You are a great knight indeed and you have defeated the fearsome windmill beast In fact the windmill was working perfectly fine Sancho did his best to dissuade Don Quixote from attempting anything else reckless Listen to me Sancho someday people will write of our great exploits But we must prove worthy of that honour by vanquishing villains and upholding justice Do you understand As Don Quixote and Sancho passed a farm they saw a thick cloud of dust appeared Don told him that there was undoubtedly a prodigious army marching in their direction How now At least you must hear the neighing of steeds the sound of trumpets and the rattling of drums Don started to name the leaders and principal knights in each army and to describe the different nations represented I  hear  nothing  but  the  bleating  of  many  sheep  and lambs Your fears prevent you from hearing or seeing aright but if you refuse to follow me to the battle stand aside and I will go on alone Hold sir come back I entreat What madness is this They are verily but sheep and lambs Don Quixote set spurs to Rocinante and charged into the midst of the sheep At this the frightened animals fled helter-skelter The shepherds seeing the cause of their disorder pelting stones that soon he fell wounded to the ground The local peasants all thought Don Quixote was crazy They laughed and taunted as he passed What kind of beast did you defeat this time Ha ha ha Did you fi nally get  those evil sheep  Ha  ha ha Ha ha ha Did you see those cowards run They are right to fear Don Quixote Look it’s Don Quixote the madman Sancho look See how the people welcome us They must have heard of our great deeds Oh no Master listen very carefully they are not welcoming us they are mocking you Don Quixote did not understand and thought the people were cheering for him Very well we shall speak no more of this today But we need more adventures Sancho Yes Master We need more adventures But his house would always be full of children to whom he would tell the most fantastic stories about Knights Squires and Noble quests and all lived happily together going on many more adventures in their imagination Returned to his estate Don Quixote realized that all his adventures were simply a product of his imagination Don Quixote never embarrassed himself further by going on any more quests GLOSSARY knight a man who served his lord as a mounted soldier in armour incredible unbelievable hilarious amusing entertaining ogre monster giant combat fighting between armed forces prodigious impressively great in extent steed horse that is ridden spur a device with a small spike or a spiked wheel that is worn on a rider's heel and used for urging a horse forward Discuss and Answer To Dream the Impossible Dream Don Quixote might be seen as not simply crazy in his refusal to see things as they really are but more like a person who wants to accomplish a greater good and so refuses to compromise his ideals Examples of such people include Nelson Mandela Mahatma Gandhi and Martin Luther King Jr Discuss with examples and other evidence whether or not they think Quixote deserves to be put in the company of real-world idealists or is merely delusional VOCABULARY Homophones are two words that are spelled differently but have the same sound see the birds flying over the sea knight night right write arms alms Homonyms are spelled the same way but differ in meaning Syllable is a unit of pronunciation having one vowel sound with or without surrounding consonants forming the whole or a part of a word for example there are two syllables in water Wa ter adventure ad ven ture syllables courageous incredible knight hilarious excitement peasant imagine shepherd entreat WATER ACTIVITIES BONFIRE ROCK CLIMBING MOUNTAIN BIKING SPEAKING Jack Don't you know how simple machines make your life easy Jimmy Um I don't know what simple machines are Jack Simple machines are mechanical devices for applying force like a wedge or ramp Jimmy Oh wow How I did not know this Jack Like the wheels on hospital bed and IV pole They help you move people faster by reducing the friction Jimmy Is the stick over there that the TV is attached to is that a simple machine too Jack Yes it is it's a lever The wheels on the bus are simple machines they make the bus move Jimmy What about the doors Jack Yeah the driver pulls a lever and the doors open and you climb up the inclined plane aka the stairs The cable in the elevator is wrapped around a groove in the wheel and axle an electric motor pulls the cable lifting the car between floors Jimmy So the wheels on the rolling chair are too by rolling the chair back instead of lifting the chair back Jack Yes they are they move the chair and reduce the friction A time I was very late A funny story about my friend I met someone very interesting An unusual event A funny story about my life Think about your story When did it happen Where were you Who was there What happened PICTO GRAMMAR Can you jump higher than this building Which is more important to us The sun or moon The moon gives us light at night when we need it But the sun gives us light only in the day when we don’t need it Which fish is the most famous What can be smarter than a talking bird What is worse than finding half a warm in your apple Spitting the other half out The moon Why Yes Because this building cannot jump The Star fish A Spelling Bee USE GRAMMAR Down Across The man ever whose age has been verified is Jiroemon Kimura Deserts are the places on Earth Antarctica is the-- continent in the world Russia is the country in the world The elephant is the-- animal in the world Mercury is the- planet to the sun Mount Everest is the mountain in the world Vatican City is the-- country in the world Diamonds are the-- material in the world The cheetah is the-- animal in the world Emotional experiences   The most frightened I’ve ever been   The happiest moment I’ve ever had   The most nervous I’ve ever been Musical experiences   The best song I’ve ever heard   The worst song I’ve ever heard   The longest time I’ve ever danced Places in your life   The most dangerous place I’ve been in   The cheapest restaurant I’ve eaten in   The most boring town I’ve ever visited WRITING Similarities Differences is similar to on the other hand both however also But too in contrast to as well differs from while unlike CREATIVE WRITING Local Historians   Ask students to collect stories about their town from older people    Ask them to fi nd out how the streets were named    Are there any interesting people or legends to which the street names refer     Are there any local places in town about which people tell stories     Any haunted houses   Let students fi nd out when the town was founded and by whom    Visit a local historical society to see old photographs or artefacts Let students create an original historical fi ction   Describe the town from the point of view of a fi ctitious citizen who might have lived  in the town long ago Include local issues of the time in the story Write the story of the  town from the fi ctionalized point of view of a resident who actually lived Language Check Point George is the  smartest and  intelligent staff of  this company Kayal is more  intelligent and  smarter than  Saral It is my the best  genre of music George is the  smartest and most  intelligent staff of  this company Kayal is smarter  and more intelligent  than Saral It is my best genre  of music When two degrees of  adjectives are used while the  fi rst one is superlative the  second one also should be  superlative When both adjectives are in  the same degree adjective  having ‘more’ must come  after adjective having ‘er If any possessive pronoun or  possessive case proceeds the  superlative degree then ‘the’  cannot be used The Age of Chivalry Poem Warm Up Back in the days of old when knights were bold who with a sword or lance in armour sought romance It was the age of chivalry long ago in man’s history when to fi ght for a righteous cause one did gain considerable applause It was mainly for show love and glory they deemed themselves being worthy to capture the heart of some fair maiden which was the most desired prize laden Oh they would strike heavy blows on all of their opponents and foes in a one to one combat defying death as crowds watched with abated breath Yes it was far back in those days of yore that courage and strength came to the fore where there was this life and death struggle   such issues at hand the knights would juggle And in fighting for their country faith and king noble impressions on people’s minds would ring that even through the ages are held in high esteem those knights in shinning armour do now all seem There are many legends based on their heroic exploits a legacy of tales which have been told with much adroit highlighting aspects of human wisdom related to virtue and vice and the lessons to be learnt are those of goodness and sacrifice History usually repeats itself time and again as it often happens a situation comes when we’re asked to do something for a just cause and acting with chivalry we shouldn’t pause George Krokos About the Poet George Krokos was born on June in Samos Greece and now lives in Melbourne Australia He is an aspiring poet who has written quite a number of poems inspired by nature science philosophy and the spiritual aspects of life He has studied eastern and western religions and associated philosophy for over years and has practised various forms of Yoga and meditation GLOSSARY lance a long weapon with a wooden shaft and a pointed steel head formerly used by a horseman in charging chivalry the medieval knightly system with its religious moral and social code abated unpleasant impressions feelings exploits adventure adroit clever or skilful READ AND UNDERSTAND When to fight for a righteous cause one did gain considerable applause And in fighting for their country faith and king noble impressions on people’s minds would ring There are many legends based on their heroic exploits a legacy of tales which have been told with much adroit CREATIVE WRITING Concrete Poems Concrete poems are made up of words that have been placed in such a way that they make the shape of an object and also use words to describe the object Start by making a simple outline of the shape or object an animal a football a fruit etc large enough to fill a piece of paper Then brainstorm a minimum of ten words and phrases that describe the shape List action and feeling words as well Next place a piece of paper over the shape and decide where your words are going to be placed so that they outline your shape but also fit well together Separate words and phrases with commas Alice in Wonderland Supplementary Alice was beginning to get very tired of sitting by her sister on the  bank and of having nothing to do  once or twice she had peeped into  the book her sister was reading but it had no pictures or conversations  in  it  and  what  is  the  use  of  a  book'  thought  Alice  without  pictures  or  conversation   So  she  was  considering  in  her  own  mind  as  well  as  she  could  for  the  hot  day made  her  feel  very  sleepy  and  stupid   whether the pleasure of making a daisy-chain would be worth the trouble of getting up  and  picking  the  daisies when  suddenly  a White Rabbit with pink eyes ran close  by her The Rabbit pulled a watch out of his  pocket  to check  the  time He shook his  head then disappeared down a rabbit's  hole  I must fi nd out why he's in such a  hurry   cried Alice  Filled with  curiosity  she ran to the rabbit's hole and peeped  through the entrance The hole dropped  suddenly and Alice fell She fell for a long time when suddenly she came upon a little three-legged table  all made of solid glass There was nothing on it except a tiny golden key When she looked around again she came upon a low curtain she had not noticed  before  and  behind  it  was  a  little  door  about  fi fteen  inches  high  She  tried  the  little  golden key in the lock and to her great delight it fi tted She opened the door and saw a  beautiful garden through it but she couldn’t reach it as she was too big When she turned around towards the three-legged table Alice found a green bottle  that said  DRINK ME  magically appeared on it Out of curiosity Alice took the bottle and  drunk the entire potion Then she began to shrink until she was no bigger than a doll She  opened  the  door  and  quickly  ran  through  it  What  a  splendid  garden   she  exclaimed  Why I'm no bigger than the insects that crawl on these fl owers  But the  excitement soon wore off  Alice grew bored with her tiny size  I want to be big again   she shouted Her shouts startled  the White Rabbit who ran past her again Mistaking  her for his maid he ordered  Go to my cottage and fetch my gloves and fan  Alice was confused by the Rabbit's behaviour Maybe I'll find something at the cottage to help me find my way out she said hopefully As she was going out she saw a piece of chocolate cake that was kept on a table by the doorway Next to the cake was a note that read EAT ME I'm so hungry Alice said as she ate the cake Suddenly she felt strange and realized Oh no I've grown larger than this house she cried Get out of my way You're blocking the door shouted the White Rabbit Alice managed to pick up his fan Immediately she began to shrink But little did she know it was a magical fan which made her small again Oh no I'll never get back to the right size she went looking for help Soon she saw a green caterpillar dressed in a pink jacket He was sitting on the top of a large mushroom smoking a bubble pipe One side makes you big the other side makes you small he said to Alice before slithering away One side of what Alice called after him The mushroom silly he answered Alice ate a piece of the mushroom Thank goodness I'm growing she cried But which way do I go That path leads to the Mad Hatter The other way leads to Lae March Hare said a voice Alice turned to find a smiling Cheshire Cat in a tree I'll see you later at the Queen's croquet game he said before disappearing There was a table set out under a tree in front of the house and the March Hare and the Hatter were having tea at it A Dormouse was sitting between them fast asleep and the other two were using it as a cushion resting their elbows on it and talking over its head Very uncomfortable for the Dormouse thought Alice only as it's asleep I suppose it doesn't mind The table was a large one but the three were all crowded together at one corner of it No room No room they cried out when they saw Alice coming There's PLENTY of room said Alice indignantly and she sat down in a large arm-chair at one end of the table Have some wine the March Hare said in an encouraging tone Alice looked all round the table but there was nothing on it but tea I don't see any wine she remarked There isn't any said the March Hare Then it wasn't very civil of you to offer it said Alice angrily It wasn't very civil of you to sit down without being invited said the March Hare I didn't know it was YOUR table said Alice it's laid for a great many more than three You may stay if you answer my riddle shouted the Mad Hatter Why is a raven like a writing desk Alice felt dreadfully puzzled The Hatter's riddle seemed to have no sort of meaning in it and yet it was certainly English I don't quite understand you she said as politely as she could Have you guessed the riddle yet the Hatter said No I give up Alice replied what's the answer I haven't the slightest idea said the Hatter Nor I said the March Hare Alice sighed wearily I think you might do something better with the time she said than waste it in asking riddles that have no answers And she continued her walk Suddenly she found herself in the middle of a field where the Queen of Hearts was playing croquet Her guards and gardeners were shaped like cards One gardener had planted white roses by mistake and then painted them red Off with their heads shrieked the Queen I hate white roses Then she noticed Alice and asked her Have you ever played croquet Yes Alice timidly answered But I've never used a flamingo or a hedgehog Play with me ordered the Queen And let me win or I'll have your head Alice tried her best to play well but she had trouble with her flamingo Off with her head cried the Queen Just then a trumpet sounded in the distance calling court to session Everyone rushed into the courtroom Court is now in session announced the White Rabbit Will Alice please come to the stand Alice took the stand and looked at the jury box where the March Hare and the Mad Hatter were making noise The Dormouse slept and the Cheshire Cat smiled at her What's going on asked Alice You are guilty of stealing the delicious heart-shaped tarts accused the Queen And now you must be punished Off with her head Off with her head yelled the Queen How silly replied Alice I did not have the slightest idea what you were talking about I was only playing croquet Alice felt someone touch her shoulder Wake up You've been sleeping for too long said her sister softly I had a strange dream said Alice She told her sister about the White Rabbit the mad tea party the Queen of Hearts and the trial But her sister wasn't paying attention You're reading again mumbled Alice As she stretched Alice saw a little White Rabbit with pink eyes scurry behind a tree READ AND UNDERSTAND I must find out why he's in such a hurry Go to my cottage and fetch my gloves and fan Oh no I'll never get back to the right size One side makes you big the other side makes you small I'll see you later at the Queen's croquet game You may stay if you answer my riddle Wake up You've been sleeping for too long Put students in pairs to role play a conversation between Alice and her sister Alice and White Rabbit Activity It’s fun to help out in the kitchen You can even practice reading aloud when reading the recipe And you can learn a little math by figuring out how to measure Here are a few fun items to make that are Alice themed F Learning About Nature Learn about caterpillars and butterflies Read a book about a caterpillar turning into a butterfly You can get one from the library or go online and find information with pictures CONNECTING TO SELF G Tackling the Issues Ask the class to discuss solutions to an issue that plagues contemporary society at large or just your community for example homelessness violence environmental degradation hunger Half the class should mention idealistic solutions to the chosen issue the other half should mention only realistic approaches to solving the problem  See if in listening to both sides someone can come up with a proposal that is both  realistic and unconventional an idea that hasn't been tried yet Rabbit Salad In this recipe you will create a salad shaped like a rabbit Start by washing some lettuce leaves You will be using them as the base for the salad Spread the leaves on top of a plate For the rabbit's body You will need half of a fresh or canned pear If you have a whole pear cut it in half lengthwise This will be the body you will decorate To create the rabbit’s nose use a cherry or some red-coloured dried fruit like a cranberry Place it in the middle of the narrow part of the pear Now you can add the eyes Take raisins and put them just above the nose on the narrow part of the pear Next the rabbit will need its ears Use almonds or other nut of choice and stick them into the pear above the eyes Lastly all rabbits need a tail Take a small piece of cauliflower and place it at the rear of the wide end of the pear half For a sweeter version use a mini marshmallow Imagine you are a marketing executive for a company in a specific industry toothpaste soup hair care products automobiles etc and are developing a product with a brand name that refers to a character from the story For example  You want to sell bandages that have little pictures of Don Quixote on  them Your company’s name is Kure-All and you decide  to call  them  Kure-All Quixote  Bandages    The slogan might be   Had a tough day with windmills   When you take a fall use  Kure-All   You can use exciting words a catchy new slogan and a jingle among other things  to promote sales of your item STEP TO SUCCESS ICT CORNER GRAMMAR DEGREES OF COMPARISON To learn and practise the three forms of adjectives To know and practise about the rules while comparing the adjectives Steps Type the URL link given below in the browser or scan the QR code You can see the home page of the interactive game of Adjectives Click START button to start playing the game First choose the adjective to be compared by clicking the image Click PLAY button Click the right form of adjectives and check your progress Levels and Time limit is given on each side Complete all the exercises by clicking arrow button in the home page while selecting various adjectives to check your knowledge in Degrees of comparison Website URL Click the following link or scan the QR code to access the website https wwwgamestolearnenglishcom comparatives Images are indicative only The Last Stone Carver Warm Up Draw a letter A Just below draw a letter B So A is a cap for B Give B one eye a round nose and a big mouth Section I READING The young man flung the hammer and the chisel to the ground and cried I’m leaving Father I’m leaving you and this work Look what it’s brought us He spread out his arms and glanced indiff erently at the small congested work room The white washed walls were stained by many monsoons The window bare of curtains opened into a tiny backyard After all these years of work this is all we have nothing nothing This kind of work just doesn’t pay The old man stared at his son in surprise Although his voice trembled it didn’t lose its usual gentleness It’s not only the money that matters son It’s the service our service to God Father the young man grunted impatiently Times have changed The stone carver’s work has changed too You can’t live on sculptures for temples only You have to mass produce mass produce like all the others in Agra Come on Father Wake up The lines around the man’s mouth tightened No my son This is the work I learnt from my father And he learned from his father We have kept up this tradition for hundreds of years and I hoped you would continue our work No Father the young man replied with determination I’m tired of working for a pittance for the committee of the temple in Srinagar I’m leaving Father The young man moved angrily out of the room leaving his old father crouching in front of a half-finished marble statue He dropped his hands into his laps and closed his eyes He began to pray and didn’t even hear the hesitant goodbye His son called out from the door Masterjee called Salim the servant boy entering the workshop barefooted He held out a glass of steaming tea in his hand Masterjee he asked once more his voice filled with concern The old man looked up His face was ashen He looked tired He called the boy to come closer and motioned him to sit down Salim he said gently Soon I will be the last stone carver here All the others would have gone to Agra There they are turning out cheap candlestands paperweights and ashtrays by the dozen They are making money but they betray our skill our age- old tradition Now Gopal has also gone I’ll have to finish this sculpture alone And with the help of God I’ll do it Salim I know you will Masterjee the boy answered You’ll make many more The old man looked at the orphan boy who had come to work for him five years ago Drenched to the skin dressed in tatters he had begged for shelter during monsoon storm And had stayed on to work for the old master craftsman He had grown tall and strong The old man knew that Salim too would leave him one day He shook his head My strength is waning I can’t work with the chisel like I used to Carving takes too long much too long Then he straightened up and said with fresh determination I’ll have to finish this work And surely I will Yes you will the boy repeated off ering his master the glass of tea Drink please It will do you good Then he added I have to go to the market for an hour or two But I’ll be back in time to prepare dinner The old man nodded The old man sighed and picked up the chisel and hammer The cool metal of the tools filled him with happiness and confidence He loved his work and didn’t want to change it for any other in the world GLOSSARY congested overcrowded grunted made a low sound crouching sitting on heels determination firmness to do something stained by mark made on clothes or materials a The walls were made dirty by rains b The Monsoon removed the dirt from the walls working for a pittance working for very little money I am tired of working for a pittance a He didn’t want to work because he was tired b He didn’t want to work as he gets low income for his work ashen pale His face was ashen a He looked pale and dull b He looked bright and cheerful drenched thoroughly wet He is drenched to the skin a He is thin and skinny b He is thoroughly wet Section Days and weeks went by It was a month since Gopal had left The old man worked tirelessly It was all there in the stone the strong straight shoulders of Krishna his soft curved hips the pointed fingers holding the flute delicately to his lips his serene face eternally beautiful the old man could see it in the stone He could feel it He only had to set it free with the chisel He didn’t feel hunger he didn’t feel thirst He was driven by the strong desire to finish the sculpture in time It was his biggest piece of work his best It would also be his last On and on he worked his chisel striking the stone again and again But then came the day when the old man felt his strength ebb His shoulders began to ache his arms felt heavy and his vision blurred Overcome with fear he sank to his knees and prayed The old man prayed a lot these days Masterjee Salim said You haven’t touched your food again Please have some rice and vegetables You only had a glass of milk for breakfast Have the curd You like curd I know you do The old man looked up He whispered I don’t think I’ll be able to finish it If Gopal was here it would be diff erent He hadn’t yet learnt to carve the finer details but in a year or two he would have learnt surely He felt silent It was the features and hands that gave him trouble There was something missing in his figures That something which can’t be taught Because it comes from somewhere deep inside you Salim whispered From deep inside here and he pointed to his heart The old man looked at the boy surprised He saw him blush and turn his face away You are right Salim you are right And then he added with sudden bitterness And if you don’t have it here he thumped his chest Then you’d better go to Agra and mass produce ashtrays for tourists from abroad Then The old man coughed painfully and reached for his glass of water Eat Masterjee eat Everything will be alright After he had eaten the old man once again took up his hammer and chisel He worked till late in the night In the early hours of the morning the chisel fell from his hand and the hammer dropped to the ground His old body sagged falling forward limply His forehead struck Krishna’s flute and slid down the statue to rest on the pedestal Hai Ram he muttered and sank into a comfortable darkness When he opened his eyes he found himself lying on a cot in his bedroom covered by a light cotton blanket GLOSSARY serene calm blurred became unclear blush show shyness He wished to have Gopal with him Salim felt that it should come from within He thought he wouldn’t be able to finish it The old man worked tirelessly on the sculpture He realized that Gopal must learn to carve the finer details He had a strong wish to finish it in time Over days he felt very weak Section From the workshop the chipping sound of the chisel reached his ears He listened Had his ears deceived him No He could hear it again the strong blow of the hammer on top of the chisel Gopal He was back Gopal had returned He would help him They would finish the statue He stumbled to his feet crossed the small room and reached the door Gopal He was about to shout when the words froze on his lips No he wanted to cry out Stop Stop the work But he couldn’t move Shock had immobilised him He stood staring at the back of the young stone carver working on the face of the statue on the eyebrows arching over a pair of fine eyes But it wasn’t his son sitting cross-legged before the biggest statue he had ever carved It was Salim his servant The old man watched stunned The first wave of shock fear and anger passed to give way to a feeling of great relief and happiness Hai Ram the old man whispered Hai Ram and tottered over to the boy Dropping his hand on his shoulder he said softly Salim The startled boy turned and looked up at his master He rose to his feet clumsily the hammer and chisel still in his hands Salim the old man searched for words I I I only wanted to help whispered the boy I I’ll learn if you teach me Masterjee I have practised secretly for almost two years in the quarry Please tell me For many years I wanted to become a sculptor like you yet I fought the feeling But it proved too strong I know there is nothing in this world I would like to do more there is nothing in life that I could do better I want to become a stonecarver Will you please teach me Masterjee The old man pulled the boy’s head against his shoulder and whispered There’s nothing I can teach you my son beta Go ahead You have it in your hands and in your heart I know you will be one of the country’s finest stonecarvers Sigrun Srivastav Sigrun Srivastav is an Indian author of German origin She is a multi-faceted artist a writer a sculptor and an illustrator As a writer she has written over books for children of all ages GLOSSARY stumbled lost balance immobilized stopped from moving tottered over moved unsteadily way startled surprised Ikebana Appliqué Origami Calligraphy Tapestry Column A Column B Hammer and chisel Painting Paint brush and palette Sculpture Moulds and roll pin Embroidery Scissors and paper Pottery Needle and thread Collage Language Check Point Do you see the red car outside see-something that you do naturally without thinking Look at the blue bird in the tree look-make an effort to see something I don’t have time to watch TV now watch-something you look at for a period of time Questions Responses Madhubani paintings are from state Bihar Assam Madhubani paintings were originally done on canvas walls This painting has international recognition yes no Dilli Haat is a tourist place craft bazaar Madhubani painting can also be a product career PICTO GRAMMAR The rat is being chased by the cat Note to the teacher In the active voice the subject performs the action In the passive voice the subject receives the action The cat is chasing the rat My mom has made a cake A cake has been made by my mom The dog chews the shoe The shoe is chewed by the dog USE GRAMMAR Silence Cars Cleanliness Cell phones Junk food Sweets should should not be used in petrol bunks maintained in libraries hospitals etc avoided as they cause cavities and toothache practised at homes as well as in public places parked in No Parking area avoided as it is bad for health The police had announced that the State Bank of India was robbed yesterday Two men entered the bank at pm with guns in their hands Customers and bank clerks were asked to lie down on the floor and one of the bank clerks was made to fill robbers bags with money After that the two men left the bank quickly The police officer said that more than one lakh of rupees was stolen from the bank but nobody was injured He also added that the robbers would be found soon People of China produced paper from wood They mixed water with the fibres of wood and dried it until they became a soft wet pulp They used this pulp to make paper The Chinese invented this method of paper making in nd century BCE Later Egyptians used papyrus plants to make paper Mix the soup powder with ml of water without allowing it to form lumps Transfer the soup into four soup bowls and serve garnished with fried corns Simmer the soup for five minutes Pour the mixture into a heavy-bottomed vessel Bring it to a boil and stir it continuously Name of the craft work   Materials used   Nature handy eco-friendly longlasting affordable price Use place person time Wandering Singers Where the voice of the wind calls our wandering feet Through echoing forest and echoing street With lutes in our hands ever-singing we roam All men are our kindred the world is our home Our lays are of cities whose lustre is shed The laughter and beauty of women long dead The sword of old battles the crown of old kings And happy and simple and sorrowful things What hope shall we gather what dreams shall we sow Where the wind calls our wandering footsteps we go No love bids us tarry no joy bids us wait The voice of the wind is the voice of our fate Sarojini Naidu Sarojini Naidu was a famous Indian poet and a major freedom fighter She was given a sobriquet Bharat Kokila The Nightingale of India on account of her beautiful poems and songs GLOSSARY lute a kind of stringed musical instrument roam wander travel kindred relations lays songs stories tarry wait delay fate destiny luck st stanza nd stanza rd stanza Where the voice of the wind calls our wandering feet   With lutes in our hands ever-singing we roam All men are our kindred the world is our home Our lays are of cities whose lustre is shed The laughter and beauty of women long dead Naya The Home of Chitrakaars Supplementary Patachitra Naya is a quaint little village in West Bengal’s Midnapore district However it is not an ordinary village Around patuas or chitrakaars or artists live there These folk artists are painters lyricists singers and performers all rolled into one They practise an ancient folk art called Pata Chitra This is a type of storytelling using painted scrolls The scrolls have stories painted on them and the artists sing the story as they unroll the scroll This art has been practised since the century Traditionally such story tellers took their painted scrolls from village to village In every village they unrolled the scrolls frame by frame and sang pater gaan or the story songs In return for their performance the villagers gave them rice vegetables and money Their stories included mythological stories and tribal folklore Nowadays the artists sing of social messages and contemporary events as well Over time however people lost interest in this art form and there were few artists and fewer listeners To keep their art alive in the modern world the patuas adapted their skills and themes to the times An innovative step they took to do this was to establish a patachitra village at Naya Slowly the eff orts to revive their artistic heritage started paying off Today the patachitra art is flourishing again in the village with village youngsters taking up the traditional art form as a passion and profession A traditional pata was painted on a canvas made of jute fibre Now it is made by stitching together sheets of commercial poster paper The colours come from plants such as marigold indigo teak leaves saff ron and turmeric They also use lamp black The colours are mixed in coconut shells with the sap of the bael tree wood apple which acts as a glue After finishing a thin cotton cloth is glued to the back of the painting so that it will last long Next the completed scrolls are dried in the sun before they are stored in rolled up bundles Today the patuas make rectangular and square-shaped paintings of diff erent sizes Social messages like conservation of trees female infanticide child-trafficking and AIDS awareness figure in their paintings They also paint images of traditional subjects such as a cat eating a lobster or fish tigers rows of cows or white owls The patuas today do not make too many long story scrolls A few of them still sing their self-composed songs but only on demand The patachitra art tradition was traditionally passed down from father to son but today many patua women have also taken up the craft Under an initiative Art for Livelihood some of these women are leading local development Patachitra Since an annual three-day festival Pot Maya has been held to celebrate the success of the local artists Held in November every year the festival exhibits modern paintings as well as scrolls dating back hundreds of years At this time the villagers paint the mud walls of their houses with colourful patachitra motifs and hang scrolls on ropes in the courtyards They also clean up the surroundings and decorate the entire village with flowers to get ready for visitors As there are no hotels in the village the visitors stay in tents During the festival the quiet hamlet is transformed into a vibrant cultural hub where visitors can learn about the craft of patachitra Several workshops are held stories are told and diff erent types of pata artwork are displayed for sale Musical and dance performances by well-known artists start in the evening and go on well into the night The patuas hold demonstrations on natural colour extraction from sources Watching a patua singing gently as he or she unfurls the scrolls is an unforgettable experience The play of light and shadow from the oil lamps on the soft colours and delicate imagery of the paintings is magical If you are interested in traditional art and crafts do visit this unique village It will be a delightful experience in a beautiful rural setting A display at the Pot Maya festival Midnapore folk art chitrakaars Pata Chitra painted scrolls unrolled The traditional folk art of West Bengal Annual festival to celebrate the success of local artists The other name of story tellers Conservation of trees female infanticide etc PROBLEM This art form faded over a period of time SOLUTION SETTING State District Village The sap of the wood apple tree acts as a glue It is made by stitching multiple sheets of poster paper together Finally they are stored in rolled up bundles Plant-based colours and lamp black are mixed in coconut shells A Patta is created by painting on a canvas The completed scrolls are dried in the sun Jute fibre canvas was used in olden days A thin cotton cloth is glued to the back of the painting for long life CONNECTING TO SELF The snake is next to the owl The owl is not next to the bird The kite is on the right The owl is between the snake and the kite Now where is the bird literary art martial art visual art textile art performing art Kuchupudi Bangra Dandia prose poetry drama novel photography film making sculpture Karate Kungfu Capoeira weaving embroidery carpet designing literary art martial art visual art textile art performing art e-links https wwwindianholi-il-nadu arts and craft s craft s of india wikipedia Book e Complete books of Arts and Craft My Book of Art and crafts Listening Passages Unit There is a very famous quote by Hellen Keller Life is either a daring adventure or nothing Adventure trips are all about making memories gaining more knowledge learning new things about the surroundings and about one’s own self and making lots of great stories Going for an adventure camp is the best way to get all of these as it forces one to get out of their ordinary lives and try new things Adventure camp basically means spending the nights in tents and doing various activities at the camp-site There are many activities included in camping to make it more exciting and interesting Some of these are mentioned below Water Activities If your camp site is near a water body then one can do aqua zorbing water skiing fishing swimming playing water volleyball and other such fun games Bonfire This can be done during winter camping Campers are made to sit surrounding the bonfire and talk about their stories or perform some acts such as playing some instrument or singing songs Rock Climbing This activity is meant to provide both physical and mental challenges to the climbers and help them in learning new skills Mountain biking Just a few scratches and the trip can be memorable with new experience of driving bicycles on forest roads Unit Madhubani painting or Mithila paintings from the Mithila region of Bihar were originally done on walls during festivals and other such occasions The artists like Jagdamba Devi and late Mahasundari Devi are responsible in getting it international recognition Madhubani paintings find a pride of place in our homes today One can see the tourists flocking to the Madhubani stalls in craft bazaars like the Dilli Haat It needed educated and ethnically aware people to bring this aspect of our culture on the international scene and make the younger generations take pride in them so that they voluntarily made a studied choice of them as career options ICT CORNER GRAMMAR ACTIVE PASSIVE VOICE To learn about the active and passive voice   To know and practise the voice exercise in Simple present tense Steps Type the URL link given below in the browser or scan the QR code You can see the use of passive voice with many examples After go through those scroll down to find Exercises links Click Exercise on Passive with Simple Present and type the answers in the boxes Check your answers at the end Complete all the exercises by clicking the links of active voice and passive voices in Simple Present tense one by one to check your learning in it Website URL Click the following link or scan the QR code to access the website Science Unit Measurement In day to day life we measure many things such as weight of fruits vegetables and food grains volume of liquids temperature of the body speed of the vehicles etc Quantities such as mass weight distance temperature volume are called physical quantities A value and a unit are used to express the magnitude of a physical quantity For example let us assume that you walk kilometre everyday In this example is the value and kilometre is the unit used to express the magnitude of distance which is a physical quantity In this lesson we are going to study about fundamental quantities derived quantities such as area volume and density and measurement of larger quantities Fundamental Quantities and Derived Quantities Generally physical quantities are classified into two types They are fundamental quantities and derived quantities Fundamental Quantities A set of physical quantities which cannot be expressed in terms of any other quantities are known as fundamental quantities Length Mass Time Their corresponding units are called fundamental units There are seven fundamental physical quantities in SI Units System of International Units Derived quantities All other physical quantities which can be obtained by multiplying dividing or by mathematically combining the fundamental quantities are known as derived quantities Area and volume Their corresponding units are called derived units Area Area is a measure of how much space is there on a flat surface The area of a plot of land is derived by multiplying its length and breadth Area length × breadth The unit of the area is m Read as square metre Area is a derived quantity as we obtain it by multiplying the fundamental physical quantity length length x breadth Area of regularly shaped objects The area of regularly shaped objects can be calculated using the relevant formulae Area of irregularly shaped objects In our daily life we encounter many irregularly shaped objects like leaves maps stickers of stars or flowers peacock feather etc The area of such irregularly shaped objects cannot be calculated using any formula How can we find the area of these irregularly shaped objects We can find the area of these figures with the help of a graph sheet The following activity shows how to find the area of irregularly shaped plane figures This method can be used to find the area of regularly shaped figures also In the case of square and rectangle this method gives the measure area accurately This method can be used to calculate the area of any irregularly shaped plane figures Volume The amount of space occupied by a three dimensional object is known as its volume Volume Surface area × Height The SI unit of volume is cubic metre or m Volume of regularly shaped objects As in the case of area the volume of a regularly shaped objects can also be determined using an appropriate formula Volume of Liquids Liquids also occupy some space and hence they also have volume But liquids do not possess any definite shape So the volume of a liquid cannot be determined as in the case of solids When a liquid is poured into a container it takes the shape and volume of the container The volume of any liquid is equal to the space that it fills and it can be measured using a measuring cylinder or measuring beaker The maximum volume of liquid that a container can hold is known as the capacity of the container The volume of a liquid is equal to the volume of space it fills in the container This can be directly observed from the readings marked in the measuring containers If we notice the measuring cups given in figure carefully we can observe that the readings are marked in the unit of ml This actually represents millilitre To understand this unit of volume let us first understand how much a litre means Litre is the commonly used unit to measure the volume of liquids We know that the unit of volume is cubic cm if the dimensions of the object are given in cm This cubic cm is commonly known as cc A volume of cc is termed as one litre l litre cc or cm ml litre Volume of irregularly shaped objects There is no formula to determine the volume of irregularly shaped objects as in the case of area For such objects volume can be determined using a measuring cylinder and water Density Take water in a beaker and drop an iron ball and a cork into the water What do you observe The iron ball sinks and the cork floats as shown in figure Can you explain why If your answer is heavy objects sink in water and lighter objects float in water then why does a metal coin sinks in water whereas a much heavier wooden log floats These questions can be answered if we understand the concept of density From activity we observe that wooden block occupies more volume than the iron ball of same mass Also we observe that wooden block is lighter than the iron block of same size The lightness or heaviness of a body is due to density If more mass is packed into some volume it has greater density So the iron block will have more mass than the wooden block of the same size Therefore iron has more density Density of a substance is defined as the mass of the substance contained in unit volume m If the mass of a substance is M and volume is V then its density is given as Density D Mass M Volume V MVD SI unit of density is kg m The CGS unit of density is cm Density of different materials Different materials have different densities The materials with more density are called denser and the materials with less density are called rarer The relationship between mass density and volume are represented in the following density triangle Density Mass Volume Mass Density × Volume Volume Mass Density Measuring larger distances Normally we use centimetre metre and kilometre to express the distances that we measure in our day to day life But for space research astronomers need to measure very long distances such as the distance between the earth and a star or the distance between two stars To express these distances we shall learn about two such units namely i Astronomical unit Light year Astronomical Unit We all know that the earth revolves around the sun in an elliptical orbit Hence the distance between the sun and the earth varies every day When the earth is in its perihelion position the position when the distance between the Earth and the Sun is short the distance between the earth and the sun is about million kilometre When the earth is in its aphelion position the position when the distance between Earth and the Sun is the largest the distance is million kilometre The average distance between the earth and the sun is about million kilometre This average distance is taken as one astronomical unit Neptune is AU away from the Sun It means it is thirty times farther than the Earth One astronomical unit is defined as the average distance between the earth and the sun AU million km × km × m Light year The nearest star to our solar system is Proxima Centauri It is at a distance of AU We can note here that using AU for measuring distances of stars would be unwieldy Therefore astronomers use a special unit called light year for measuring the distance in deep space We have learnt that the speed of light in vacuum is × m s This means that light travels a distance of × m in one second In a year non-leap there are days Each day has hours each hour has minutes and each minute has seconds Thus the total number of seconds in one year × × × × second If light travels at a distance of × m in one second then the distance travelled by light in one year × × × × m This distance is known as one light year One light year is defined as the distance travelled by light in vacuum during the period of one year Light year × m In terms of light year Proxima Centauri is at light-years from Earth and the Solar System The Earth is located about light-years away from the galactic centre Unit Force and motion Look at the picture given below Kavitha can reach her school in two ways as shown in the picture Can you tell by choosing which path she could reach the school early In the picture given below you can see leaf falling from a tree In which path the leaf will reach the ground first Uma and Priya are friends studying in the same school After school hours they go to the nearby playground play games and return back home One day Uma told that she would reach the playground after visiting her grandmother’s house The paths which they took to reach the playground is shown here Take a twine and measure the length of the two paths A and B Which is the longest path among the two From the above examples we could conclude that when an object travels from one place to another it will reach faster if it travels along the straight line path The straight line path is the shortest distance between two points In this lesson we are going to study about distance and displacement speed and velocity acceleration distancetime graph velocity-time graph centre of gravity and stability Distance and Displacement The total length of a path taken by an object to reach one place from another place is called distance The shortest distance from the initial position to the final position of an object is called displacement Both distance and displacement possess the same unit The SI unit distance and displacement is metre m The figure given below shows the motion of a person between two places A and B He travels km along the first path Along the second path he travels km The distance between A and B in the case of first path is km In the case of second path the distance is km The shortest distance between the two places is km which is represented by the third path So the displacement is km In east direction The path of an object moving from point A to point B is shown in the figure Total distance travelled by the object is m The displacement of the object is m south east direction The path in which a rabbit ran is shown in the figure below Let us consider that each square is in an unit of one square meter The rabbit starts from point A and reaches the point B Find the distance and displacement of it in the two figures When will the distance and displacement be equal The starting point and the finishing point should be different When we represent the displacement we use a positive or negative sign depending on the direction in which it travels Let us consider the point A as the starting point While the object moves from A to B the displacement is considered to be positive and it is negative when it travels from B to A Subha goes to the nearby playground from her home Look at the picture and answer the following questions What is the distance she travelled What is her displacement Can you answer the following questions The distance travelled by an object is km and its displacement is km What do you infer from this The distance travelled by a person is km and his displacement is km What do you infer from this Speed Velocity Speed In sixth standard you have already studied about speed in detail Speed is the rate of change of distance Speed Distance Time The unit of speed is metre second m s We can classify speed into two types Uniform speed If a body in motion covers equal distances in equal intervals of time then the body is said to be in uniform speed Non- uniform speed If a body covers unequal distances in equal intervals of time the body is said to be in non-uniform speed Velocity Velocity is the rate of change in displacement Velocity v Displacement Time SI unit of velocity is metre second m s Look at the figure An athlete takes s to complete a m sprint event Find her speed and velocity Uniform velocity A body is said to have uniform velocity if it covers equal displacement at equal intervals of time in the same direction Light travels through vacuum Non-uniform velocity If either speed or direction changes the velocity is non-uniform A train starting and moving out of the station Average velocity If the total displacement of an object is divided by the total time taken by the object we get the average velocity In the figure given below a car travels km due east and makes a U turn to travel another km If the time taken for the whole journey is h calculate the average velocity of the car Average velocity Total displacement Time taken Taking the direction due east of point O as positive Average velocity km h or × m s The triangle method can help you to recall the relationship between velocity v displacement d and time t Acceleration Acceleration is the rate of change of velocity In other words if a body changes its speed or direction then it is said to be accelerated SI unit of acceleration is m s A car at rest starts to travel in a straight line path It reaches a velocity of m s in s What is its acceleration assuming that it accelerates uniformly Positive acceleration If the velocity of an object increases with respect to time then the object is said to be in positive acceleration Negative acceleration or Deceleration or Retardation If the velocity of an object decreases with respect to time then the object is said to be in negative acceleration or deceleration or retardation The velocity of a golf ball rolling in a straight line changes from m s to m s in s What is its deceleration assuming that it is decelerating uniformly Initial velocity u m s Final velocity v m s Time taken t s Acceleration a v u t m s The deceleration is m s Uniform acceleration An object undergoes uniform acceleration when the change increase or decrease in its velocity for every unit of time is the same When the velocity of the object is increasing by m s the acceleration is m s When the velocity of the object is decreasing by m s the deceleration is m s Non uniform acceleration An object undergoes non–uniform acceleration if the change in its velocity for every unit of time is not the same Note here that the change in velocity is not the same for every second Thus the moving object is undergoing non-uniform acceleration Distance Time Graphs A car travelling along a straight line away from the starting point O is shown in the figure The distance of the car is measured for every second The distance and time are recorded and a graph is plotted using the data The results for four possible journeys are shown below The graph has zero gradient ie the distance is constant for every second Thus the car is at rest The graph has constant gradient The distance increases m in every second Thus the car moves with uniform speed The graph has an increasing gradient ie That is the speed increases The graph has a decreasing gradient That is the speed decreases Speed Time Graphs Let us consider a bus travelling from Thanjavur to Trichy The speed of the bus is measured for every second The speed and time are recorded and a graph is plotted using the data It is known as speed-time graph The results for four possible journeys are shown The speed of the bus remains at ms- So the bus has zero acceleration The speed of the bus remains at ms- Here slope of the line is zero So the bus has zero acceleration The speed of the bus increases by ms- every second Hence the graph has a positive and constant gradient and the acceleration is constant The speed of the bus decreases by ms- very second Hence the graph has a negative and constant gradient and the acceleration is negative and constant The speed of the bus is increasing with time Hence the graph has a positive and increasing gradient and the acceleration increases The speed is decreasing with time Hence the graph has a positive and decreasing gradient and the acceleration decreases Comparison between Distance Time and Speed Time Graphs The Speed Time graphs and Distance Time graphs may look very similar But they give different information We can differentiate them by looking at the labels Centre of Gravity Try to balance a cardboard on your finger tip What do you observe You can notice that there is only one point at which the cardboard is balanced The point at which the cardboard is balanced is called the centre of gravity of the cardboard The centre of gravity of an object is the point through which the entire weight of the object appears to act How do we find the centre of gravity of an object Centre of gravity of regular shaped objects Generally the centre of gravity of the geometrical shaped objects lie on the geometric centre of the object The ruler is in equilibrium when supported at its centre of gravity For a regular object such as a uniform meter ruler the centre of gravity is at the centre of the object When the object is supported at that point it will be balanced If it is supported at any other point it will topple Stability Stability is a measure of the body’s ability to maintain its original position Three types of stability are a Stable equilibrium b Unstable equilibrium c Neutral equilibrium Let us demonstrate them by taking a frustum Stable Equilibrium In stable equilibrium the frustum can be tilted through quite a big angle without toppling Its centre of gravity is raised when it is displaced The vertical line through its centre of gravity still falls within its base So it can return to its original position Unstable Equilibrium In this equilibrium the frustum will topple with the slightest tilting Its centre of gravity is lowered when it is displaced Here the vertical line through its centre of gravity falls outside its base So it will not come back to its position Neutral Equilibrium It causes frustum to topple The frustum will roll about but does not topple Its centre of gravity remains at the same height when it is displaced The body will stay at any position to which it has been displaced Condition for Stability Stability can be increased by the following ways Lowering its centre of gravity Increasing the area of its base A heavy base lowers the centre of gravity So the object will be stable A broad base makes the object more stable Real Life Applications of Centre of Gravity In order to have stability the luggage compartment of a tour bus is located at the bottom and not on the roof Extra passengers are not allowed on the upper deck of a crowded double decker bus Racing cars are built low and broad for stability Table lamps and fans are designed with large heavy bases to make them stable Unit Matter around us We know that everything that occupies space and has mass is called matter Do you know what is matter is composed of We have studied earlier that matter is composed of tiny little particles which cannot be seen with naked eye That particle is called atom In this lesson we will study about atoms molecules elements compounds chemical formulae and atomicity Atoms Graphite lead used in pencil is made up of an element called carbon We can break graphite into smaller and smaller pieces If we have a finer knife we can break it even smaller If we keep cutting the minuscule graphite into smaller and smaller particle we will reach a point where we get the smallest constituent of graphite carbon atom If we break the carbon atom apart the properties of carbon are exhibited The smallest unit of an element that exhibits the properties of that element is called as atom All the matter is composed of tiny particles called atom Water rice and everything we see around is made up of atoms An atom is the basic unit of a matter Structure of an atom Even with the best of optical microscope we cannot see atoms However there are advanced instruments that help us to imagine the atoms on the surface of a material For example the following figure shows the image of the surface of silicon Molecules When an atom combines with another atom or atoms and forms a compound it is called as molecule A molecule is made up of two or more atoms chemically combined Oxygen gas in the air that we breathe is made up of two oxygen atoms chemically combined Ozone is a substance that is made up of three oxygen atoms chemically combined An atom of oxygen O and two atoms of Hydrogen H combine to form a molecule of Water HO Molecules exhibit the properties of matter and also have individual existence A molecule can be formed by the same or different kinds of atoms Molecules can be classified as below A molecule which contains only one atom is called monatomic molecule Inert gases A molecule which contains two atoms is called diatomic molecule Oxygen Nitric oxide Hydrogen etc A molecule containing three atoms is called a triatomic molecule Ozone Sulphur dioxide Carbon dioxide etc A molecule containing more than three atoms is known as polyatomic molecule Phosphate Sulphur etc Molecules of Elements A molecule of an element consists of fixed number of one types of atom chemically combined Table shows that gases are made up of two atoms of the same element Molecules of Compounds Molecule of a compound consists of a fixed number of different types of atoms chemically combined For example let us look at the model of a water molecule below Each molecule of water consists of one oxygen atom and two hydrogen atoms The ratio of oxygen and hydrogen atoms remains fixed whether water is in liquid solid or gaseous state This principle applies to the molecules of all compounds Elements Matter is classified into two broad categories namely pure substances and mixtures Pure substances are further divided into two categories as elements and compounds Matter in its simplest form is called an element We are using many elements in our daily life The common salt consists of two elements sodium and chlorine Water consists of hydrogen and oxygen Magnesium and phosphorus are used for making crackers Sulphur is used as manure in agriculture Gallium is used for making mobile phones and silicon is used for making computer chips There are known elements till date Out of these elements occur naturally while elements are synthesised artificially in the laboratory Classification of Elements We can classify the elements broadly into metals non-metals and metalloids based on their chemical properties Metals We have tools utensils and jewellery made of silver copper iron gold aluminium etc By hammering or rolling we can deform these materials into various shapes Such elements that are malleable a material may be flattened into thin sheets or various shapes are called as metalsMetals are generally hard and shiny elements Sodium is one of the exceptions as it is soft All metals except mercury are solids at room temperature Mercury is the only metal that is liquid at room temperature Metals are malleable can be bent or beaten into sheets They can be drawn into wires They are good conductors of heat and electricity Copper lead tin nickel iron zinc gold magnesium and calcium are examples of metals Non-metals Non-metals are generally dull and soft However diamond is shiny and also the hardest natural substance on earth Non-metals can be gases solids and liquids Non-metals such as oxygen hydrogen and chlorine are gases at room temperature Carbon iodine sulphur and phosphorus are solids at room temperature Bromine is the only non-metal that is liquid at room temperature Non-metals are poor conductors of heat and electricity However graphite a form of the non-metal carbon is a good conductor of electricity Metalloids Metalloids exhibit the properties of both metals and non metals Silicon arsenic antimony and boron are some examples of metalloids Symbol of an element A symbol is an abbreviation or short representation of a chemical element There is a unique symbol for each element It represents one atom of the element The symbol is usually derived from the name of the element which is either in English or Latin These symbols are accepted by the International Union of Pure and Applied Chemistry IUPAC Dalton was the first scientist to use the symbols for elements in a very specific sense When he used a symbol for an element he also meant a definite quantity of that element that is one atom of that element Berzelius suggested that the symbols of elements can be written as one or two letters of the name of the element The following rules are followed while assigning symbol to an element Chemical symbols usually consist of one or two letters The symbols of most elements correspond to the first letter which is capitalized of their English name For example the symbol for oxygen is O and that for hydrogen is H You will study about symbols in details in standard Elements in human Body Nearly of the mass of our human body consists of just six chemical elements namely oxygen carbon hydrogen nitrogen calcium and phosphorus Another five elements make up most of the least percentage They are potassium sulphur sodium chlorine and magnesium Elements in air Air is a mixture of gases The molecules of two different elements nitrogen and oxygen make up about of the air The rest includes small amounts of argon and carbon dioxide Other gases such as neon helium and methane are present in trace amounts Oxygen is the life-giving element in the air Compounds A compound is a pure substance that is formed when the atoms of two or more elements combine chemically in definite proportions Compounds exhibit properties that are entirely different from the properties of their constituent elements For example the atoms of the elements hydrogen and oxygen combine chemically in a fixed ratio to form the compound water However water does not have the same properties of hydrogen and oxygen For example at room temperature water exists as liquid while hydrogen and oxygen exist as gases Also oxygen supports fire whereas water is used as a fire extinguisher Similarly common salt Sodium chloride is a compound made up of elements sodium and chlorine It is used in our food whereas sodium chlorine are poisonous and both are unsafe for consumption Properties of Compounds A compound is formed only when the constituent elements combine in a fixed proportion The properties of a compound are different from those of its constituent elements A compound cannot be broken down by physical methods This is because a compound is made up of different elements that are chemically combined Sodium chloride cannot be separated by physical methods such as filtration A compound can be separated into its constituent elements by chemical methods only Chemical Formulae Often we write water as HO This is the chemical formula for water molecule This means that each molecule of water has two hydrogen atoms combined with one oxygen atom A chemical formula is a symbolic representation of one molecule of an element or a compound It provides information about the elements present in the molecule and the number of atoms of each element In HO small number beside the H is called subscript It tells us the number of atoms of that element present in the molecule Hence there are two hydrogen atoms in water molecule There is no number of besides O It means that there is only one atom of that element present in the molecule Hence there is oxygen atom in a water molecule Can you guess the types of atoms and number of each of the atoms in sodium chloride The chemical formula tells us the types of Atoms and the number of each type of atom in One molecule of substance Atomicity In chemistry atomicity implies the total number of atoms present in one molecule of an element compound or a substance Let us see how to calculate the atomicity of elements For example oxygen exists as a diatomic molecule It means that a molecule of oxygen contains two atoms hence its atomicity is O O O Oxygen atom Oxygen atom Oxygen Molecule Similarly a phosphorus molecule P contains atoms and a sulphur molecule S contains sulphur atoms Hence their atomicity is and respectively For molecule containing more than one types of atoms simply count the number of each atom and that would be its atomicity For example one molecule of sulphuric acid HSO consists of hydrogen atom sulphur atom and oxygen atoms Hence its atomicity is One molecule of water HO contains two atoms of hydrogen and one atom of oxygen Thus the atomicity of water is three Effect of temperature on Solid Liquid and Gas In solids particles are arranged very closely When solids are heated the particles in them gain energy and vibrate vigorously They move slightly further apart from one another This causes the volume of matter to increase This process is called expansion How it happens The matter begins to expand when heated and the volume increases due to the increase in the distance between the particles But the size of the particles remains same During heating or expansion the mass of matter does not change Although the volume of the matter changes the size and number of the particles of matter do not change Hence during heating the mass of matter is conserved For example in an iron lock the distance between the iron particles increases when they gain enough heat However the number of iron particles does not change Hence the mass of the iron lock is conserved The melting of ice is an example for change of states of matter The change in the states of matter occurs during melting boiling and freezing and condensation When the particles possess enough energy they overcome the strong forces of attraction between one another They break free from one another and move randomly For example when solid ice is heated to C it melts to become liquid water In the same way when liquid water is heated to C it boils to become steam Unit Atomic Structure In the last chapter we studied that anything around us is matter and it is made up of molecules The molecules are combination of atoms of different elements or the same element Table chair bag book chalk and blackboard in short everything you see around are made up of atoms Atoms are the smallest particles They cannot be seen even through a microscope In this lesson we are going to study about atomic theories sub-atomic particles atomic number and mass number and valency Atomic Theories An atom is thousand times smaller than the thickest human hair It has an average diameter of m or × m To understand the size of an atom now let us find what is the size of known things like pencil red blood cell virus and dust particle Now you could imagine how small an atom would be Many scientists have studied the structure of the atom and advanced their theories about it The theories proposed by Dalton Thomson and Rutherford are given below Atom × m Dalton’s atomic theory John Dalton proposed an atomic theory in the year He proposed that matter consists of very small particles which he named atoms An atom is the smallest indivisible particle It is spherical in shape His theory does not propose anything about the positive and negative charges of an atom Hence it was not able to explain many of the properties of substances Thomson’s theory In JJ Thomoson proposed a different theory He compared an atom to a watermelon His theory proposed that an atom has positively charged part like the red part of the watermelon and in it are embedded like the seeds negatively charged particles which he called electrons According to this theory as the positive and negative charges are equal the atom as a whole does not have any resultant charge Thomson’s greatest contribution was to prove the existence of the negatively charged particles or electrons in an atom by experimentation For this discovery he was awarded the Nobel Prize in Although this theory explained why an atom is neutral it was an incomplete theory in other ways Rutherford’s theory There were shortcoming in Thomson's theory Earnest Rutherford gave a better understanding Earnest Rutherford conducted an experiment He bombarded a very thin layer of gold with positively charged alpha rays He found that most of these rays which travel at a great velocity passed through thin gold sheet without encountering any obstacles A few are however turned back from the sheet Rutherford considered this remarkable and miraculous as if a bullet had turned back after colliding with tissue paper Based on this experiment Rutherford proposed his famous theory They are The fact that most alpha particles pass through the gold sheet means that the atom consists mainly of empty space The part from which the positively charged particles turned back is positively charged but it is very small in size as compared to the empty space From these inferences Rutherford presented his theory of the structure of atoms For this theory he was awarded the Nobel prize for chemistry Rutherford’s theory proposes the following The nucleus at the centre of the atom has positive charge Most of the mass of the atom is concentrated in the nucleus The negatively charged electrons revolve around the nucleus in specific orbits In comparison with the size of the atom the nucleus is very very small The sub-atomic particles The discoveries made during the twentieth century proved that atoms of all elements are made up of smaller components electron proton and neutron An electron from hydrogen atom is no different from the electron of a carbon atom In the same manner protons and neutrons of all elements also have same characteristics These particles that make up the atom are called subatomic particles Proton p The proton is the positively charged particle and it is located at the nucleus Its positive charge is of the same magnitude as that of the electron’s negative charge Neutron n Neutron is inside the nucleus The neutron does not have any charge Except hydrogen protium the nucleus of all atoms contain neutrons Protons and neutrons are the two types of particles in the nucleus of an atom They are called nucleons Electron e is a negatively charged particle Electrons revolve around the nucleus of the atom in specific orbits The mass of an electron is negligible as compared to that of a proton or neutron Hence the mass of an atom depends on the number of protons and neutrons in the nucleus The total negative charge of all the electrons outside the nucleus is equal to the total positive charge in the nucleus That makes the atom electrically neutral Atomic number and Mass number If all the elements are made up of same sub-atomic particles how will a carbon atom differ from an iron atom Further investigations led to the discovery that the number of protons inside the nucleus of an atom determines what element it is For example if the nucleus has only one proton then all such atoms are hydrogen atoms If there are eight protons then that atom is oxygen Atomic number z The number of electrons or protons in an atom is called the atomic number of that atom It is represented by the letter Z If we know the atomic number of an atom we can find the number of electrons or protons in it Look at the figures The nucleus of hydrogen atom has one proton around which revolves one electron It means that its atomic number z is In a helium atom there are two protons in the nucleus and two electrons revolving in the orbit around the nucleus So the atomic number z of helium is Look at the atomic structure of oxygen shown in the figure What is its atomic number Mass number A or Atomic mass We have seen that the mass of an atom is concentrated in its nucleus From this we can get the mass number A It is equal to the sum of the number of protons p and number of neutrons n in the nucleus Atomic mass or Mass number Number of Protons Number of Neutrons A p n Lithium atom contains protons and neutrons Its mass number A In a sodium atom there are Protons and neutrons Hence its mass number A is While writing the symbol of an element its atomic number and mass number are also written For example the symbols of hydrogen carbon and oxygen are written as H C Orespectively All the elements in the periodic table have the following combination of protons electrons and neutrons Valency When we shake hands with others we can either shake hand with one persons using one hand or shake hand with two persons using both our hands If we have more hands we can shake hands with more persons In the same manner atoms can share either one electron or two or three or four electrons and some cannot share any electron This property is called valency Valency is the combining property of an atom It is a measure of how many hydrogen atoms it can combine with For example oxygen can combine with two hydrogen atoms and create water molecule So the valency of oxygen atom is two In the case of chlorine it can combine with only one hydrogen to create HCl hydrochloric acid Here the valency of chlorine is one Methane CH has one carbon atom combining with four hydrogen atoms Can you guess the valency of carbon in methane In ammonia molecule nitrogen combines with three hydrogen atoms What is the valency of nitrogen in ammonia Atoms of different elements combine with each other to form molecules Valency determines the number of atoms of an element that combines with atom or atoms of another type The element having valency one is called monovalent Example Hydrogen and Sodium The elements having valency two are called divalent Example Oxygen and Beryllium The elements having valency three are called trivalent Example Nitrogen and Aluminium Some elements exhibit more than one valency For example iron combines with oxygen to form two types of oxides namely ferrous oxide exhibits valency and ferric oxide exhibits valency We will study about them in detail later When atoms of different elements combine with each other molecules of compounds are formed In these instances it is necessary to know the valancies of those elements Unit Reproduction and Modification in plants We know already that flowering plants have root stem and leaves They are called vegetative organs Flowers fruits and seeds in a plant are called reproductive organs In earlier classes we have seen that new plants can be grown from seeds In this lesson we are going to know how a flower changes itself into a fruit and the modifications of root stem and leaves of a plant We can see from this activity that watermelon plant is produced from that seeds Potato plant is not from seed but from the stem tuber vegetative part Seed is not only the source for new generation even vegetative part of a plant can be used to produce a new plant The process by which plants and animals produce young ones and increase their number is known as reproduction Drumstick tree can be grown from both seeds and stem cuttings When plants are reproduced from the seeds we call that process as sexual reproduction All other ways of reproduction without seed are called as asexual reproduction Sexual reproduction Seed is produced from a flower by the process of pollination and fertilization This is known as sexual reproduction To understand how seeds are formed in a flower first we need to understand parts of a flower Parts of flower Let us compare few buds and opened flowers of Hibiscus and Datura Observe bud and opened flower of Hibiscus and Datura We can tabulate the characteristics of Hibiscus and Datura flowers as below In a bud we can see a green colour leaf like structure which cover the whole bud or flower Each of these green leaf like structure present as an outermost layer is called as sepal This outer most ring of sepals is known as calyx Petals are the largest part of flowers They are often attractive brightly coloured sometimes sweet scented and attract the insects This ring of petals together is called corolla Inside corolla in Hibiscus we can observe a long tube on which many stamens are arranged But in Datura we can see only five stalked structures stamens This ring or whorl of a flower is called androecium Each stamens consists of two parts a stalk called filament and a lobe called anther If you touch these lobes in a mature flower we can get a powdery substance called pollen grains male reproductive part Inside androecium whorl we can find a female reproductive part of the flower called gynoecium You will find this part with a swollen bottom part This is the ovary Seeds are produced in this part On top of the ovary there is a slender tube like structure called style The top most sticky tip of the style is stigma Pollen grains are received by the stigma This is the fourth whorl of a flower Types of flowers Flowers can be divided into two types They are explained below Complete Flower If all the four whorls calyx corolla stamens and pistil are present then it is called as complete flower Complete flowers are bisexual flowers Incomplete Flower If any of these four whorls is missing then it is called as incomplete flower Incomplete flowers are unisexual flowers There are two types of unisexual flowers male flower and female flower The flower with androecium and without gynoecium is called as male flower and the one with gynoecium and without androecium is known as female flowers Pollination We know that flowers of pumpkin are unisexual that is some flowers are male while many are female flowers We can easily identify the male and female flower of pumpkin even before the buds bloom To understand how a flower develops into fruit let us perform an experiment on pumpkin plant The process by which pollen grains reach stigma is called as pollination The flower that receives pollen grains is called pollinated flower while the one that did not receive pollen grains is called as unpollinated flower In the above experiment we transferred the pollen grains from male flower to the female flower This is called as an artificial pollination However in nature there are many ways in which pollen grains reach the stigma of the flower and it is called as natural pollination In some plants like grasses pollen grains are light Stamens shed pollen grains and are carried by wind to other flower Insects birds are also agents of pollination Bees butterflies and variety of birds hover around flowers They help to carry pollen from one flower to another Pollen grains stick to their legs wings or abdomen when they move from one flower to another This is called as cross pollination When you shake stamens pollen grains fall Thus when wind shakes the flower or when a butterfly agitates the flower pollen grains could fall onto the stigma of the same flower Some plants that have both the male and female parts within a single flower bisexual pollinate by this means This is called as self pollination Beans Fabaceae and tomatoes Solanaceae commonly self-pollinate Even though for example tomato self pollinate they need the help of the insects to create vibrations within the flowers that will effectively loosen the pollen Paddy is mostly self pollinating using just gentle wind as the pollinating agent The agents that are helping in pollination are called pollinators In many plants pollens have to come from some other flowers This is obvious in case of plants which have distinct male and female flowers like pumpkin In some flowers the gynoecium matures first before the androecium shed pollens Such plants need cross pollination Plants such as apples plums strawberries pumpkins use insects for cross-pollination Fertilization During pollination pollen grains reach stigma What happens to them after this Substances produced on the stigma causes the pollen grain to germinate During the germination a tube develops from the pollen grain which carries male gametes and ultimately reaches female gamete inside the ovary through the style Male gamete fuses with the female gamete to form zygote This process is known as fertilization Where is this female gamete located Inside the ovary small rounded structures ovules are present In these ovules female gamete is present To know more about this we should cut ovary of a flower in longitudinal and transverse ways Cut a ovary of a flower both vertically and horizontally Observe the ovules Compare the ovary and ovules from few different flowers Are there one or more ovules Can you see any connection between the number of ovules in the ovary and number of seeds in each fruit Collect some fruits like tomato brinjal lady’s finger vegetable mango peas and custard apple and observe You can see some green part above brinjal and lady’s finger What are they Compare mango custard apple and peas All these are single fruits but custard apple has many small parts in it each with a seed Mango has a single seed and pea has many seeds What do you understand from the above observations A green part above fruits of brinjal and lady’s finger are sepals of a flower In some plants after fertilization sepal will not fall from fruit and remain or persist with fruit Custard apple is made up of many fruits aggregated together Each fruit part is thin membranous with some granule like which is edible In mango the outer skin and middle pulpy are edible and sweet The inner most part is with single seed In pea the fruit is not fleshy but forms a covering pouch for many seeds In all the above fruits ovary a lower most swollen part of pistil develops into a fleshy fruit Ovules present inside the ovary gets transformed into a seed Hence now with these observations we shall list the changes taking place in a flower after fertilization These are collectively said to be post fertilization changes Calyx sometimes persist with fruit Petals wither fall off Androecium fall off Pistil remain and develops into a fruit Style and stigma fall off Ovary enlarges to store food materials and develops into a fruit Ovules present inside the ovary develops into seeds Asexual reproduction We saw that plants reproduce not only from seeds but by other processes as well The production of new plants without the involvement of pollination and fertilization is known as asexual reproduction Let us study the types of asexual reproduction Vegetative Propagation In potato shoot arise from eyes Sugar cane and yam also grow like this Vegetative parts of the plants such as root stem and leaves can help to produce the plant Budding When we go to a bakery we see so many types of cakes and breads These are very soft in nature This is due to the presence of yeast Single yeast undergoes asymmetric division It produces a small protuberance which gradually grow and detach from the parent cell This process is called budding Fragmentation In a pond we see so many algae Spirogyra is a filamentous alga When it matures the filament divides into pieces Each fragment or piece of a filament will grow into a new filament or individual Likewise spirogyra produces so many young ones and this process is known as fragmentation Spore Formation Scarcity of water high temperature nutrient deficiency in soil etc are unfavourable conditions During these conditions non-flowering plants like algae fungi moss and ferns produce spores They germinate into a new plant when favourable conditions return Modifications of plant parts Compare the given plants and discuss with your teacher Carefully remove a fresh carrot plant from the soil and observe it Look at the part we usually consume as carrot vegetable It is not a unripe fruit but the tap root of the carrot plant We can see that the tap root of the carrot is swollen In the case of the carrot plant the tap root has a different characteristics than the usual plants Normally each plant organ originally evolves to meet certain needs of the plant For example roots evolve primarily to anchor the plant and also to absorb water and mineral nutrients from the soil Leaves are adapted to optimize photosynthesis Stems evolve to reach out to sunlight and also to conduct water from roots to leaves However in certain plant species specific parts have evolved further in unusual and surprising ways to meet certain other specific needs In some plants root stem and leaves change their shape and structure to perform special functions like storage of food mechanical support protection and other vital functions This is known as modification What appear as the leaf of a cacti are actually their stem and what appear as spine on them are actually leaf Its leaves are modified into spines an adaptation to reduce transpiration Photosynthesis is performed by the stem part of the plant In this section let us study about the modification of root stem and leaves Modification of Root a Roots for storage Look at radish turnip beet root and carrot They all grow under the soil As soon as you pluck it from the ground if you wash them gently you will notice small roots dangling from their surface All these vegetables are in fact roots of the plant Instead of thin slender roots they have become a place to store the food produced by them Hence they are thick and swollen One can notice that the tap root of radish is in the shape of spindle swollen in the middle and tapering at both ends Such type of modified roots are called spindle shaped root At times like in the case of turnip and beet root the tap root can acquire a shape of top that is spherical at the base and tapering shortly towards the apex They are called as top shaped root In case of carrot the shape is conical broad at the apex and tapering gradually towards the base and such modified roots are called conical shaped root b Mechanical Support Look at a banyan tree It seems to have many trunk supporting it However many of them are actually roots As the banyan tree is large and huge it needs support so that it does not tilt and fall down Many plants require such additional support Such plants develop roots on their aerial parts to provide mechanical support These roots grow downward and act as supportive organs There are three types of modified roots for support Prop roots Roots are modified to provide mechanical support as seen in banyan tree These roots grow vertically from horizontal branches of a tree Stilt roots In sugar cane and maize adventitious roots arise from the nodes in cluster at the base of the stem These roots are called stilt roots which give additional support Climbing roots In betel and black pepper nodes or internodes bear roots which help in climbing c Breathing roots or Respiratory roots Avicennia is a tree which grows in mangroves or swamps They have roots which are seen above the ground for the purpose of gaseous exchange These roots are erect peg like structures with numerous pores through which air circulates These roots are called breathing roots or pneumatophores d Haustorial roots Roots may also perform some special functions Haustoria or sucking roots are one such example Cuscuta a parasite plant climb the trees and other vegetation and use the haustorial roots to penetrate the tissue of the host plant and suck nutrients from them They are usually found in parasitic plants that depend on the host plants for nutrients Modification of stems Can you guess what is common between ginger onion bulb and potatoes All three are stems Some plants have their stems modified for storing food and for vegetative propagation Modified stem may be aerial subaerial or underground stems a Aerial Modifications Phylloclade In dry climate conserving water is a challenge Water evaporates from the surface If the surface area is larger evaporation would be more and if the surface area is smaller the evaporation will be less Plants with many leaves have more surface area Cactus hence has a thick stem which does most of the food production through photosynthesis and leaves are reduced to small spines with less surface area b Sub aerial Modifications Stem of some plants remains sub aerial which grow horizontally on the surface of the soil for the purpose of reproduction There are four types Runner The stem which grows laterally on the surface of the soil breaks up to produce roots where it touches the ground to give rise to new plants Centella Vallarai Stolon Stolon is a slender branch of the stem that grows upwards to some distance and then bends towards the ground Upon touching the ground it gives rise to a new plant Wild strawberry Sucker Sucker is a short and weak lateral branch that grows diagonally upwards and directly gives rise to a new shoot Chrysanthemum Offset An offset is a short and thick branch that arises from the axial part of a leaf It has thick internodes It produces a tuft of leaves and of small roots below Eichhornia c Underground modifications In aerial and sub aerial modifications stem has indefinite growth In underground modified stem whole stem is burried under the ground and it has definite growth Usually stem grows above the ground but there are some stems that grow under the ground to store food These underground stems swell and become thick There are four types of underground stems They are Rhizome Corm Tuber Bulb Rhizom It is an underground thick stem with nodes and internodes with scale leaves at the node It grows horizontally and has an irregular shape Rhizome have buds It gives rise to new stem and leaves Ginger and Turmeric Corm This underground stem is round in shape and flat at the top and bottom It is a condensed form of rhizome and bears one or more buds in the axils of scale leaves Daughter plants arise from their buds Colocasia Tuber It is an enlarged spherical underground stem that stores food It has many dormant buds on its surface known as eyes If we plant a part of tuber with the bud it grows into a new plant Potato Bulb It is a condensed stem which is disc like and stores food in the fleshy leaves The bulb has two types of leaves Fleshy Leaves Scaly Leaves The upper part of the stem has a terminal bud and it is covered by many scaly leaves The inner fleshy leaves store food as seen in garlic and onion Modifications of Leaf Plants have changed themselves to adapt to the environment they grow One of them is the modification of leaves Leaves of several plants get modified into different form based on the purpose and environment Spines Leaves are reduced to spines and the stem is modified into green succulent part to perform photosynthesis Opuntia Tendrils In climbers the leaf of plant are modified into elongated structure to help the plants climb efficiently Gloriosa superba Leaf tips are modified into tendrils Pisum sativum Pea Terminal leaflets are modified into tendrils Phyllode In Acacia auriculiformis petioles expand to form leaf like structure They carry out the function of leaf Photosynthesis Traps Plants that grow in nitrogen deficient places adapt themselves well to get it In Nepenthes the leaves are modified into a flask like structure which is used to attract insects and other tiny animals The inner wall of the leaf secretes digestive enzymes that help to digest the insects and extract the nitrogen needed for the plant Unit Health and Hygiene Have you ever taken leave from the school due to sickness What happens exactly when we become sick Sometimes we feel good even without taking any medicines and sometimes we need to consult a doctor and take regular medicines to be healed Why is it so To prevent and treat sickness successfully it is necessary to have complete understanding of the common sicknesses in the area and the combination of things that caused them This lesson may help you to understand the various causes of sickness In this lesson we are going to study about health and hygiene care of the body dieseases health problems of children and safety Hygiene Health is the best wealth If you have good health you will have a sound mind and you will gain good knowledge and wealth also Health refers to a state of a sound mind and body free from any sickness or ailment stress and problems In simple words health refers to the physical emotional and psychological well-being of a person To maintain good health you should follow good hygiene eat nutritious food do exercise take rest and have a sound sleep Hygiene refers to the good habits and their practices which are followed to prevent diseases maintain good health especially through cleanliness consumption of safe drinking water and proper disposal of sewage It refers to all those activities that are done for improving and maintaining good health and sound mind Maintenance of personal and environmental hygiene is called cleanliness In simple words it refers to the state of being clean which is essential for good health To protect us from diseases it is essential to maintain good health by taking regular bath cleaning the clothes and surroundings and also avoiding unhygienic food consumption Personal hygiene Personal hygiene is defined as the branch of health which is concerned with the individual’s adjustment to the physiological needs of the body and mind for the attainment of the maximum level of health It also refers to the cleaning and grooming of the body Cold and flu are some of the common communicable diseases They are caused not only by bacteria but also by virus When you have cold and flu you may also have running nose cough sore throat and sometimes fever or pain in the joints For some this condition may also lead to mild diarrhoea What will happen if cold affected friend classmate of you sneezes or cough in front of you When he sneezes some secretions may come out of his nose Secretions oozing out from the nose may contains the bacteria or virus When the patient touches some other object or someone else after touching the nose the virus is transferred When the patient sneezes or coughs the virus comes out with the droplets and become airborne Hence it is a good practice for the patient with cold and flu to use a hand kerchief to blow the noses and also wash the hands often to ensure that they do not accidentally spread the virus to others Community Hygiene A community is formed by a group of people living together in a particular area If the people in a community wish to lead a healthy life they should maintain basic community hygiene It can be done by adopting the following measures The surroundings should be kept clean Drains should be covered properly Used water from houses should not be let out into open drains or open areas The domestic wastes should be segregated and properly disposed off safely in separate dust bins provided by the government Green and Blue Care of the body Human body is a massive miracle It consists of organs and systems which function continuously Our body is compared to a machine Human body works well with proper maintenance and guidance For smooth functioning all the parts of the body should work in unison The digestive system circulatory system and muscular system are the core systems that should be in synchronization and function well We need to keep them well by proper care Dental Care Dental care or broadly speaking oral hygiene is an important aspect of the personal health of an individual Good oral hygiene implies sound teeth and healthy gums with healthy surrounding tissues The physical act of chewing food promotes saliva and gastric secretions which help digestion The act of chewing and tasting is called mastication It gives pleasure and emotional satisfaction of eating food Teeth is essential for good appearance and clear speech also Brushing two times a day will prevent the formation of tartar and plaque on your teeth and gums When you floss it will remove food particles plaque and bacteria which build up between your teeth When you start flossing your gums may bleed a little bit but after few days that will be stopped It should be started only with proper medical guidance Diseases affecting the teeth Failure to have oral hygiene results in diseases affecting the teeth Some of the diseases affecting the teeth and gums their causative agents and remedial measure are given below in the table Eye Care Eyes are an important organ of our body They are considered as windows to the world Eyesight is the most important sense of what we perceive comes through the sense of sight Protecting the eyes can reduce the odds of blindness and vision loss We should protect our eye from the diseases surroundings and climate condition ACTIVITY Observe the pictures and tick do’s and don’ts in the given tables Sl No Practices I Do I Don’t do Do you rub the eyes Do you watch TV work on computer for a long time Do you use cold water for cleaning your eyes Do you like eating carrot Do you regularly eat fruits like orange sweet lemon and lemon In the above checklist what do you understand Diseases affecting Eye Diseases affecting the eyes and the remedial measures are given below Hair Care The condition of the hair reflects to some extent the nutritional status and general health of the body Thin sparse hair and the loss of hair indicates a poor nutritional status The deficiencies in diet physical and mental illness of various kinds may also lead to premature greying of hair The hair follicles from which the hair grows produce oil which keeps the hair smooth The sweat and the dead skin cells come off the scalp The oil sweat and dead cells all add together and can make the hair greasy and look dirty unless it is washed regularly Keeping hair clean and healthy Regular hair wash and massage of the scalp will remove the dead skin cells excess oil and dust Rinsing the hair well with clear water and using good toothed comb for hair dressing is highly essential for the maintenance of hair Diseases A disease is the functional or physical change from a normal state that affects the health of a person by causing disability or discomfort The following are the conditions that could lead to the development of disease in an individual Infection caused by disease-causing microbes Lack of balanced diet Poor lifestyle and unhealthy habits Malfunctioning of one or more body parts or organs The prevention and treatment of diseases can be considered in two groups for their better understanding They are communicable and non-communicable disease Communicable Diseases Communicable diseases are those diseases that spread from one person to another Healthy persons must be protected from people with communicable diseases Diseases spread through contaminated air water food or vectors insects and other animals a Diseases caused by Bacteria Communicable diseases like tuberculosis cholera and typhoid are caused by bacteria These diseases spread through air water and some other organisms Tuberculosis Tuberculosis TB is caused by Mycobacterium tuberculae and spreads from one person to another person through air spitting prolonged contact and sharing materials of the patient The symptoms are fever weight loss chronic cough bloody spitting and difficulty in breathing Prevention and treatment BCG vaccination Giving special attention to the patient Regular medication like DOT Cholera Cholera is caused by Vibrio cholerae and spread through the consumption of contaminated food or water The symptoms of cholera is vomiting severe diarrhoea and cramps in legs Vibrio Cholerae Drinking contaminated water can be a cause Prevention and treatment Good hygienic practices like washing hands before eating Avoid eating uncovered food from street vendors Drinking boiled water Getting vaccination against cholera Typhoid Typhoid is caused by Salmonella typhi and spreads by contaminated food and water The symptoms are anorexia headache rashes on abdomen dysentery and high fever up to Prevention and treatment Drinking boiled clean water Proper disposal of sewage Vaccination b Diseases caused by Virus Viral diseases are extremely widespread infections caused by many type of viruses Some diseases caused by viruses are hepatitis chickenpox and rabies Hepatitis Hepatitis is one of the most dangerous and fatal diseases caused by Hepatitis virus-A B C D E Its mode of transmission is contaminated water sharing of needles and blood transfusion The symptoms of hepatitis is loss of appetite anorexia vomiting eyes and urine turning to yellow colour Prevention and treatment Drinking boiled water Proper cleaning of hands Chickenpox Chickenpox also known as varicella is a highly contagious infection caused by the varicella zoster virus This disease spreads through air and contact with an infected person Its symptoms are appearance of rashes on the whole body fever headache and tiredness Prevention and treatment The chickenpox varicella vaccine is the best way to prevent chickenpox Special attention should be given to the infected persons c Rabies Rabies is a fatal disease which is transmitted by the bite of the infected dog rabbit monkey cat etc The virus present in the saliva of dog enters the brain via neurons The symptoms of rabies are hydrophobia extreme fear for water fever for weeks and exaggerations in behaviour Prevention and treatment In early stages rabies is very difficult to detect After an animal is bitten it usually takes two to twelve weeks to show any symptoms and it may take as long as two years also Fatality can be prevented by timely vaccination before the onset of symptoms Non-communicable diseases Non-communicable diseases do not spread from person to person They are caused by other factors Therefore it is important to know which diseases are communicable and which are not They are never caused by germs bacteria or other living organisms that infect the body Antibiotics or medicines that fight against germs do not help to cure non-communicable diseases Some of the non-communicable diseases are explained below a Wearing out of body parts Rheumatism heart attack epileptic seizures stroke migraine headache cataract and cancer b External harmful agents entering the body Allergies asthma poisons snakebite cough from smoking stomach ulcer alcoholism c Lack of trace elements in the body Anemia pellagra night blindness and xerophthalmia goiter and hypothyroidism d Malnutrition Nutritious food is needed for a person to grow well work hard and stay healthy Many common sicknesses are caused by malnutrition Specific health problems of children Anaemia It is caused by eating food with less iron content and can also be caused due to feeding some other foods instead of breast milk Severe anaemia in children may lead to hookworm infection chronic diarrhoea and dysentery In the recent days school going children especially girls are affected by anaemia The Government of Tamil Nadu provides iron folic tablets to all the girls in the schools of all areas every week The signs of anaemia Pale or transparent skin the inner surface of eye lids are pale white fingernails pale gums weakness and fatigue In severe cases face and feet may be swollen the heart beat is rapid and with shortness of breath Children and women who eat mud are usually anaemic Treatment and prevention of anaemia Anaemia can be preventing by takes proper food and diet Food Moringa leaves dates liver sheep and chicken green green leafy vegetables like beans peas lentils and greed banana Pills Cod liver oil tablet Ferrous sulphate Safety and First Aid First aid is the immediate treatment given to the victim of trauma or sudden illness before medical help is made available First aid is important for following reasons It saves the life It prevents further bleeding and determine the condition of the patient It relieves the pain It provides a medical care available at the earliest Burns The tissue damage caused by heat chemical electricity sunlight or nuclear radiation is known as burns Mostly burns are caused by scalds building fires flammable liquid and gases There are three types of burns according to degree of burning First-degree burns affect only the outer layer called the epidermis of the skin Second-degree burns damage the epidermis and the layer beneath it called the dermis Third-degree burns involve damage or complete destruction of the skin to its full depth and damage to underlying tissues also People who experience such burns often require skin grafting First aid for Burning In case of minor burns the affected area should be washed with cold water and an antiseptic cream should be applied In case of severe burns where deeper layers of tissues get destroyed and blisters appear use of water should be avoided The burnt area should be covered with a clean non-sticking cloth or bandages Larger burns need immediate medical attention It is very important to keep a fire extinguisher readily available Cut and Scratches Cuts and scratches are the areas of damage on the surface of the skin A cut is a line of damage that can go through the skin and into the muscle tissues below whereas a scratch is surface damage that does not penetrate the lower tissues Cuts and scratches may bleed or turn red become infected and leave scars First aid for cuts For minor cuts the affected area should be washed with cold running water and cleaned with an antiseptic liquid Then an antiseptic cream should be applied on the wound and sterilized bandage should be tied to prevent infection If the cut is deep a clean cotton pad should be placed on the cut and pressed and the injured person should be taken to a doctor immediately Basic cleanliness and protection The most important thing is to help anybody but you must also protect yourself from HIV and other blood-borne diseases when you help someone who is bleeding You should wear gloves or a clean plastic bag on your hands Be careful not to prick yourself with needles or other sharp objects around the person you are helping Unit Visual Communication In general whenever we think of computers the things that come to our mind are computer screen keyboard mouse and CPU We have learnt about computer and the parts of a computer as introductory part in standard VI Apart from them software and hardware also play vital role in the working of computer Now we shall learn how to operate the computer File and Folder The reason we prefer computer is its speed and the ability to store data How can we save data and information in computer We can save them in folders which accommodate multiple files or a single file Let us understand the terminologies like file and folder before moving further File The output we get from any application is commonly referred as file Therefore the application for the specific purposes determines the nature of the file Folder A folder is a storage space that contains multiple files We can create files as per the user’s need For clear understanding we can take the example of a bookshelf in a library The individual book can be considered as a file and the whole set of books in a shelf can be considered as folders When we right click on the mouse the pop-up menu appears on the screen with multiple options Select New option and a secondary menu comes up with another set of options Select Folder option in the menu You can now save your file s in the newly created folder Creating Files More people are using Windows and LINUX operating systems in their computers We can do many activities like collecting notes drawing painting creating animations spreadsheets word docs PPTs etc We use Guide Board to go to unknown places When we On the computer and click the Start button at the left corner of the computer it shows the list of all programs in the computer Now select the required program and create the required files If the computer is operating on the Windows OS we can collect our notes in Notepad application and draw pictures in Paint application As per its name we can type notes in Notepad and save the created files in a folder Likewise in the Paint app we can draw and edit pictures Let us see how we can create image gallery animations and graphics easily Visual Communication Devices Pictures and audio-visuals gives us more understanding than teaching and writing on the black board Is it right Instead of saying a story like once upon a time there was a king we can understand the concept easily by seeing the video Also it registers firmly in the minds of the students The device which helps in explaining the concepts easily through pictures is known as Visual Communication Device For example photos audio visuals drawings animations all these can be created easily with the help of computer Cinema is a good example for Visual Communication Device Photo Gallery and Photostory You all must have admired the photos in the albums To beautify photos and edit the photos photographers are using a software known as Photoshop Can we make photo gallery only with the help of photos or is there anything more to do with a bunch of photos We can make photostory Yes with the photos we can make a story In our primary classes we have studied photo stories like this Children learn concepts easily through photo stories than by reading words This type of photo stories can be converted easily into videos with the help of the software Microsoft Photostory Microsoft Photostory To make videos with the help of this software we have to order the photos first then we have to select a music and keep it in a file Step Open the application of Microsoft Photostory In that select Begin a new story and click on Next Step Click Import Picture in the next screen Now the files in our computer will appear Select Saved pictures for video There is a provision for editing the picture If required we can edit the image and click on Next Step Now we can input small text which is apt to the pictures Then click on Next and give animation to the videos We can give audio effect also to these images After finishing this click on Next Step To provide background music we can select a music file through Select Music and click on Next Step Next select a title for the story and select the place where it has to be saved in your computer Then through Settings change the format of the video Step Now our video is ready to view Click View your story You can see your video now Graphics and Animation a Raster Graphics The picture or image which is created by Raster Graphics is entered as file and data Pictures are of two types one is Vector another one is Raster Raster Graphics are created on the basis of Pixels The photos taken by camera and the photos scanned by a scanner are of the Raster type When we enlarge this type of photos we could see the pictures as rectangular layers or grids Types of Raster Files png Portable Network Graphics jpg or jpeg Joint Photographics Experts Group gif Graphics interchange Format tiff Tagged Image File Format psd Photoshop Document The Software which edit the Raster Graphics is Adobe Photoshop b Vector Graphics As the Vector Pictures are created on the basis of Mathematics even when we enlarge the picture its accuracy will not change Types of Vector Graphics Files eps Encapsulated Post Script ai Adobe Illustrator Artwork pdf Portable Document Format svg Scalable Vector Graphics sketch The softwares which edit the Vector Graphic Images are Adobe Illustrator Sketch Inkscape Creating vector image through Inkscape Software Inkscape software is used to convert image drawn on paper into vector image Step First we have to scan the picture we have drawn in the computer Step Then we have to open this picture in the Inkscape software Select the entire picture Step Select Path option From the submenu select Trace Bitmap option Step Do corrections in the small screen which appears Now upload this edited image and click on OK Step Now close the screen of TRACE BITMAP Now click the picture that appears on the present screen and drag it You will get the vector graphics of the drawn picture SAVE it by clicking the save button and save it in your choice of file format As soon as we see the above picture we know the difference between the two The first is TWO DIMENSIONAL D another one is THREE DIMENSIONAL D The two dimensional D images have only the two dimensions length and height But three dimensional images D have length height and width D images appear in front of our eyes like it happens in the real world Three dimensional videos will bring the scenes alive before our eyes Already there are three dimensional films Now three dimensional games have also got released Now there is a new technology VIRTUAL REALITY in D VIRTUAL REALITY is a technology which shows the computer image as real image When we see games through this technology we can feel perceive the setting of the game as real Now this technology has been introduced in Smart Phones too Heat and Temperature Learning Objectives To understand the working principle of thermometer To measure temperature using thermometer To know about Thermometric Liquids To differentiate between Clinical and Laboratory Thermometer To know the various units of temperature To convert a temperature from a thermometer scale to others Introduction You shiver when it is cold outside and sweat when it is hot outside but how can you measure those weather temperatures Temperature is involved in many aspects of our daily lives including our own bodies and health the weather and how hot the stove must be in order to cook food The measurement of warmness or coldness of a substance is known as its temperature It is a measure of the average kinetic energy of the particles in an object Temperature is related to how fast the atoms within a substance are moving The gas particles on the right have more kinetic energy than those on the left So the gas on the right is at a higher temperature Temperature Units There are three units which are used to measure the temperature Degree Celsius Fahrenheit and Kelvin Degree Celsius Celsius is written as and read as degree For example it is read as twenty degree Celsius Celsius is called as Centigrade as well Fahrenheit Fahrenheit is written as for example it is read as twenty five degree Fahrenheit Kelvin Kelvin is written as K For example K it is read as hundred Kelvin The SI unit of temperature is kelvin K Measuring Temperature The temperature of the object is well approximated with the kinetic energy of the substances The high temperature means that the molecules within the object are moving at a faster rate But the question arises how to measure it Molecules in any substance are very small to analyze and calculate its movement Kinetic energy in order to measure its temperature You must use an indirect method to measure the kinetic energy of the molecules of a substance We studied that solids expands when heat is supplied to it Like solid substances liquids are also affected by heat To know this let us do the activity In a thermometer when liquid gets heat it expands and when it is cooled down it contracts It is used to measure temperature Like solid and liquid objects the effect of heat is also observed on gaseous objects Thermometer Thermometer is the most common instrument to measure temperature There are various kinds of thermometers Some of them are like glass tubes which look thin and are filled with some kind of liquid Why Mercury or Alcohol is used in Thermometer Mostly Alcohol and Mercury are used in thermometers as they remain in liquid form even with a change of temperature in them A small change in the temperature causes change in volume of a liquid We measure this temperature by measuring expansion of a liquid in thermometer What is required A small glass bottle a rubber cork an empty refill water colour a candle a fork a paper What to do Take a small glass bottle Fill it with coloured water Make hole at the centre of the rubber cork Pass empty refill from the hole of the rubber cork Make the bottle air tight and observe the water raised in the refill Make a scale on paper place it behind the refill and note down the position of the surface of water Hold bottle with fork and supply heat to it with candle Then observe What is the change in the surface of water Stop the supply of heat When water is cooled observe the surface of water in the refill what change takes place Why When a liquid is heated it expands and when it is cooled down it contracts Properties of Mercury Its expansion is uniform For equal amounts of heat it expands by equal lengths It is opaque and shining It does not stick to the sides of the glass tube It is a good conductor of heat It has a high boiling point and a low freezing point − Hence a wide range of temperatures can be measured using a mercury thermometer Properties of Alcohol The freezing point of alcohol is less than − So it can be used to measure very low temperatures Its expansion per degree Celsius rise in temperature is very large It can be coloured brightly and hence is easily visible Types of Thermometers There are different types of thermometers for measuring the temperatures of different things like air our bodies food and many other things Among these the commonly used thermometers are clinical thermometers and laboratory thermometers Clinical Thermometer These thermometers are used to measure the temperature of a human body at home clinics and hospitals All clinical thermometers have a kink that prevents the mercury from flowing back into the bulb when the thermometer is taken out of the patient’s mouth so that the temperature can be noted conveniently There are temperature scales on either side of the mercury thread one in Celsius scale and the other in Fahrenheit scale Since the Fahrenheit scale is more sensitive than the Celsius scale body temperature is measured in F only A clinical thermometer indicates temperatures from a minimum of or to a maximum of or Precautions to be Followed While Using a Clinical Thermometer The thermometer should be washed before and after use preferably with an antiseptic solution Jerk the thermometer a few times to bring the level of the mercury down Before use the mercury level should be below or Do not hold the thermometer by its bulb Keep the mercury level along your line of sight and then take the reading Handle the thermometer with care If it hits against some hard object it may break Do not place the thermometer in a hot flame or in the hot sun Laboratory Thermometers Laboratory thermometers are used to measure the temperature in school and other laboratories for scientific research They are also used in the industry as they can measure temperatures higher than what clinical thermometers can record The stem and the bulb of a lab thermometer are longer when compared to that of a clinical thermometer and there is no kink in the lab thermometer A laboratory thermometer has only the Celsius scale ranging from − to Precautions to be Followed While Using a Laboratory Thermometer Do not tilt the thermometer while measuring the temperature Place it upright Note the reading only when the bulb has been surrounded by the substance from all sides In humans the average internal temperature is though it varies among individuals However no person always has exactly the same temperature at every moment of the day Temperatures cycle regularly up and down through the day according to activities and external factors Use of Laboratory thermometer Take some water in a beaker Take a laboratory thermometer and immerse its bulb end in water holding it vertically Ensure to dip whole portion of bulb end The bulb end should not touch the bottom or side of the beaker Observe the movement of rise of mercury When it becomes stable take the reading of the thermometer Repeat this with hot water and take the reading Difference between clinical and laboratory thermometer Clinical Thermometer Laboratory Thermometer Clinical thermometer is scaled from to or from to Laboratory thermometer is generally scaled from to Mercury level does not fall on its own as there is a kink near the bulb to prevent the fall of mercury level Mercury level falls on its own as no kink is present Temperature can be read after removing the thermometer from armpit or mouth Temperature is read while keeping the thermometer in the source of temperature a liquid or any other thing To lower the mercury level jerks are given No need to give jerk to lower the mercury level It is used for taking the body temperature It is used to take temperature in laboratory Digital Thermometer Here is a lot of concern over the use of mercury in thermometers Mercury is a toxic substance and is very difficult to dispose of if a thermometer breaks These days digital thermometers are available which do not use mercury Instead it has a sensor which can measure the heat coming out from the body directly and from that can measure the temperature of the body Digital thermometers are mainly used to take the body temperature ACTIVITY Use of Digital thermometer Tip Probe On Off Button Display Wash the tip with warm not hot soapy water Press the ON button Insert the tip of the thermometer into the mouth bottom or under the armpit Hold the thermometer in place until it beeps about seconds Read the display Turn off the thermometer rinse under water and put it away in a safe place Caution Alex wanted to measure the temperature of hot milk using a clinical thermometer His teacher stopped him from doing so We are advised not to use a clinical thermometer for measuring the temperature of any object other than human body Also we are advised to avoid keeping it in the sun or near a flame Why A Clinical thermometer has small temperature range The glass will crack burst due to excessive pressure created by expansion of mercury Maximum minimum thermometer The maximum and minimum temperatures of the previous day reported in weather reports are measured by a thermometer called the maximum minimum thermometer Scales of thermometers Celsius scale Celsius is the common unit of measuring temperature termed after Swedish astronomer Anders Celsius in before that it was known as Centigrade as thermometers using this scale are calibrated from Freezing point of water to boiling point of water In Greek Centium means and Gradus means steps both words make it centigrade and later Celsius Fahrenheit Scale Fahrenheit is a Common unit to measure human body temperature It is termed after the name of a German Physicist Daniel Gabriel Fahrenheit Freezing point of water is taken as and boiling point Thermometers with Fahrenheit scale are calibrated from to Kelvin scale Kelvin scale is termed after Lord Kelvin It is the SI unit of measuring temperature and written as K also known as absolute scale as it starts from absolute zero temperature Temperature in Celsius scale can be easily converted to Fahrenheit and Kelvin scale as discussed ahead Fahrenheit Celsius Kelvin K K K K Boiling Point of Water Freezing Point of Water K Temperature in Celsius scale can be easily converted to Fahrenheit and Kelvin scale as discussed ahead The equivalence between principal temperature scales are given in Table for some temperatures Temperature Celsius scale Farenheit scale Kelvin scale K Boiling point of water Freezing point of water Mean temperature of human body Room temperature Average Relation between Fahrenheit scale and Celsius scales is as under F C K C HEAT AND TEMPERATURE KELVIN KELVIN KELVIN KELVIN KELVIN KELVIN KELVIN KELVIN Temperature of the Universe in the earliest moments after the Big Bang C F C F C F C F CF C F C F Hottest natural temperature ever recorded on Earth Average human body temperature Lord Kelvin Anders Celsius Gabriel Fahrenheit Rankine KEY CONTRIBUTORS Thermometer Liquid Expands when Heated Low Temperature High Temperature Most of the people in the world use the Celsius scale to measure temperature for day to day purpose The Kelvin scale has been designed in such a way it is not only an absolute temperature scale but also change is equal to a K change This makes the conversion from Celsius to absolute temperature scale Kelvin scale easy just the addition or subtraction of a constant But in United States they prefer to use the Fahrenheit scale The problem is converting Fahrenheit to absolute scale Kelvin is not easy To sort out this problem they use The Rankine scale It named after the Glasgow University engineer and physicist Rankine who proposed it in It is an absolute temperature scale and has the property of having a R change is equal to a change Fahrenheit users who need to work with absolute temperature can be converted to Rankine by R F Numerical Problems Solved examples How much will the temperature of be in Celsius and Kelvin Given Temperature in Fahrenheit F Temperature in Celsius C Temperature in Kelvin K F- C C C x K C Thus the temperature in Celsius C and in Kelvin K At what temperature will its value be same in Celsius and in Fahrenheit Given If the temperature in Celsius is C then the temperature in Fahrenheit F will be same ie F C F- C or C- C C x C x C C C C F The temperatures in Celsius and in Fahrenheit will be same at Convert the given temperature K K K K POINTS TO REMEMBER The measurement of warmness or coldness of a substance is known as its temperature There are three units which are used to measure the temperature Degree Celsius Fahrenheit and Kelvin The SI unit of temperature is Kelvin K In a thermometer when liquid gets heat it expands and when it is cooled down it contracts It is used to measure temperature Relation between Fahrenheit scale and Celsius scales is F- C K C i Clinical thermometer A form of energy Normal temperature of human body Heat iv Boiling point of water v Melting point of water Kink ELECTRICITY Learning Objectives Understanding the flow of electric current and learning to draw the circuit diagram Understanding the difference between conventional current and electron flow Understanding the different types of circuit based on flow of electricity and the connection of bulbs in a circuit Distinguishing a cell and a battery Understanding the effects of electric current and factors affecting the effect of electric current Applying their knowledge in identifying the components of electrical circuits Understanding the discrimination between different type of circuits Doing numerical problems and drawing the circuit diagram of their own Introduction In when it was sun set in the west that miracle happened in New york city When Thomas Alva Edison gently pushed the switch on bulbs in houses suddenly got lighted up It was the greatest invention to mankind From then the world was under the light even in the night Many countries began using electricity for domestic purposes Seventeen years after the New York in electricity first came to India The Calcutta Electric Supply Corporation Limited commissioned the first thermal power plant in India on April Around s a thermal power station was set up at Basin Bridge in Madras city and power was distributed to the government press general hospital electric tramways and certain residential areas in Madras Today electricity is a common household commodity In your class we learned about electricity and their sources From operating factories running medical equipments like ventilator communications like mobile radio and TV drawing water to the agricultural field and light up homes electricity is important What is electricity We can see that it is a form of energy like heat and magnetism We have learnt that all materials are made up of small particles called atoms The centre of the atom is called the nucleus The nucleus consists of protons and neurtrons Protons are positively charged Neutrons have no charge Negatively charged electrons revolve around the nucleus in circular orbits Electricity is a form of energy that is associated with electric charges that exists inside the atom ACTIVITY Comb your dry hair Immediately after combing the dry hair bring the comb closer to the bits of paper what will you observe When you are getting up from the plastic chair the nylon shirt seems to be stuck to the chair and make crackling sound What is the reason for the creation of the sound A balloon sticks to wall without any adhesive after rubbing on your hand Do you know the reason for all In all the above activities when a body is rubbed against some other body become charged Electric charge is measured in a unit called coulomb One unit of coulomb is charge of approximately × protons or electrons Electrical charges are generally denoted by the letter `q` Electric Current The flow of electric charges constitute an electric current For an electrical appliance to work electric current must flow through it An electric current is measured by the amount of electric charge moving per unit time at any point in the circuit The conventional symbol for current is I Cross section area Electric charge Unit of Electric Current The SI unit for measuring an electric current is the ampere which is the flow of electric charge across a surface at the rate of one coulomb per second I q t Where I ⇒ current in Ampere A q ⇒ charge in coulomb c t ⇒ time taken in seconds s CHARGE TIME CURRENT I e e e q t Worked example If coulomb of electric charge flows through a wire in two minutes calculate the current in the wire Solution Given Charge q coulomb Time t min x s s Current I q t C s A Conventional Current and Electron Flow Before the discovery of electrons scientists believed that an electric current consisted of moving positive charges This movement of positive charges is called conventional current After the electrons were discovered it was known that electron flow actually takes place from the negative terminal to the positive terminal of the battery This movement is known as electron flow Conventional current is in the direction opposite to electron flow Measurement of electric current Electric current is measured using a device called ammeter The terminals of an ammeter are marked with and sign An ammeter must be connected in series in a circuit Instruments used to measure smaller currents in the milli ampere or micro ampere range are designated as milli ammeters or micro ammeters milliampere mA ampere ampere microampere µA ampere ampere Worked Examples If A current flows through a circuit then convert the current in terms of micro ampere Solution Given that the current flows through the circuit is A We know that A µA A × µA × × µA × µA A µA Potential difference v Electrical charges need energy to push them along a circuit Water always flows from higher to lower ground Similarly an electric charge always flows from a point at higher potential to a point at lower potential An electric current can flow only when there is a potential difference V or PD The potential difference between any two points in the circuit is the amount of energy needed to move one unit of electric charge from one point to the other Unit of potential difference Did you ever notice the precautionary board while crossing the railway track and the electrical transformer What does the word high voltage denotes The term metioned in the board volt is the measurement for the electric potential difference The SI unit of potential difference is volt V potential difference between two points is measured by using a device called voltmeter Water at the top of the waterfall has more potential energy Water near the base of the waterfall has less potential energy The electric current flow from the higher potential level to the lower potential level is just like the water flow Electrical conductivity and Resistivity Resistance R An electrical component resists or hinders the flow of electric charges when it is connected in a circuit In a circuit component the resistance to the flow of charge is similar to how a narrow channel resists the flow of water Electric charge Electrical component with resistance The higher the resistance in a component the higher the potential difference needed to move electric charge through the component We can express resistance as a ratio Resistance of a component is the ratio of the potential difference across it to the current flowing through it V I R The SI unit of resistance is ohm Greater the ratio of V to I the greater is the resistance Electrical conductivity σ Electrical conductivity or specific conductance is the measure of a material's ability to conduct an electric current It is commonly represented by the Greek letter σ sigma The SI Unit of electrical conductivity is Siemens meter S m Electrical resistivity ρ Electrical resistivity also known as specific electrical resistance or volume resistivity is a fundamental property of a material that quantifies how strongly that material opposes the flow of electric current The SI unit of electrical resistivity is the ohm-metre Ωm Material Resistivity ρ Ω m at Conductivity σ S m at Silver x- x Copper x- x Annealed Copper x- x Aluminum x- x Analogy of Electric Current with Water Flow An electric current is a flow of electrons through a conductor like a copper wire We can't see electrons however we can imagine the flow of electric current in a wire like the flow of water in a pipe Let us see the analogy of flow of electric current with the water flow Water flowing through pipes is pretty good mechanical system that is a lot like an electrical circuit This mechanical system consists of a pump pushing water through a closed pipe Imagine that the electrical current is similar to the water flowing through the pipe The following parts of the two systems are related The pipe is like the wire in the electric circuit and the pump is like the battery The pressure generated by the pump drives water through the pipe The pressure is like the voltage generated by the battery which drives electrons through the electric circuit Suppose there are some dust and rust that plug up the pipe and slow the flow of water creating a pressure difference from one end to the other end of the pipe In similar way the resistance in the electric circuit resists the flow of electrons and creates a voltage drop from one end to the other Energy loss is shown in the form of heat across the resistor Current Water Analogy More water current More electric current Less water current Less water current Sources of Electric current Electro chemical cells or electric cells An electric cell is something that pro- vides electricity to different devices that are not fed directly or easily by the supply of electricity In addition to electro chemical we use electro thermal source for generating electricity for large scale use It has two terminals When electric cells are used a chemical reaction takes place inside the cells which produces charge in the cell ACTIVITY Shall we produce electricity at our home Materials required Zinc and copper electrodes a light blub connecting wires and fruits such as lemons orange apples grapes and bananas Procedure Set up a circuit as shown in figure Note the brightness of the blub when the circuit is connected to a lemon Repeat the experiment using the other fruits listed above Do you notice the differences in the brightness of the bulb when it is connected to different fruits Which fruit gives the greatest brightness Why If you do not know please get the appropriate reason from your teacher Inference In the above activity what makes enabled the bulb to glow Why there is a difference in the brightness of the bulb The reason is that the fruits which you have connected to the bulb produces the electric energy at different levels The sources which produce the small amount of electricity for shorter periods of time is called as electric cell or electro chemical cells Electric cell converts chemical energy into electrical energy Types of cell primary cell and secondary cell In our daily life we are using cells and batteries for the functioning of a remote toys cars clock cellphone etc Event hough all the devices produces electrical energy some of the cells are reusable and some of them are of single use Do you know the reason why Based on their type they are classified into two types namely primary cell and secondary cell Primary cell The dry cell commonly used in torches is an example of a primary cell It cannot be recharged after use Secondary cells Secondary cells are used in automobiles and generators The chemical reaction in them can be reversed hence they can be recharged Lithium cylindrical cells button cells and alkaline cells are the other types that are in use ACTIVITY I am so exhausted I am going to faint What first aid will you give me to wake up Difference between primary cell and secondary cell PRIMARY CELL SECONDARY CELL The chemical reaction inside the primary cell is irreversible The chemical reaction inside the secondary cell is reversible It cannot be recharged It can be recharged Examples of secondary cells are lead accumulator Edison accumulator and Nickel Iron accumulator It is used to operate devices such as mobile phones cameras computers and emergency lights Examples- simple voltalic cell Daniel cell and lechlanche cell and dry cell Examples of secondary cells are lead accumulator Edison accumulator and Nickel Iron accumulator Primary cell simply Dry cell A dry cell is a type of chemical cell commonly used in the common form batteries for many electrical appliances It is a convenient source of electricity available in portable and compact form It was developed in by Yei Sakizo of Japan Primary Cell Secondary Cell Dry cell Lithium cylindrical cells Button cells Alkaline cells Automobile battery Dry cells are normaly used in small devices such as remote control for TV torch camera and toys A dry cell is a portable form of a leclanche cell It consists of zinc vessel which acts as a negative electrode or anode The vessel contains a moist paste of saw dust saturated with a solution of ammonium chloride and zinc chloride The ammonium chloride acts as an electrolyte Electrolytes are substances that become ions in solution and acquire the capacity to conduct electricity The purpose of zinc chloride is to maintain the moistness of the paste being highly hygroscopic The carbon rod covered with a brass cap is placed in the middle of the vessel It acts as positive electrode or cathode It is surrounded by a closely packed mixture of charcoal and manganese dioxide MnO in a muslin bag Here MnO acts as depolarizer The zinc vessel is sealed at the top with pitch or shellac A small hole is provided in it to allow the gases formed by the chemical action to escape The chemical action inside the cell is the same as in leclanche cell The dry cell is not really dry in nature but the quantity of water in it is very small as the electrolyte is in the from of a paste In other cells the electrolyte is usually a solution Batteries Batteries are a collection of one or more cells whose chemical reactions create a flow of electrons in a circuit All batteries are made up of three basic components an anode the side a cathode the – side and some kind of electrolyte Electrolyte is a substance that chemically reacts with the anode and cathode Invention of the Battery One fateful day in Italian physicist physician biologist and philosopher Luigi Galvani was dissecting a frog attached to a brass hook As he touched the frog’s leg with an iron scapel the leg twitched Galvani theorized that the energy came from the leg itself but his fellow scientist Alessandro Volta believed otherwise Volta hypothesized that the frog’s leg impulses were actually caused by different metals soaked in a liquid He repeated the experiment using cloth soaked in brine instead of a frog corpse which resulted in a similar voltage Volta published his findings in and later created the first battery the voltaic pile in The invention of the modern battery is often attributed to Alessandro Volta It actually started with a surprising accident involving the dissection of a frog ELECTRIC SWITCH Our country faces a shortage of electricity So wastage of electricity means you are depriving someone else of electricity Your electricity bill goes up So we must use electricity very carefully and only when it is needed We must use the electricity as long as we need it in our house hold activities Can you remember what you did last year to turn the current on or off This time we shall use a switch to turn the current on or off You may have used different kinds of switches to turn your household electric appliances on or off Switches help us to start or stop the appliances safely and easily ACTIVITY Make your own switch Let us make a switch of our circuits Take cm long iron strip Bend it twice as shown in figure Now drive a nail into the bend of the wooden block Nail one end of the strip to the other end of the wooden block so that its free end rests just above the first nail without touching it Your switch is ready Would you like to test your switch To do so first set up the circuit as shown in the figure How would you use the switch to open or close the circuit If the bulb in your circuit glows when the metal strip of your switch is pressed on the nail and turns off when it is not then your switch is working The switch you made is a simple one You may have seen many different types of switches on switchboards and appliances at your home and school The switches are designed according to their usage convenience and safety But all of them work on the same principle Switch is a mechanical component that consists of two or more terminals that are internally connected to a metal strip Commonly used switches are listed below Electric Circuit Tapping Circuit you made with switch is a simple circuit key Toggle switch Illuminated switch Plug key Rocker switch Slide switch are used to draw Symbol Symbol Symbol Symbol open closed Wire Connects electrical components to one another Usually insulated with a rubber covering Bulb Light source Consists of metal filament glass bulb metal casing and metal tip Switch Controls the flow of electric current such as Electric conductors Metal such as copper iron Electric insulator Wood Glass Plastic Rubber Electric current flows in the electric circuit Bulb lights up No electric current flows in the electric circuit Bulb does not light up can be are made up of Circuit diagrams Battery Energy source Has a positive terminal and a negative terminal Electrial components Electric Circuits Electric circuit It is difficult to draw a realistic diagram of this circuit The electrical appliances you use at home have even more difficult circuits Can you draw realistic diagrams of such circuits which contain many bulbs cells switches and other components Do you think it is easy It is not easy Scientists have tried to make the job easier They have adopted simple symbols for different components in a circuit We can draw circuit diagrams using these symbols Symbols for bulbs cells and switches are shown in figure In a cell the longer line denotes the positive terminal and the short line denotes the negative terminal We shall use these symbols to show components in the circuits we draw Such diagrams are called circuit diagrams All muscles of our bodies move in response to electrical impulses generated naturally in our bodies Types of electrical circuits In the above experiment we make a circuit with a bulb and a cell We make only one kind of the circuit with a cell and a bulb But we can make many types of circuits if we have more than one bulb or cells by connecting these components in different ways Series circuit Two kinds of circuits can be made with two bulbs and a cell In this experiment we shall make one of them and study it Look at the circuit with two bulbs and a cell and a switch given here Figure It is clear from the circuit diagram that the two bulbs are connected one after the other The circuit diagram shows the sequence of the bulbs and cell not their real position The way in which the bulbs have been connected in this circuit is called series connection Now make the circuit by joining the two bulbs and cell Do both the bulbs light up Do both glow equally bright If one glows less bright will it shine more brightly if we change its place in the sequence Change the sequence of bulbs and notice Sometimes bulbs appear to be similar can differ from each other So similar looking bulb do not always glow equally bright when connected in series The circuit can be broken at several places For example between the cell and the bulb between the two bulbs etc Parallel Circuit Figure shows a circuit in which two bulbs are connected in different places This is a second type of circuit Two bulbs in this circuit are said to be connected in parallel and such circuits are called parallel circuits Similarity and Difference between Series and Parallel Circuit ■ Single loop connection ■ Bulbs dimmer ■ Bulbs share power ■ All bulbs go out if one goes out ■ Energy source ■ Connected by branches ■ Bulbs brighter ■ Each bulb fully powered ■ All bulbs stay lit if one goes out ■ Wires Series Circuit Science to mind pricking If an electrician attending an electrical fault at your home gets current shock will you touch him in order to get rid off him from current risk Will you use the wet stick to beat him to avoid further effects of electric shock Why do the electric line man are wear rubber gloves in their hands while doing electrical works on a electrical pole We know that all materials are made up of the basic building block the atom An atom in turn contains electrically charged particles Many of these particles are fixed to the atoms but in conductors such as all metals there are lots of particles that are not held to any particular atom but are free to wander around randomly in the metal These are called free charge Short circuit You might h a v e observed the spark in the electric pole located nearby your house Do you know the cause of this electric spark This is due to the short circuiting of electricity along its pathA short circuit is simply a low resistance connection between the two conductors supplying electrical power to any circuit Arc welding is a common example of the practical application of the heating due to a short circuit Conductors And Insulators Based on the property of conductance of electricity substances are classified into two types namely Conductors and Insulators or bad conductors of electricity The electrons of different types of atoms have different degrees of freedom to move around With some types of materials such as metals the outermost electrons in the atoms are loosely bound and they chaotically move in the space between the atoms of that material Because these virtually unbound electrons are free to leave their respective atoms and float around in the space between adjacent atoms they are often called as free electrons Electricity Let’s imagine that we have a metal in the form of a wire When a voltage is connected across the ends of the metal wire the free electrons drift in one direction So a really good conductor is one that has lots of free charges while those who don’t have enough free charges would not be good at conducting electricity or we can say that they would be poor conductors of electricity Conductors Conductors are the materials whose atoms have electrons that are loosely bound and are free to move through the material A material that is a good conductor gives very little resistance to the flow of charge electron on the application of external voltage This flow of charge electron is what constitutes an electric current A good conductor has high electrical conductivity in the above activity In general more the free electrons the better the material will conduct for a certain applied voltage Insulators Those materials which don’t have enough free electrons are not good at conducting electricity or we can say that they would be poor conductors of electricity and they are called insulators Insulators which gives very high resistance This is the material used in SIM Cards Computers and ATM cards Do you know by which material I am made up off The chip which are used in SIM Cards Computers and ATM cards are made up of semiconductors namely silicon and germanium because of their electrical conductivity lies between a conductor and an insulator An insulator gives a lot of resistance to the flow of charge electron During the drift of the electrons in an object when an external voltage is applied collisions occur between the free electrons and the atoms of the material also affect the movement of charges These collisions mean that they get scattered It is a combination of the number of free electrons and how much they are scattered that affects how well the metal conducts electricity The rubber eraser does not allow electric current to pass through it So rubber is a non-conductor of electricity Rubber is an insulator Most of the metals are good conductors of electricity while most of the non-metals are poor conductors of electricity Wires made of copper an electrical conductor have very low resistance Copper wires are used to carry current in households These wires are in turn enclosed in electrical insulators or materials of high electrical resistance These materials are usually made of flexible plastic Effects of Electric Current You performed many experiments with electricity in Class and learned quite a few interesting facts For example you saw that a bulb can be made to light up by making electricity flow through it The light of the bulb is thus one of the effects of electricity There are several other important effects of electricity We shall study some of these effects in this chapter There are main effects of electricity as Heating effect Magnetic effect Magnetism Chemical effect Heating effect When an electric current passes through a wire the electrical energy is converted to hear In heating appliances the heating element is made up of materials with high melting point An example of such a material is nichrome an alloy of nickel iron and chromium The heating element nichrome is covered with a layer of electrical insulation layer of electrical insulation The insulated element is in turn placed in a looped tube made of a gook heat conductor The heating effect of electric current has many practical applications The electric bulb geyser iron box immersible water heater are based on this effect These appliances have heating coils of high resistance Generation of heat due to electric current is known as the heating effect of electricity Factors affecting Heating Effect of current Electric Current Resistance Time for which current flows Electric Fuse Electric fuse is a safety device which is used in household wiring and in many appliances Electric fuse has a body made of ceramic and two points for connecting the fuse wire The fuse wire melts whenever there is overload of the current in the wire This breaks the circuit and helps in preventing damage to costly appliances and to the wiring In electrical devices a glass fuse is often used This is a small glass tube in which lies the fuse wire Effects of Electric current MCBs Miniature Circuit Breaker MCBs have been replacing electric fuse from wirings at most of the places The electric fuse has a big practical problem Whenever the wire fuses one needs to replace the wire to resume electric supply More often than not this proves to be a cumbersome task Miniature circuit breakers break the circuit automatically One just needs to switch it on to resume the electric supply Many models of MCBs have a built in mechanism by which the electric supply is automatically resumed Magnetic Effect of electricity The next effect of electric current is Magnetism In Hans Christian Oersted discovered the electricity that has a magnetic effect The experiment in activity- will help you understand the magnetic effect of electric current Application of magnetic effect of electric current Electromagnet Magnetic effect of electric current has been used in making powerful electromagnets Electromagnets are also used to remove splinters of steel or iron in hospitals dealing with eye injuries Electro magnets are used in many appliances that we use in our day to day life namely electric bell cranes and telephone Let us know how the magnetic effect of electric current is applied in telephones Telephone In telephones a changing magnetic effect causes a thin sheet of metal diaphragm to vibrate The diaphragm is made up a metal that can be attracted to magnets The diaphragm is attached to spring that is fixed to the earpiece When a current flows through the wires the soft iron bar becomes an electromagnet ACTIVITY Materials required Iron nail Battery Switch Wire Take around cm long piece of insulated flexible wire and an iron nail say about cm long Wind the wire tightly around the nail in the form of a coil Connect the free ends of the wire to the terminals of a cell as shown Place some pins on or near the end of the nail Now switch on and switch off the current What happens When the switch is kept in on position the pins starts to cling to the end of the nail When the electric current is switched off the coil generally loses its magnetism Such coils are called as electromagnets The polarities of both ends of the coil changes according to the direction of electric current passes Battery Switch Iron nail Coil of insulated wire The world comes to brightness Thomas Alva Edison Thomas Alva Edison was affected by scarlet fever and hence he joined the school at Fort Huron in America only at the age of eight When he was a child his hearing capacity was reduced One day his teacher scolded him vehementlyOn that day he dropped out of the school Since the age of seven Edison was interested towards domestic electrical devices At the age of he read the book Natural and Experimental Philosophy written by Richard Parker At the age of he read deeply Michal Faraday’s Experimental Researches in Electricity Edison worked as a telegraph operator in a railway station He was the dynamic telegraph operator His first invention was electrical telegraph and its related instruments After leaving the school his mother who was a teacher taught lessons at home for three years He invented an advanced instrument Gramophone in He used a platinum wire coil in a vacuum glass and discovered the first electric bulb in Thomas Alva Edison invented a commercially viable electric bulb This was exhibited in By using mechanical power in a battery electric power was generated by providing the voltage Edison proved that voltage is given in the ends of battery The same was transferred into an electric motor which provided mechanical energy As a mark of respect to Edison on his death the light of Statue of Liberty in New York was turned off Except the road lights of Chicago and Broadway all the lights in the city were turned off Edison was an American Scientist and Industrialist He invented many instruments like Electric bulb electric motor gramophone and kinetoscope He was known as for taking the world of darkness to brightness crossing all the obstacles in life By extending Kinetoscope into feet film strip he made first talkie film by using electric motor and magnifying glass in The diaphragm becomes attracted to the electromagnet As the person on the other end of the line speaks his voice cause the current in the circuit to change This causes the diaphragm in the earpiece to vibrate producing sound Diaphragm Current Chemical Effects of Electricity Chemical reactions happens when electricity passes through various conducting liquids This is known as chemical effects of electricity You will learn chemical effect of electricity in your higher classes POINTS TO REMEMBER An electric current is a flow of electric charge or the amount of charge flowing through a given cross section of a material in unit time Conventional current is in the direction opposite to electron flow One ampere is defined as the flow of electric charge across a surface at the rate of one coulomb per second An electric cell is something that provides electricity to different devices that are not fed directly or easily by the supply of electricity A dry cell is a portable form of a leclanche cell Batteries are a collection of one or more cells whose chemical reactions create a flow of electrons in a circuit The cell is the basic single electrochemical unit which converts chemical energy to electrical energy Ammeter An instrument for measuring the flow of electrical current in amperes Ammeters are always connected in series with the circuit to be tested Ampere A A unit of measure for the intensity of an electric current flowing in a circuit One ampere is equal to a current flow of one coulomb per second Circuit A closed path in which electrons from a voltage or current source flow Circuits can be in series parallel or in any combination of the two Current I The flow of an electric charge through a conductor An electric current can be compared to the flow of water in a pipe Measured in ampere Fuse A circuit interrupting device consisting of a strip of wire that melts and breaks an electric circuit if the current exceeds a safe level Conductor Any material where electric current can flow freely Conductive materials such as metals have a relatively low resistance Copper and aluminum wire are the most common conductors Insulator Any material where electric current does not flow freely Insulation materials such as glass rubber air and many plastics have a relatively high resistance Insulators protect equipment and life from electric shock Parallel Circuit A circuit in which there are multiple paths for electricity to flow Each load connected in a separate path receives the full circuit voltage and the total circuit current is equal to the sum of the individual branch currents Series Circuit A circuit in which there is only one path for electricity to flow All of the current in the circuit must flow through all of the loads Short Circuit When one part of an electric circuit comes in contact with another part of the same circuit diverting the flow of current from its desired path One unit of coulomb is charge of approximately × protons or electrons The potential difference between any two points is the amount of energy needed to move one unit of electric charge from one point to the other Electrical conductivity or specific conductance is the measures a material’s ability to conduct an electric current Electrical resistivity is the property of a material that quantifies how strongly that material opposes the flow of electric current The sources which produce the small amount of electricity for shorter periods of time is called as electric cell or electro chemical cells Electrolytes A substance that dissociates into ions in solution and acquires the capacity to conduct electricity Sodium potassium chloride calcium and phosphate are examples of electrolytes Electron flow is in the same direction to conventional current flow The fuse wire does not melts whenever there is overload in the wiring In a parallel circuit the electric components are divided into branches The representation of the electric current is A The electrical conductivity of the semiconductor is in between a conductor and an insulator Cell used to open or close a circuit Switch safety device used in electric circuit Circuit A complete path for the flow of an electric current Miniature circuit Breaker Reset by hand circuit becomes complete once again Fuse A device which converts chemical energy into electrical energy Water pipe Electric current Copper conductor Wood Length metre scale Current milli ampere micro ampere A This activity helps the students to understand about the Parrellel and series circuit Electricity URL http wwwphysics-chemistry-interactive-flash-animationcom electricity electromagnetism interactive components circuits association-series parallelhtm ICT CORNER ELECTRICITY PROCEDURE Step Type the URL link given below in the browser or scan the QR code A page opens with a battery some cables two sets for circuit and two bulbs Step Ask the students to fix the wires to the battery and the circuit Step Let the students do it and understand the concept with different combinations Unit Changes Around Us Physical and Chemical Changes of Matter Physical Changes of Matter Butter Ice Cube Ice Cube Melts Butter Melts Nail Rusty Nail Dough Baking Bread Chemical Changes of Matter To state the effect of heat on solid liquid and gas and the associated changes in the arrangement of particles upon heating To differentiate physical change and chemical change on the basis of particle theory To involve in experiments crystallizing copper sulphate melting ice freezing water sublimating camphor To identify the process as a physical change or chemical change based on its characteristics To clarify the process of rusting burning of paper curdling of milk reaction of baking soda with lemon juice To distinguish periodic and non-periodic changes To experience the endothermic and exothermic changes through simple activities Learning Objectives Introduction Changes take place around us all the time A change refers to an alteration in physical properties or alteration in the composition of matter For example ice melts on heating that is it changes from a solid to liquid On further heating water starts evaporating it changes from a liquid to gas Here there is a change in the physical state of the substance Let us look at another change that is when objects made of iron are exposed to moist conditions a reddish-brown new substance called rust forms on the surface of these objects In this instance of rusting there is change in the composition of the substance Thus the change involves an alteration in the properties such as colour texture and the state of the substance since there is formation of a new substance Let us go for another set of example Heat a cup of water and a paper The water upon heating become just hotter and hotter and at some point will become water vapour It remains water at all times that is water remains the same only its volume changes and hence it is called as physical change Whereas in case of burning of paper changes to carbon dioxide and other substances Now we cannot get back the paper after burning As there is a change in the chemical nature it is called as chemical change When you mix sugar in water is it a chemical change or physical change Look at the following list Identify the physical and chemical changes and fill in the given table rusting of iron digestion of food boiling egg rotting banana mixing sand and water chopping wood crushing a can mixtures of different coloured buttons burning of wood In class six we read that matter is classified as solid liquid and gas based on the physical state We know that matter is made up of tiny particles atoms and molecules particles are in constant and random movement Let us have a look at the summary of the characteristics of solid liquid and gas When the arrangement of the particles in a substance change for any reason applying pressure altering temperature and other different reasons the physical state of the substance gets changed Let us see what happens when we apply heat to the substances Solid Liquid Gas In which parcles are very close together Parcles are arranged in a fixed regular paern Parcles can vibrate about their fixed posions In which parcles are close together Parcles are not arranged in a fixed regular paern Parcles are able to slide past one another Parcles are far apart from each other Parcles are not arranged in a fixed regular paern Parcles move freely over long distances Physical Changes Chemical Changes Effect of heat on solid liquid and gases Upon heating particle arrangement within the state of matter gets disturbed The disturbance is seen either as expansion or contraction When heated or cooled the object may expand or contract but the mass remains the same That is the number of particles that was inside the object does not undergo any change only the arrangement of the particle changes When a glass of water is heated its volume increases and if a glass of water is cooled its volume decreases Such changes where there is change in volume but mass remaining the same are called physical changes and they can be pictorially depicted as follows Effect of heat again and heat loss May result in Mel ng Boiling Freezing and Condensa on May result in Expansion or Contrac on During which volume changes mass is conserved This brings about Change in state There are other possibilities that can occur upon heating the solids liquids and gases The possible changes are due to melting boiling freezing and condensation during which there is change in the physical state of the particles of the matter Let us discuss about them in detail in a short while Let us now see some physical changes and the underlying reasons as why they are simply physical changes Physical changes Physical changes are the changes in which only physical properties of a substance undergo a change and there is no change in its chemical composition There is no new substance formed in a physical change Physical properties include lustre malleability flexibility and ductility ability to be drawn into a thin wire density viscosity solubility mass volume and so on Any change in these physical properties is referred to as a physical change For example when a rubber band is stretched it elongates However when then stretching is stopped the rubber band comes back to its original state and shape In this example there is no new substance formed but the rubber band remains the same before and after elongation Characteristics of a physical change A physical change has following characteristics During a physical change no new substances are formed In a physical change the chemical properties of a substance do not change For example when ice cube melts water is formed In this change there is no new substance but water is same both in ice and in water A physical change is usually temporary and reversible in nature For example when water is heated water vapours are formed once water vapours are cooled water can be obtained again In a physical change the chemical properties of a substance do not change For example when a piece of gold is melted its chemical composition remains the same in the solid form and also in the liquid form In a physical change the physical properties such as colour shape and size of a substance may undergo a change For example cutting of vegetables and inflating a balloon are some examples of physical changes in which size and shape of a substance undergoes a change we know it is not Changes of state Change of state of a substance is one of the major physical changes we encounter in daily lives We have read about simple changes of physical state such as melting of ice in our previous classes The following are some of the changes of state from Solid to Liquid is Melting from Liquid to Gas is Vaporization from Liquid to Solid is Freezing from Gas to Liquid is Condensation from Solid to Gas is Sublimation Melting vaporization and sublimation occur when heated and hence it is called as endothermic process In an endothermic process the speed of the molecules is increased hence they move faster In contrast such as in freezing and condensation heat is removed resulting in the decreasing the speed of the molecules causing them move slower Such processes are called as exothermic process In the next section we will look at each of these physical changes Melting You have seen a puddle of water getting pooled around the glass of ice-cream or a glass of ice cubes when it is kept in room temperature The ice cubes ice-cream melt Right Can you give reason for that The ice kept in the beaker receives heat from the surrounding air to melt and form water Melting of ice and freezing of water Though ice and water look different they are both made of water molecules This means that no new substance is formed during the melting of ice only a change of state from solid to liquid takes place during the melting of ice So the melting of ice to form water is a physical change The change which occurs during the melting of ice to form water can be reversed easily by freezing the water to form ice again by keeping a beaker of water in the freezer zone of a refrigerator Thus we can find that Solid Liquid heating Liquid Solid cooling Melting is the changing of a solid into its liquid state and it happens by heating whereas Freezing is the changing of a liquid into its solid state and it happens by cooling Vapourization Look at a kettle kept on the fire The bubbles form and the liquid water becomes water vapour if you heat it sufficiently However when you put a wet cloth to dry the water evaporates into air leaving the clothes dry That is there are two types of vaporization boiling and evaporation the first one is by heating and the second type of vapourization is natural Boiling is the process of conversion of a liquid into vapours on heating In gaseous state only the arrangement of molecules changes there is no change in their chemical composition So boiling is a physical change Particles of a gas Particles of a liquid Upon heating a liquid the particles gain energy and vibrate more vigorously When the particles possess enough energy they overcome the strong forces of attraction between one another The particles break free from one another and move randomly For example when liquid water is heated to it boils to become steam Boiling occurs when the boiling point is reached The liquid changes to its gaseous state Evaporation Take a glass of water All the water molecules are moving here and there at different velocities shown as arrows of different lengths Some of the molecules especially at the surface could be moving in a direction away from the liquid and have adequate energy to overcome the attractive force surface tension of the liquid then that molecule will escape into the air Thus slowly and steadily the water molecules escape or said to evaporate and the water level in the glass decreases as the time passes Note that the temperature of the water did not rise to the level of boiling point of water Nor were there any bubbles formed like boiling Evaporation is the technique used to separate dissolved solids from a solid-liquid mixture This is the technique used to extract salt from sea water in salt pans Shallow level of sea water is impounded Slowly the water evaporates due to action of Sun Ultimately salt deposits over the ground we can understand Evaporation makes use of the fact that the solvent in a solution can vapourise at any temperature leaving behind a residue of the solid that was dissolved in the liquid From drying clothes to drying fish evaporation is used Factors affecting the rate of evaporation You must be remembering an activity done in Class six in which we have taken two same shaped glasses and fill them with equal amount of water from same tap We kept one under the hot sun and other under the shadow After three to four hours we saw that there is difference in water levels The one kept in the hot place witness more evaporation compared to the one in shade From this we can conclude that higher the temperature the rate of evaporation will be more As the temperature increases more molecules are able to break free from the surface Thus the rate of evaporation increases with rising temperature Activity Take two pans one wide and another narrow Fill hot water in both to the same depth Keep them in open Observe after one to two hours The pan that is wide has cooled more than the narrow one That is more the surface area the rate of evaporation is more Wind From this can you guess why we unfurl the clothes while putting them to dry rather than just drape them over the cloth line Evaporation is a slow process and occurs only at the surface of the liquid Freezing Water in the freezer compartment of a refrigerator gets cooled and solidifies to form ice In this case the liquid water changes into solid water called ice Only a change in state from liquid to solid takes place during the freezing of water to form ice but no new substance is formed So the freezing of water is a physical change Upon cooling a liquid the particles loose energy and vibrate less vigorously When the particles possess less energy they can experience strong forces of attraction between one another The particles move closer to each other and movement of particles is also restricted For example when liquid water is cooled to it freezes to become ice Freezing occurs when the freezing point is reached The liquid changes to its solid state Greater the surface of conversion of a liquid more molecules are available for evaporation Activity Take sugar solution in a shallow broad bowl Place the bowl in hot sun for a few hours See that the bowl does not get any disturbance for the whole day You can see that the solvent in the sugar solution evaporates leaving the sugar crystals in the bowl The arrangement of particles in liquid and solid are diagrammatically represented as follows Particles of a liquid Particles of a solid Condensation We would have observed that the plate that covers the cooked food items have water droplets inside Why The water vapour emerges from the hot food and goes up The plate covering the food item is in relative less temperature than the hot food Thus the more energetic molecules loose energy once they touch the cooler plate As the molecules lose heat they lose energy and slow down They move closer to other gas molecules Finally these molecules collect together to form a liquid Condensation happens when molecules in a gas cool down In class six you learnt about water cycle in which you already know how the clouds are formed from water vapour Water vapour condenses to form clouds Condensation is the conversion of gas into its liquid state The liquid obtained after condensation can be converted back into gas on heating So condensation is also a physical process During this process only the arrangement of molecules changes from the gaseous state to liquid state So condensation is a physical change Gas Liquid cooling Liquid Gas heating Condensation is the changing of a gas into its liquid state and it happens by cooling whereas Evaporation is the changing of a liquid into its gas state and it happens by heating Sublimation We have seen camphor being burnt at home kept in rooms to prevent entry of mosquitoes Have you ever noticed camphor becoming liquid at any point of time It will not There are certain solid substances like camphor naphthalene that get converted into gas directly upon heating without becoming liquid This process in which a solid is converted directly into gas is called sublimation In each of the above said processes there is a change of state due to change in temperature But there is no change in chemical composition By changing the temperature all these changes can be reversed We know that change of a physical state is only a physical change So evaporation boiling condensation melting and freezing are all physical processes ACTIVITY Sublimation Take some camphor in a porcelain dish and cover it with a clean glass funnel Close the mouth of the funnel with small amount of cotton wool Heat the contents in the dish can you see that camphor changes into vapour state without becoming liquid Ammonium chloride is another substance that undergoes sublimation Crystallization Though not mentioned earlier crystallization is also a special form of physical change The soluble impurities get removed from certain solids by crystallization The process of cooling a hot concentrated solution of a substance to obtain crystals is called crystallization We also know that sea-water contains salts dissolved in it and the salt can be separated from sea-water by the process of evaporation The process of evaporation is not a good technique because the soluble impurities do not get removed in the process of evaporation Further the crystals of salts obtained by the process of evaporation are small The shape of crystals cannot be seen clearly So the solid substances are usually purified by the process of crystallization Large crystals of pure substances can be obtained from their solutions by the process of crystallization Crystallization is a method of separation as well as a method of purification Evaporation Condensation Gas Liquid Freezing Solid Melting Chemical changes Changes that occur with the formation of new substance with different chemical composition or transformation of a substance into another substance with the evolution or absorption of heat or light energy are termed as chemical changes Rusting of iron burning curdling of milk reaction of baking soda with lemon juice fermentation are some examples of chemical changes Chemical changes are very important in our lives All the new substances which we use in various fields of our life are produced as a result of chemical reactions Some of the examples of the importance of chemical changes are given below i Metals are extracted from their naturally occurring compounds called ores by a series of chemical changes Medicines are prepared by carrying out a chain of chemical changes iii The materials such as plastics soaps detergents perfumes acids bases salts etc are all made by carrying out various types of chemical changes iv Every new material is discovered by studying different types of chemical changes In addition to new products the following may also accompany a chemical change Heat light or any other radiation may be given off or absorbed Sound may be produced A change in smell may take place or a new smell may be given off A colour change may take place A gas may be formed Explosion of a firework is a chemical change We know that such an explosion produces heat light sound and unpleasant gases that pollute the atmosphere That is why we are advised not to play with fireworks When food gets spoiled it produces a foul smell Shall we call this change as a chemical change Discuss in the class Give your reflections You must have noticed that a slice of an apple acquires a brown colour if it is not consumed immediately Colour of the potato remains the same when stored in water but there is change in colour with the piece kept in air Look at the cut brinjal kept in air The change of colour in these cases is due to the formation of some new substances which you will learn in higher classes Are these not chemical changes Cut a fresh slice of potato and brinjal and keep it away for sometime Stored in water Stored out of water Rusting of iron In class six we have already studied that rusting is an example of a chemical change Now shall we read why the process of rusting is called a chemical change The Iron Pillar at Delhi Amazingly there is an iron that did not rust There is an iron pillar at the Qutub complex in Delhi which is more than years age Even after such a long period the iron pillar kept in open spaces has not rusted at all This shows that Indian scientists made great advances in metal making technology even at century which enabled them to make this iron pillar having the quality of great rust resistance Rusting is one change that affects iron articles and slowly destroys them Since iron is used in making bridges ships cars truck bodies and many other articles the monetary loss due to rusting is huge The process of forming rust is represented as follows iron oxygen water rust Fe O from air HO FeO HO For rusting to take place both oxygen and water or even water vapour is essential In fact if the content of moisture in air is high the air is said to be more humid and eventually rusting is faster How can we prevent rusting Iron articles can be prevented from making contact with oxygen water water vapour A simple way is to apply a coat of paint or grease These coats should be applied regularly to prevent rusting Another way of preventing rusting is to deposit a layer of a metal like chromium or zinc on iron This is called galvanization and you will learn about this detail in higher classes Burning we have already studied that burning of paper is a fast change Burning a piece of paper gives entirely new substances such as carbon-di- oxide water water vapour smoke and ash Heat and light are also given out during the burning of ACTIVITY Take a small piece of magnesium ribbon and clean it by rubbing its surface with a sand paper Hold the magnesium ribbon at one end with a pair of tongs and bring its other end over the flame of a burner paper We cannot combine the products of burning of paper to form the original paper again So it is a permanent change Now shall we perform an activity of burning a piece of magnesium ribbon and find what type of change is it What do you observe You can see that the magnesium ribbon starts burning with a dazzling white light Hold the burning magnesium ribbon over a watch glass so that the powdery ash being formed by the burning of magnesium collects in the watch glass When magnesium ribbon burns in air then the magnesium metal combines with the oxygen of air to form a new substance called magnesium oxide Magnesium Oxygen Magnesium oxide Mg O MgO Magnesium oxide compound appears as a white powdery ash The burning of magnesium ribbon is a chemical change because a new substance magnesium oxide is formed during this change Curdling of milk We know that curdling of milk is an example of irreversible change since we cannot get back the milk after curdling occurs It is also called as a chemical change Shall we clarify the process of curdling Curdling is a process in which liquid gradually turns into solid forming clumps along the way Take hot milk in a pan and add few drops of curd in few minutes milk curdles forming lumpy solid masses We can even add lemon extract to the hot milk to effect curdling immediately but the taste and texture of the curd will not be the same as that of the curdling occurring in a few hours You can try to taste the curd formed by immediate curdling and gradual curdling Fermentation In class six we saw an example that preparation of batter to produce idly is an example for irreversible change Fermentation is the process in which microorganisms such as yeast and certain bacteria break down sugar solution into alcohol and carbon-di-oxide It is an irreversible process as the alcohol formed cannot be turned back into sugar Thus fermentation is a chemical change Yeast converts sugar Carbon dioxide Alcohol Louis Pasteur a French chemist and microbiologist was the first person to describe the process of fermentation He described that fermentation occurs in the absence of air and in the presence of micro organisms such as yeast He discovered the cure for rabies Chemical reaction of baking soda with lemon Baking soda is sodium hydrogen carbonate and lemon juice contains citric acid So when these two substances are mixed together then a chemical change takes place between sodium hydrogen carbonate and citric acid to form three new substances sodium citrate carbon- di-oxide and water The chemical change can be written in the form of a word equation as follows Sodium hydrogen carbonate citric acid sodium citrate carbon dioxide water ACTIVITY When baking soda and lemon juice are mixed together then bubbles of carbon-di-oxide are formed along with the formation of some salt and water Take ml of lemon juice and add pinch by pinch of baking soda to it Actually when we mix baking soda with lemon juice we will hear a hissing sound when bubbles of carbon-di-oxide coming out and rising in the reaction vessel Conditions needed for a chemical change We know that firing of crackers is a chemical change Some crackers explode only when thrown against a wall or struck with a hard substance Thus we could see that change in pressure may also bring about a chemical change When lemon juice is mixed with soda water they produce brisk effervescence which is otherwise not possible when they are separate So we can say that many chemical changes occur only when the substances are made to physically contact with each other We have tasted raw rice and cooked rice Have not we They are different in their taste Cooking is a process that is involved in the stated example wherein rice is boiled with sufficient water It is the heat and the water that had brought the change in texture and taste of the rice before and after cooking Thus we can say that heating is a condition needed for a chemical change to occur We know the use of vanaspathi in cooking vanaspathi is obtained from vegetable oils by addition of hydrogen to the oils nickel platinum or palladium are used as catalyst during the process of hydrogenation of oils Catalysts are substances that speed up the process of a chemical change and it will not undergo any change during the course of the reaction For example yeast acts as the catalyst in the fermentation of sugar You will learn more about catalyst in your higher classes Water is a chemical compound that remains as water when undisturbed But if a few drops of an acid is added to water and subjected to electrolysis by passing electric current it decomposes into hydrogen and oxygen So we can understand that electric current is also a condition that is needed for effecting a chemical change Thus we can conclude that physical contact of the substances heat light electricity applying pressure are some of the different conditions needed for chemical changes to occur Indicators of a chemical change Take some broken pieces of egg shell in a test tube and add lemon juice to it You could see bubbles of carbon-di-oxide evolving in the test tube This is because of the chemical change between the two Hence we can say that evolution of bubbles serve as an indicator that of a chemical change When water is added to quicklime calcium oxide there will be evolution of lot of heat along with the formation of slaked lime calcium hydroxide This is a chemical change and it is indicated by the evolution of heat when the reaction sets in between quicklime and water Every day we cook food stuffs and clean the empty cooking utensils Suppose when we leave the cooked utensils with some cooked food and leave them without washing for a day we could sense a foul-smell coming from the vessels the next day This is because the food stuff had become rotten and produces a foul-smell Here spoilage of food is a chemical change and it is indicated by the foul smell So change of odour is also an indicator of a chemical change When an iron nail is kept in water for a few days and taken out the nail will become reddish brown in colour indicating that it has rusted We know that rusting is a chemical change and it is indicated by a change in colour of the iron nail We know that hot milk curdles to form white lumps of curd when mixed with lemon juice A lump of curd is the precipitate that is obtained by the chemical reaction between hot milk and lemon juice So formation of precipitate is also an indication of a chemical change To conclude there can be evolution of bubbles evolution of heat change of odour change in colour or formation of a precipitate that serve as indicators for us to understand that a chemical change had taken place Exothermic and Endothermic chemical changes Just as the physical change Chemical reaction will be either endothermic or exothermic ACTIVITY Ask a student to stretch both hands put a pinch of soap powder in one hand and a pinch of glucose in the other hand Add a few drops of water to soap powder and ask how the student feels upon adding water Now add a few drops of water to the glucose at the other hand Now ask the student how he she feels on adding water What is the feeling when water is added to glucose What is the difference when water is added to soap powder and when water is added to glucose In this activity the student reported that he she felt the warmness in the palm when water is added to soap powder Right We saw that the burning of magnesium ribbon gives out heat and light Similarly burning of wood also releases heat and light Such changes in which heat is released are known as exothermic changes There are some changes in which heat is absorbed For example water absorbs heat when it evaporates to form water vapours Similarly ice absorbs heat when it melts to form water Such changes in which heat is absorbed are known as endothermic changes Dissolution of glucose in water is also an endothermic change Periodic and non-periodic change Depending on whether or not a change repeats itself after a definite period of time it can be classified as periodic change or a non- periodic change Periodic changes Changes that repeat themselves after a definite interval of time are called periodic changes Rotation and Revolution of earth beating of the heart clock striking every hour motion of the seconds-hand minute-hand hour- hand of a clock are some examples of periodic changes Every year we observe that seasons changes We go from rains to winter and winter to summer and so on What types of clothes are worn in winter What are the clothes that we wear in summer If the winter season changes into summer we observe change in the texture type of clothes we wear We wear woolen clothes in winter and cotton clothes in summer Similarly we observe that the winter season is cool and summer season is hot In winter duration of night is longer than in summer We take cold drinks in summer but prefer hot tea coffee or milk in winter These changes that we observe show the change of seasons The seasons and changes in weather occur because earth rotates on its fixed axis Changing seasons are almost periodic in nature Non-periodic changes Changes that do not repeat themselves after a definite interval of time and occur randomly are called non-periodic changes Eruption of a volcano occurrence of an earthquake a streak of lighting flash across the sky during a thunderstorm running of a batsman between the wickets movement of legs while dancing are a few examples of non-periodic changes POINTS TO REMEMBER Particle arrangement within the state of matter gets disturbed upon heating The disturbance is seen either as expansion or contraction A process in which liquid changes into vapour on heating is called evaporation A process in which solid changes into liquid on heating is called melting or fusion A process in which gas changes into a liquid is called condensation A process in which liquid changes into solid is called freezing Physical changes are the changes in which only physical properties of a substance undergo a change and there is no change in its chemical composition Solid substances are usually purified by the process of crystallization Evaporation is the technique used to separate dissolved solids from a solid-liquid mixture Certain solid substances like camphor naphthalene get converted into gas directly without becoming liquid upon heating by sublimation Changes that occur with the formation of new substance with different chemical composition or transformation of a substance into another substance with the evolution or absorption of heat or light energy are termed as chemical changes Changes that repeat themselves after a definite interval of time are called periodic changes Changes that do not repeat themselves after a definite interval of time and occur randomly are called non-periodic changes Changes in which heat is absorbed are known as endothermic changes Changes in which heat is released are known as exothermic changes Cutting of cloth is an example of a periodic change Taking a glass of water and freezing it by placing it in the freezer is a chemical change A bean plant collecting sunlight and turning it into bean seeds is an example of physical and non-periodic change If the chemical properties of a substance remain unchanged and the appearance or shape of a substance changes it is called a periodic change Tarnishing of silver is an example of endothermic change Melting Change of state from liquid to solid Ticking of clock Condensation Change of state from liquid to gas Formation of ice cube Evaporation Change of state from solid to liquid Collecting flowers Freezing Change of state from gas to liquid Ice cube to water Periodic change Occurs at irregular time intervals Water to steam Non-periodic change Occurs at regular time intervals Steam to water drops A rough piece of wood is sanded and polished resulting in change in texture Rusting of a iron nail Painting the grill Bending a paper clip Pounding silver into thin plate Rolling the chappathi dough into thin wire Occurrence of day and night eruption of volcano burning of matchstick dosa from the batter blinking of eyelids occurrence of a thunderstorm rotation of the earth formation of eclipses Physical changes Chemical changes This activity helps the students to understand the effect of heat on matters CHANGES AROUND US Changes Around Us URL https interactivesckorg simulations chemistry phases-of- matter app indexhtmlm ICT CORNER PROCEDURE Step Type the URL link given below in the browser or scan the QR code A page opens with a glass full of ice with a play button near to it Step Press Play button It opens into another page with the set up of temperature and change of phases Step Set the temperature and phases Press the play button below Step Do it with different options Then a next page button will come Step Go there you will end with a small quiz Cell Biology Learning Objectives To compare the plant cell with the animal cell and understand their similarities and dissimilarities To understand the cell as a fundamental unit of life To know and understand the different types of Human cells and their related functions To know the functions of different cell organelles To compare different cell organelles their functions and know their similarities and specialties Introduction Sona had a dinner some hour later she experienced a stomach pain and went to a clinic After examination the Doctor told Sona that she had eaten food contaminated with a type of bacteria which might have caused food poisoning Bacteria are micro-organisms that can be seen only under microscope and not seen through nacked eyes Salmonella species is a bacteria that can cause food-borne infection Our earth is a beautiful place where in different types of organisms happily coexist From minute mosses to huge conifers invisible bacteria to huge blue whale all have a basic unit called Cell Let us study about the cell Cell as a fundamental unit of life The building wall is made up of numerous bricks In the similar manner a bee hive is composed of numerous hexagonal units Some of the organisms are represented by a single cell Therefore they show a simple organization The basic functional unit of an organism is called a cell Structure of a cell represent the arrangement of parts or organells in a cell Function is the activity of each part or organell in a cell Cells are the basic building blocks of an organism You learnt that atoms are the basic building blocks of matter in chapter three Likewise human body is made up of animal cell and plant is made up of plant cell Unicellular organisms Some simple organisms are made up of only one cell They are called unicellular organisms which can be seen with the help of a microscope There are many single celled microscopic organisms Have a look at the image Chlamydomonas and an Amoeba a single cell organisms which carryout entire functions The body of all organisms are made up of tiny building blocks called cells Bacteria are also one celled unicellular organisms Amoeba Chlamydomonas Multicellular Organism The cells are organized into tissues organs and organ systems in a multicellular organism Macroscopic organisms are visible and consists of many cells The body of macroscopic organisms involves various functions You can see cells of onion and human through a microscope Onion and man are examples for multicellular organism Onion Human Cell to organism Many cells function together to form tissues different tissues combined together to form an organ and different organs to form an organ system which leads to form an organism Organisms Many types of organ systems function together in a body respiratory system digestive system excretory system circulatory system etc Organ System Many organs together form an organ system which is concerned with a specific function For example Respiratory system which has organs like nostrils nasal chamber wind pipe and lungs that helps in the process of respiration In a plant the root system consists of primary root secondary root and tertiary root which does the function of conduction of water mineral and also fixation Organism Organ system Organ Tissue Cell Organ A collection of different tissues worked together to perform a specific function or functions is called an organ Human body has different organs like stomach eye heart lungs etc are made up of different type of tissues Plant have organs such as leaves stems and roots Tissue Tissue is a group of cells organized for a specific function Tissues have following features like same shaped cells or different shaped cells to perform a common function Human and other animals are made up of nervous epithelial connective and muscle tissues Plants have transport protective and ground tissues Cell The cell is a basic structural and functional unit of life Cell is the building unit of living organisms You can see in a hand how many types of cells are there to work together to perform its functions So cell is known as the basic unit of life Muscle cells Nerve cells Bone cells Epidermal cells Plant and Animal cell comparison Why do plant cells differ from animal cells They differ from each other because they have to perform different functions Now you know that there are many main similarities between plant and animal cells Let us see how they differ from one another as given in the picture Activity Human cells related to functions Different types of cells Our body is made up of many different kinds of cells Each type of cell is specialized to perform a specific function Depending on the function cell has specific shape size and may have some components which other type of cells do not have Have a look at the differences between nerve cells and red blood cells in the images Even though there are many different types of cells there are some components common to all type of cells Let us take a look at this in the next section What’s inside a cell Inside a cell there are many tiny structures called cell organelles These organelles are responsible for providing needs of the cell They work to bring in food supplies get rid of waste protection and repair of the cell and help it to grow and reproduce Each one has a specific function to do for the cell And if any one organelle stops its function then the cell is programmed to die Cell Structure As we have mentioned before all cells have some common structure These are Cell membrane Cytoplasm and Nucleus In most eukaryotic cells The structure of a typical plant and animal cell shows following peculiarities Cell membrane The boundary of an animal cell is the plasma membrane which is also called as cell membrane Cell wall Supporter and Protector All animal and plant cells are enclosed or surrounded by a cell membrane as you learned before However as you might have noticed previously that animal cells often have an irregular shape whereas plant cells have a much more regular and rigid shape Plant cells have an additional layer on the outer side of the cell membrane This is called as the cell wall that provides a frame work for support and stability The cell wall is formed from various compounds the main one being cellulose Cellulose helps to maintain the shape of the plant cell This allows the plant to remain rigid and upright even if it grows to great heights Each cell is interconnected with its neighboring cells through openings called Plasmodesmata Cell wall Large vacuole Small vacuole lled with both inorganic and organic molecules along with water to support the organelle lled with both inorganic and organic molecules along with water to support the organelle The cytoplasm includes all living parts of cell with in the cell membrane but excluding the nucleus Endoplasmic reticulum a network of membranous tubules and is involved in protein and lipid synthesis Mitochondria are organelles They make most of the cell’s supply of adenosine triphosphate ATP a molecule that cells use as a source of energy Their main job is to convert energy They supp ATP a sou is to Golgi body is a complex of vesicles and folded membranes involved in secretion and intracellular transport Specialised cell Structure Function Epithelial cells they are mostly flat and columnar in shape They cover the surface of the body for protection Muscle cells they are long and spindle shaped They can contract and relax allowing the cell for movement Nerve cells the body of ner- vous cell is branched with an elongated nerve fiber Nerve cells are specialized to carry and conduct messages that coordinate the functions of the body Red blood cells Round biconcave and disc shaped Red blood cells carry oxygen and collect carbon dioxide from various part of the body Stem Cells Stem cells are quite amazing as they can divide and multiply while at the same time with their ability to develop into any other type of cell Embryonic stem cells are very special as they can become absolutely any type of cell in the body for example blood cell nerve cell muscle cell or gland cell So they are utilized by the Scientist and Medicos to cure and prevent some diseases like Spinal cord injury Cytoplasm I am the Area of Movement When you look at the temporary mounts of an onion peel you can see a large region of each cell an enclosed by the cell membrane This region takes up very little stain It is called the cytoplasm The cytoplasm includes all living parts of the cell with in the cell membrane excluding the nucleus The cytoplasm is made up of the cytosol and cell organelles The cytosol is a watery jelly- like medium made up of water and usually colourless Cell organelles and structures present in a cell are endoplasmic reticulum vacuole ribosome golgi body lysosome mitochondria centriole chloroplast surrounded by plasma membrane and cell wall Protoplasm vs Cytoplasm In particular the material inside and outside the nuclear membrane is known as Protoplasm The fluid inside the nucleus is known as the nuclear fluid or nucleoplasm and outside the nucleus is called as cytoplasm Inside the cytoplasm Mitochondria Power house of the Cell Do you remember learning about the food as the energy source for the body Just as wood is burnt to release the stored potential energy to make a fire to heat some water The food that you ate to be broken down in order to release the energy which can be used by your body to function Mitochondria are responsible to do this function Very active cells have more mitochondria than cells that are less active Which type of cell do you think will have more mitochondria a muscle cells or a bone cell Mitochondrian is an oval or rod shaped double membrane bounded organelle Aerobic respiratory reactions take place with in the mitochondrion to release energy So it is known as the Power House of the cell The energy produced within the mitochondrion is used for all the metabolic activities of the cell Mitichondrion Chloroplast- Food Producers Do you notice the green organelles present in plant cells and absent in animal cells Chloroplasts are the only cell organelles that can produce food from the sun energy Only plants with chloroplast are able to do photosynthesis because they contain the very important green pigment chlorophyll Chlorophyll can absorb radiant energy from the Sun and convert it to the chemical energy which can be used by the plants and animals Animal cells lack chloroplasts and are unable to do photosynthesis Cells in a leaf Leaf Chloroplast Observing chloroplast in algae Collect some algae from pond and separate out thin filaments of them Place a few filaments on a slide Observe it under the microscope Take the help of given figure and draw the picture of chloroplast that you have observed under the microscope Chloroplast is a type of plastid which are present only in plant cells Plastids are mainly of two types chromoplasts coloured and leucoplasts colourless Various range of these plastids impart different colours to various parts of plant Chromoplast impart colour to flower and fruits As fruits ripen chloroplasts change to chromoplasts Starch is converted to sugar Golgi Complex- I need a break Membrane bounded sacs are stacked on top of the other with associated secretory vesicles are collectively known as golgi complex Functions of golgi complex are the production of secretory substances packaging and secretion This is the secret behind the change in the colour and taste of fruits Lysosome- Suicidal Bag Everything I touch I destroy You will find organelles called as lysosomes which are very small to view using a light microscope They are the main digestive compartments of the cell They lyse a cell hence they are called suicidal bag Centrioles They are generally found close to the nucleus and are made up of tube-like structures Centrioles or centrosomes are present only in animal cells and absent in plant cells It helps in the separation of chromosomes during cell division Structure of a Centriole Endoplasmic reticulum You guys be quiet I have so much work to do It is an inter membranous network made up of flat or tubular sacs within the cytoplasm Endoplasmic reticulum is of two types They are rough endoplasmic reticulum and smooth endoplasmic reticulum Endoplasmic reticulum Rough endoplasmic reticulum are rough due to the ribosomes attached to the membrane which helps in the synthesis of protein Smooth endoplasmic reticulum It is a network of tubular sacs without ribosomes on the membrane They play a role in the synthesis of lipids steroids and also transport them within the cell Nucleus Everyone do what I say Acting like the Brain of the cell Plant and animal cells have a nucleus inside the cytoplasm It is surrounded by a nuclear envelope One or two nucleolus and the chromatin body are present inside the nucleus During cell division the chromatin body is organised into a chromosome Storage of genetic material and transfers heredity characters from generation to generation are the functions of chromosome Functions of Nucleus In controls all the processes and chemical reactions that take place inside the cell Inheritance of character from one generation to another Nucleus Cell Structure Function s Cell membrane Cell wall Cytoplasm Mitochondria Vacuole Chloroplast Endoplasmic reticulum Red blood cells Red blood cells do not contain a nucleus Without a nucleus these cells die quickly about two million red blood cells die every second Luckily the body produces new red blood cells every day POINTS TO REMEMBER Cells are the basic structural and functional units of all living organisms Cells are microscopic and can be seen only under a microscope Cell membranes are selectively permeable which means they only allow certain substances to pass in and out of the cell Plant cells have a cell wall around the cell membrane that is rigid and provides support and protection to the cell content The Cytoplasm includes the organelles and the cytosol The Cytosol is the jelly- like medium in which many chemical reactions take cell Everything inside the cell membrane except the nucleus is considered to be the cytoplasm Mitochondria are responsible for cellular respiration which releases the energy from the food Plants have chloroplasts with chlorophyll pigments to produce food by photosynthesis Stem cells are cells that have the ability to divide and develop into many different types of the cell A group of different tissues makes up an organ Organs working together in groups form a systems or organ systems Organ systems make up an organism such as a human Animal cells have a cell wall Salmonella is a unicellular bacteria Cell membrane is fully permeable Only plant cells have chloroplasts Human stomach is an organ Ribosomes are small organelles with a membrane Neuron Lungs Xylem brain adipose Leaf RBC WBC hand muscle heart ovum squamous phloem cartilage Cell Tissue organ Basis of Classification Learning Objectives To understand the need for dichotomous classification To classify animals according to their characteristic features To know the classification of animals and get the knowledge about invertebrates and vertebrates To acquire knowledge about the classification of plants To know the importance of five kingdom classification To understand the Binomial Nomenclature Introduction When you get ready to go to school all your things uniform lunch box water bottle shoes etc to be kept ready Just imagine if all these things are not ready you will need to spend too much time to collect them Likewise in a grocery shop medical shop and bakery all the items are systematically arranged Sorting of things is very much required and important for all living beings We see various plants and animals around us It is estimated that about million species of living organisms have been identified and named till now However many scientists believe that only a small portion of the total species existing on earth has been identified In order to know about the behavior and relationship among organisms that are known biologists have classified them into two broad groups plants and animals Grouping of living organisms based on their common features is known as biological classification Class room Wooden Materials Wring Materials Fixed Black Board with wooden frame Portable Pencil Chair Table Chair Table Wooden Scale Color pencil Eraser Book Note book Pens Ruler Iron or Plasc Iron or Plasc Color pencil Pencil box Chalkpies With arm Without arm Si­ng Materials Wring Materials Fixed Portable With arm Without arm Si­ng Materials Non Wooden Materials Black Board White Board List out things found in your class room Chair Table Black board Chalk piece Cupboard Fan Light Switches School bag Lunch bag Text book Note book Water bottle Pencil box Pencil Pen Rubber Ruler Door Window Writing pad Colour pencil Eraser Sharpener Compass and Chart papers Find out one common difference among these materials to classify the above things into two Wooden Non Wooden Find out another difference to classify each group into two sub groups Wooden sitting materials Wooden writing materials and Non wooden sitting material Non wooden writing materials Continue to identify differences to classify each small subgroups into two Fixed Portable With arm Without arm There are some similarities and differences exist among these materials So we need to observe and identify those similarities and differences to construct a dichotomous key The dichotomous key allows us to make quick reference and identify a particular thing Classification provides scientists a systematic easy way of studying organisms Classification is done using this dichotomous key What is dichotomous key It is a tool used to classify organisms based on their similarities and differences Features of dichotomous key A single feature that differentiate a group easily One character selected to separate the group as present or absent Continue the nd step until only one item will remain at the end Dichotomy of Animals Using a dichotomy pattern classify the given list of animals Ostrich peacock monkey frog toad turtle snake shark goldfish ant tapeworm earthworm and leech Presence or absence of back bone we can classify them into two groups Animals with back bone can be divided into its subgroup based on its body temperature Further classification can be done based on its difference like presence of feather or hair scales etc With Jointed Legs Without Legs Classication of Animals Warm Blooded Cold- Blooded Mammals Birds Fish Amphibians With pairs of legs With more than pairs of legs Worm like Not- Worm like Aristotle was a Greek philosopher and thinker who lived about years ago Aristotle came up with the following grouping system that was used for almost years after his death He classified all organisms into either animals or plants Then he classified into those with blood and those without blood Then the animals are classified into three groups based on their method of movement walkers flyers or swimmers ACTIVITY Aim To sort out a box of given buttons and classify them into different types Materials Required A box full of different types of buttons Procedure Take a box of given buttons Work in small groups of three or four and classify the buttons based on the following classification criteria i Shape Buttons with four holes Buttons with two holes iv Colour Identify other features that can be used to sort out buttons into different groups Based on the special features and characters the students identify each button according to its size hole and colour This is known as identification Then teacher shall ask students to separate the buttons according to the size hole and colours This is known as assortment After assorting the buttons the teacher ask the students to gather the buttons according to their size hole and colours This is termed as grouping Identification assortment and grouping which results in classification Classification The method of arranging the organisms into groups is called classification When we classify things we put them into groups based on their characteristics Why do we classify things Classifying things makes it easy for us to know their similarities and differences Things with similar characters are classified into same group These things are usually similar in at least one characteristic Things with different characteristics are classified into different groups These things are usually different in at least one characteristic Classification helps us to understand living and non living things in better way For example we can classify a newly discovered organism we would come to know how it relates with other Need for Classification Classification is needed to identify an organism correctly It helps to know the origin and evolution of an organism To establish the relationship among different organisms It provides the information about living things in different geographical regions It helps in understanding how complex organisms must have evolved from simpler ones Scientists have been able to discover and classify more than million organisms on the earth ranging from tiny bacteria to the largest blue whales Each organism has been classified in a category based on its evolutionary relationship with other group of organisms We can define hierarchy of organisms as The system of arranging taxonomic categories in a descending order based on their relationships with other group of organism is called hierarchy of categories This system was introduced by Linnaeus and is called Linnaean hierarchy There are seven main categories of hierarchies namely Kingdom Phylum Class Order Family Genus and Species Species is the basic unit of classification Based on the above classification the following table shows different phylum with general features and examples of different phyla and classes S NO General Characters Division Microscopic unicellular pseudopodia flagella and cilia for locomotion reproduce by fission or conjugation Phylum Protozoa Amoeba Euglena and Paramoecium Multicellular organisms with holes in the body Skeleton formed of spicules asexual and sexual reproduction Phylum Porifera Leucosolenia Spongilla Sycon Multicellular organisms Diploblastic sessile or free swimming solitary or colonial asexual and sexual reproduction Phylum Coelenterata Hydra Sea anemone Jelly fish Corals Acoelomates parasites inside the body of animals and human beings mostly hermaphrodite bisexual Phylum Platyhelminthes Planaria Liver fluke Blood fluke Tapeworm Unsegmented body mostly parasites in human beings and animals causing diseases asexual reproduction Phylum Aschelminthes or Nematoda Ascaris lumbricoides Triploblastic segmented body mostly hermaphrodite bisexual and unisexual Phylum Annelida Earthworm Nereis Leech Segmented body thick chitinous cuticle forming an exoskeleton paired and jointed legs unisexual exhibits sexual dimorphism Phylum Arthropoda Crab Prawn Millipede Insects Scorpion Spider Soft bodied unsegmented muscular head foot and visceral mass mantle a calcareous shell sexual reproduction Phylum Mollusca Cuttle fish Snail Octopus Exclusively marine spines and spicules over the body water vascular system tube feet for feeding respiration and locomo- tion sexual reproduction Phylum Echinodermata Starfish Sea Urchin Brittle star Sea cucumber and Sea- lily Phylum CHORDATES Aquatic cold blooded vertebrates with boat shape body and jaws locomotion by paired and median fins sexual reproduction Class Pisces Shark Catla Mullet Tilapia Amphibious cold- blooded two pairs of limbs sexual reproduction Class Amphibia Frog Toad Salamander Caecilian Cold- blooded lung breathing scales over the body pentadactyl limb adapted for climbing running and padding oviparous Class Reptilia Garden lizard House lizard Turtles Tortoise Snakes Crocodile Warm blooded exoskeleton of feathers flight adaptation spongy bones with air cavities powerful eyes sexual reproduction oviparous Class Aves Wader bird Roller bird Hoopoe bird Parrot Sparrow Hen Ostrich Kiwi Terrestrial warm blooded external ear or pinna muscular diaphragm non nucleated RBC heterodont and diphyodont dentition viviparous give birth to young ones Class Mammalia Duck bill Platypus Kangaroo Cat Dog Tiger Zeebra Man Phylum Characters Example Porifera Pore bearers Coelenterata Gastro vascular cavity Platyhelminthes Flame cells Aschelminthes Thread like worms Annelida Body is segmented Arthropoda Have jointed legs Mollusca Soft bodied with shells Echinodermata Spines on the skin Chordata Have back bone Classification of Plants Based on dichotomy plants also can be classified into two main groups Flowering and Non flowering Non flowering plants do not produce seeds and flowering plants produce seeds Based on their nature of plant body Non flowering plants are classified into three types algae mosses and ferns Based on their fruit body flowering plants are classified into two types gymnosperms and angiosperms Algae Plant is thallus not well-differentiated into root stem and leaves They are predominantly aquatic They are unicellular or multicellular filamentous Example Chara PLANTS Do not produce Seed Has no true roots stems or leaves Has some roots stems and leaves like structures Monocotylendons With one cotyledon PADDY Dicotylendons With two cotyledons TAMARIND Has roots stems and leaves Flowering Plants Angiosperms Non-Flowering Plants Gymnosperms Produce seeds Chara Mosses Plant body is not differentiated into true root stem and leaves They are water living plants needs moisture to complete its life cycle Hence they are referred to as amphibious plants They do not have any specialized vascular tissues for conduction of water and food Examples Funaria Ferns Plant body is well-differentiated into root stem and leaves Leaves may be large or small Specialized vascular tissues are found for the conduction of water and food Basically they are the first land plants which grows well in shady moist and cool places Examples Adiantum Adiantum Gymnosperms Plants are perennial woody evergreen with true root stem and leaves They possess vascular tissues xylem without vessels and phloem without companion cells Ovules are naked without ovary Hence they do not produce fruits Seed are naked Examples Pinus Cycas Pinus Angiosperms Plant body is well differentiated into true root stem and leaves They produce flower with four whorls calyx corolla androecium and gynoecium hence known as flowering plants Female reproductive organ ovary is present inside the flower which develops into fruit and ovule develops into seed Plant possess well developed vascular system with xylem vessels and phloem companion cells Angiosperms are the dominant plant forms of present day Based on the number of cotyledons angiosperms are broadly divided into two groups a monocotyledons b dicotyledons Plant seeds which have only one cotyledon are said to be monocots Plant seeds which have two cotyledons are known as dicots Example- Paddy monocot tamarind dicot Paddy Tamarind Monocotyledon Dicotyledon The Five Kingdom Classification The five kingdom classification was proposed by RH Whittaker in Five kingdoms were formed on the basis of characteristics such as cell structure mode of nutrition source of nutrition and body organization Monera Kingdom Monera Bacteria All prokaryotes belong to the Kingdom Monera which do not posses true nucleus Cells of prokaryotes do not have a nuclear membrane and any membrane bound organelles Most of the bacteria are heterotrophic but some are autotrophs Bacteria and Blue green algae are examples for monera Kingdom Protista The Kingdom Protista includes unicellular and a few simple multicellular eukaryotes There are two main groups of protists The plant like protists are photosynthetic and are commonly called algae Algae include unicellular and multicellular types Animals like protists are often called protozoans They include amoeba and paramecium Amoeba Paramecium Kingdom Fungi Fungi are eukaryotic and mostly are multicellular They secrete enzymes to digest the food and absorb the food after digested by the enzymes Fungi saprophytes as decomposers decay causing organisms or as parasites Kingdom Fungi includes molds mildews mushrooms and yeast Mushroom Yeast Kingdom Plantae Planatae plants are multicellular eukaryotes that carry out photosynthesis Reserve food materials are starch and lipids in the form of oil or fat Plant cells have cell wall and specialized functions such as photosynthesis transport of materials and support Kingdom Plantae includes ferns cone bearing plants and flowering plants Ferns Cone bearing plants Flowering plants Kingdom Animalia Animalia animals are multicellular eukaryotic and heterotrophic animals Cells have no cell wall Most members of the animal kingdom can move from place to place Invertebrates like sponges hydra flatworms round worms insects snails starfishes Vertebrates like Fish amphibians reptiles birds and mammals including human beings belong to the kingdom Animalia Fish Pisces Frog Amphibian Crocodile Reptiles Cow Mammals Bird Aves IMPORTANT CHARACTERISTICS OF FIVE KINGDOMS Characteristics Monera Protista Fungi Plantae Animalia Cell Type Unicellular Prokaryotic Unicellular Eu- karyotic Multicellular Non green and Eukaryotic Multicellular Eukaryotic Multicellular Eukaryotic Nucleus Absent Present Present Present Present Body Organisation Cellular level of organization Cellular level of organization is Multi cellular with loose tissue Tissue level and organ level Tissue organ and organ system Mode of Nutrition Auto or Heterotrophic Auto or Heterotrophic Saprophytic parasitic some- time symbiotic Autotrophic Heterotrophic Example Bacteria and Blue green algae Spirogyra and Chlamydomo- nas Rhizopus and Agaricus Herb Shrub and Trees Fish frog crocodile Birds and human being Merits of five Kingdom Classification This system of classification is more scientific and natural This system of classification clearly indicates the cellular organization mode of nutrition and characters for early evolution of life It is the most accepted system of modern classification as the different groups of organisms are placed phylogenetically It indicates gradual evolution of complex organisms from simpler one Demerits of five Kingdom Classifications In this system of classification of viruses have not been given a proper place Multicellular organisms have originated several times from protists This type of classification has drawn back with reference to the lower forms of life Some organisms included under protista are not eukaryotic Binomial Nomenclature Gaspard Bauhin in introduced naming of organisms with two names which is known as Binomial nomenclature and it was implemented by Carolus Linnaeas in He is known as Father of Modern Taxonomy Binomial nomenclature is an universal system of naming organisms As per this system each organism has two names the first is the Genus name and the second is the Species name Genus name begins with a capital letter and Species name begins with a small letter Example The nomenclature for onion is Allium sativam Genus name is Allium species name is sativam Vernacular name is a local name that is familiar for a particular place Binomial name is an universal name which never changes Binomial nomenclature and classification helps scientists to identify any organisms and to place them at a particular hierarchy ACTIVITY Field trip to sanctuaries zoo should be arranged Students are guided to observe the animals and explain about the feature of animals how they are protected and maintained in the zoo Note the displayed names of the plants and animals Discuss your observation in the class Scientific Names of Some Organisms SNo Common Name Scientific Name Human being Homo sapiens Onion Allium sativum Rat Rattus rattus Pigeon Columba livia Tamarind Tamirindus indica Lime Citrus aurantifolia Neem Tree Azadirachta indica Frog Rana hexadactyla Coconut Cocos nucifera Paddy Oryza sativa Fish Catla catla Orange Citrus sinensis Ginger Zingiber officinale Papaya Carica papaya Date Phoenix dactylifera POINTS TO REMEMBER Classification of living organisms is made on the basis of their characteristics similarities and differences Classification is needful to identify living organisms and to study about them conveniently Kingdom is the largest division of the living world and species is the basic unit of classification Kingdom Animalia is divided into sub kingdoms Invertebrates Animals without back bone Vertebrates Animals with back bone Invertebrates are classified into nine phyla Vertebrates are classified into five classes Plants are classified into flowering and non flowering plants and further classified into groups based on their nature of plant body and fruiting body In RH Whittakar proposed a five kingdom classification of living organisms The Five kingdom classification includes five kingdom namely Monera Protista Fungi Plantae and Animalia Gaspard Bauhin is introduced the binomial nomenclature and it was implemented by Carolus Linnaeus in Binomial nomenclature is an universal system of naming organisms It contain two names The first name of binomial is genus name and the second name is species name Carolus Linnaeus is known as Father of Modern Taxonomy Classification helps to know the origin and evolution of an organism Fishes are aquatic vertebrates In the year Five kingdom classification was proposed True nucleus is seen in prokaryotic cell Animal cells have cell wall Monera Moulds Protista Bacteria Fungi Neem Plantae Butter fly Animalia Euglena This activity enables the students to identify vertebrates And invertebrates Classification URL https wwwtinytapit activities gfca play vertebrates-and-invertebrates ICT CORNER PROCEDURE Step Type the URL link given below in the browser or scan the QR code A page opens with tinytap and PLAY button Step Click it it opens into another page Step The page shows animals with the words Invertebrate or vertebrate in a box near the animal Step When you click the correct option vertebrate or invertebrate it goes to next picture Step Step CLASSIFICATION Digital Painting Learning Objectives After learning this lesson the students will be able to know how to draw a picture through the software Tux Paint explore their creative thinking learn arithmetic calculations through the software Tux Math In this chapter the students will learn to use the software Tux Paint and Tux Math What is Tux Paint Tux Paint is a free drawing program designed for young children It has a simple easy-to-use interface fun sound effects and an encouraging cartoon mascot which helps to guide children as they use the program Choose a Tool from the options on the left side of the screen Then make choices from the right side of the screen Directions are provided at the bottom of the screen Title Screen When Tux Paint first loads a title credits screen will appear Once loading is complete press a key or click on the mouse to continue Or after about seconds the title screen will go away automatically Main Screen The main screen is divided into following sections Left Side Toolbar This toolbar has the control options to draw and to edit images Middle Drawing Canvas This is the largest part of the screen dedicated to draw and edit images Right Side Selector When a tool is selected from the left side tool bar the right side bar will display the options associated with the specific tool When the line tool is selected the right side bar shows the various lines available When the shape tool is selected different shape options can be seen on the right side Lower Colors A palette of available colors are shown near the bottom of the screen Bottom Help Area At the very bottom of the screen Tux the Linux Penguin provides tips and other information while you draw Tools Icons The Paint Brush tool lets you draw freehand using various brushes chosen in the Selector on the right and colors The Stamp tool is like a set of rubber stamps or stickers images Use the Left and Right arrows to cycle through the collections This tool is used to draw Lines This tool is lets you draw some simple filled and un-filled shapes This tool is used to type texts Magic tool is a set of special tools selecting one of the magic effects from the selector situated in the right side This tool provides countless number of special visual effects if it is used in various combination with other tools This tool can be used either by clicking or by dragging the effect directly on to the image to apply it This tool is appears similar to the Paint Brush but it is used to erase the picture This tool is used to cancel a command given earlier This tool is used to reverse the action of Undo Clicking the New button will start a new drawing This tool is used to open are existing file This tool is used to save your current picture This tool is used to print your current picture This tool is used to close Tux Paint window Shortcut Keys Tool Name Keyboard Shortcut Key New Ctrl N Open Ctrl O Save Ctrl S Print Ctrl P Quit Esc Undo Ctrl Z Redo Ctrl Y Tux Math Tux Math is an open source arcade style video game for learning arithmetic The main goal is to make learning effective and fun Tittle Screen Math Command Training Academy choose this to go to a list of over fifty prepared lessons starting with simple typing of single digit numbers and progressing to multiplication and division involving negatives and missing number questions x The player wins if the question list is completed successfully Successfully completed lessons are indicated with a flashing gold star Play Arcade Game This option can be used to select and play one of the four open- ended arcade style games meaning the game gets faster and faster as long as the player can keep up with the goal to get the highest score possible The options include Space Cadet simple addition Scout addition and subtraction to ten Ranger addition subtraction multiplication and division to ten Ace all four operations with operands to including negative numbers and missing number type questions Play Custom Game This option can be used to play a game based on the config file in the player’s home directory More Options These options have Demo mode as well as credits and project information Keys Use the UP and DOWN arrow keys to select what you wish to do and then press ENTER RETURN SPACEBAR Or use the mouse to click the menu item Pressing ESCAPE will quit the program Animal Celll Battery Binomial Boiling Cell Conventional current Conductors Conductivity Corals Classification Chloroplast Chromoplast Cell wall Contraction Condensation Crystallization Curdling Diaphragm Dry cell Dicotyledons Electric current Electrical circuit Endoplasmic reticulum Expension Fuse Flame cells Freezing Fermentation Green gland Heating effect Insulator Identification Invertebrates Leucoplast Magnetic effect Monocotyledons Malpighian tubules Microscope Malleability Million Nephridia Nucleus Non periodic change Oyster Oviparous Organelle Parallel circuit Parental care Plant Cell Plastids Plasmodesmata Periodic change Resistivity Rusting Series circuit Short circuit Specific resistance Solenoid Spicules Stem cell Taxonomy UniCellular organisms Viviparous Vernacular Name Vertebrates Viscosity Vapourization Water vascular system Unit Magnetism Introduction You might have seen magnets Have you ever enjoyed playing with them Take a steel glass Take a needle through which thread is passed Press the thread with a finger near the hole of the needle as shown in the figure and raise the glass upward slowly What happens Observe the same activity performed by your teacher and note it Does the needle stand vertically up without touching the glass Why this happens Discovery of Magnets People wondered about this incident Each and everyone expressed their views What might be the reason for the stick to get stuck on the rock Yes you are right That is a magnetic rock People found it attracting not only for the stick of Magnus but also for all the materials made of iron The more rocks of these kinds were found worldwide These magnetic rocks were named Magnets and the ore is called as Magnetite after the name of the boy Magnus The name is also supposed to come after the name of the place Magnesia in which it was found Magnetite was the ore with attracting property found in that region Magnetites are natural magnets They are called magnetic stones Natural magnets do not have a definite shape Since they are used for finding direction they are also called leading stones or lode stones Magnet of different shapes After learning the method of changing the piece of iron into magnet magnetization we have been making and using several kinds of magnets Such man-made magnets are called artificial magnets Bar-magnet Horseshoe magnet Ring magnet and Needle magnet are generally used artificial magnets Oval-shape Disc shapes and Cylindrical magnets are also available Activity Take a magnet Take the magnet Closer to the objects surrounding you What happens Observe and note The objects attracted by the magnet The objects not attracted by the magnet Which substances are used to make the objects attracted by the magnet Bar-magnet Horseshoe magnet Ring magnet Needle magnet Magnetic and Non Magnetic Materials Substances which are attracted by magnet are called magnetic substances Iron cobalt nickel are magnetic substances Substances which are not attracted by magnet are called non-magnetic substances Paper plastic are called non- magnetic substances Magnetic Poles Place some iron filings on a paper Place a bar magnet horizontally in the filings and turn it over a few times Now lift the magnet What do you see Which part of the magnet has more iron filings sticking to it Which part of the magnet has almost no filings sticking to it The parts of the magnet those attract the largest amount of iron filings are called as its poles The attractive force of the magnet is very large near the two ends These two ends are called its poles In experiments with magnets you will need to use iron filings again and again You can do this by placing a magnet in a pile of sand and turning it around in the sand The small pieces of iron present in the sand will stick to the magnet If you cannot find sand you can look for iron pieces in clayey soil as well If you don’t have iron filings you can collect small pieces of iron and they will serve the purpose as well If you have a horseshoe magnet or any other type of magnet at home find the position of its poles by this experiment Finding directions with a magnet Tie a piece of thread to the centre of a bar magnet and suspend it Note in which direction the magnet stops Draw a line on a sheet of cardboard or the table along the direction in which the bar magnet stops ie a line parallel to the bar magnet Turn the magnet gently and let it come to stop again Repeat it three or four times Does the bar magnet stop in the same direction each time In which direction does the magnet stop every time This is roughly the north-south direction The end of the magnet that points to the north is called the North Pole The end that points to the south is called the South Pole A freely suspended magnet always comes to rest in north-south direction The directive property of magnets has been used for centuries to find directions Around years ago the Chinese discovered that a suspended lode stone stops in the north-south direction Chinese used these lode stones to find directions The navigators of that country used to keep a piece of lode stone suspended in their boats and during a storm or mist they used the lode stone to locate directions Magnetic compass A compass is an instrument which is used to find directions It is mostly used in ships and airplanes As a rule mountaineers also carry a compass with them so that they do not lose their way in unknown places The compass has a magnetic needle that can rotate easily The marked end of the needle is the North Pole of the magnet Can you use magnetic compass to find west direction Ask your teacher to help you in using magnetic compass Properties of Magnets Attraction or Repulsion Take two similar magnets place them in four different ways as shown in Figure LET US MAKE MAGNETS Take a nail a piece of Iron and place it on a table Now take a bar magnet and place one of its poles near one edge of the nail piece of Iron and rub from one end to another end without changing the direction of the pole of the magnet Repeat the process for to times Bring a pin or some iron filings near the nail piece of Iron to check whether it has become a magnet Does the nail piece of iron attract the pin iron filings If not continue the same process for some more time Magnets lose their properties when they are placed near Cellphone Computer DVDs These objects will also get affected by magnetic field Make your own magnetic compass Insert the magnetized needle that you made in the activity in to two styrofoam balls Thermocol balls and place the needle in bowl of water Test whether the floating needle is always turned in rest on north south direction Note If you don't have styrofoam balls you can use dry leaf or a cork piece Storage of Magnets Improper storage can also cause magnets to lose their properties To keep them safe bar magnets should be kept in pairs with their unlike poles on the same side They must be separated by a piece of wood and two pieces of soft iron should be placed across their ends For a horse-shoe magnet a single piece of soft iron can be used as a magnetic keeper across the poles Usage of Magnets We use various equipment with magnets in day to day life Discuss with your friends about the usage of the magnets in the following instances Phone covers Pin holders Magnetic crane In some toys In compasses In pencil boxes Stickers on refrigerators In speakers In small electric motors In some door locks Bags Science Today Bullet Trains We Know that Like poles of the magnet repel each other Keep two Bar magnets as shown in the Figure What do you observe By using repulsion we can levitate a magnetic object Let us make a toy and enjoy magnetic levitation Have you enjoyed with this toy Electromagnetic train is working in the same principle Have you heard about it Electromagnetic train is called as suspension train and also called as flying train It does not require diesel or petrol This technology uses the property of magnetic attraction and repulsion to run these super fast electromagnetic trains How does the electromagnetic train work Electromagnets are used in Electromagnetic train Electromagnets are magnetised only when current flows through them When the direction of current is changed the poles of the electromagnets are also changed Like poles of the magnets which are attached at the bottom of the train and rail track repel each other So the train is lifted from the track up to a height of cm We Know that we can move any magnetic object with the force of attraction or repulsion properties of magnets This train also moves with the help of the magnets attached on the sides of track and the magnets fitted at the bottom sideway of the train By controlling the current we can control the magnets and movement of the train As there are no moving parts there is no friction So the train can easily attain a speed of km per hour These trains are capable of running up to km hour They do not make any noise They require less energy and they are eco-friendly Even though many countries have taken effort to use these trains such trains are used for public transport only in China Japan and South Korea In India the possibilities of introducing these trains are under consideration Points to remember Magnetites are natural magnets They are called magnetic stones Man-made magnets are called artificial magnets Substances which are attracted by magnet are called as magnetic substances Substances which are not attracted by magnet are called non-magnetic substances A freely suspended magnet always comes to rest in north-south direction The end of the magnet that points to the north is called the North Pole The end that points to the south is called the South Pole A compass is an instrument which is used to find directions Like Poles N-N S-S repel each other and unlike poles N-S S-N attract each other Magnets lose their properties if they are heated or dropped from a height or hit with a hammer Unit Water Introduction Water is one of the basic substance present in the earth It plays a vital role in the evolution and survival of life It is impossible to imagine life on the earth without water Water helps to regulate the temperature of our planet It also helps to maintain the temperature in organisms Where do we get water from We need water to perform several day to day activities like cooking food washing clothes cleaning utensils etc We get water from different water sources in our surroundings In villages towns wells canals tanks ponds rivers water tanks hand pipes are the main sources of water List out the sources from where you get water in your village town For example Ramu says he and his family get water from the pipes in washrooms and kitchens Sankar says he has to use handpump daily both in the morning and evening to collect the water Raja says his mother used to get up early and walks to pond to get water Where do you get water for your household uses Where and how water is found on the earth Water is available in nature in three forms Solid Liquid Vapour Solid form of water Ice It is present in ice bergs and ice caps on top of tall mountains galaciers and polar regions Liquid form of water Water It is present in oceans seas lakes rivers and even underground Gaseous form of water Vapour It is present in the air around us Availability of water We know that nearly ¾th of the surface of the earth is covered by water Most of the water that is of the total amount of water that exits on earth is found in seas and oceans Can we drink the water available in the sea Sea water is salty But water used for our daily purposes is not salty It is known as fresh water Water obtained from ponds puddles river tube-wells and taps at home is usually fresh water If the total water on earth be let’s see what percent would be the availability of fresh water Look at the pie chart given below From the pie chart it can also be noted that water is saline water Only found is the freshwater and that too in polar ice caps and glaciers So this portion of water is not readily available for drinking The distribution of the totally available freshwater is as follows Polar ice caps and glaciers Ground water Other sources of water Surface water The distribution of total surface water is as follows Lakes Rivers Swamps Thus the above pie chart explains that we have a very small amount of fresh water available for human usage and so maintaining the water table and the conservation of water is very essential Isn’t it Water while passing through layers of soil dissolves salts and minerals to a maximum extent These salts and minerals have been deposited in seas and oceans for millions of years and are still being deposited In addition the oceanic volcanoes which are present inside also add salts to the sea Water with large amounts of dissolved solids is not potable or suitable for drinking Such water is called saline water Activity Relative amount of water at various sources Take a litre bucket a ml mug a ml tumbler and a ml spoon If the capacity of the bucket is litre then it represents the total amount of water present on the Earth Now transfer a mug of water from the bucket and it is ml and then it represents the total amount of fresh water present in the Earth The water left in the bucket represents seas and oceans This water is not fit for human use The water present in the mug represents the freshwater which is present in frozen form on snow-covered mountains glaciers and polar ice caps This water is also not readily available for human use Next transfer ml of water to the tumbler then it represents the total amount of ground water Finally take one-fourth spoonful of water while the capacity of the spoon is ml then it represents the total amount of surface water ie water seen in all the rivers lakes and ponds of the world It can be taken as potable water When such a small amount of potable water is available then we should be more economic in using water Is it not Activity Conduct the activity with common saltsand chalk powder charcoal powder and copper sulphate Fill up the following table Substance Dissolves in water Does not dissolve in water common salt sand chalk powder charcoal powder copper sulphate From the above activity we could observe that common salt and copper sulphate dissolve in water and contribute their properties like colour and other properties to water but sand chalk powder and charcoal powder do not dissolve in water Water freeze at o Celsius at normal pressure Every year march nd is observed as the world water day Composition of water Water is a transparent tasteless odourless and nearly colourless chemical substance It is composed of two atoms of hydrogen combined with one atom of oxygen The molecular formula of water is HO However the physical composition of water changes from place to place It can be clear or cloudy oxygenated or not very oxygenated and it can be fresh or salty The amount of salt in water is termed as salinity Based on its salinity water is classified into three main categories such as freshwater brackish water and sea water Fresh water contains to of salt Brackish water contains upto of salt and seawater contains more than of salt Ocean water is composed of many substances The salts include sodium chloride magnesium chloride and calcium chloride Activity Water contains dissolved salts Take some tap water in a china dish and heat it Continue heating till all the water gets dried up Stop the heating and look at the china dish What do you observe inside the china dish Deposits of some solid particles on the surface of china dish can be observed The deposit is of salts that are dissolved in water This shows that water has dissolved salts in it Note Do not use distilled water or water from purifier or RO Reverse Osmosis unit and the like for this activity Water cycle The water on the earth evaporates into the atmosphere due to the heat of the sun The water vapour in the atmosphere forms clouds From the clouds water falls on the earth in the form of rain or snow By this natural process water gets renewed This is called water cycle Water cycle is a continuous process It involves three stages evaporation condensation and precipitation It is also called the hydrological cycle Evaporation Water from oceans lakesponds and rivers evaporates due to the heat of the sun Condensation Water vapour which enters into the atmosphere by evaporation moves upward with air gets cooled and WPRVSKHUH FHDQWRODQG ZDWHUYDSRUWUDQVSRUW DQG SUHFLSLWDWLRQ HJHWDWLRQ DQG LYHUV HUFRODWLRQ ODNHV RLOPRLVWXUH URXQGZDWHU URXQGZDWHU IORZ XUIDFHIORZ FHDQ FH FHDQSUHFLSLWDWLRQ FHDQHYDSRUDWLRQ YDSRUDWLRQWUDQVSLUDWLRQ DWHUF\FOH changes into tiny water droplets that form clouds in the sky Precipitation The millions of tiny droplets collide with one another to form larger droplets When the air around the clouds is cool these drops of water fall in the form of snow or rain Activity Spread a piece of wet cloth in the sunlight Observe after some time Where has the water in the wet cloth gone The water evaporates into the atmosphere due to the heat of the sun Have you heard of transpiration It is the process of loss of water from the aerial parts of a plant in vapour form There is a continuous cycling of water and it exists in three forms in nature Water evaporating from lakes rivers and oceans forms the gaseous state Rain water forms the liquid state Snow on mountains and polar ice caps forms the solid state These three states occur in nature keep the total amount of water on the earth constant even when the whole world is using it How do you know that atmosphere has water vapour Let us do the following activity Natural Sources of fresh water Three types of natural sources of fresh water are available on the earth Surface water Water present on the surface of the earth such as riverlakeponds streams or fresh water wetland is called surface water Frozen water Water that is present in the frozen form as polar ice-caps and glaciers are called frozen water A larger portion of water is of the total available fresh water is in frozen state Ground water Ground water is the water present beneath Earth's surface in soil This water is Activity Condensation of water vapour Take a glass half filled with water Wipe the outer surface of the glass with a clean piece of cloth Add some ice into the water Wait for one or two minutes Observe the changes that take place on the outer surface of the glass From where do water drops appear on the outer side of the glass The cold surface of the glass containing icy water cools the air around it and the water vapour of the air condenses on the surface of the glass This process is also the result of condensation of water vapour obtained through springs open wells tube wells or hand pumps etc Groundwater Water Water Water Loam Loam Sand and gravel Clay Impermeable rock limestone Soil More to know Water is measured in litre and millilitre Gallon is also a measure of volume of liquids Gallon litre Water level in the reserviors is measured in TMC One thousand million cubic feet Water released from dams is measured in cusec cubic feet sec The Himalayas The Himalayas contain ice caps ice bergs and glaciers Ten of Asia’s largest rivers flow from the Himalayas and more than a billion people’s livelihoods depend on those rivers Aquatic animals During winter water in lakes and ponds in the cold countries will be frozen and a solid layer of ice is formed on the surface of water Still aquatic animals living under the ice do not die This is because the floating layer of ice acts as a protective coat and doesn’t permit heat to escape from water So as the water at the surface alone turns to ice it the existence of aquatic animals Conservation of water There is no change in the total quantity of water available on the earth It remains the same But the water useful for plants animals and man is decreasing day by day It is called scarcity of water What are the reasons for scarcity of water The main reasons for water scarcity Population explosion Uneven distribution of rainfall Decline of ground watertable Pollution of water Careless use of water We should take care to prevent scarcity of water Otherwiseit is impossible for organisms to live on the earth The only method of preventing scarcity of water is conservation of water Saving water for the future generations by using water carefully and in a limited way is conservation of water Methods of water conservation Mainly two methods can be followed for the conservation of water Water management Water management consists of the following factors a Bringing awareness about the bad effects of throwing wastes into the water bodies b Recycling of water by separating pollutants c Minimizing the use of chemical fertilizers in agriculture It reduces the pollution of underground water d Controlling deforestation e Adopting drip irrigation and sprinkler irrigation in agriculture By this way lesser amount of water can be used for the irrigation Rainwater harvesting Direct collection and use of rain water is called rainwater harvesting There are two types of rainwater harvesting a Collecting water from where it falls eg Collecting water from the roof tops of the houses or buildings Roof water harvesting b Collecting flowing rain water eg Collecting rainwater by constructing ponds with bund Coovam is an estuary Estuaries are wetlands where water bodies meet the sea It is a combination of fresh water from land meeting the salty seawater Estuaries are home to unique plants and animal species Importance of water Human body Our body uses water in all its cells organs and tissues to help regulate its temperature and maintain other bodily functions On an average the human body requires litres of water per day for proper functioning Water helps in digestion of food and removal of toxins from the body Domestic Apart from drinking people use water for many other purposes These include cooking bathing washing clothes washing utensils keeping houses and common places clean watering plants etc Activity Estimation of water consumed by a family on a day Activity Amount of water used in litres Brushing Bathing Washing clothes Toilets Cooking Washing utensils Cleaning floor Any other purpose Total amount of water used by a family in a day Swamps are wetlands that are forested They occur along large rivers or on the shores of large lakes The water of a swamp may be freshwater brackish water or seawater Swamps are important for providing fresh water and oxygen to all life Pichavaram Mangroves in Chidambaram Muthupet mangrove wetland Pallikkaranai wetland in Chennai Chembarambakkam in Kancheepuram are a few examples of swamps in Tamilnadu Agriculture Water is also essential for the healthy growth of farm crops and farm stock and is used in the manufacture of many products Industry Industry depends on water at all levels of production It is used as a material a solvent and for generating electricity Water distribution and treatment system We know that water is distributed by local bodies In some areas which water is obtained from river lake and ground water is treated and distributed Model of water distribution and treatment plant is shown in figures The Water distribution and water treatment system Let us avoid wasting water When you happen to see any leaking tap in your school or home keep a bucket to collect the water that is leaking and measure the amount of water and the time taken to fill the bucket After noting the time taken to fill a bucket you can estimate the amount of water getting wasted on a day Can you please think over the amount of water getting wasted all around the world from the leaking taps Points to remember Water is one of the most important components that all animals including human beings and plants depend on for their livelihood To an extent of of the total water that exists on Earth is found in seas and oceans Only of the freshwater is available in polar ice caps and glaciers Lakes rivers swamps constitute only of the surface water The moisture in the soil indicates the presence of underground water The continuous circulation of water in nature is called the water cycle It is effected by evaporation condensation precipitation and transpiration Ground water is the water present beneath Earth's surface in soil Lavoisier decided to redo Boyle’s experiment precisely Lavoisier burned the iron plate in an air- tight Jar In he married Mary Anne Lavoisier couldn’t do his research without the precise instruments designed by Mary Anne When weighing the iron plate individually it shown the gain in mass When lifting the lid of the jar slightly the air rushed into the jar Boyle We should accurately measure the mass In a chemical reaction the initial and final mass should be same so matter can never be created nor destroyed With a chemical reaction chemical compound may be changed We can change the chemical composition of substances by chemical reaction But I am most interested in Chemistry Yeah As I expected the final mass of the total system is same as initial Mary Anne’s role is as important as Lavoisier in all these discoveries Oxygen in the air should be the reason for this increment in mass The air pressure should have been decreased after oxygen is converted into a solid substance during chemical reaction After burning an iron plate there is a raise in its mass The Revolution in Chemistry There was an another surprise for him Lavoisier proved that water is made up of oxygen and hydro- gen Water is not a basic element too In consequence of proving water and air is not basic elements the concept Panchaputha was obsolete Objects are made up of diff erent kind of atoms Yes This should be the quantity of the oxygen in this jar Experiments of Lavoisier showed that air is a mixture A new era of modern chemistry started The book Elements of Chemistry published by him in laid the foundation of modern chemistry What is this The Large and small plates shows the same gm weight gain in this jar After exhausting oxygen the chemical reaction is stopped increasing of mass is also interrupted Lavoisier repeated his experiment so many times and concluded that the quantity of the oxygen in the air should be While respiration we inhale Oxygen and exhale Carbon dioxide Even when rusting burning of substances the same oxidation is occurred So he told that our respiration is equivalent to slow burning Oh Is air not a basic element Unit Chemistry in Everyday life Introduction We have studied earlier about the physical changes and chemical changes Can you identify from the following list which are physical changes and which are chemical changes breaking of a stick into two pieces burning of a paper tearing paper into small pieces dissolving sugar in water burning of petrol or LPG gas water boiling into water vapour coconut oil becoming solid during winter Can you see the important difference between the chemical change and physical change When you cut a paper into two both are still paper pieces but once you burn it there is no longer the paper only some ash and the smoke are left Chemical change results in the change of the substance In physical change only the shape size or volume changes the state of the matter may also change from liquid to gas or from liquid to solid however the substance remains chemically as it is Let us do the following experiment Add a pinch of turmeric powder to water water turns yellow Take a small quantity of soap water in a beaker and add a pinch of turmeric powder to it Now What happens Is there any change in colour of the solution Is it also turning to yellow or to some other colour Try adding turmeric powder to various household liquids and observe the result Try it on say tamarind extract Try it on with cleaning liquids in the house Does it change the colour Chemists identify turmeric powder as a natural indicator The change in colour indicates that the material is either acid or base medium Find answer for the following questions with the help of your teacher This will help you to understand how chemistry plays vital role in our life How does milk change into curd How can you remove stain on the copper vessels Idli is a little bit hard while we cook by using newly grinded idli dough but it is soft with old dough Why How does rusting of iron happen Why does white sugar change into black when heating We can understand the chemical changes that happen around us by knowing the answers for the above questions We use chemical changes in various forms in our daily life Chemistry is the branch of science which deals with the study of particles around us The beauty of chemistry is that it explains the properties of the basic components of particles such as atoms and molecules and the effects of their combination We can consider all the particles around us as chemicals The water HO we drink is the combination of hydrogen and oxygen The salt NaCl we use in our kitchen is a combination of the chemicals sodium and chlorine Even our body is made up of a lot of chemical particles We could prepare soft idly as a result of a chemical change named fermentation takes place in the idly batter During fermentation the idly batter undergoes a chemical change by bacteria While cooking the food products undergo so many chemical changes As a result there are favourable changes in colour flavour and taste in the food We can use chemical changes to produce certain materials For example some of the objects such as soaps fertilizers plastics and cement which we use in our daily life can be prepared by making chemical changes in some naturally occurring objects We can study about the manufacturing processes and usages of certain materials we use in our daily life such as soaps fertilizers cement gypsum Epsom plaster of paris phenol and adhesives in this lesson Soaps and Detergents Bathing soap and washing detergents are kinds of soaps which we use in our daily life In addition to this we are When we cut onion we get tears in the eyes with irritation because of the presence of a chemical propanethial s-oxide in onion This is easily volatile When we cut onion some of the cells are damaged and this chemical comes out It becomes vapour and reach our eyes result in irritation and tears in eyes When we crush the onion more cells will be damaged and more chemicals come out using washing powder to remove strong stains on the clothes The detergent molecules have two sides one side water loving other water hating Water hating goes and joins with dirt and oil in the cloth while the water loving joins with the water molecules When you agitate the cloth the dirt is surrounded by many molecules and is taken away from the cloth The cloth becomes clean and the dirt surrounded by the detergent molecules float in the water making it dirty We can prepare our own soap by the following activity Different soaps for different purposes are prepared with various raw materials We can understand this by doing the following activity LUW RZVRDSVFOHDQFORWKHV DEULF RDS PROHFXOH Activity Collect various kinds of soap’s wrapper Complete the following table based on the information provided in the wrapper S No Name of the Soap Ingredients Bathing soap Washing soap Bathing soap for kids Toilet cleaners House floor cleaner liquid Inference Nature of the soaps varies according to its constituents Preparation of Soap Materials Required ml of water g of Lye Sodium hydroxide ml of coconut oil Process Cover your work area with old newspaper Take ml of water in a jar Add gram of concentrated sodium hydroxide and allow it to cool Then add ml of coconut oil drop by drop and stir it well Pour that solution into an empty match box soap can be obtained after getting dried Try this soap to wash your handkerchief CHEMISTRY IN EVERY DAY LIFE Fertilizers Apart from water sunlight and air certain nutrients are also needed for the growth of plants We know that the plants get their nutrients from the soil Nitrogen N Phosphorous P and Potassium K are the three important nutrients among the various nutrients needed for the growth of plants These three are called as Principal Nutrients The table given below depicts the quantity of elements absorbed by certain common plants Crop Yield per hectare kg Approxi- mate Nitrogen kg Phosphorous kg Potassium kg Rice Corn Sugarcane Groundnut What would happen to the nutrient content of the soil if the field is farmed continuously How could we resend these nutrients back to the soil Fertilizers are organic or inorganic materials that we add to the soil to provide one or more nutrients to the soil Fertilizers given to plants can be classified into two They are organic and inorganic fertilizers Organic fertilizers Fertilizers containing only plant or animal- based materials or those synthesized by micro- organisms are called organic fertilizers These fertilizers can be prepared easily This type of fertilizers are economical eg Vermi compost compost Inorganic fertilizers The fertilizers prepared by using natural elements by making them undergo chemical changes in the factories are called inorganic fertilizers eg Urea Ammonium sulphate and Super phosphate The table given below lists the nutrients in inorganic fertilizers Name of fertiliser Nitrogen Phosphorus Potassium Urea Super phosphate Ammonium sulphate Potassium nitrate If we use kg of urea then according to the table kg of nitrogen percent will be added to the soil The percentage of nitrogen in ammonium sulphate is If kg of potassium nitrate is added to soil how much potassium would the soil get Cement In ancient period the houses were constructed by using the mixture of lime sand and wood At present the people are widely use the cement for construction of houses dams and bridges The cement is manufactured by crushing of naturally occurring minerals such as lime clay and gypsum through milling process Activity Make a visit to agriculture field in your area List out the various crops and type of fertilizers used there S No Name of the Crop Name of the Fertilizer Earthworms take organic wastes as food and produce compost castings So earthworms are known as Farmers friends because of the multitude of services they provide to improve soil health and consequently plant health Cement becomes hardened when it is mixed with water Gypsum plays a very important role in controlling the rate of hardening of the cement During the cement manufacturing process a small amount of gypsum is added at the final grinding process Gypsum is added to control the setting of cement Uses of cement Cement is used as mortar concrete and reinforced cement concrete Mortar Mortar is a paste of cement and sand mixed with water In houses mortar is used to bind building blocks for constructing walls to apply coating over them and to lay floor Concrete Concrete is a mixture of cement sand and gravel It is used in the construction of buildings bridges and dams Reinforced Cement Concrete Reinforced cement concrete is a composite material by mixing iron mesh with cement This is very strong and firm It is used in the construction of dams bridges centering works in houses and construction of pillars Huge water tanks water pipes and drainages are built with this Gypsum Gypsum is a soft white or grey naturally available mineral The chemical name of gypsum is calcium sulphate dihydrate Take three empty tumblers of same size and name them as A B and C Add two tea spoonful of cement in each of the container Then pour one tea spoonful of water in container A and two spoonful of water in B and three spoonful of water in C After an hour observe which container of the cement set fast Touch the containers and see if they are warm or cool From this experiment we understand that water and cement should be mixed in a certain ratio for fast setting The molecular formula of gypsum is CaSO· HO Uses Used as fertilizers Used in the process of making cement In the process of making Plaster of Paris Epsom Epsom salt is magnesium sulphate hydrate The molecular formula of Epsom is MgSO HO It offers a wide range of uses Uses Eases stress and relaxes the body Helps muscles and nerves function properly Medicine for skin problems Improving plant growth in agriculture Plaster of Paris Plaster of Paris consists of fine white powder calcium sulphate hemihydrate The molecular formula of Plaster of Paris is CaSO HO Known since ancient times plaster of paris is so called because of its preparation from the abundant gypsum found near Paris capital of France Plaster of paris is prepared by heating gypsum where it gets partially dehydrated Uses In making black board chalks In surgery for setting fractured bones For making casts for statues and toys etc In construction industry Phenol Have you ever observed the oily material which is used to clean your house Do you know what it is It is a chemical named as Phenol Phenol is a carbolic acid of an organic compound It is a necessary ingredient for preparing variety of phenol products The molecular formula of phenol is CH OH it is a weak acid It is a volatile white crystalline powder It is a colorless solution but changes into red in the presence of dust It irritates when exposed on human skin It is widely used for industrial purposes Phenol itself is used in low concentrations in mouthwash and as a disinfectant in household cleaners Phenol used as surgical antiseptic since it kills micro organisms Adhesives What will you do when a page of your book is torn accidentally It can be fixed by using a cello tape How cello tape works There is a paste like material in one surface of the cello tape Have you ever discussed about this material The paste like substance is called adhesive It is commonly known as glue mucilage or paste The substances applied to one surface or both the surfaces of two separate items that binds them together and resists their separation are called adhesives Adhesives are substances that are used to join two or more components together through attractive forces acting across the interfaces A practical experience Do you notice how puncture of your bicycle is repaired by the shop keeper He ensures the punctured surfaces are clean dry and free of dust and roughens the area around the hole using a metal scraper He takes an appropriate patch of tyre-tube and applies a suitable adhesive to both the roughened area and to the underside of the patch apply firm pressure and allows drying completely Why does he apply pressure This increases the adhesive capacity at both the surfaces and ensures proper binding Types of adhesives There are two kinds of adhesives one is natural made from starch and another one is artificial made from chemicals The one used in puncture shop is an artificial adhesive Artificial adhesives may be classified in a variety of ways depending on their utilities Their forms are paste liquid film pellets tape It is used in various conditions such as hot melt reactive hot melt thermo setting pressure sensitive and contact Points to Remember Soaps are prepared by heating the mixture of olive oil animal fat and concentrated sodium hydroxide solutions Fertilizer facilitates growth of plants Vermi compost has high nutrient benefits and it is useful for sustaining the land fertility Cement is manufactured by using lime clay and gypsum Plaster of Paris is used to fix bone fractures Diluted phenol is used as a cleaner disinfectant and mouthwash Adhesives are substances that are used to join two or more components together Unit Our Environment Introduction The surroundings or space in which a person animal or plant lives is known as an environment Environment is everything that surrounds us It can have both living biotic and non-living things abiotic Abiotic factors are non-living things such as sunlight air water and minerals in soil Biotic factors are living things of our environment such as plants animals bacteria and more Organisms live constantly interact with one another and adapt themselves to conditions of their environment The Ecosystem Ecosystem is a community of living and non-living things that work together Each part of an ecosystem has a role to play Any changes in the environment such as increased temperature or heavy rains can have a big impact on an ecosystem Ecosystems can be either natural or artificial Activity Think of the objects in your home Just keep in mind the books toys furniture food materials and even pets of your home These living and non-living things together make your home Look at the following picture and list out the living and non-living things in the pond Natural ecosystem Ecosystem originated without human intervention is called a natural ecosystem This can be an aquatic ecosystem or a terrestrial ecosystem The ecosystem in water is called aquatic ecosystem Sea river lake pond and puddle are some examples of natural aquatic ecosystem Ecosystems outside the water body and on land are called terrestrial ecosystems Forests Mountain regions Deserts etc are examples of natural terrestrial ecosystems Artificial ecosystem Artificial ecosystem is created and maintained by human They have some of the characteristics of natural ecosystems They are much simpler than the natural ecosystems These can be the terrestrial ecosystems such as paddy fields gardens etc or the aquatic ecosystem such as fish tank Aquarium Aquarium is a place in which fish and other water creatures and plants are maintained An aquarium can be a small tank or a large building with one or more large tanks Terrarium Terrarium is a place in which live terrestrial animals as well as plants are maintained With controlled conditions that copy their natural environment Aquariums and Terrariums are used to observe animals and plants more closely They are also used for decorations Food Chain and Food Web Living organisms need food to perform their physiological activities Some organisms can produce their own food such as plants while other organisms cannot do this and depends on other organisms to obtain their food We can therefore identify different feeding types of mechanisms in an ecosystem based on how the organism obtain gets their food They are producers and consumers Producers Producers are organisms that are able to produce their own food They do not need to eat other organisms Producers are also called autotrophs Can you name an organism that prepare it’s own food Plants are producers because they make their own food by photosynthesis What do plants require for photosynthesis Consumers Organisms which cannot produce their own food has to eat other organisms as food These organisms are called consumers All animals are consumers as they cannot produce their own food Consumers are also called heterotrophs There are many types of consumers and we can classify them into specific groups depending on the food that they consume These are herbivores Animals which eat plants or plant products eg cattle deer goat and rat carnivores Animals that eat other animals eg Lion tiger frog and owl omnivores Animals that eat both plants and animals eg Humans dog and crow decomposers Micro-organisms that obtain energy from the chemical breakdown of dead organisms both plants and animals They break complex organic substances into simple organic substances that goes into the soil and are used by plants eg Bacterium Fungi Food chain In a forest deer eats grass and in turn tiger eats deers In any ecosystem there is a chain like relationship between the organisms that live there The sequence of who eats whom in an ecosystem is called as food chain It describes how an organism gets food and nutrients by eating other organisms A food chain shows the relationship between producers grass consumers deer goat cow and tiger and decomposer Bacteria and Fungi Energy flow The food chain begins with the energy given by the Sun Sunlight triggers photosynthesis in plants The energy from the Sun is stored in the plant parts When the grasshopper eats the grass the energy flows from grass to grasshopper Frog gets energy by eating grasshopper This energy is transferred to a crow when the frog is eaten by a crow Thus we conclude the primary energy production in the world of living things is produced by plants that is by photosynthesis The micro organism degrade the excreta and the dead bodies of animals into primary simple components and puts them back into soil It is this material that help the plants to grow Thus we can see that there is a cyclic movement of materials from primary producers to highest level predators then back to the soil Trophic levels The energy is passed from the producer to the consumers But there are three different consumers in any food chain How can we distinguish different consumers Animals that eat plants are primary consumers Animals that eat primary consumers are called secondary consumers Animals that eat the secondary consumers mostly predators are the tertiary consumers There may even be large predators that eat tertiary consumers They are called as quaternary consumers Each of these levels in the food chain is called a trophic level Organism uses up to of its food energy for its life processes Only about of energy goes into new body cells and will be available to the next animal when it gets eaten This loss of energy at each trophic level can be shown by an energy pyramid A rat eats grains and in turn we know snake eats rat Now snake is a prey for peacock and in turn peacocks are easy prey for tigers and leopards Now think Do tigers have any natural predators In all food chain there is a top level predator that has no natural predators In an aquatic ecosystem there are no natural predator for alligator in a forest there are no natural predators for tigers Importance of food chain Learning food chain help us to understand the feeding relationship and interaction between organisms in any ecosystem Understanding the food chain also helps us to appreciate the energy flow and nutrient circulation in an ecosystem This is important because pollution impacts the ecosystem The food chain can be used to understand the movement of toxic substances and their impacts Food web Consumers have different sources of food in an ecosystem and do not rely on only one species for their food If we put all the food chains within an ecosystem together then we end up with many interconnected food chains This is called a food web Activity Take a square paper Fold its diagonals Draw three lines in three triangles as shown in the picture Cut from the edge of the diagonal to the center as shown in the picture If you fold this triangle and paste behind the third triangle you get a pyramidal shape In one of the triangles draw images of each of the organisms in the different levels In another triangle write the names of the organisms In the last triangle write the energy level of the organism Have a look at the following example You must come up with different organisms Eagle Snakes Mice Seeds of Plants Eagle Fold Fold Triangle Triangle Triangle Triangle Fol Waste Management and Recycling To protect our environment it is very important to reduce waste manage it properly and maximise recycling Waste is any substance or material that has been used but is not wanted anymore This is either because it is worn out broken or no longer has any purpose Everyone produces waste which has an impact on all ecosystems However most of us do not know where our garbage goes There are many types of waste There is liquid waste in our drains there are gases hiding in the air like pollutants from factories and there is solid waste garbage we put in our waste bins Biodegradable and Non- biodegradable Waste Solid waste we generate can be classified into two major types Biodegradable wastes Non-biodegradable wastes Activity Take two mud pots or glass jars and fill them up with garden soil In the first pot mix wastes such as banana peel some vegetable peels and a few tree leaves into the soil In the second pot mix a piece of plastic carry bag sweet wrapper and metal foil into the soil What happen to the waste materials placed in both pots Do you notice a difference between first and second pot Observe the changes over two weeks and discuss with your classmates Biodegradable waste The term Biodegradable is used for those things that can be easily decomposed by natural agents like water oxygen ultraviolet rays of the sun and micro-organisms etc One can notice that when a dead leaf or a banana peel is thrown outside it is acted upon by several micro- organisms like bacteria fungi or small insects in a time period Biodegradable waste includes vegetable and fruit peels leftover food and garden wastes grass leaves weeds and twigs Natural elements like oxygen water moisture and heat facilitate the decomposition thereby breaking complex organic forms to simpler units Decomposed matter eventually mixes or returns back to the soil and thus the soil is once again nourished with various nutrients and minerals Non-biodegradable waste Those materials which cannot be broken down or decomposed into the soil by micro-organisms and natural agents are labeled as non-biodegradable These substances consist of plastic materials metal scraps aluminum cans and bottles etc These things are practically immune to the natural processes and thus cannot be fed upon or broken down even after thousands of years Give some examples for Biodegradable and Non-biodegradable waste S No Biodegradable waste Non-bio- degradable waste Food Waste Plastic Bottles Discuss with your teacher and friends Are animal bones biodegradable Are all types of clothes biodegradable Rani and her garbage Rani gets home from school She is hungry She eats a banana and a packet of chips She puts the banana peel and plastic chips packet into the waste bin In the waste bin the waste mixes together and the banana peel and makes the plastic chips packet dirty The waste bin starts to smell and Rani’s mother puts the waste outside on the street The municipality collects the waste from outside Rani’s house and many other houses in a tractor The tractor drives to a big open dump and leaves all mixed wastes there Sometimes there are fires in the open dump When waste like Rani’s chips packet burns unhealthy chemicals pollute the ecosystem These chemicals are present in the air we breathe The leftover ash from burning waste pollutes the soil When it rains some of the dangerous chemicals goes into the ground Some of the rain never reaches the ground as it collects in the plastic garbage at the dump Little pools of water let mosquitoes to breed and they can spread unwanted diseases like dengue and malaria Cows and dogs go into the open dump looking for food As the waste is mixed many things that are not good to eat such as plastics smell like food The animals get confused and eat some plastics by accident This makes them sick Rani is a student like you She does not want to make animals sick She does not want to pollute beautiful Town She does not like mosquitoes and wishes that no one ever gets sick from them So Rani takes this decision I will dispose the waste property and reduce all type of pollution Do you want to do the same as Rani does Learn about the R's and how you can start to solve these problems Solid Waste Management It is our duty to reduce creating waste and protect environment R's are important in protecting environment The first R is reduce and the second R is reuse and the last R is recycle The waste hierarchy or pyramid shows the best ways to manage solid waste Avoid Avoid the usage of unwanted materials which create more debris Before you buy anything think that Do I really need it eg Avoid buying packed foods Refuse to buy use and throw plastic products Reduce We can reduce the waste by using durable goods that last longer instead of things that are used once and thrown away eg Write on both sides of papers Instead of unnecessary printing use electronic facilities Share newspapers magazines and other things with others Reuse Reuse means using a thing again and again rather than using and throwing after a single use eg Instead of using plastic bags use and throw pens and batteries use cloth bags fountain pens and rechargeable batteries Reuse glass bottles for other purposes Repair foot wears and use them Creative reuse Creative reuse or Up- cycling is the process of converting waste materials or useless products into new materials or products of better quality or for better environmental value When you upcycle you are giving an item a new purpose eg Used tyres into chairs Used PET bottle into penstand Recycle The process by which waste materials are used to make new products is called recycling eg Using old clothes to make paper and melting some plastics to make floor mats plastic boards and hose pipes Compost The process of degradation of organic wastes into manure by the action of microorganism is called composting The manure thus obtained becomes natural fertilizer for the plants as well as increases the soil fertility Incinerate The burning of solid waste in incinerator is called incineration discarded medicines toxic drugs blood pus During incineration the enormous heat kills all contagious disease-causing germs Landfill Landfilling is a method in which wastes are dumped into naturally occurring or man-made pits and covered with soil Garbage buried inside landfills remain here for a long time as they decompose very slowly and become manure These places can be converted into parks gardens etc Earlier in the lesson you learn about Rani and how she did not want to cause pollution Simple steps in your daily life can make big differences There are two steps you should remember The first step should always be to reduce waste Think of the R’s and the waste pyramid and remember the order of the levels The second step is to keep waste separate This way the waste will remain clean and can be easily reused or recycled Mixing different types of waste together biodegradable and non-biodegradable makes that place dirty Waste separation exercise The Solid Waste Management SWM rules say that Every Household should segregate and store the waste generated by them in three separate streams namely bio-degradable non bio-degradable and domestic hazardous waste in suitable bins and handover segregated wastes to authorised waste pickers or waste collector as per the direction or notification by the local authorities from time to time No body shall throw burn or bury the solid waste on streets open public spaces outside their premises or in the drain or water bodies Domestic hazardous waste means discarded paint drums pesticide cans CFLbulbs tube lights expired medicines broken mercury thermometers used batteries used needles and syringes and contaminated gauge etc generated at the household level Learn how to separate waste correctly into waste bins so you can keep Tamilnadu clean and beautiful kg kg kg kg kg Kenya India China Germany USA How much waste does each person make around the world every day The average person in India produces kg of waste every day It may be small amount of waste But India has a large population and imagine you collected all the waste today and put it into tractors You would fill so many tractors that you could create a traffic jam approximately kilometres long Imagine a road all the way from Kanyakumari to New Delhi completely blocked with tractors carrying garbage and no space to walk in between This is how much waste we create in India each day If we reduce the waste we reduce the pollution Every day million kilos of solid waste is generated in India Activity Preparation of Vermi compost Dig a pit for about one feet depth in the backyard or garden of your home or school Fill the pit by bio wastes paper and food wastes and place few earth worms in it sprinkle water and close the place with jute or cardboard and ensure moisture all the time After days the vermi compost casting layer formed just above the pit These compost can be applied to the plant which contains water soluble nutrients This type of compost helps in plant growth as well as sustain the land is fertility Pollution Pollution occurs when the environment gets contaminated by wastes chemicals and harmful substances Pollution is the damage caused to the environment mainly because of human activities Any substance that causes pollution is known as a pollutant Pollution is an unwanted change in the physical chemical and biological characteristics of our land air and water Types of Pollution There are four major kinds of pollution Air pollution Water pollution Land soil pollution Noise pollution Air pollution Most air pollution is caused by the burning of fossil fuels oil petrol coal and natural gas The are used in industries power plants and motor vehicles Burning these fossil fuels release toxic gases and fine particles such as ash and soot into the air causing air pollution Air pollution is also caused by burning solid wastes like some plastics gases or chemicals released from factories and fumes from aerosols like deodorant spray cans or paints Certain toxic gases produced by industries mix with raindrops in the atmosphere and make rain unusually acidic This is called acid rain It damages plants washes the nutrients out of soils and kills fish Air pollution is harmful to all living organisms including humans Polluted air affects skin eyes and respiratory system How can we reduce air pollution Cycle or walk short distances instead of using a motor vehicle Travel by public transport bus or train Do not burn solid waste Avoid fireworks Water pollution Water pollution occurs when wastes from factories houses and farms mixes with the water in rivers lakes ponds the ocean or even groundwater Contaminated or polluted water can spread diseases and chemicals which are not good for our health The most significant sources of water pollutants are Sewage water we use at home for bathing cleaning cooking Industrial effluents liquid wastes from factories Agricultural pollutants chemical pesticides and fertilisers that get washed from farms Solid waste when waste gets dumped into water bodies How can we reduce water pollution Do not pour leftover oil old medicines or waste down the drain or into the toilet Reduce the use of chemical pesticides and fertilizers to grow crops Use waste water for garden in home Do not litter or dump waste always use a waste bin Land soil pollution In the same way as water and air get polluted land or soil pollution happens when toxic chemicals change the natural balance in soil Land pollution comes from farming Excess use of chemical pesticides and fertilisers mining digging up metals and other materials factories industrial waste and the solid waste from our own homes like plastics and broken electronics Soil pollution affects animals humans and even plants because soil or land acts like a sponge When it rains pollutant sinks into the soil If we grow plants to eat in polluted soils these dangerous chemicals can get into our food How can we reduce land pollution First try to reduce waste then recycle the rest Always use a waste bin and never litter Do not burn waste the ash mixes easily with soil Noise pollution Noise pollution affects the environment We all like a quiet and peaceful place since unpleasant or loud sounds disturb us Loud music the sounds of motor vehicles fire works and machines cause noise pollution Continuous noise disturbs our sleep and does not allow to study Noise pollution has been directly linked to stress and health impacts such as high blood pressure and hearing loss Loud noise or even loud music can damage our ears Noise pollution also disturb animals Birds have to communicate talk louder so that they can hear each other in noisy areas Even underwater noise pollution from ships can make whales lose their way as they use sounds to navigate iving biotic and non-living abiotic components interact with one another There are two types of ecosystems terrestrial on land and aquatic in water The feeding relationship in an ecosystem is called a food chain Biodegradable and non-biodegradable waste should be kept separate The R’s are in a certain order First reduce then reuse and finally recycle Waste should never be burned as it causes air and soil pollution Pollution occurs when the environment gets contaminated by wastes chemicals and harmful substances Major types of pollution are four air pollution water pollution land pollution and noise pollution There are many small habits any student can practice to reduce pollution manage waste correctly and protect the environment Unit Plants in Daily Life Introduction We are living in a green planet Plenty of natural plant resources are around us Economic botany basically deals with all pervading plants in relation to human welfare as food clothing shelter and medicine either directly or indirectly Indirect usage includes the needs of mans livestock and the maintenance of the environment the benefits may be domestic commercial environmental or aesthetic Plants bring about economy to the country in large extent and it is a fact that the wealth of any country largely depends upon its agriculture and plant products Economic botany is the study of relationship between people and plants and the uses of plants in economy From the earliest time rice wheat and millet have been the staple food of a vast population of India as indicated by the presence of charred grains in most of the excavation sites In addition references are abundant in ancient literature about the existence and usage of several crops of economic importance Observe the following pictures carefully Can you identify what they are doing Why are the farmers harvesting paddy A woman makes rope using coir Where does the raw material come from Neem leaves are being collected in a plate Do you know the uses of neem leaves What material is used by the man to make a chair In this lesson let us discuss about the different crop plants of economic uses in relation to mankind Based on their economic values and uses plants may be broadly classified as follows Plants as Food Spice yielding plants Medicinal plants Fibre yielding plants Timber yielding plants Ornamental plants Plants as Food Plants are the main source of food for humans beings These plants are known as food plants Do you have a vegetable garden in your house Have you ever seen harvesting of ripened vegetables Which part of the plants is used as food for us We eat different parts of plants such as root stem leaf seed unripe and ripe fruits We can classify the food plants as follows Vegetables Cereals Pulses Plants also give us coffee tea sugar and raw materials for oil Vegetables We get vegetables from different parts of the plants Roots eg Beetroot Carrot Leaves eg Green Vegetables Curry Leaves Cabbage Stems eg Potato Yam sugarcane Flowers eg Banana flower Cauliflower Fruits eg Amla Guava Cereals Cereals are edible components of grain of cultivated grass Example Rice Wheat Bajra Millet and Ragi Pulses Pulses are edible seeds of plants legume family Pulses are produced in pods eg Bengal gram Green mung bean Spices Spices are aromatic parts of tropical plants traditionally used to flavour the food Spices come from the bark or roots of Activity Tabulate the names of vegetables Cereals and pulses you know SNo Vegetables Cereals Pulses Rice India is the second largest producer of fruits and vegetables in the world certain plants leaves flowers or stems of plants primarily used for flavoring coloring or preserving food Spices used in India Following spices are included in a variety of Indian dishes Cardamom black pepper curry leaves fenugreek fennel ajwain bay leaves cumin coriander seeds turmeric cloves ginger nutmeg and cinnamon World Food Day October- The aim of celebration of this day is to promote worldwide awareness and action for those who suffer from hunger and for the need to ensure food security and nutritious diets for all Each year World Food Day is celebrated by the Food and Agriculture Organization of the United Nations FAO World Food Day adopts a different theme each year Ask your teacher about the theme of this year Medicinal plants Some of the plants around us are good in healing our diseases We call these plants as medicinal plants They alleviate burns cut cold fever sneezes and more Some chemical compounds in the medicinal plants act against insects fungi and certain germs Medicinal plants are considered as rich resources of ingredients which can be used in drug preparation Here is a list of plants that have the highest medicinal value Plant name Parts used Medicinal use Amla Fruit Cure Vitamin C deficiency diseases like Scurvy Improve immunity Tulsi Leaves seed Cough cold bronchitis expectorant Aloe Leaves Laxative wound healing skin burns and ulcer Neem Bark leaf and seed Skin diseases germicide Turmeric Rhizome Helps body to fight foreign invaders Ask your parents about the medicinal uses of plants such as Phylanthus Vallarai Black nightshade Tippili Vettiver Thuthuvalai and make a write up What are the other plants used for medicinal purpose in your area Fibre yielding plants Plants which give us fibres necessary for our uses are called as Fibre yielding plants The fibre from these plants can be spun into thread rope and cloth These fibres are called as natural fibres We can classify the Fibre yielding plants into two types based on the uses and the parts of the plant from where we get the fibre Based on Use Textile Fibres making cloth eg Cotton Cordage Fibres making rope eg Coconut Fibre Filling Fibres making mattresses eg Silk cotton Based on the plant parts Plant Fibres include seed hairs eg cotton Stem or bast Fibres eg flax jute Leaf Fibres eg Agave Husk Fibres eg coconut In India Jute crop is grown in seven states West Bengal Assam Odisha Bihar Uttar Pradesh Tripura and Meghalaya West Bengal alone accounts for over of raw jute production Take a small quantity of cotton swap Hold it between your thumb and fore finger Now gently start pulling out the cotton while continuously twisting the Fibres Are you able to make a yarn The process of making yarn from Fibres is called Spinning Timber yielding plants The wood needed for the construction of buildings and making of furniture are obtained from certain plants We use wood for these purposes due to their features like durability stylish finishing and resistance to temperature changes All commercial timbers are classified into two classes as Hardwoods and softwoods based essentially on their structure Hardwoods Hardwoods are angiosperms flowering plants the largest group of land plants High-quality furniture desks flooring and wooden construction are being made only using hardwood Teak Jackfruit Softwoods Softwoods come from gymnosperm non-flowering plants trees Certain angiosperms also yield softwood Softwoods have a wide range of applications such as making plywood wooden boxes medium-density Fibreboard MDF and paper making eg katampu Pine Ornamental plants Plants which are grown for aesthetic reasons are called as ornamental plants Producing flowers from floral plant is the important section of horticulture eg Jasmine Rose Chrysanthemum Carnation Jerbara etc To decorate houses gardens and parks we are planting shrubs such as Hibiscus Grape Jasmine and Crotons and climbers like Mullai Allamanda and Bougainvillea trees such as Golden shower tree Mandarai Delonix tree Flame of the forest etc What are the ornamental plants grown in your locality Interrelationship between plants and animals Animal-plant Interactions Animals rely on plants for their food and shelter This relationship benefits not only animals but also plants Such relationship is economically significant For example silkworms feed on mulberry leaves and live on mulberry plants This relationship between a worm and a plant is economically useful for us in silk production Animals pests and birds are essential for cross-pollination of flowers Bright colours of flowers smell and honey attract insects As the insects go from one flower to another they leave the pollen grains from their body This results in cross-pollination and the formation of vegetables and fruits These insect pollinators and birds need to be protected to produce the best yield Bees are the best pollinators They also give us honey Plants and algae living in coral reefs are the food for variety of fishes Fisheries work is done in these areas Animals and birds play an important role in spreading seeds of various plants The digestive enzymes in the digestive system of the birds soften the protective layer of the seeds and make it easier to germinate If these natural relationship between animals and plants are affected it shows its impact on economy too Other uses of plants Maintain soil fertility Plants maintain soil fertility Their droppings and shedding of leaves fruits and other parts degrade in the soil to form humus This humus increases soil fertility Plants like blue green algae and bacteria Pseudomonas are extensively used to fix nitrogen in the soil for agriculture Prevent soil erosion Plants when grown in dense will prevent soil erosion ie in times of wind or flood the fertile top layer of soil is carried away by air or water This is prevented by plants if grown around Bio fuels Some plants are also grown for the sake of bio fuels Plant fuel is less toxic as it does not emit harmful gases and also less expensive Jatropha Even the plant waste is used to generate electricity eg Sugar mills Rubber and Natural plastic We obtain rubber for tyre wiring seats etc from plants Natural plastics are also produced from plants which are biodegradable So it does not do harm to our environment Neem Oil coated Urea Farmers in India uses urea as a fertilizer to increase the agricultural productivity Indian Scientists made Neem Coated urea which released nitrogen gradualy and helps the plants to absorb maximum nitrogen It reduces the impact of urea on an environment Pala spinach Osteo arthritis is a joint disease affecting joints and knee of any age people Currently Indian scientists at CDRI Central Drug Research Institute Lucknow have made a nano formulation from the Palak Pala spinach to cure this disease Human beings directly or indirectly depend on plants for food clothes and shelter The branch of science which deals with the relationship between plants and human beings and the economical usages of plants is called economic botany Plants are the main sources of food for human beings The plants which give food to us are called food plants Pulses are the edible seeds of plants in the legume family Spices are the aromatic parts of tropical plants traditionally used to flavour food Some chemcial compounds some plants act against insects fungi and certain germs They are called as medicinal plants Plant fibres are classified into Textile Fibres Cordage Fibres and Filling Fibres based on usage Timbers are classified as hard wood and soft wood depending on their strength and structure Plants grown for decorative purposes are called as ornamental plants When the interrelationship between animals and plants are affected our economy is also affected Unit Hardware and Software Introduction Computer is a device comprising both hardware and software The functions of hardware and software combines together to make the Computer functional A hardware device helps to enter input information The software processes the input data and gives the output in the monitor a hardware device Thus computer is like a human body where human body is the hardware and soul is the software Hardware possible but we can see the functions of the software in the form of output Email existed before the World Wide Web Hardware Software Hardware is the parts of the computer which we can touch and feel Hardware includes Input and Output devices Cabinet Hard Disk Mother Board SMPS CPU RAM CD Drive and Graphics Card Software Hardware is lifeless without software in a computer Software are programmed and coded applications to process the input information The software processes the data by converting the input information into coding or programmed language Touching and feeling the software is not Types of Software The software is divided into two types based on the process They are System Software Operating System Application software System Software System Software Operating system is software that makes the hardware devices process the data inputted by the user and to display the result on the output devices like Monitor Without the operating system computer cannot function on its own Some of the popular operating system are Linux Windows Mac Android etc Application Software Application software is a program or a group of programs designed for the benefit of end user to work on computer The application programs can be installed in the hard disk for the usage on a particular computer This type of application program completes one or more than two works of the end user The following are the examples of application program Video player Audio player Word processing software Drawing tools Editing software etc System and Application Software types The operating system and application software are available in two forms They are Free and Open source Paid and Proprietary Software Free and Open source Free and open software is available at free of cost and can be shared to many end users Free software is editable and customizable by the user and this leads to updation or development of new software Examples of Free and Open source software LINUX Open office Operating System Geogebra etc Paid and Proprietary Software There is software that is to be paid to use either permanently or temporarily these types of software are paid and need a license to use it The license of the software would not be provided unless it is purchased Similarly the end users are legally prohibited to steal the software program or to use the pirated version of the Paid and Proprietary Software Some of the examples of Paid Proprietary Software are Windows Microsoft office Adobe Photoshop etc Artificial magnet Adhesives Aloe Bio degradable waste Bio fuel Consumers Compost Cereal Decomposers Disinfectant Electromagnet Estuary Ecosystem Food Chain Food webGround water Herbivore Hard wood Incinerate Inorganic fertilizerLand Fill Like poles Magnet Magnetic Material Magnetic Compass Magnetization Magnetic attraction Magnetic repulsion Non Magnetic substances North pole South pole Natural Indicator Non Bio degradable waste Natural pesticidesOrganic fertilizer Ornamental Plant Producers Pollution Pulses Pollinators Surface water Synthetic Swamp Soft wood Spices Turmeric Powder Timber Unlike poles Vermi Compost Water cycle Water treatment plant History Unit Sources of Medieval India The periods from AD CE to and from AD CE to are classified as Early Medieval and Later Medieval periods respectively in Indian history Numerous and varied sources are fortunately available to the historians engaging in the study of Medieval India Added to the information that can be gleaned from inscriptions monuments and coins are the accounts left by Arab Persian and Turkish chroniclers These accounts are rich in detail and have given first-hand information on the life of kings though they provide very little information on the life of the common people The opinions of the courtiers and chroniclers are often one-sided written in a hyperbolic language exaggerating the king’s achievements Let us now explore the various sources available for the study of the history of Medieval India Sources Sources are the supporting materials documents or records in the form of evidence that help to reconstruct the past We examine the details of political economic and socio-cultural developments with the aid of sources Primary Sources Inscriptions monuments and coins and the information available in them Secondary Sources Literary works chronicles travelogues biographies and autobiographies Inscriptions Inscriptions are writings engraved on solid surfaces such as rocks stones temple walls and metals The king’s royal decrees dedications and donations monuments raised in commemoration of victories in wars those built in memory of deceased warriors contain rich information about the concerned era Copper-plate grants which were treated as legal documents have significant source value The Islamic-Persian practices and the relatively high cost of copper plates made palm leaf and paper cheaper alternatives from century onwards Several copper-plate grants issued during the later Chola period to century record gifts to individual priests or teachers who were Hindu Buddhist or Jaina or to persons of eminence Both the giver and the receiver are very elaborately described By contrast most stone inscriptions differ in their content In stone inscriptions the beneficence of a donor is recorded The major focus is upon the giver Tiruvalangadu plates of Rajendra Chola I and the Anbil plates of Sundara Chola are notable examples Uttiramerur inscriptions in Kanchipuram district provide details of the way in which the village administration was conducted Various types of lands gifted by the Chola kings are known from the inscriptions and copper plates They are Vellanvagai land of non-brahmin proprietors Brahmadeya land gifted to Brahmins Shalabhoga land for the maintenance of a school Devadana land gifted to temples Pallichchandam land donated to Jaina Monuments Temples palaces mosques tombs forts minars and minarets are called by the collective name monuments The Sultans of Delhi introduced a new type of architecture The monuments they built had arches domes and minarets as the main features The inscriptions in these monuments contain rich information which can be used to construct history The medieval Khajuraho monuments Madhya Pradesh and temples in Konark Odisha and Dilwara MtAbu Rajastan constitute valuable sources to understand the religion-centered cultural evolution in northern India Temples in Thanjavur Brihadeshwara Gangaikonda Cholapuram and Darasuram symbolise the magnificent structures the Later Cholas built in Tamil Nadu Vitala and Virupaksha temples at Hampi similarly speak of the contribution of Vijayanagara rulers century Quwwat-ul Islam Masjid Moth-ki-Masjid Jama Masjid Fatehpur Sikri Dargah all in and around Delhi and Charminar Hyderabad are the important mosques belonging to the medieval times The forts of historical importance are Agra Fort Chittor Fort Gwalior Fort and Delhi Red Fort as well as the forts of Daulatabad Aurangabad and Firoz Shah Kotla Delhi Palaces in Jaipur Jaisalmer and Jodhpur signify the greatness of the Rajput dynasty that wielded enormous power from these places Qutb Minar and Alai-Darwaza the tombs of Iltutmish Balban and all the Mughal rulers are the other prominent structures recognised as valuable sources of information Cities in ruin such as Firozabad and Tughlaqabad in north India and Hampi in south India remain rich repositories of the history of medieval India Coins The portrait and the legend on the coins convey the names of kings with their titles events places dates dynasties and Royal emblems The composition of metals in the coins gives us information on the economic condition of the empire Mention of king’s achievements like military conquests territorial expansion trade links and religious faith can also be found in the coins Muhammad Ghori had stamped the figure of Goddess Lakshmi on his gold coins and had his name inscribed on it This coin tells us that this early Turkish invader was in all likelihood liberal in religious outlook Copper Jitals are available for the study of the period of the Delhi Sultans Silver Tanka introduced by Iltutmish Ala-ud-din Khalji’s gold coins Muhammad-bin-Tughluq’s copper token currency are indicative of coinage as well as the economic prosperity or otherwise of the country of the time Religious Literature Devotional movement in South India and later in North resulted in the development of bhakti or devotional literature The Chola period was known as the period of devotional literature and works such as Kamba Ramayanam Sekkizhar’s Periyapuranam Nalayira Divyaprabhandham composed by Azhwars and compiled by Nathamuni Devaram composed by Appar Sambandar and Sundarar and compiled by Nambiyandar Nambi Manikkavasakar’s Thiruvasagam all were scripted during the Chola times Jayadeva’s Gita Govindam century was a follow-up of the Bhakti Movement in South India Kabir Das a century mystic poet also had an influence on the Bhakti Movement in India Secular Literature Madura Vijayam and Amuktamalyatha were poems composed by Gangadevi and Krishnadevaraya respectively that help us gain insight into the events and individuals associated with the Vijayanagara Empire Chand Bardai’s Prithiviraj Raso portrays the Rajput king’s valour For pre-Islamic periods the only exception was Kalhana’s Rajtarangini century Books Biographies and Autobiographies Minhaj-us-Siraj patronised by Sultan Nazir-ud-din Mahmud of Slave Dynasty wrote Tabakat-i-Nasiri The compendium deals with the period from the conquest of Muhammad Ghori to AD CE The compendium was named after his patron In the century Hasan Nizami a migrant from Ghazni wrote Taj-ul-Ma’asir towards the end of Iltutmish’s rule It provides information about Qutb-ud-din Aibak and is considered the first official history of the Delhi Sultanate Zia-ud-din Barani a courtier of Muhammad Tughluq wrote Tarikh-i-Firoz Shahi in which he dealt with the history of Delhi Sultanate from Ghiyas-ud-din Balban to the early years of the reign of Firoz Shah Tughluq Ferishta’s Tarikh-i-Frishta century deals with the history of the rise of the Mughal power in India In the century emperor Babur’s Babur Nama and Abul Fazal’s Ain-i-Akbari and Akbar Nama provided detailed information about these two emperors In the century Jahangir wrote his memoir Tuzk-i-Jahangiri throwing a lot of light on the period Apart from autobiographies of emperors Tabakat-i-Akbari authored by Nizam-ud-din Ahmad is considered reliable than the exaggerated account of Abul Fazal Similarly Badauni’s outstanding work Tarikh-i-Badauni Badauni's History was published in This work spans three volumes The volume on Akbar’s reign is a frank and critical account of Akbar's administration particularly of his religious policy Travellers and Travelogues Marco Polo a Venetian traveller visited when the Pandya kingdom was becoming the leading Tamil power in the century Marco Polo was twice in Kayal which was a port city presently in Thoothukudi district of Tamilnadu It was full of ships from Arabia and China Marco Polo tells us that he himself came by a ship from China According to Marco Polo thousands of horses were imported into southern India by sea from Arabia and Persia Al-Beruni century accompanied Mahmud of Ghazni in one of his campaigns and stayed in India for years The most accurate account of Mahmud’s Somnath expedition is that of Alberuni As learned man and a scholar he travelled all over India trying to understand India and her people He learnt Sanskrit and studied the philosophy of India In his book Tahquiq-i-Hind Alberuni discussed the Indian conditions systems of knowledge social norms and religion Ibn Battuta century an Arab-born Morocco scholar travelled from Morocco right across North Africa to Egypt and then to Central Asia and India His travelogue Rihla The Travels contains rich details about the people and the countries he visited According to him Egypt was rich then because of the whole of the Indian trade with the West passed through it Ibn Battuta tells us of caste in India and the practice of sati We learn from him that Indian merchants were carrying on a brisk trade in foreign ports and Indian ships in the seas He describes the city of Delhi a vast and magnificent city Those were the days when Sultan Muhammad bin Tughluq transferred his capital from Delhi to Devagiri Daulatabad in the south converting this city into a desert In the South Vijayanagar had many foreign visitors who left behind their detailed accounts of the state An Italian named Nicolo Conti came in Abdur Razzaq came from Heart the court of Great Khan in Central Asia in Domingo Paes a Portuguese traveller visited the city in All of them recorded their observations which are very useful for us today to know the glory of the Vijayanagar Empire Unit Emergence of New Kingdoms in North India There are plenty of stories that speak of the valour and chivalry of Rajputs Rajput states formed a collective entity that was called Rajputana Chittor was prominent and had become the rallying point for all Rajput clans It was small compared to Malwa and Gujarat Yet the Rajputs ruled over these states In commemoration of the victory of Rana of Chittor over Malwa the Jaya Stambha the tower of victory was built in Chittor The Pratiharas and the Palas had established their powerful kingdoms in western India and in eastern India respectively By the century the Pratihara dynasty had progressed to such an extent that it called itself the sovereigns of Rajasthan and Kanauj The decline of Pratihara kingdom led to the rise of Palas in Bengal and Chauhans in north-western India India’s Islamic period might have begun in the immediate context of Arabs conquest of Sind AD CE rather than in AD CE But the resistance shown by the kings of Kanauj especially of Yasovarman AD CE and later by the Rajput chiefs and kings who held Kanauj and most of northern India until the middle of the century made it impossible Origin of the Rajputs The word Rajput is derived from the Sanskrit word Rajputra which means scion of the royal blood After the death of Harsha in AD CE various Rajput clans established kingdoms in different parts of northern and central India The Rajputs trace their pedigree far back into the past Their three principal houses are the Suryavanshi or the Race of the Sun the Chandravanshi or the Race of the Moon and the Agnikula or the Race of Fire God Among those who claimed descent from solar and lunar lines Chandelas of Bundelkhand were prominent Tomaras were ruling in the Haryana region But they were overthrown by the Chauhans in the century Thirty-six royal Rajput clans were listed by the Oriental scholar James Tod in AD CE Among them four claimed a special status the Pratiharas the Chauhans the Chalukyas different from the Deccan Chalukyas known as Solankis and the Paramaras of Pawars All the four clans were of the Agnikula origin Pratiharas The Pratiharas or Gurjara Pratiharas one of the four prominent clans of the Rajputs ruled from Gurjaratra in Jodhpur In the century AD CE Harichandra laid the foundation of the Gurjara dynasty Nagabhatta I was the first and prominent ruler of Pratiharas In the century he ruled over Broach and Jodhpur and extended his dominion upto Gwalior He repulsed the invasion of the Arabs of Sind from the east and checked their expansion He was succeeded by Vatsaraja who desired to dominate the whole of North India His attempt to control over Kanauj brought him into conflict with the Pala ruler Dharmapala Vatsaraja’s successors Nagabhatta-II and Rambhadra did not do anything impressively Mihirabhoja or Bhoja son of Rambhadra within a few years of his accession succeeded in consolidating the power of the Pratiharas As a strong ruler Bhoja was able to maintain peace in his kingdom The Arab menace was firmly tackled by him After Bhoja the Pratihara Empire continued its full glory for nearly a century Having successfully resisted the Arabs the Pratiharas turned their attention towards the east and by the end of millennium they ruled over a large part of Rajasthan and Malwa They also held Kanauj for some time The Rajputs fought each other endlessly in the and centuries Taking advantage of these internecine quarrels many local kings succeeded in making themselves independent Palas Dharmapala AD CE Gopala who founded the Pala dynasty did not have royal antecedents He was elected by the people for his superior capabilities During his reign from to Gopala laid the foundations for the future greatness of this dynasty in Bengal Dharmapala his son made the Pala kingdom a powerful force in northern Indian politics He led a successful campaign against Kanauj He was a great patron of Buddhism He founded Vikramashila Monastery which became a great centre of Buddhist learning Dharmapala was succeeded by his son Devapala who extended Pala control eastwards into Kamarupa Assam Devapala was also a great patron of Buddhism He gifted five villages to Buddhists He also constructed many temples along with monasteries in Magadha According to the historian RC Majumdar The reigns of Dharmapala and Devapala constitute the most brilliant chapter in the history of Bengal After Devapala five rulers ruled the region insignificantly The kingdom attained unprecedented glory when Mahipala ascended the throne in Mahipala I Mahipala I was the most powerful ruler of the Pala dynasty He is called the founder of the second Pala dynasty The decline of Pratiharas gave the Palas an opportunity to take a leading role in north Indian affairs But he could not extend his domain beyond Banaras because of the impressive campaigns of the Chola king from the South Rajendra Chola Mahipala restored the old glory of the Palas He constructed and repaired a large number of religious buildings at Banaras Sarnath and Nalanda The Pala dynasty declined soon after the death of Mahipala and gave way to the Sena dynasty The Chauhans The Chauhans ruled between AD CE and over the eastern parts of the present-day Rajasthan establishing their capital at Sakambari This Rajput dynasty was founded by Simharaji who was popularly known as the founder of the city of Ajmer The Chauhans were the feudatories of the Pratiharas and staunchly stood by them to check the Arab invasions The last of Chauhan kings Prithiviraj Chauhan was considered the greatest of all Chauhan rulers He defeated Muhammad Ghori in the first battle of Tarain fought in However he was defeated and killed in the second battle of Tarain in Contribution of Rajputs to Art and Architecture Art Rajput courts were centres of culture where literature music dance paintings fine arts and sculpture flourished A specific style of Rajput painting often focusing on religious themes emerged at Rajput courts Their style of painting is called Rajasthani The Rajasthani style of painting can be seen at Bikaner Jodhpur Mewar Jaisalmer all in Rajasthan Rajasthani Painting Architecture The Rajputs were great builders Some of the important examples of the Rajput buildings are the strong fortresses of Chittorgarh Ranathambhor and Kumbahlgarh all in Rajasthan Mandu Gwalior Chanderi and Asirgarh all in Madhya Pradesh The examples of domestic architecture of the Rajputs are the palaces of Mansingh at Gwalior the buildings at Amber Jaipur and lake palaces at Udaipur Many of the Rajput cities and palaces stand among the hills in forts or by the side of beautiful artificial lakes The castle of Jodhpur in Rajasthan is perched upon a lofty rock overlooking the town The temples the Rajput rulers built have won the admiration of art critics The temples in Khajuraho the Sun temple in Konark the Dhilwara Jain temple constructed in Mount Abu and Khandarya temple at Madhya Pradesh are illustrious examples of their architecture The Khajuraho in Bundelkhand has temples The shikharas of the Khajuraho temples are most elegant The exterior and interior parts of the temples are adorned with very fine sculptures These temples are dedicated to Jain Tirthankaras and Hindu deities like Shiva and Vishnu There are sixteen Hindu and Jain temples at Osian which is miles away from Jodhpur The Jain temple at Mount Abu has a white marble hall and a central dome of concentric rings and richly carved vaulted ceiling and pillars Contribution of Palas to Culture The Palas were adherents to the Mahayana school of Buddhism They were generous patrons of Buddhist temples and the famous universities of Nalanda and Vikramashila It was through their missionaries that Buddhism was established in Tibet The celebrated Buddhist monk Atisha who reformed Tibetan Buddhism was the president of the Vikramashila monastery The Palas also maintained cordial relations with the Hindu-Buddhist state of the Shailendras of Sumatra and Java Under Pala patronage a distinctive school of art arose called Pala art or Eastern Indian art Pala artistic style flourished in present-day states of Bihar and West Bengal and also in present-day Bangladesh It was chiefly represented by bronze sculptures and palm-leaf paintings celebrating the Buddha and other divinities The Pala bronze sculptures from this area played an important part in the spread of Indian culture in Southeast Asia Advent of Islam Islam as a religious faith originated at Mecca in Arabia The founder of Islam was Prophet Muhammad The followers of Islam are called Muslims An Islamic state especially the one ruled by a single religious and political leader was known as Caliphate Caliph means a representative of the Prophet Muhammad Two early Caliphates were Umayyads and the Abbasids Both the Umayyads and the Abbasids expanded their rule separately by their conquests and by preaching the principles of Islam In the century India the Arab presence appeared in the form of a Muslim army that conquered the Sind But their further expansion was made impossible by the kings of Gangetic plains and the Deccan By the end of the century with the decline of the Abbasid Caliphate the Arab garrisons in India and elsewhere threw off Caliph’s control and began to rule independently The Turkish governor Alp-Tegin was one among them whose capital was Ghazni Afghanistan His successor and son-in-law Sabuktigin wanted to conquer India from the north-west But only his son Mahmud succeeded in this endeavour Mahmud of Ghazni AD CE Mahmud is said to have conducted raids into India At that time North India was divided into number of small kingdoms One of them was Shahi kingdom which extended from Punjab to Kabul The other important kingdoms were Kanauj Gujarat Kashmir Nepal Malwa and Bundelkhand The initial raids were against the Shahi kingdom in which its king Jayapala was defeated in After his defeat Jayapala immolated himself because he thought that this defeat was a disgrace His successor Anandapala fought against Mahmud but was defeated in the battle of Waihind near Peshawar in As a result of his victory at Waihind Mahmud extended his rule over Punjab The subsequent raids of Mahmud into India were aimed at plundering the rich temples and cities of North India In he raided Nagarkot in Punjab hills and Thaneshwar near Delhi Ruins of Somnath Temple In Mahmud plundered the holy city of Mathura He also attacked Kanauj The ruler of Kanauj Rajyapala abandoned Kanauj and later died Mahmud returned with enormous riches His next important raid took place in Gujarat In AD CE Mahmud marched from Multan across Rajaputana and defeated the Solanki king Bhimadeva I and plundered Anhilwad Mahmud is said to have sacked the famous temple of Somanath breaking the idol Then he returned through the Sind desert That was his last campaign in India Mahmud died in AD CE The Ghaznavid Empire roughly included Persia Trans-Oxyana Afghanistan and Punjab Muhammad of Ghor Muhammad of Ghor or Muhammad Ghori started as a vassal of Ghazni but became independent after the death of Mahmud Taking advantage of the decline of the Ghaznavid Empire Muhammad Ghori brought Ghazni under his control Having made his position strong and secure at Ghazni Muhammad turned his attention to India Unlike Mahmud of Ghazni he wanted to extend his empire by conquering India In Muhammad captured Multan and occupied whole of it in his subsequent expeditions In he attacked Punjab and captured it The Battle of Tarain Realising the grave situation in which they were caught the Hindu princes of North India formed a confederacy under the command of Prithiviraj Chauhan Prithiviraj rose to the occasion and defeated Muhammad in the battle of Tarain near Delhi in This was called the first battle of Tarain To avenge this defeat Muhammad made serious preparations and gathered a huge army He arrived with his large force in Lahore via Peshawar and Multan He sent a message to Prithiviraj asking him to acknowledge his supremacy and become a Muslim But Prithiviraj rejected the proposal and prepared his army to resist the invader Many Hindu kings and chieftains also joined him In the ensuing second battle of Tarain in Muhammad thoroughly routed the army of Prithiviraj who was captured and killed The second battle of Tarain was a major disaster for the Rajputs Their political prestige suffered a serious setback The whole Chauhan kingdom now lay at the feet of the invader The first Muslim kingdom was thus firmly established in India at Ajmer and a new era in the history of India began After his victory over Prithiviraj at Tarain Muhammad returned to Ghazni to deal with the threat from the Turks and the Mongols After the death of Muhammad in his most capable general Qutb-ud-din Aibak who had been left behind in India took control of Muhammad’s territories in India and declared himself as the First Sultan of Delhi Unit Emergence of New Kingdoms in South India Later Cholas and Pandyas I The Later Cholas Introduction The Cholas are one among the popular and well-known Tamil monarchs in the history of South India The elaborate state structure the extensive irrigation network the vast number of temples they built their great contributions to art and architecture and their overseas exploits have given them a pre-eminent position in history Revival of the Chola Rule The ancient Chola kingdom reigned supreme with the Kaveri delta forming the core area of its rule and with Uraiyur present-day Tiruchirappalli as its capital It rose to prominence during the reign of Karikala but gradually declined under his successors In the century Vijayalaya ruling over a small territory lying north of the Kaveri revived the Chola Dynasty He conquered Thanjavur and made it his capital Later Rajendra I and his successors ruled the empire from Gangaikonda Cholapuram the newly built capital Rajaraja I AD CE was the most powerful ruler of Chola empire and also grew popular beyond his times He established Chola authority over large parts of South India His much-acclaimed naval expeditions led to the expansion of Cholas into the West Coast and Sri Lanka He built the famous Rajarajeswaram Brihadeshwara Temple in Thanjavur His son and successor Rajendra Chola I AD CE matched his father in his ability to expand the empire The Chola empire remained a powerful force in South India during his reign After his accession his striking military expedition was to northern India capturing much territory there He proclaimed himself the Gangaikondan conqueror of the Gangai region The Gangaikonda Cholapuram temple was built to commemorate his victories in North India The navy of Rajendra Chola enabled him to conquer the kingdom of Srivijaya southern Sumatra Cholas control over the seas facilitated a flourishing overseas trade Decline of the Chola Empire Rajendra Chola’s three successors were not capable rulers The third successor Veerarajendra’s son Athirajendra was killed in civil unrest With his death ended the Vijayalaya line of Chola rule On hearing the death of Athirajendra the Eastern Chalukya prince Rajendra Chalukya seized the Chola throne and began the rule of Chalukya-Chola dynasty as Kulothunga I Kulothunga established himself firmly on the Chola throne soon eliminating all the threats to the Chola Empire He avoided unnecessary wars and earned the goodwill of his subjects But Kulothunga lost the territories in Ceylon The Pandya territory also began to slip out of Chola control Kanchipuram was lost to the Telugu Cholas The year marks the end of Chola dynasty when King Maravarman Kulasekara Pandyan I defeated the last king Rajendra Chola and established the rule of the Pandyas in present-day Tamil Nadu Administration The central administration was in the hands of king As the head of the state the king enjoyed enormous powers The king’s orders were written down in palm leaves by his officials or inscribed on the temple walls The kingship was hereditary in nature The ruler selected his eldest son as the heir apparent He was known as Yuvaraja The Yuvarajas were appointed as Governors in the provinces mainly for administrative training The Chola rulers established a well-organised system of administration The empire for administrative convenience was divided into provinces or mandalams Each mandalam was sub-divided into naadus Within each naadu there were many kurrams groups of villages The lowest unit was the gramam village Local Governance Local administration worked through various bodies such as Urar Sabhaiyar Nagarattar and Nattar With the expansion of agriculture numerous peasant settlements came up on the countryside They were known as Ur The Urar who were landholders acted as spokesmen in the Ur Sabhaiyar in Brahman villages also functioned in carrying out administrative financial and judicial functions Nagarattar administered the settlement of traders However skilled artisans like masons blacksmiths goldsmiths weavers and potters also lived in Nagaram Nattar functioned as an assembly of Nadu and decided all the disputes and issues pertaining to Nadu The assemblies in Ur Sabha Nagaram and Nadu worked through various committees The committees took care of irrigation roads temples gardens collection of revenue and conduct of religious festivals Uttiramerur Inscriptions Uttiramerur Inscriptions Uttiramerur presently in Kanchipuram district was a Brahmadeya village land grants given to Brahmins There is a detailed description of how members were elected to the committees of the village sabha in the inscriptions found there One member was to be elected from each ward There were wards in total The eligibility to contest was to men in the age group of well-versed in vedic texts and scriptures and also owned land and house The process of election was as follows The names of qualified candidates from each ward were written on the palm-leaf slips and put into a pot The eldest of the assembly would engage a boy to pull out one slip and declare his name Various committees were decided in this way Revenue The revenue of the Chola state came mainly from the land The land tax was known as Kanikadan The Chola rulers carried out an elaborate survey of land in order to fix the government’s share of the land revenue One-third of produce was collected as land tax It was collected mostly in kind In addition to land tax there were taxes on profession and tolls on trade Social Structure Based on Land Relations The Chola rulers gifted tax-free lands to royal officials Brahmins temples devadana villages and religious institutions Land granted to Jain institutions was called pallichchandam There were also of vellanvagai land and the holders of this land were called Vellalars Ulu-kudi a sub-section of Vellalar could not own land but had to cultivate Brahmadeya and vellanvagai lands The holders of vellanvagai land retained melvaram major share in harvest The ulu-kudi got kil-varam lower share Adimai slaves and panicey-makkal labourers occupied the lowest rung of society In the intermediate section came the armed men and traders Irrigation Cholas gave importance to irrigation Themile long embankment built by Rajendra Chola in Gangaikonda Cholapuram is an illustrious example Vati-vaykkal a criss-cross channel is a traditional type of harnessing rain water in the Cauvery delta Vati is a drainage channel and a vaykkal is the supply channel The commonly owned village channel was called ur-vaykkal The nadu level vaykkal is referred to as nadu-vaykkal The turn-system was in practice in distributing the water Religion Chola rulers were ardent Saivites Hymns in praise of the deeds of Lord Siva were composed by the Saiva saints the Nayanmars NambiyandarNambi codified them which came to be known as the Thirumurai Temples The Chola period witnessed an extensive construction of temples The temples in Thanjavur Gangaikonda Cholapuram and Darasuram are the repository of architecture sculpture paintings and iconography of the Chola art Temples during the Chola period were not merely places of worship They were the largest landholders Temples promoted education and devotional forms of art such as dance music and drama The staff of the temples included temple officials dancing girls musicians singers players of musical instruments and the priests Cholas as Patrons of Learning Chola kings were great patrons of learning Rajendra I established a Vedic college at Ennayiram now in Villupuram District There were students learning the Vedas grammar and Upanishads under teachers This example was later followed by his successors and as a result two more such colleges had been founded at Tirubuvanai near present-day Puducherry and Tirumukkoodal in present-day Chengalpattu district in and respectively The great literary works Periyapuranam and Kamba Ramayanam belong to this period Trade There was a flourishing trade during the Chola period Trade was carried out by two guild-like groups anju-vannattar and mani-gramattar Anju-vannattar comprised West Asians Arabs Jews Christians and Muslims They were maritime traders and settled on the port towns all along the West Coast It is said that mani-gramattar were the traders engaged in inland trade In due course both groups merged under the banner of ai-nutruvar and disai-ayirattu-ai-nutruvar functioning through the head guild in Ayyavole Karnataka This ai-nutruvar guild operated the maritime trade covering South-East Asian countries Through overseas trade with South-East Asian countries elephant tusks coral transparent glass betel nuts cardamom opaque glass cotton stuff with coloured silk threads were imported The items exported from here were sandalwood ebony condiments precious gems pepper oil paddy grains and salt The Later Pandyas Introduction Pandyas were one of the three ancient Tamil dynasties that ruled southern India since the century BC BCE but intermittently Korkai associated with pearl fisheries is believed to have been their early capital and port They moved to Madurai later as many early Tamil inscriptions of Pandyas have been unearthed in Madurai and its surroundings Under the Pandya kings of the Sangam Age Madurai was a great centre of culture Poets and writers of Tamil language gathered there and contributed to the development of Tamil Classics The Pandyas had re-established their strong position in south Tamil Nadu by the end of the century AD CE after eliminating the rule of Kalabhras But they could not resist the rising power of the later Cholas who ruled South India from to century Thereafter taking advantage of the decline of Chola power the later Pandyas re-established their authority Their rule continued until century Revival of Pandya Kingdom AD CE Kadunkon recovered Pandya territory from the Kalabhras towards the close of century He was succeeded by two others Arikesari Maravarman was the first strong Pandya ruler who ascended the throne in AD CE He was a contemporary of Mahendravarman I and Narsimahvarman I Inscriptions and copper plates praise his victory over his counterparts Cheras Cholas Pallavas and Sinhalese Arikesari Maravarman is identified with the Kun Pandian the persecutor of Jains After Arikesari the greatest of the dynasty was Jatila Parantaka Nedunjadayan Varaguna I the donor of the Velvikkudi plates Nedunjadayan expanded the Pandya territory to include Thanjavur Tiruchirappalli Salem and Coimbatore districts Nedunjadayan’s successors Srimara Srivallabha and Varaguna II were successively defeated by Pallavas Later they could not face the rising Chola dynasty under Parantaka I Parantaka I defeated the Pandya king Rajasimha who fled the country in Thus ended the Pandya rule revived by Kadungon Rise of Later Pandyas The Chola viceroyalty became weak in Pandya country after the death of Adhirajendra the last king of Vijayalaya line Eventually the Pandya kingdom could emerge as the only leading Tamil dynasty in the century Madurai continued to be their capital Now Kayal was their great port Marco Polo a famous traveller from Venice visited Kayal twice in and He tells us that this port town was full of ships from Arabia and China and bustling with business activities Sadaiyavarman Sundarapandyan The illustrious ruler of the second Pandya Kingdom was Sadaiyavarman Jatavarman Sundarapandyan to He brought the entire Tamil Nadu under his rule which extended up to Nellore in Andhra He held the Hoysalas in check The Chera ruler the chief of Malanadu accepted his feudatory position and paid tribute to Sundarapandyan Emboldened by the decline of the Chola state the Boja King of Malwa region Vira Someswara challenged Sundarapandyan In a war at Kannanur Sundarapandyan defeated Someswara Sundarapandyan succeeded in establishing his authority over the chieftains of Cuddalore Kanchipuram in northern Tamil Nadu Arcot and Salem in the western region There were two or three co-regents who ruled simultaneously along with Sundarapandyan VikramaPandyan and ViraPandyan After Sundarapandyan MaravarmanKulasekaran ruled successfully for a period of years giving the country peace and prosperity He had two sons The king’s appointment of ViraPandyan as a co-regent provoked the other son Sundara Pandyan who killed his father Maravarman Kulasekaran In the civil war that ensued ViraPandyan won and became firmly established in his kingdom The defeated SundaraPandyan fled to Delhi and took refuge under the protection of Ala-ud-din Khalji This provided the opening for the invasion of Malik Kafur After Malik Kafur’s invasion the Pandyan Kingdom came to be divided among a number of kings from the main ruling Pandya’s family In Madurai a Muslim State subordinate to the Delhi Sultan came to be established Polity and Society State Pandya kings preferred Madurai as their capital Madurai has been popularly venerated as Koodal The kings are traditionally revered as Koodal-kon Koodal Nagar Kavalan The Pandyas derived military advantage over their neighbours by means of their horses They imported these horses through Arabs with whom they had commercial and cultural contactThe king claimed that he was ruling according to Manu Sastra This doctrine supported the social hierarchy in the society Kings and local chiefs created Brahmin settlements called Mangalam or Chatur-vedi-mangalam with irrigation facilities The actual landowning groups are described as the Bumiputtirar otherwise called the vellalar Historically they were locals and hence they were referred to as nattu-makkal The communal assembly of this group is Cittira Meli Periyanattar Royal Officials A band of officials executed the royal orders The prime minister was uttara-mantri The historical personalities like Manickavasagar Kulaciraiyar and Marankari worked as ministers The royal secretariat was known as eluttu-mandapam The most respected officials were maran-eyinan sattan-ganapathy enathi-sattan tira-tiran murthi-eyinan and others The titles of military commanders were palli-velan parantakan-palli-velan maran-adittan and tennavan-tamilvel Administrative Divisions Pandy nadu as in Chola state consisted of many provinces known as vala-nadus which in turn were divided into many nadus and kurrams The administrative authorities of nadus were the nattars Nadu and Kurram contained settlements viz mangalam nagaram ur and kudi where different social groups inhabited Village Administration An inscription from Manur Tirunelveli district dated AD CE provides an account of village administration It looks similar to Chola’s local governance that included village assemblies and committees Both civil and military powers seem to have been vested in the same person Irrigation The Pandya rulers created a number of irrigation sources On either side of the rivers Vaigai and Tamiraparani channels leading to the irrigation tanks were built In southern Tamilnadu like the Cholas Pandyas introduced the new irrigation technology Irrigation works were done by local administrative bodies local chiefs and officials Repairs were mostly undertaken by local bodies Sometimes traders also dug out tanks for irrigation Religion Pandyas extended patronage to vedic practices Velvikkudi copper plates as well as inscriptional sources mention the rituals like Asvameda yaga Hiranya garbha and Vajapeya yaga conducted by every great Pandya king The impartiality of rulers towards both Saivism and Vaishnavism is also made known in the invocatory portions of the inscriptions Temples of both sects were patronised through land grant tax-exemption and renovation The great Saiva and Vaishnava saints Nayanmaras and Alwars combined contributed to the growth of Tamil literature and spiritual enlightenment The period was marked by intense religious conflict The Bhakti movement of the time prompted the heterodox scholars for a debate Many instances of the defeat of Buddhists and Jains in such debates are mentioned in Bhakti literature The Pandya kings of the period supported and promoted Tamil and Sanskrit Temples Medieval Pandyas and later Pandyas did not build any new temples but maintained the existing temples enlarging them with the addition of gopuras and mandapas The monolithic mega size ornamented pillars are the unique feature of the medieval Pandya style The sculptures of Siva Vishnu Kotravai Ganesa and Subramanyar are the best specimens in these temples Pandyas specially patronised the historic Meenakshi temple at Madurai and kept expanding its premises by adding gopuras and mandapas Meenakshi Temple Madurai Trade Arab settlements on the west coast of southern India from century had led to the expansion of their trade connection to the east coast because the governments of the east coast pursued a more liberal and enlightened policy towards overseas traders Their charters exempted traders from various types of port dues and tolls In Kayal there was an agency established by an Arab chieftain by name Malik-ul-Islam Jamal-ud-din This agency facilitated availability of horses to Pandya kings In and centuries horse trade became brisk Marco Polo and Wassaff state that the kings invested in horses as there was a need of horse for ceremonial purposes as well as for fighting wars Those who were trading in horses were called kudirai chetties They were active in maritime trade also The busiest port town under the Pandyas was Kayal Pattinam now in Thoothukudi district on the east coast Gold coins were in circulation as the trade was carried through the medium of gold It was variously called kasu kalanchu and pon Unit The Delhi Sultanate During the eleventh century the Turkish horsemen pillaged northern India and due to their persistent campaigns they succeeded in seizing political control of the Gangetic plain by the next century Though the success of their conquests could be attributed to their audacity and ferocity their success is really due to the failure of Indians to defend themselves and their territories Indians viewed each other with distrust failing to take note of the success of Islam in early years of its spread The superior military might of Muslim soldiers was yet another factor that contributed to success in their conquests In this lesson we discuss how Turkish warriors set about founding and consolidating their Islamic rule till the advent of Babur Slave Dynasty Muslim rule in India was established by Muhammad Ghori in century AD CE As he had no sons he nurtured special slaves called bandagan a Persian term used for slaves purchased for military service These slaves were posted as governors and they were later raised to the status of Sultans After Ghori’s death in one of his slaves Qutb-ud-din-Aibak who had been left behind by Muhammad Ghori to govern the territories he had conqured proclaimed himself ruler of the Turkish territories in India He laid the foundation of the Slave Dynasty This dynasty is also known as Mamluk dynasty Mamluk is an Arabic word meaning slave Qutb-ud-din-Aibak Shams-ud-din-Iltutmish and Ghiyas-ud-din-Balban were the three great Sultans of this dynasty The Slave Dynasty ruled over the sub-continent for about years Qutb-ud-din-Aibak Qutb-ud-din-Aibak began his rule by establishing Lahore as the capital of his kingdom Later he shifted his capital to Delhi He was active all through his rule in Delhi conquering new territories and suppressing rebellions He personally led military campaigns to the central and western Indo-Gangetic plain north India and left the conquest of the eastern Gangetic Plain Bihar Bengal to the care of Bakhtiar Khalji Aibak built the Quwwat-ul-Islam Masjid mosque in Delhi This mosque is considered to be the oldest in India He also laid the foundation of the Qutb-Minar but he was unable to complete it It was later finished by his son-in-law and his successor Iltutmish Aibak died of injuries received during an accidental fall from a horse while playing polo in Iltutmish Aibak’s son Aram Shah proved incompetent and so the Turkish nobles chose Iltutmish the son-in-law of Aibak as the Sultan who served as a military commander of Aibak Iltutmish firmly established his control over the territories by suppressing rebellions It was during his reign that the threat of Mongols under Chengiz Khan loomed large over the frontiers of India He averted the impending danger by refusing to provide shelter to the Kwarezm Shah Jalal-ud-din who had been driven out by Chengiz Khan In order to counter the possible attack of the Mongols Iltutmish organised Turkish nobility into a select group of nobles known as chahalgani or The Forty Iltutmish granted iqtas land to members of his army Iqta is the land granted to army officials in lieu of a regular wage The iqta holder is called the iqtadar or muqti who had to provide the Sultan with military assistance in times of war The iqtadar collected revenue from his iqta to meet the cost of maintaining his troops and horses Iltutmish completed the construction of the Qutb-Minar started by Aibak Iltutmish died in April after ruling for years Razia As the most capable son of Iltutmish Rukn-ud-din-Firuz was dead Iltutmish nominated his daughter Razia Sultana as his successor to the throne of Delhi Razia was an able and brave fighter But she had a tough time with Turkish nobles as she favoured non-Turkish nobles She also faced the situation of the ferocious Mongols raiding Punjab during her reign Razia made an Ethiopian slave named Jalal-ud-din Yakut as her personal attendant and started trusting him completely This led to a revolt of the Turkish nobles who conspired against her and got her murdered in Ghiyas-ud-din Balban After Razia three weak rulers in succession ascended the throne After them came Ghiyas-ud-din Balban Balban abolished The Forty as it was hostile to him He established a department of spies to gather intelligence about the conspirators and the trouble makers against his rule He dealt with insubordination and defiance of royal authority sternly Tughril Khan a provincial governor of Bengal who raised a banner of revolt against Balban was captured and beheaded He was ruthless in dealing with enemies like Meos of Mewat a Muslim Rajput community from north-western India Balban however took care to maintain cordial relationship with the Mongols He obtained from Hulagu Khan a grandson of Chengiz Khan and the Mongol viceroy in Iran the assurance that Mongols would not advance beyond Sutlej Balban built forts to guard his empire against the Mongol attacks He patronised the famous Persian poet Amir Khusru Balban died in Balban’s son Kaiqubad turned out to be weak In Malik Jalal-ud-din Khalji the commander of the army assumed the office of Naib a deputy to the Sultan and ruled the kingdom in the name of Kaiqubad Then one day Jalal-ud-din sent one of his officers and had Kaiqubad murdered Jalal-ud-din then formally ascended the throne With him began the rule of Khalji dynasty Khalji Dynasty Jalal-ud-din Khalji There were many military campaigns during the reign of Jalal-ud-din But they were mostly organised and led by his nephew Ala-ud-din the governor of Kara One significant military expedition was against the Deccan kingdom Devagiri Ala-ud-din after defeating the Yadava king Ramachandra plundered the city and returned with huge wealth Ala-ud-din treacherously killed Jalal-ud-din after buying off the prominent nobles and important commanders with the wealth he had brought from the Deccan and declared himself as the Sultan of Delhi in Ala-ud-din Khalji Ala-ud-din Khalji consolidated the Delhi Sultanate The range of his conquests is impressive in the Punjab against the Mongols in Rajasthan and in Gujarat With his northern frontiers secure he sent his chief lieutenant Malik Kafur into the southern parts who took even the distant Madurai in The Yadavas of Devagiri the Kakatias of Warangal the Hoysalas of Dwarasamudra and the Pandyas of Madurai accepted Ala-ud-din’s suzerainty Ala-ud-din’s political and administrative reforms were as impressive as his military conquests Ala-ud-din undertook a survey of the agrarian resources around his capital and fixed a standard revenue demand He entrusted the task of collecting the revenue to the military officers This measure deprived the local chiefs and rajas of their time memorial privilege Ala-ud-din established a system of forced procurement of food grains for Delhi and other garrison centres The procurement prices were fixed and grain collected as tax was stored in state granaries In order to ensure the enforcement of his new regulations he employed spies who were responsible to report to him directly Ala-ud-din died in The failure of his successors to retain power led to the seizure of power by Ghiyas-ud-din Tughluq who founded the Tughluq dynasty Tughluq Dynasty Ghiyas-ud-din One of the major tasks of Ghiyas-ud-din as the Sultan was to recover the territories that the Sultanate had lost during the turmoil following the death of Ala-ud-din Ghiyas-ud-din Tughluq sent his son Jauna Khan to fight against Warangal Jauna Khan defeated Pratabarudra of Warangal and returned with a rich booty With this looted wealth Ghiyas-ud-din is said to have laid the foundation of the city Tughluqabad near Delhi However as Ala-ud-din treacherously killed his uncle Jauna Khan was said to have killed his father and ascended the throne with title Muhammad-bin-Tughluq in Muhammad-bin-Tughluq Muhammad-bin-Tughluq was a learned man Yet he was a person of cruelty Ala-ud-din had conquered looted and left the old ruling families as his dependents In contrast Muhammad Tughluq dreamt of making the whole of the subcontinent his domain With the view to facilitating extended sovereignty he shifted his capital from Delhi to the centre of the kingdom namely Devagiri He also changed its name to Daulatabad When Muhammad himself decided that the move was a mistake he ordered a return to Delhi as the capital again When Ibn Battuta the Morocco traveller who was with the Sultan returned to Delhi he found Delhi empty abandoned and had but a small population Tughluq changed the Ala-ud-din’s system of revenue collections in grain and ordered that land revenue which was increased should henceforward be collected in money This proved disastrous during famines When he discovered that the stock of coins and silver was inadequate for minting he issued a token currency in copper Counterfeiting soon became order of the day and as a result the entire revenue system collapsed Trade suffered as foreign merchants stopped business This forced Sultan to withdraw the token currency and pay gold and silver coins in exchange This move led the state to become bankrupt Tughluq increased land tax in the Doab region which triggered peasant revolts As the revolts were cruelly dealt with peasants abandoned cultivation which resulted in the outbreak of frequent famines Coins of Muhammad-bin-Tughluq Tughluq ruled as Sultan for years During his long reign he had to face many revolts of the provincial governors The Governors of Awadh Multan and Sind revolted and declared themselves independent In South India several states arose The new Daulatabad and the conquered territories around them were declared independent sultanate called Bahmani Its founder after whom it was named was a soldier formerly in Tughluq service Madurai was proclaimed a separate sultanate in Bengal became independent in Tughluq died on March Firoz Shah Tughluq Tomb of Firoz Shah Tughluq Firoz the son of Ghiyas-ud-din’s younger brother succeeded Muhammad-bin-Tughluq Firoz could neither suppress revolts nor win back the provinces that had broken away He also showed no interest in re-conquering the southern provinces He refused to accept an invitation c from a Bahmani prince to intervene in the affairs of the Deccan Firoz rewarded Sufis and other religious leaders generously and listened to their advice He also created charities to aid poor Muslims built colleges mosques and hospitals He adopted many humanitarian measures He banned inhuman punishments and abolished taxes not recognised by Muslim law He promoted agriculture by waiving off the debts of the agriculturalists and constructing many canals for irrigation He laid out new gardens and restored old gardens of Ala- ud-din-Khalji He had built new towns such as Firozabad Jaunpur Hissar and Firozpur Despite adopting a peaceful approach and taking efforts to organise the Sultanate well he had to spend his last days in unhappiness His own son Muhammad Khan revolted against him and Firoz Shah died in September at the age of Timur’s Invasion The sacking and massacre by Tamerlane or Timur of Delhi came a decade after Firuz Shah Tughluq died As a ruler of the region around Samarkand in Central Asia Timur had occupied some parts in the north-west of India Taking advantage of India’s weakness he entered India in December and plundered Delhi Punjab besides the Delhi city was the province that suffered most by Timur’s raid Timur apart from carrying huge wealth in the form of gold silver jewels also took along Indian artisans like carpenters and masons to work on monuments in Samarkand Sayyid Dynasty Though the Sultanate fragmented into a number of independent kingdoms it endured for years more till the Mughal invasion Before leaving Delhi Timur had left behind his representative Khizr Khan as the governor of the territories he had conquered Delhi Meerut and Punjab He founded the Sayyid Dynasty in which lasted till The last ruler of this dynasty Ala-ud-din Alam Shah abdicated the throne in This gave Bahlol Lodi then the governor of Sirhind Punjab the opportunity to become the new Sultan of Delhi leading to the establishment of Lodi dynasty Lodi Dynasty In Bahlol Lodi was succeeded by his son Sikandar Lodi Sikandar was a patron of arts and learning He founded the city of Agra and made it his capital He died in and was succeeded by his son Ibrahim Lodi who was defeated by Babur in in the Panipat battle Thus the Lodi dynasty and the Delhi Sultanate were ended by Babur who went on to establish the Mughal Empire in India Geography Unit Interior of the Earth The earth our homeland is a dynamic planet The earth’s surface has lofty mountains high plateaus large plains and deep valleys etc The earth’s surface is constantly undergoing changes inside and outside Have you ever wondered what lies in the interior of the earth What is the earth made up of Let us learn about this in detail Interior of the Earth The structure of the earth may be compared to that of an appleOn the basis of the study of earthquake waves the spherical earth is found to be three concentric layers They are The crust The mantle and The core The Crust The crust is the outermost layer of the earth Its thickness varies from to km It is about km on the continental masses and only km on the ocean floors Despite greater thickness the continental crust is less dense than the oceanic crust because it is made of both light and dense rock types The oceanic crust is composed mostly of dense rocks such as basalt The crust comprises two of distinct parts The upper part consists of granite rocks and forms the continents It has the main mineral constituents of silica and alumina So it is referred to as Sial It has an average density of g cm The lower part is a continuous zone of denser basaltic rocks forming the ocean floors comprising mainly of silica and magnesium It is therefore called Sima It has an average density of g cm The sial and the sima together form the earth’s crust Since the sial is lighter than the sima the continents can be said to be floating on a sea of denser sima The Mantle The next layer beneath the crust is called the mantle It is separated from the crust by a boundary called Mohorovicic discontinuity The mantle is about km thick It is divided into two parts i The upper mantle with a density of g cm extends down to km The lower mantle having a density of g cm extends from to km Why the interior of the earth is so hot The Core The innermost layer of the earth is called the core It is also known as barysphere It is separated from the mantle by a boundary called Weichart-Gutenberg discontinuity The core is also divided into two parts i The outer core which is rich in iron is in liquid state It extends between km The inner core composed of Nickel and Ferrous Nife is solid in state The central core has very high temperature and pressure It extends from km to km The average density of core is cm The Earth Movements The lithosphere is broken into a number of plates known as the Lithospheric plates Each plate oceanic or continental moves independently over the asthenosphere The movement of the Earth’s lithospheric plates is termed as tectonic movements The energy required to move these plates is produced by the internal heat of the earth These plates move in different directions at different speed Lithospheric Plates At places these plates move away from each other creating wide rifts on the earth’s surface At some places these plates come closer and collide When an oceanic plate collides with a continental plate the denser oceanic plate is forced below the continental plate As a result of the pressure from above the rocks heats up and melts The molten rocks rise again forming volcanic mountains along the continental edge Alternatively a trench may be formed between two plates In some cases when two continental plates converge neither plate can be forced under the other Instead folds may be created Great mountain ranges like the Himalayas have been formed in this way The movement of these plates causes changes on the surface of the earth The earth movements are divided on the basis of the forces which cause them The forces which act in the interior of the earth are called as Endogenic forces and the forces that work on the surface of the earth are called as Exogenic forces Endogenic forces produce sudden movements and Exogenic forces produce slow movements Endogenic movements produce earthquakes and volcanoes that cause mass destruction over the surface of the earth Earthquake A sudden movement of a portion of the earth’s crust which produces a shaking or trembling is known as an earthquake The point where these vibrations originate is called the focus of the earthquake The point of the earth’s surface directly above the focus is called the epicentre of the earthquake From the focus the earthquake vibrations travel in different directions in the form of seismic waves The earthquake waves are recorded by an instrument known as seismograph The magnitude of an earthquake is measured by the Richter scale The numbers on this scale range from to Causes of Earthquake The chief cause of earthquake is the sudden slipping of the portion of the earth’s crust along fractures or faults The movement of the molten rocks underneath the surface produce strains which break the rocks apart The sudden shifting of landmass causes upheavals in the crust of the earth sending vibrations or waves into the surrounding portions of the earth Sometimes the surface of the earth itself cracks Effects of Earthquakes Earthquakes may cause changes in the earth’s surface Vibrations often set landslides in mountainous regions A greater danger in an earthquake is the falling of buildings Most of the houses which collapsed were made of mud and bricks and proved to be death traps Underground water system is naturally disturbed by such movements Fire is another great danger An earthquake which originates below or near the sea causes great disturbance in the water The floods and waves cause great loss of life sometimes more than the earthquake itself Tsunami a Japanese term is the name given to the huge waves caused in the sea by an earthquake Tsunamis are quite common along the coasts of Japan and other regions in the Pacific Ocean Distribution of Earthquakes The world’s distribution of earthquakes coincide very closely with that of volcanoes Regions of greatest seismicity are circum-Pacific areas with the epicenters and the most frequent occurrences along the Pacific Ring of Fire It is said that about of earthquakes occur in this belt Remaining of earthquakes take place in the Mediterranean-Himalayan belt including Asia Minor the Himalayas and parts of north-west China The remaining percent of earthquakes occur in Northen Africa and Rift valley areas of the Red sea and Dead sea In India the Himalayan region and the Ganga-Brahamaputra valley are prone to earthquakes A number of earthquakes have been experienced in this region Some of them were very severe and caused extensive damage the earthquake of Uttar Kashi in and Chamoli in The Deccan Plateau which was supposed to be comparatively free from the dangers of the earthquakes has experienced two severe earthquakes in the past the Koyna Maharashtra earthquake in and the Latur earthquake in Volcanoes A volcano is a vent or an opening in the earth’s crust through which hot magma erupts from deep below the surface The opening is usually circular in form Volcanic eruptions may also take place through a long crack or fissure through which steam and other materials flow out The molten rock material within the earth together with gases is called magma After it rises to the surface it is called as lava In course of time lava and other materials flow out of a volcano accumulate around the opening and form a conical hill or a mountain vent is an openning or mouth of a volcano The top of this cone is usually marked by a funnel-shaped depression which is called a crater If the crater of a volcano is of great size and is shaped like a basin it is called a caldera Calderas are caused by violent explosions which blow away entire tops of great cones Causes of Volcanic Activity The temperature increases as the depth increases at the rate of for every metres There is also great pressure At a depth of about km the pressure is about tonnes per cm of rock Under these circumstances the interior of the earth is in a semi-molten state called magma The magma under great pressure has the capacity to dissolve great volume of gas some gases are also combustible This makes volcanic material burst forth through the weak spots in the earth’s crust Nature of volcanic eruptions Sometimes magma rises slowly to the surface and spreads over a vast area This is known as fissure eruption Some plateaus and plains have been formed in this way Deccan Plateau in India and the Colombian Plateau in North America If the magma rises quickly to the surface lava is thrown high into the atmosphere Besides lava ash steam gases and pieces of rocks are also thrown out This type of eruption is known as explosive eruption The terrible explosion on August in the island of Krakatoa Indonesia is an example for explosive type of eruption The viscosity of lava is determined by the amount of silica and water in magma Highly viscosity lava is rich in silica and has little water Low viscosity lava has little silica but a lot of water It moves rapidly forming smooth flows Types of Volcanoes Volcanoes are classified according to their periodicity of eruptions and the state of activity such as Active Valcano Dormant Valcano Extinct Valcano Active Valcano Valcanoes that erupt frequently are called active volcanoes Most of the active volcanoes lie in the Pacific Ring of Fire belt which lies along the Pacific coast There are about active volcanoes in the world such as Mt Stromboli in Mediterranean Sea StHelens in USA Pinatubo in Philippines Mauna Loa in Hawaii is the world’s biggest active volcano Dormant Volcano These volcanoes have shown no sign of activity for many years but they may become active at any time These are called Sleeping Volcanoes Vesuvius mountain of Italy Mt Fujiyama of Japan Mt Krakatoa of Indonesia are famous examples of this types Extinct volcano A Volcano has not erupted in past years is often listed as Extinct volcanoes The top of extinct volcanic mountains have been eroded Mt Popa of Myanmar and Mt Kilimanjaro and Mt Kenya of Africa are examples of extinct volcanoes Distribution of Volcanoes in the world Volcanoes are located in a clearly-defined pattern around the world They are closely related to regions that have been intensely folded or faulted There are about active volcanoes and thousands of dormant and extinct ones They occur along the coastal mountain ranges as off-shore islands and in the midst of oceans but there are a few in the interior of continents The volcanic belts are also the principal earthquake belts of the world There are three major zones of volcanic activities in the world They are The Circum Pacific belt The Mid continental belt The Mid Atlantic belt Circum Pacific Belt This is the volcanic zone of the convergent oceanic plate boundary It includes the volcanoes of the eastern and western coastal areas of Pacific Ocean This zone is popularly termed as the Pacific Ring of Fire which has been estimated to include two-thirds of the world’s volcanoes Mid continental belt This is the volcanic zone of convergent continental plate boundaries that includes the volcanoes of Alpine mountain chains the Mediterranean Sea and the fault zone of eastern Africa The important volcanoes are Vesuvius Stromboli Etna Kilimanjaro and Kenya Surprisingly the Himalayas have no active volcanoes at all Mid Atlantic Belt This belt represents the divergent boundary of plates located along the mid-Atlantic ridges Volcanoes of this area are mainly of fissure eruption type Iceland is the most active volcanic area and is located on the mid-Atlantic ridge St Helena and Azores Island are other examples Unit Landforms In the earlier class we have learnt that the surface of the earth is not the same everywhere The earth has an infinite variety of landforms named mountains plateaus plains valley etc Some parts of the lithosphere may be rugged and some flat These landforms are a result of two processes They are i The Endogenic Process The Exogenic Process i The Endogenic Process The endogenic process internal process leads to the upliftment and sinking of the earth’s surface at several places The Exogenic Process The exogenic process external process is the continuous wearing down and rebuilding of the land surface Gradation is the process of levelling of highlands through erosion and filling up of lowlands through deposition Landforms The landscape is being continuously worn down by two processes weathering and erosion Weathering is the breaking and falling apart into small pieces of the rocks on the earth’s surface Erosion is the wearing down of the landscape by different agents like water wind ice and sea waves The eroded material is carried away by water wind etc and eventually deposited This process of erosion and deposition create different landforms on the surface of the earth River The water flowing from its source to river mouth along a definite course is called a River Rivers generally originate from a mountain or hill The place of origin of the river is known as its Source The place where it joins a lake or sea or an ocean is known as River mouth The running water in the river erodes the mountainous track which creates a steep-sided valley like the letter V known as V shaped valley Falling of river water over a vertical step in the river bed is called waterfall It is formed when the soft rocks are removed by erosion Coutrallam falls across the river Chittar in Tamil Nadu Plunge pool is a hollow feature at the base of a waterfall which is formed by cavitation Alluvial fan is a deposition of sediment occurs at which the river enters a plain or the foot-hills As the river enters the plain it twists and turns forming large bends known as Meanders Meanders along the River Vellar near Sethiyathope in Cuddalore District Tamil Nadu Due to continuous erosion and deposition along the sides of the meander the ends of the meander loops come closer In due course of time the meander loop cuts off from the river and forms a cut-off lake also called an Ox-bow lake At times the river overflows its banks This leads to the flooding of the neighbouring areas As the river floods it deposits layers of fine soil and other material called sediments along its banks This leads to the formation of a flat fertile floodplain The raised banks are called levees As the river approaches the sea the speed of the flowing water decreases and the river begins to break up into a number of streams called distributaries The velocity of the river becomes so slow that it begins to deposit its load The collection of sediments from all the mouths form Delta Deltas are excellent productive lands Cauvery delta Ganges delta Mississippi delta Glacier A large body of ice moving slowly down a slope or valley due to gravity is called a glacier Glaciers are grouped into Mountain or Valley Glaciers and Continental Glaciers Continental Glacier The glacier covering vast areas of a continent with thick ice sheets Antarctica Greenland Mountain or Valley Glacier is a stream of ice flowing along a valley It usually follows former river courses and are bounded by steep sides The Himalayas and the Alps Glaciers expose the solid rocks of earth by removing the loose materials found on it Cirque is a glacially eroded rock basin with a steep side wall and steep head wall surrounding an armchair-shaped depression Corrie Scotland United Kingdom Kar Germany As the ice melts they get filled up the cirque with water and become beautiful lakes in the mountains called as Tarn Lake When two adjacent cirques erode towards each other the previously rounded landscape is transformed into a narrow rocky steep sided ridges called Arete U Shaped Valley is found beneath the glaciers which is deepened and widened by the lateral and vertical erosion The material carried by the glacier such as rocks big and small sand and silt get deposited These deposits form glacial moraines Wind Have you ever visited a desert Try to collect some pictures of sand dunes An active agent of erosion and deposition in the deserts is wind Mushroom Rock Winds erode the lower section of the rock more than the upper part Therefore such rocks have narrower base and wider top Wider top rocks in the shape of a mushroom commonly called mushroom rocks An isolated residual hill standing like a pillar with rounded tops are called Inselbergs Inselberg in the Kalahari Desert of South Africa When the wind blows it lifts and transports sand from one place to another When it stops blowing the sand falls and gets deposited in low hill like structures These are called sand dunes The crescent shaped sand dunes are called Barchans When the grains of sand are very fine and light the wind can carry it over very long distances When such sand is deposited in large areas it is called Loess Large deposits of loess are found in China Sea waves A part of the land adjoining or near the sea is called the Sea coast The boundary of a coast where land meets water is called the Coast line The coastal areas are subject to change due to wave erosion and wave deposition The erosion and deposition of the sea waves give rise to coastal landforms Sea Cliffs are steep rock faces formed when the sea waves dash against them Sea waves continuously strike at the rocks So Cracks develop Over time they become larger and wider Thus hollow like caves are formed on the rocks They are called Sea Caves Sea cave As the cavities of sea caves become bigger and bigger only the roof of the caves remains thus forming Sea Arches Further erosion breaks the roof and only walls are left These wall like features are called Sea Stacks The sea waves deposit sediments of sand and gravel along the shores forming Beaches Sand bar is an elongated deposition of sand or mud found in the sea almost parallel to the coast Lagoon is a shallow stretch of water partially or completely separated from the sea Chilika lake in Odisha Pulicat lake in Tamil Nadu and Vembanad lake in Kerala are the famous lagoons in India Unit Population and Settlement Population Geography is a study of demographic phenomena which includes natality morality growth rates etc through both space and time Increase or decrease in population indicates population distribution and growth The study of movements and mobility of population is called migration The Races Race has been defined as a biological grouping within the human species The race is a group of people with more or less permanent characteristics that are inherited The most widely found human racial types are based on visual traits such as head shape facial features nose shape eye shape and colour skin colour stature blood groups etc The major world human races are Caucasoid Negroid Mongoloid Australoid Caucasoid The Caucasoid is known as European race This group is the one with fair skin and dark brown eyes wavy hair and narrow nose The Caucasoid are also found in Eurasia Negroid Negroid have the dark eyes black skin black wooly hair wide nose long head and thick lips They are living in different parts of Africa Mongoloids The mongoloid race is commonly known as the Asian-American race The mongoloid have the light yellow to brown skin straight hair flat face broad head and medium nose Such people are found in Asia and Arctic region Australoids Australoids have wide nose curly hair dark skin and short in height They are living in Australia and Asia Races of India India is said to be one of the cradle lands of human civilization The ancient Indus valley civilization in India is believed to have been of Dravidian origin in northern India The Dravidian people were pushed south when the Indo-Aryan came in later South India was dominated by the three Dravidian kingdoms of the Chera the Cholas and the Pandyas The Dravidian languages are Tamil Telugu kannada Malayalam and Tulu almost all the Dravidians live in southern part of India Religion Religion means a particular system of faith and worship which brings human being with human society Religion is a symbol of group identity and a cultural rallying point Classification of Religion a Universalizing Religions Christianity Islam and Buddhism b Ethnic Religions Judaism Hinduism and Shintoism c Tribal or Traditional Religions Animism Shamanism and Shaman Language Language is a great force of socialization Language either in the written or oral form is the most common type of communication Language promotes the transmission of ideas and the functioning of political economic social and religious systems Major Languages in the world Tamil Hindi Chinese English Spanish Portuguese Russian Arabic German Languages of India India has many languages and culture Each state has its own language major languages were recognised by Indian Constitution Kashmiri Urdu Punjabi Hindi Rajasthani Gujarati Bengali and Assamese are spoken in North India The main languages of the Dravidian family are Tamil Telugu Kannada Malayalam etc These languages are mainly spoken in southern India Today usage of language has changed It is often used as communicational skill With the different means of communication and fast moving world advancement in technology helps in understanding the different languages very easily These technologies have really brought the world closer Settlement Settlement is a place where people live and interact through activities such as agriculture trading and entertainment A rural settlement is a community involved predominantly in primary activities such as agriculture lumbering fishing and mining An urban settlement engages in predominantly in secondary and tertiary activities such as industries trade and banking A rural settlement tends to have a small population and low population density Urban settlement often has a large population size and high population density Site and situation refers to the location of the actual settlement The initial choice of a site for a settlement depends on how it is useful for meeting our daily needs like water supply availability of farmland building material and fuel etc Old House Types In the early periods of human settlement houses were built using local materials The form of the house was closely related to the environment In the agricultural regions houses were built with mud walls and the roof was made of stalks of paddy or other crops of grass or thatch Local wood was used to provide frame for the roof Such old houses had wide verandahs and an open air circulation The size of the house depended on the economic status of its inhabitants Patterns of Settlements Settlements are classified into Compact settlements and Dispersed settlement Compact settlements Compact settlement is also known as nucleated settlement In this type large number of houses are built very close to each other such settlement develop along the river valleys and fertile plains In India compact settlements are found in the northern plains and the coastal plains of peninsular India Dispersed Settlements Dispersed settlements are generally found in the areas of extreme climate hilly tracts thick forests grasslands areas of extensive cultivation In these settlements houses are spaced far apart and after interspersed with fields In India this type of human settlement is found in the northern kosi tract the Ganga delta the Thar Desert of Rajasthan and the foot hills of Himalayas and the Niligris Rural settlement Rural settlements are predominantly located near water bodies such as rivers lakes and springs where water can be easily available People choose to settle near fertile lands suitable for agriculture along with the provision of other basic needs Hence they prefer to live near low lying river valleys and coastal plains suited for cultivation The availability of building materials like wood stone and clay near settlements is another advantage for settlements to be built Factors Influencing Rural Settlement Nature of topography Local weather Condition Soil and water resources Social organisation Economic condition Pattern of Rural Settlement The pattern of settlement has been defined as the relationship between a house or building to another A rural settlement pattern is a function of relief climate water supply and socio-economic factor It is broadly classified under the following patterns such as Linear Rectangular Circular Star like pattern etc In a Linear settlement houses are arranged along the either side of a roadways railways line river or canalthe edge of a valley etc settlements found in the Himalayas the Alps the Rockies The rectangular settlements are almost straight meeting each other at right angles Such a settlement is found in plain areas or inter montane plain settlements found in Sutlej Houses built around a central area are known as Circular pattern of settlements Such settlement develop around lakes and tanks The Star like pattern of settlement develops on the sites and places where several roads converge and houses spread out along the sides of roads in all directions The Namakkal urban settlements Wet Point Settlement A wet point settlement is located near water sources in arid regions Dry Point Settlement A dry Point settlement is located in low- lying areas in the regions of excessive dampness Dry point settlements are not affected by flood or any other source of water Such settlements are found in the coastal plains of Kerala and deltas along the east coast of India Urban Settlements The settlements in which most of the people one engaged in secondary and tertiary activities are known as urban settlements Town cities and the areas of large cities are referred to as urban areas Classification of Urban Settlements The definition of urban area varies from one country to another Some of the common basis of classification are Size of population Occupational structure Administration Town Town is a general name for an urban place usually a settlement meeting a prescribed minimum population threshold The settlement with a population more than people is called a town Basis on the function cities can be classified into towns such as administrative cantonment academic etc City The term City is generally applied to large urban places with a central business district In India an urban place with more than one lakh population is considered as a city Mega city A mega city is a very large city typically with a population of more than million people A mega city can be a single metropolitan area Canton Tokyo Delhi Mumbai are some of the examples of megacities Megalopolis The word megalopolis is given to a large settlement which is formed by the combination of two or more large cities whose total population exceeds ten million The region made up of cities between Boston and Washington DC is a well-known megalopolis In India Kolkata is the largest urban area which is a megalopolis Gandhinagar Surat Vadodara Rajkot in Gujarat are the important megalopolis cities in India Conurbation A Conurbation is a region comprising of a number of cities large town and other urban areas that through population growth and physical expansion have merged to form one continuous urban or industrially developed area Mumbai in Maharashtra Gurgaon Faridabad in Haryana Noida in Uttar Pradesh are the conurbation cities of India Satellite Town A satellite town is a town designed to house the over population of a major city but is located well beyond the limits of that city Satellite towns are generally located outside the rural urban fringe In India most satellite towns are purely residential in character Smart City In an urban region a city which is very much advanced in terms of infrastructure real estate communication and market availability is called a Smart City The first ten smart cities of India are Bhubaneshwar Pune Jaipur Surat Ludhiana Kochi Ahmedabad Jabalpur Vishakappattinam Solapur and Davanagere Tamil Nadu has major cities to be transformed as smart cities They are Chennai Madurai Tirunelveli Tiruchirappalli Thanjavur Tiruppur Salem Vellore Coimbatore Thoothukudi Dindigul and Erode Civics Unit Equality Nature has made man inequal in colour height talent physical strength etc and the natural inequalities can never be rectified Even the twins looking like the similar are not equal in their abilities Man made inequalities on the basis of caste religion language economy etc can be rectified It is universally accepted that people are differed in their capacity ability attitude etc but at the same time it is also accepted that they should be given equal opportunities for the development of their skills and talents What is Equality Equality is ensuring individuals or groups that are not treated differently or less favourably on the basic of specific protected characteristic including areas of race gender disability religion or belief sexual orientation and age According to Prof Laski Equality does not mean identity of treatment the sameness of reward It means first of all absence of social privilege on the second it means that adequate opportunities are laid upon to all Importance of Equality Equality is a powerful moral and political ideal that has inspired and guided human society for many centuries The concept of equality invokes the idea that all human beings have equal worth regardless of their caste colour gender race or nationality The democratic ideals such as liberty equality etc are meaningful and effective only when they are implemented with justice Kinds of Equality Social equality Social equality means that all citizen are entitled to enjoy equal status in society There should not be any discrimination of caste creed colour and race All should have equal opportunity to develop their personality and to complete goals Civil Equality Civil equality is enjoyment of civil rights by all citizen There should not be any discrimination of superior or inferior the rich or the poor caste or creed Equal rights should be available to all the persons and nobody should be denied enjoyment of any rights Rule of law is in force in England and in the eyes of law all are equal and equal treatment is given to all by the rule of law In India the same rule of law is followed Rule of law was advocated by AVDicey the British legal luminary Political Equality All the democratic countries including India have guaranteed the political rights to all citizens It includes Right to vote Right to hold public Office Right to criticise the government Citizens should have equal opportunity to actively participate in the political life These rights can be enjoyed through the Universal Adult Franchise In India the voting right is given to all the citizens who has attained years of age without any discriminations India is the first country to give right to vote to women from the very first general election held in the year In Switzerland the right to vote is given to women in Any person who has completed the age of years can contest in the election in India Right to criticise the government is also very important right and the people can express their resentment through demonstrations The value of the vote of the Prime Minister and value of vote of common man in general election is same which denotes political equality Gender Equality All human beings both men and women are free to develop their personal abilities and make choices without any limitations woman were not given equal rights and they were considered as weak as compared to man and they were placed in a secondary position to men They should be treated equally It does not mean that women and men have to become the same but their rights responsibilities and opportunities will not depend on whether they are born male or femaleGender Equality is the equal right of both men and women to have access to opportunities and resources They have right to participate in the economic sphere and make important decisions Women with their talent and hard work have proved that their ability is not less than men in any aspect Nowadays women are successfully working in many fields like Border Security force Indian Air Force etc For the uplift of women reservation has been given for women in local bodies UNICEF says Gender Equality means that women and men and girls and boys enjoy the same rights resources opportunities and prolictions It does not require that girls and boys or women and men be same or that they be treated exactly alike As of gender equality is the fifth of seventeen sustainable development goals of the United Nations Human dignity Dignity means self respect Human dignity is the most important human right from which all other fundamental rights derive Dignity is the quality of being honourable noble and excellent Every human being should be regarded as a very valuable member of the community Equality of Opportunity and Education All the individuals should have similar chances to receive education They should have similar opportunities to develop their personality We need equality to get equal treatment in society If we treat equality we can earn respect and dignity Equality in Indian constitution Almost the constitution of all the countries in the world have guaranteed equality Likewise the constitution of India has also guaranteed equality to all citizens by providing Articles from Equality before law and equal protection of law have been further strengthened in the Indian constitution under Article We can promote equality by Treating all fairly Creating an inclusive culture Ensuring equal access to opportunities Enabling to develop full potential Making laws and policies Education Conclusion India is the largest democratic country in the world Equality and justice are the pillars of democracy Justice can be achieved when people are treated equality Equality is so important because it preserves the dignity of an individual Equality is an important principle for a society to function Civics Unit Political parties Student Siva Good morning Mam May I come in Teacher MsAadhi Good morning Siva Always you will be on time Why are you so late today Siva Sorry mam I was delayed due to a procession Ms Aadhi What is it about Who arranged this procession Siva My uncle said That is the work of the political party Ms Aadhi Oh I see Siva What is political party mam Why are they doing so Ms Aadhi Wait Today I am going to teach about political parties Let us know all about that In earlier times emperors and kings ruled India The king was the supreme head of the Legislative Executive and Judiciary branches Governance was in the hands of one person The welfare of the people depended on the ruler People had no rights to do against the ruler Later foreign powers made India as their colonies The colonies became statesv after Independence was declared In India became a democratic country A vibrant democracy needs a strong political party system Party System is a modern phenomenon In a democracy people are able to voice their opinions on any subject What are Political Parties Political parties are the voluntary associations of individuals with broad ideological identity who agree on some policies formulate an agenda and programme for the society Political parties seek to implement their policies by winning people’s support through election Parties vary in size and in the ways they organize themselves as well as in their policies Any political party has three basic Components The leader the active members the followers Importance of political parties Political parties are the backbone of democracy Parties are not part of the formal arrangement of a government but they are essential elements to form the government They formulate public opinion They serve as intermediaries between the citizen and the policy makers A party is recognized if it has been engaged in political activity for five years its candidates secure at least six percent of total votes in the last general election Characteristics of Political Parties Political parties consist a group of persons of common goals and shared values have its own ideology and programme Capture power only by constitutional means endeavour to promote the national interest and national welfare Types of Party System There are three major types of party system Single Party System a system in which a single political party has the right to form the government Single party is existed in the communist countries such as China North Korea and Cuba Bi Party System In Bi Party system the power is usually shared between two parties Of the two parties one becomes the ruling party and the other becomes opposition eg Bi-Party system can be seen in UK the Labour Party and the Conservative Party and in USA the Republican Party and the Democratic Party Multi Party System When the competition for power is among three or more parties the system is known as multi party system This type of party system is in existence in India France Sweden and Norway etc Party system in India Countries that follow a federal system have two kinds of parties India’s party system originated in the late century In fact India has the largest number of political parties in the world In India we find the existence of political parties at three levels They are National parties Regional parties and Registered but unrecognised parties independent candidates Every party in the country has to register with Election Commission Criteria for Recognition The Election Commission of India has some criteria for the recognition of political parties in India Recognized parties Parties that fulfill these criteria are called recognized parties They are given a unique symbol by the Election Commission A registered but unrecognized political party cannot contest election on its own symbol This party has to choose one symbol form free symbol poll panel announced by the Election Commission Majority Party The Political Party whose number of candidates elected is more than the others is called the majority party The Majority Party forms and runs the government They select and appoint their ministers to run the government They play a decisive role in making laws for the country Minority Party Those with lesser number of elected candidates are called the minority party Opposition Party The party which gets second largest number of seats next to the majority party in the election is called the Opposition party An effective opposition is very essential for the successful operation of the democracy They are as important as that of ruling party They check the autocratic tendencies of the ruling party They critically examine the policies and bills introduced by the government They raise their voice on the failures and wrong policies They highlight important issues which are not acted upon the Government The leader of the opposition party enjoys the rank of Cabinet Minister Coalition Government In a Multiparty system a single party sometimes may not secure the majority required to form the government In such a case some parties join together to form the government Such government is called Coalition Government Electoral Symbols and its importance An electoral symbol is a standardised symbol allocated to a political party They play an important role in elections They can be easily identified understood remembered and recognized by the voters The Election commission has stopped allotting animals as symbols The only exceptions are the lion and the elephant The symbol of nationally recognized parties is standard throughout India That symbol will not be allotted to any other party or individual State parties are allotted to certain symbols that no other party can use the symbol in that particular state but which different parties in different states can use the same symbol eg Shiv Sena in Maharashtra and Jharkhand Mukti Morsha in Jharkhand use bow and arrow as their symbol Both National and Regional parties trigger the growth of the nation and work for the welfare of the people Economics Unit Production There are two main activities in an economy such as production and consumption Similarly there are two kinds in economy producers and consumers Well-being is made possible by efficient production and by the interaction between producers and consumers In the interaction consumers can be identified in two roles both of which generate well-being Consumers can be both customers of the producers and suppliers to the producers The customer’s well-being arises from the commodities when they buy and consume The supplier’s well being is related to the income they receive when they sell the commodities and services In an economy all are consumers but all are not producers or sellers Meaning of Production Production is a process of combining various material inputs and immaterial inputs in order to make something for consumption the output It is the act of creating an output a good or service which has value and contributes to the utility of individuals Production in economics refers to the creation of those goods and services which have exchange value It means the creation of utilities Utility means want satisfying power of a product According to the nature of utilities they are classified into form utility time utility and place utility Types of Production There are three types of production They are Primary production Secondary Production Tertiary Production Primary Production Primary production refers to the state of activity in which natural resources are directly used Since agricultural is given prime importance it is also referred as agricultural sector production Agriculture forestry fishing mining and oil extraction are examples to primary sector Secondary Production The process of manufacturing products by using primary products as raw materials is known as secondary level production Since industries are given prime importance it is also referred as industrial sector production Manufacturing of cars clothing chemicals engineering and building etc are examples to secondary sector Tertiary Production Tertiary production is known as the services which are not visible rendered by the teachers doctors etc are to the economy Banking insurance education health and defence etc are examples to service sector Factors of Production Factors of production are known as inputs of production which are transformed into output or products There are two main divisions of factors of production They are i Primary factors of production and Derived factors of production or Modern factors of production or secondary factors of production Primary factors of production are Land and Labour Derived factors of production are capital and organisation Capital is known as investment and the organisation is known as organising Land Labour and Capital for producing products Organisation is also known as Entrepreneurship Land Land as a factor of production refers to all those natural resources or gifts of nature which is provided freely to man It includes within itself several things such as land surface air water minerals forests rivers lakes seas mountains climate and weather Thus land includes all things that are not made by man Characteristics of Land Land is a Free Gift of Nature Man has to make efforts in order to acquire other factors of production But to acquire land no human efforts are needed Land is not the outcome of human labour Rather it existed even long before the evolution of man Land is fixed in supply The total quantity of land does not undergo any change It is limited and cannot be increased or decreased with human efforts No alteration can be made in the surface area of land Land is imperishable All man-made things are perishable and these may even go out of existence But land is imperishable Thus it cannot go out of existence Land is a Primary Factor of Production In any kind of production process we have to start with land For example it helps to provide raw materials for industries and to produce crops Land is Immovable It cannot be transported from one place to another For instance no portion of India’s surface can be transported to some other country Land has some Original Indestructible Powers There are some original and indestructible powers of land which a man cannot destroy Its fertility may be varied but it cannot be destroyed completely Land Differs in Fertility Fertility of land differs on different pieces of land One piece of land may produce more and the other may be less As a gift of nature the initial supply price of land is zero However when used in production it becomes scarce Therefore it fetches a price accordingly Labour Labour is the human input into the production process Alfred Marshall defines labour as the use of body or mind partly or wholly with a view to secure an income apart from the pleasure derived from the work Characteristics of Labour Labour is more perishable than other factors of production It means labour cannot be stored The labour of an unemployed worker is lost forever for that day when he does not work Labour can neither be postponed nor accumulated for the next day It will perish Once it is lost it is lost forever Labour is an active factor of production Neither land nor capital can yield much without labour Labour is not homogeneous Skill and dexterity vary from person to person Labour cannot be separated from the labourer Labour is mobile Man moves from one place to another from a low paid occupation to a high paid occupation Individual labour has limited bargaining power He cannot fight with his employer for a rise in wages or improvement in work-place conditions However when workers combine to form trade unions the bargaining power of labour increases Division of Labour The concept Division of Labour was introduced by Adam Smith in his book An Inquiry into the Nature and Causes of the Wealth of Nations Division of labour means dividing the process of production into distinct and several component processes and assigning each component in the hands of a labour or a set of labourers who are specialists in that particular process Example A Tailor stitches a shirt in full In the case of Garments exporters cutting of cloth stitching of hands body collars holes for buttons stitching of buttons etc are done independently by different workers Therefore they are combining the parts into a whole shirt Garments Export Unit Merits of division of labour It improves efficiency of labour when labour repeats doing the same tasks It leads to the use of modern machinery in production resulting in inventions Ex More’s Telegraphic Codes Time and raw materials are used very efficiently Demerits of division of labour Repetition of the same task makes labourer to feel that the work is monotonous and stale It kills the humanity in him Narrow specialization reduces the possibility of labourer to find alternative avenues of employment This results in unemployment Reduce the growth of handicrafts and the worker loses the satisfaction of having made a commodity in full Capital Capital is man made physical goods used to produce other goods and services In the ordinary language capital means money In economics capital refers to that part of man-made wealth which is used for the further production of wealth All wealth is not capital but all capital is wealth According to Marshall Capital consists of those kinds of wealth other than free gifts of nature which yield income Forms of capital Physical Capital or Material Resources Ex Machinery tools buildings etc Money capital or Monetary resources Ex Bank deposits shares and securities etc Human capital or Human Resources Ex Investments in education training and Health Characteristics of Capital Capital is a passive factor of production Capital is man-made Capital is not an indispensable factor of Production Capital has the highest mobility Capital is more flexibility Capital is productive Capital Lasts Long Capital involves present sacrifice to get future benefits Entrepreneur or Organisation An entrepreneur is a person who combines the different factors of production land labour and capital in the right proportion and initiates the process of production and also bears the risk involved in it The entrepreneur is also called Organizer In modern times an entrepreneur is called the changing agent of the society He is not only responsible for producing the socially desirable output but also to increase the social welfare Characteristics of Entrepreneur Identifying profitable investible opportunities Deciding the location of the production unit Making innovations Deciding the reward payment Taking risks and facing uncertainties History Unit Vijayanagar and Bahmani Kingdoms Learning Objectives To know the circumstances that led to the rise and expansion of Vijayanagar and Bahmani kingdoms To familiarise ourselves with the administration military organisation and the economic life during the time of their reign To know the contribution of Vijayanagar and Bahmani rulers to literature art and architecture Unit Vijayanagar and Bahmani Kingdoms Introduction The political condition of India in the fourteenth century provided great opportunities for the rise of new kingdoms in the south The repressive measures of the temperamental Muslim king Muhammad-bin-Tughlaq led to the rise of many new independent states In the south Vijayanagar and Gulbarga or Bahmani emerged as two great kingdoms The Bahmani kingdom spread all over the Maharashtra region and partly over Karnataka Ruled by monarchs it lasted for nearly years Early in the sixteenth century it collapsed and split into five sultanates Bijapur Ahmednagar Golconda Bidar and Berar The state of Vijayanagar continued to flourish for nearly years Ultimately Vijayanagar’s wealth and prosperity induced the Muslim Deccan kingdoms to launch a combined war against it In the battle of Talikota finally they could succeed in crushing Vijayanagar Empire Foundation of Vijayanagar Empire Vijayanagara the city of victory was established in southern Karnataka by two brothers named Harihara and Bukka According to one tradition Vidyaranya head of the Saivite Sringeri mutt instructed them to abandon their service to the Tughluqs and rescue the country from Muslim authority The new kingdom was called Vidyanagara for a time in honour of the spiritual teacher Vidyaranya before it came to be called Vijayanagara Four dynasties namely Sangama Saluva Tuluva and Aravidu ruled this kingdom Harihara and Bukka The fertile regions between the rivers Krishna and Tungabhadra and the Krishna- Godavari delta were the zones of conflict among the rulers of Vijayanagar Bahmani and Odisha The valour of the first two brothers Harihara and Bukka of the Sangama dynasty protected the new kingdom from the superior forces of the Bahmani sultanate which had been established about a decade after the foundation of Vijayanagara Bukka I’s son Kumara Kampana ended the sultanate in Madurai and succeeded in establishing Nayak kingdom there The conquest of the Madurai Sultanate by the Vijayanagara empire is described in detail in the poem Madura Vijayam composed by Kumara Kamapana’s wife Gangadevi End of Sangama Dynasty When King Bukka died he had left behind a large territory to his son Harihara to rule Harihara II’s impressive achievement was securing Belgaum and Goa from the Bahmani kingdom Harihara’s son Devaraya I defeated Gajapati kings of Odisha His successor Devaraya was the greatest ruler of the Sangama dynasty He began the practice of recruiting Muslim fighters to serve him and to train him in the new methods of warfare Rise of Saluva Dynasty After Devaraya II the Vijayanagar Empire went through a crisis The able commander of the Vijayanagar army Saluva Narasimha making use of the situation declared himself the emperor after murdering the last ruler of Sangama dynasty Virupaksha Raya But the Saluva dynasty founded by Saluva Narasimha came to an end with his death When Naras Nayaka his able general seized power it ushered in the Tuluva dynasty Krishnadevaraya Krishnadevaraya who reigned for years was the most illustrious rulers of the Tuluva dynasty His first step after ascending the throne was to bring under control the independent chieftains in the Tungabhadra river basin After succeeding in this effort his next main target was Gulbarga The Bahmani sultan Mahmud Shah had been overthrown and kept in imprisonment by his minister Krishnadevaraya freed the sultan and restored him to the throne Similarly he forced a war on Prataparudra the Gajapati ruler of Odisha Prataparudra negotiated for peace and offered to marry off his daughter to him Accepting the offer Krishnadevaraya returned the territory he had conquered from Prataparudra Krishnadevaraya with the assistance of the Portuguese gunners could easily defeat the Sultan of Golconda and subsequently take over Raichur from the ruler of Bijapur Krishnadevaraya A Great Builder Krishnadevaraya built huge irrigation tanks and reservoirs for harvesting rainwater He built the famous temples of Krishnaswamy Hazara Ramaswamy and Vithalaswamy in the capital city of Hampi He distributed the wealth he gained in wars to all major temples of South India for the purpose of constructing temple gateways gopura called Rayagopuram in his honour Vithalaswamy Temple He recruited a large army and built many strong forts He imported large number of horses from Arabia and Iran which came in ships to Vijayanagar ports on the west coast He had good friendly relationship with the Portuguese and Arabian traders which increased the Empire’s income through customs Patron of Literature Art and Architecture Krishnadevaraya patronised art and literature Eight eminent luminaries in literature known as astadiggajas adorned his court Alasani Peddana was the greatest of them all Another notable figure was Tenali Ramakrishna Battle of Talikota and the Decline of Vijayanagar Krishnadevaraya was succeeded by his younger brother Achtyuda Deva Raya After the uneventful reigns of Achtyuda Deva Raya and his successor Venkata I Sadasiva Raya a minor ascended the throne His regent Rama Raya the able general of the kingdom continued as a de facto ruler even after Sadashiva Raya attained the age for becoming the king He relegated Sadasiva Raya to a nominal king In the meantime the sultans of Deccan kingdoms succeeded in forming a league to fight the Vijayanagar Empire The combined forces of the enemies met at Talikota in In the ensuing battle known as Rakasa Tangadi Battle of Talikota Vijayanagar was defeated There was terrible human slaughter and pillaging the capital city of Hampi All the buildings palaces and temples were destroyed The beautiful carvings and sculptures were desecrated The glorious Vijayanagar Empire had ceased to exist Hampi Virupaksha Temple The site of the city of Vijayanagar on the bank of the river Tungabhadra in eastern Karnataka is now called Hampi Hampi is in ruins and the UNESCO has declared it a heritage site Aravidu Dynasty Rama Raya was killed on the battlefield and his brother Tirumaladeva Raya managed to escape along with the king Sadasiva Raya Tirumaladeva Raya moved to Chandragiri carrying all the treasures and wealth that could be salvaged There he began the rule of Aravidu dynasty The Aravidu dynasty built a new capital at Penukonda and kept the empire intact for a time Internal dissensions and the intrigues of the sultans of Bijapur and Golconda however led to the final collapse of the empire about Vijayanagar Administration State Kingship was hereditary based on the principle of primo geniture But in some instances the reigning rulers in order to ensure peaceful succession nominated their successors There were also instances of usurpation Saluva Narasimha usurped the throne and it led to the replacement of Sangama dynasty with Saluva dynasty The practice of appointing a regent to look after the administration when a minor succeeded the throne was also prevalent Structure of Governance The empire was divided into different mandalams provinces nadus districts sthalas taluks and finally into gramas villages Each province was administered by a governor called Mandalesvara The lowest unit of the administration was the village Each village had a grama sabha Gauda village headman looked after the affairs of the village The army consisted of the infantry cavalry and elephant corps The army was modernised and Vijayanagar army began using firearms The combination of firearm and cavalry made them one of the most feared armies in India Economic Condition The Vijayanagar Empire was one of the richest states then known to the world Several foreign travellers who visited the empire during the fifteenth and the sixteenth centuries left behind glowing accounts of its splendour and wealthThe emperors issued a large number of gold coins called Varahas Gold Coins of Vijayanagar Empire Agriculture It was the policy of its rulers to encourage agriculture in different parts of the empire by following a wise irrigation policy Apart from the state there were wealthy landholders and temples that invested in irrigation to promote agriculture Abdur Razzaq the visiting Persian emissary to Krishnadevaraya’s Court records the huge tank built with the help of Portuguese masons Channels were constructed to supply water from the tank to different parts of the city The city was well stocked with a variety of agricultural goods Cottage Industries Vijayanagar’s agricultural production was supplemented by numerous cottage-scale industries The most important of them were textile mining and metallurgy Crafts and industries were regulated by guilds Abdur Razzaq the makes a reference to separate guild for each group of tradesmen and craftsmen Trade During the Vijayanagar Empire inland coastal and overseas trade flourished in goods such as silks from China spices from the Malabar region and precious stones from Burma Myanmar Vijayanagar traded with Persia South Africa Portugal Arabia China Southeast Asia and Sri Lanka Contribution to Literature Under the patronage of Vijayanagar rulers religious as well as secular books were written in different languages such as Sanskrit Telugu Kannada and Tamil Krishnadeva Raya wrote Amuktamalyada an epic in Telugu and also a Sanskrit drama Jambavati Kalyanam Tenali Ramakrishna authored Pandurangamahatyam Scholars like Srinatha Pothana Jakkama and Duggana translated Sanskrit and Prakrit works into Telugu Amuktamalyada is considered a masterpiece in Telugu literature It relates the story of the daughter of Periazhvar Goda Devi Andal who used to wear the garlands intended for Lord Ranganatha before they were offered to the deity and hence the name Amuktamalyada who wears and gives away garlands Contribution to Architecture The temple building activity of the Vijayanagar rulers produced a new style called the Vijayanagara style Prominence of pillars and piers in large numbers and the manner in which they were sculptured are hallmarks of the Vijayanagara style Horse was the most common animal to be depicted on the pillars The structures have a mandapam open pavilion with a raised platform generally meant for seating the deity on special occasions These temples also have a marriage hall with elaborately carved pillars Bahmani Kingdom Foundation and Consolidation of the Bahmani Kingdom Ala-ud-din Hasan also known as Hasan Gangu seized Daulatabad and declared himself sultan under the title of Bahman Shah in In his effort this Turkish officer of Daulatabad Devagiri was supported by other military leaders in rebellion against the sultan of Delhi Muhammad bin Tughluq In two years Ala- ud-din Hasan Bahman Shah shifted his capital to Gulbarga His successors found it difficult to organise a stable kingdom even around Gulbarga So the capital was again shifted to Bidar in There were monarchs of the Bahmani dynasty Ala-ud-din Hasan Bahman Shah Ala-ud-din Hasan ruled for years His attempt to exact an annual tribute from the state of Warangal the Reddi kingdoms of Rajahmundry and Kondavidu led to frequent wars Ala-ud-din Bahman Shah divided the kingdom into four territorial divisions called tarafs A governor was appointed for each province He commanded an army was solely responsible for its administration and for the collection of the revenue The system worked well under a powerful king but its dangers became apparent during the reign of a weak ruler Ala-ud-din Hasan Bahman Shah Muhammad Shah I Muhammad shah I succeeded Bahman Shah He waged two wars with Vijayanagar but couldn’t gain from it But his attack on Warangal in earned him a large property and wealth including the important fortress of Golconda and his treasured turquoise throne which thereafter became the throne of the Bahmani kings Turquoise is a semi-precious stone sky blue in colour Turquoise throne is one of the bejewelled royal seats of Persian kings described in Firdausi’s Shah Nama Muhammad Shah laid a solid foundation for the kingdom His system of government continued even after the Bahmani kingdom disintegrated into five sultanates He built two mosques at Gulbarga One the great mosque completed in measures by feet and has a roofed courtyard A large number of Arabs Turks and notably Persians began to immigrate to the Deccan many of them at the invitation of Sultan Muhammad I and there they had a strong influence on the development of Muslim culture during subsequent generations Golconda Fort The Golconda Fort is located about kilometres from Hyderabad on a hill meters height The fort is popular for its acoustic architecture The highest point of the fort is Bala Hissar It is believed that there is a secret underground tunnel which leads from the Durbar Hall to one of the palaces at the foot of the hills Gulbarga Mosque Successors of Muhammad Shah I Mujahid the son of Muhammad shah ascended the throne However on his return to Gulbarga from the expedition against Vijayanagar he was assassinated and the nephew of the conspirator Daud the uncle of Muhammad was enthroned in as Muhammad Muhammad II’s reign was peaceful and the sultan spent much of his time building his court as a centre of culture and learning There were constant wars between the Bahmani and Vijayanagar rulers over the fertile Tungabhadra–Krishna region The threat also came from the north especially from Malwa and Gujarat The noteworthy ruler after eight and a half decades to was Muhammad Muhammad reigned for years For most of these years the lieutenant of the kingdom was Mahmud Gawan the most notable personality of the time Eight ministers of the Bahmani state Vakil-us-saltana or lieutenant of the kingdom who was the immediate subordinate authority of the sovereign Peshwa who was associated with the lieutenant of the kingdom Waziri-kull who supervised the work of all other ministers Amir-i-jumla minister of finance Nazir assistant minister for finance Wasir-i-ashraf minister of foreign affairs Kotwal or chief of police and city magistrate in the capital and Sadr-i-jahan or chief justice and minister of religious affairs and endowments Mahmud Gawan A Persian by birth Mahmud Gawan was well-versed in Islamic theory Persian and Mathematics He was also a poet and a prose writer The Bahmani king Ala-ud-din Hasan Bahman Shah greatly impressed by his wisdom and military genius recruited him He served with great distinction as the Prime Minister under Muhammad and contributed extensively to the development of the Bahmani kingdom Gawan was known for his military campaigns as well as administrative reforms He used Persian chemists to teach the Bahmani army about the preparation and the use of gunpowder In his war against the Vijayanagar kings in Belgaum he used gunpowder In order to tighten the administration and to curb the power of provincial governors who often functioned as virtual kings Gawan divided the existing four provinces of the Bahmani Sultanate into eight provinces so as to limit the area under the rule of each governor and to make the provincial administration more manageable He also placed some districts in the provinces directly under the central administration Gawan sought to curtail the military powers of the governors by allowing them to occupy only one fort in their territory The sultan kept the other forts under his direct control The royal officers who were given land assignments as pay were made accountable to the sultan for their income and expenditure The administrative reforms introduced by Gawan improved the efficiency of the government but curtailed the powers of the provincial chiefs who were mostly Deccanis So the already existing rivalry among nobles such as Deccanis and Pradesis foreigners further intensified and conflicts broke out Gawan became a victim of this tussle for power The Deccani nobles grew jealous of his success and considered him as an obstacle to their rise They manipulated by forging a letter to implicate Gawan in a conspiracy against the sultan Sultan who himself was not happy with Gawan’s dominance ordered his execution Decline of Bahmani Kingdom Gawan’s execution prompted several of the foreign nobles who were considered the backbone of the state to leave for their provinces After Sultan Muhammad III’s death Mahmud or Shihab-ud-din Mahmud reigned as the sultan until his death in His long rule is noted for the beginnings of the process of disintegration After him four of his successors on the throne were kings only in name During this period the Sultanate gradually broke up into five independent Deccan kingdoms Bidar Bijapur Ahmednagar Berar and Golconda Contribution of Bahmani Sultans Architecture The contribution of Bahmani kings to architecture is evident in Gulbarga Archaeological excavations done in the site of the kingdom has helped to unearth palaces halls of public audience ambassadors residences arches domes walls and citadels These finds are illustrative of their architectural skill Education The founder of the Bahmani kingdom Ala- ud-din Hasan Shah was educated at Multan at the initiative of Zabar Khan a general of Ala- ud-din Khalji On his accession he took special care in founding a school to educate his sons His son Muhammad I was a patron of learning He opened institutions for the purpose of educating the children of noble families in the art of soldiery Sultan Firoz the eighth Bahmani king was a linguist and a poet Later his successors founded schools in Gulbarga Bidar Daulatabad and Kandahar Boarding and lodging at the king’s expenses were provided in these schools Mahmud Gawan’s world famous madrasa in Bidar with a large library containing a collection of manuscripts is illustrative of the importance given to scholarship and education by Gawan Mahumad Gawan Madrasa Summary The foundation of Vijayanagar kingdom by two brothers Harihara and Bukka and its consolidation by their successors notably Devaraya are described The most illustrious ruler Krishnadeva Raya’s career and achievements are highlighted Defeat of Vijayanagar at the hands of combined forces of Deccan Sultanates is narrated Vijayanagar’s system of governance and economy are explored Contributions of Vijayanagar to literature art and architecture are also dealt with Establishment of Bahmani kingdom by Ala-ud-din Hasan Bahman Shah and its consolidation by his able successor Muhammad I are detailed The administrative system introduced by Bahman Shah and measures adopted by Muhammad I and later by Mahmud Gawan during the kingship of Muhammad are analysed Bahmani kings contribution to architecture and education are also examined Glossary conflict a serious disagreement ascending leading upwards subsequently after a particular thing adorned decorated pillaging robbing using violence especially in wartime intrigue conspire plot primogeniture the right of succession belonging to the first child splendour magnificent flourishing growing successfully prominence the state of being important indemnity guarantee surety Vijayanagara Ruler of Odisha Prataparudra Astadiggajas Krishna Devaraya Pandurangamahatyam Abdur Razzaq City of victory Tenali Ramakrishna Persian emissary I Turquoise throne is one of the bejewelled royal seats of Persian kings described in Firdausi’s Shah Nama The fertile regions between the rivers Krishna and Tungabhadra and Krishna–Godavari delta were the zones of conflict among the rulers of Vijayanagar and Bahmani III Muhammad I was educated at Multan IV Mahmud Gawan served with great distinction as the Prime Minister under Muhammad III Harihara and Bukka were the founder of Bahmani kingdom Krishnadeva Raya who reigned for years was the most illustrious rulers of Sangama dynasty Alasani Peddana was the greatest of all Astadiggajas Kingship of Vijayanagar administration was hereditary based on the principle of primo geniture There were monarchs of the Bahmani dynasty UnitII The Mughal Empire Learning Objectives To trace the foundation and establishment of Mughal Empire in India To acquaint ourselves with the career and achievements of six great Mughal kings To understand the administrative and religious policies of the Mughal rulers To gain knowledge about the cultural contributions of Mughals BABUR HUMAYUN AKBAR JAHANGIR SHAH JAHAN AURANGZEB Introduction A new empire began in India with the arrival of the Mughal king Babur Except for the brief reign of Sher Shah of Sur dynasty the Mughal rule lasted from AD CE to These were the years when the fame of the Great Mughals of India spread all over Asia and Europe After six Great Mughal Emperors the empire began to disintegrate Babur Ancestry and His Early Career Zahir-ud-din Muhammad Babur popularly known as Babur was the founder of the Mughal Empire in India The term Mughal can be traced to Babur’s ancestors Babur was the great grandson of Timur on his father’s side On his mother’s side his grandfather was Yunus Khan of Tashkent who was known as the Great Khan of the Mongols and the thirteenth in the direct line of descent of Chengiz Khan Babur was born on February He was named Zahir-ud-din Defender of Faith Muhammad He inherited Farghana a small kingdom in Central Asia when he was years old But he was soon driven out from there by Uzbeks After years of adversity Babur established himself as the ruler of Kabul Babur Foundation of the Mughal Empire In Kabul Babur set his sights eastward reminded by the memory of Timur’s Indian invasion In the very year after he took Kabul Babur led his first expedition towards India Yet he was preoccupied with the Central Asian affairs He did not have any ambition beyond Punjab till Then a greater opportunity came knocking Dilawar Khan who was Daulat Khan Lodi’s son and Alam Khan who was the uncle of Sultan of Delhi arrived in Kabul to seek Babur’s help in removing Ibrahim Lodi from power Babur defeated Ibrahim Lodi in the famous Battle of Panipat in and occupied Delhi and Agra Following Babur’s victory in this battle Mughal dynasty came to be established in India with Agra as its capital Babur’s Military Conquests Babur defeated Rana Sanga and his allies at Khanwa in He won the war against the chief of Chanderi in and prevailed over the Afghan chiefs of Bengal and Bihar in Babur died in before he could consolidate his victories Babur was a scholar in Turkish and Persian languages He recorded his impressions about Hindustan its animals plants and trees flowers and fruits in his autobiography Tuzuk- i-Baburi Rana Sanga Following the tradition set by Chengiz Khan who nominated the most deserving among his sons as his heir Babur chose his favourite and eldest son Humayun as his heir Humayun and Humayun on his accession to the throne divided his inheritance as per his father’s will and accordingly his brothers Kamran Hindal and Askari got a province each Yet each of the brothers aspired for the throne of Delhi Humayun also had other rivals and notable among them was the Afghan Sher Shah Sur the ruler of Bihar and Bengal Sher Shah defeated Humayun at Chausa and again at Kanauj Humayun defeated and overthrown had to flee to Iran With the help of the Persian ruler Shah Tahmasp of the Safavid dynasty Humayun succeeded in recapturing Delhi in But he died in when he fell down the stairs of his library in Delhi Humayun Tomb Sher Shah Sher Shah was the son of the Afghan noble Hasan Suri ruler of Sasaram in Bihar After overthrowing Humayun Sher Shah started the rule of Sur dynasty at Agra During his brief reign he built an empire stretching from Bengal to the Indus excluding Kashmir He also introduced an efficient land revenue system He built many roads and standardised coins weights and measures Sher Shah Akbar Accession to Throne After the death of Humayun in hisyear-old son Akbar was crowned the King Humayun’s trusted general Bairam Khan became the regent and ruled on behalf of Akbar as the latter was a minor Akbar Hemu a general of Sur dynasty soon captured Agra and Delhi in In the same year Bairam Khan defeated and killed Hemu in the battle at Panipat Second Battle of Panipat As Bairam Khan was murdered in Gujarat allegedly at the instance of Akbar who could not tolerate his dominance in day-to-day governance of the kingdom Akbar assumed full control of the government Akbar brought most of India under his control through conquests and alliances N S W E Lakshadweep islands INDIA Andaman and nicobar islands INDIA BAY OF BENGAL ARABIAN SEA INDIAN OCEAN Kabul Multan Delhi Ajmer Agra Malwa Gujarat Khandesh Gondwana Odisha Bengal Bihar Lucknow Golkonda Bidar Allahabad Berar Ahmednagar Bijapur Calicut Madurai Nellore Goa Diu Kandahar Lahore Panipat Patna Polygars Kashmir MUGHAL EMPIRE UNDER AKBAR Conquests of Women Rulers Akbar conquered Malwa and parts of Central India His defeat of Rani Durgavati a ruler in the Central Province is not appreciated since the brave Rani did him no harm Yet urged by his ambition to build an empire Akbar had no consideration for the good nature of the ruler Similarly another woman ruler Akbar had to confront in South India was the famous Rani Chand Bibi regent of Ahmednagar The fight this woman put up impressed the Mughal army so much that they gave her favourable terms of peace Rani Durgavati Battle of Haldighati Akbar defeated Rana Uday Singh of Mewar and captured the fort of Chittoor in and then Ranthambore in In he won over Uday Singh’s son Rana Pratap at the Battle of Haldighati Though defeated Rana Pratap escaped on his horse Chetak and continued his fight leading a life in the jungle The memory of this gallant Rajput is treasured in Rajputana and many a legend has grown around him Rana Pratap Commercial Access to Arabia Southeast Asia and China Akbar’s conquest of Gujarat helped him to establish control over Gujarat’s overseas trade with the Arabs and the Europeans Akbar’s military campaigns in East Bihar and Odisha and victory over Bengal facilitated access to Southeast Asia and China Military Campaigns in the North-West Among other conquests of Akbar the important were the campaigns he launched in the North–West of India Akbar added Kandahar Kashmir and Kabul to the Mughal Empire His battles in the Deccan led to the annexation of Berar Khandesh and parts of Ahmednagar Under Akbar the Mughal Empire extended from Kashmir in the north to Godavari in the south and from Kandahar in the west to Bengal in the east Akbar died in and his mortal remains were buried at Sikandra near Agra Akbar’s Religious Policy Akbar realising that the gains of affection would be more enduring than the gains of the sword made all out efforts to win the goodwill of the Hindu nobles and the Hindu masses He abolished the jizya poll tax on non-Muslims and the tax on Hindu pilgrims He also married a girl of a noble Rajput family Later he married off his son to a Rajput girl as well He appointed Rajput nobles to important and top positions in his Empire Raja Man Singh of Jaipur was sent as governor of Kabul once Akbar treated all the religious groups fairly with generosity of spirit The Sufisaint Salim Chishti and the Sikh Guru Ramdas received Akbar’s utmost respect and regard Guru Ramdas was gifted a plot of land in Amritsar where the Sikh shrine Harmandir Sahib was later built In Ibadat Khana a hall in the new Fatehpur Sikri city constructed by Akbar scholars of all religions met for a discourse Contributions to culture Akbar was a great patron of learning His personal library had more than four thousand manuscripts He patronised scholars of all beliefs and all shades of opinions He extended his benevolence to authors such as Abul Fazl Abul Faizi and Abdur Rahim Khan-i-Khanan the great storyteller Birbal competent officials like Raja Todar Mal Raja Bhagwan Das and Raja Man Singh The great composer and musician Tansen and artist Daswant adorned Akbar’s court as well Jahangir Akbar was succeeded by Prince Salim his son through a Rajput wife who was also named Nur-ud-din Muhammad Jahangir Conqueror of the World Jahangir was more interested in Jahangir art and painting and gardens and flowers than in running the government So Jahangir’s wife Mehr-un-nisa known as Nur Jahan was the real power behind the throne Jahangir carried on to some extent his father’s traditions The toleration of religions of Akbar’s time continued in Jahangir’s time Nur Jahan But Jahangir ordered the execution of Sikh leader Guru Arjun or Arjan for helping his rebellious son Khusrau who contested for the throne This resulted in a prolonged fight between the Sikhs and the Mughals As a result of this confrontation the Mughals had to lose control over the trade routes to Afghanistan Persia and Central Asia The loss of Kandahar exposed India to invasions from the North-West Ahmednagar though conquered by Jahangir remained a source of trouble throughout his reign Jahangir granted trading rights to the Portuguese and later to the English Thomas Roe a representative of King James I of England visited Jahangir’s court and this agreement paved the way for the British establishing their first factory in Surat Shah Jahan Shah Jahan Prince Khurram after a struggle for power succeeded Jahangir as Shah Jahan King of the World Shah Jahan ruled for thirty years He led a campaign against Ahmednagar and annexed it in Bijapur and Golconda were also conquered later Some Maratha warriors notably Shahji Bhonsle Shivaji’s father entered the services of the Deccan kingdoms and trained bands of Maratha soldiers to fight against the Mughals So there was a sustained resistance in the Deccan to the Mughals from the Marathas too Shah Jahan was intolerant towards other religions than Islam In his reign came the climax of Mughal splendour which is detailed in the next part of this lesson Shah Jahan fell ill in and a war of succession broke out among his four sons Aurangzeb emerged successful after killing his three brothers Dara Shuja and Murad Shah Jahan passed the last eight years of his life as a prisoner in the Shah Burj of the Agra Fort Aurangzeb Aurangzeb the last of the Great Mughals started off his reign by imprisoning his old father He assumed the title Alamgir the Conqueror of the World He reigned for years He was no lover of art like his grandfather Jahangir and architecture like his father Shah Jahan Aurangzeb He tolerated no religion excepting Islam He re-imposed the jizya tax on Hindus and excluded them from office as far as possible Between and Aurangzeb remained in the North and suppressed the revolt of Bundelas Jats Satnamis and Sikhs Aurangzeb’s expansion in the North-East resulted in a war with the Ahoms of Kamarupa Assam The kingdom came under repeated attacks of the Mughals but it could not be subdued totally N S W E Lakshadweep islands INDIA Andaman and nicobar islands INDIA BAY OF BENGAL ARABIAN SEA INDIAN OCEAN Kabul Peshawar Rajputs Diu Mumbai Goa Cochin Polygars Delhi Agra Gondwana Allahabad Panipat Patna Kashmir Ajmer Malwa Gujarat Asirgarh Ahmednagar Purandhar Bengal AURANGZEB’S EMPIRE Relationship with Rajputs and Marathas Aurangzeb’s hostility towards Rajputs led to prolonged wars with them To make matters worse his rebellious son Prince Akbar joined the forces of Rajputs and created troubles to him Prince Akbar entered into a pact with Shivaji’s son Shambuji in the Deccan So Aurangzeb had to march to the Deccan in In the Deccan Aurangzeb brought Bijapur and Golconda into submission Shivaji had carved out a kingdom proclaiming himself the Emperor of Maratha State Aurangzeb could not stop the rise of Shivaji in the south- west But he vanquished Shivaji’s son and successor Shambuji who was captured and executed by him Aurangzeb remained in the Deccan until his death in at the age of nearly By the end of Aurangzeb’s rule the British had firmly established their trade centres at Madras Chennai Calcutta Kolkata and Bombay Mumbai The French had their main trade centre in Pondicherry Puducherry The Mughal Administration Central Administration The Mughals provided a stable administration in larger parts of India The Emperor was the supreme head of the Mughal administrative system He was the law maker the chief executive the commander-in-chief of the army and the final dispenser of justice He was assisted by a council of ministers The most important officials were the Wakil Prime Minister and Wazir or diwan in charge of the revenue and expenditure Mir Bhakshi was in- charge of the army The Mir Saman looked after the royal household The Qazi was the Chief Judge Sadr-us-Sudr was minister for enforcing Islamic law Sharia Provincial Administration The empire was divided into several Subhas provinces Each Subha was under the control of an officer called Subedar The Subhas were further divided into districts called Sarkars The Sarkars were subdivided into Parganas A group of villages Gramas formed a Pargana Local Administration The towns and cities were administered by Kotwals Kotwals maintained law and order The administration of villages was left in the hands of local village panchayats informal institution of justice in villages The Panchayatdars jury dispensed justice Army The Mughal army comprised infantry cavalry war elephants and artillery The Emperor maintained a large number of trained and well-armed bodyguards and palace guards Mansabdari System Akbar introduced the Mansabdari system According to this system the nobles civil and military officials were combined to form one single service Everyone in the service was given a mansab meaning a position or rank A Mansabdar was a holder of such a rank Mansabdar rank was dependent on Zat and Sawar The former indicated one’s status Sawar was the number of horses and horsemen he had to maintain His salary was fixed on the basis of the number of soldiers each Mansabdar received ranging from to The Mansabdars were paid high salary by the Emperor Before receiving the salary a Mansabdar had to present his horsemen for inspection Their horses were branded to prevent theft The Emperor could use the troops maintained by a Mansabdar whenever he wished The rank of Mansabdar was not hereditary during Akbar’s time After him it became hereditary Land Revenue Administration Land revenue administration was toned up during the reign of Akbar Raja Todar Mal Revenue Minister of Akbar adopted and refined the system introduced by Sher Shah Todar Mal’s zabt system was put in place in the north and north-western provinces According to this system after a survey lands were classified according to the nature and fertility of the soil The share of the state was fixed at one-third of the average produce for years During the reign of Shah Jahan the zabt or zabti system was extended to the Deccan provinces The Mughal emperors enforced the old iqta system renaming it jagir It is a land tenure system developed during the period of Delhi Sultanate Under the system the collection of the revenue of an area and the power of governing it were bestowed upon a military or civil official now named Jagirdar Every Mansabdar was a Jagirdar if he was not paid in cash The Jagirdar collected the revenue through his own officials The Amal Guzar or the revenue collector of the district was assisted by subordinate officers like the Potdar the Qanungo the Patwari and the Muqaddams Those appointed to collect the revenue from the landholders were called zamindars Zamindars collected taxes and maintained law and order with the help of Mughal officials and soldiers The local chieftains and little kings were also called zamindars But at the end of the sixteenth century the zamindars were conferred hereditary rights over their zamin The zamindar was empowered to maintain troops for the purpose of collecting revenue The emperor granted lands to scholars holy men and religious institutions These lands called suyurghal were tax-free Religious Policy The Mughal emperors were the followers of Islam Akbar was very liberal in his religious policy In Akbar’s court the Portuguese missionaries were great favourites Akbar tried to include the good principles in all religions and formulated them into one single faith called Din-I-Ilahi divine faith Jahangir and Shah Jahan also followed the policy of Akbar Aurangzeb rejected the liberal views of his predecessors As we pointed out earlier he re-imposed the jizya and pilgrim tax on the Hindus His intolerance towards other religions made him unpopular among the people Art and Architecture Babur introduced the Persian style of architecture to India by building many structures at Agra Biana Dholpur Gwalior and Kiul Aligarh but only a few of them exist today Humayun’s palace in Delhi Din-i-Panah was probably destroyed by Sher Shah Sur who built the Purana Qila in its place The most prominent monument of Sher Shah’s reign was his mausoleum built at Sasaram in Bihar Purana Qila The Diwan-i-Khas Diwan-i-Am Panch Mahal pyramidal structure in five stories Rang Mahal Salim Chishti’s Tomb and Buland Darwaza were built during Akbar’s time Jahangir completed Akbar’s tomb at Sikandara and the beautiful building containing the tomb of Itmad-ud-daula father of Nur Jahan at Agra Buland Darwaza Shah Jahan’s time witnessed the climax of Mughal splendour The famous peacock throne covered with expensive jewels was made for the Emperor to sit on Then rose the world famous Taj Mahal by the side of the Jumna river at Agra Besides Taj he built the Moti Masjid the pearl mosque at Agra the great Jama Masjid of Delhi and the Diwan-i-Khas and Diwan-i-Am in his palace in Delhi Diwan-i-Khas Diwan-i-Am During Aurangzeb’s reign architecture did not receive much patronage The Bibi Ka Maqbara in Aurangabad a mausoleum built by his son Prince Azam Shah as a loving tribute to his mother in the late seventeenth century is however worth mentioning Red Fort Red Fort also called Lal Qila in Delhi was the residence of the Mughal emperors Constructed in by Emperor Shah Jahan as the palace of his fortified capital Shajahanabad The Red Fort is named for its massive enclosing walls of red sandstone Summary Babur founded the Mughal Empire in after defeating Ibrahim Lodi in the Battle of Panipat Humayun’s unsettled conditions and Sher Shah’s victory over him in the Battle of Kanauj Sher Shah’s efficient land revenue administration and the introduction of coin system and standardised weights and measures are dealt with in this chapter Humayun’s retrieval of the Mughal Empire and his untimely death leading to the accession of his son Akbar with Bairamkhan as the regent and defeating Hemu the great general of Sur dynasty in the Battle of Panipat are described Akbar’s military conquests as well as his religious policy are explained Jahangir’s disinterest in state governance leading to dominance of his wife Nur Jahan in the Mughal Court is elaborated upon Shahjahan extending Mughal rule in the Deccan and the resultant conflict with Marathas are analysed Aurangzeb’s conquests helped to expand the Mughal Empire but his policies against Rajputs Marathas and Sikhs provoked resistance from them paving the way for its downfall Mughal administration headed by the Emperor who in turn was assisted by various officials is described Akbar’s Mansabdari system and the land revenue policy formulated by Raja Todar Mal according to the zabt system are examined Mughals contributions to culture notably to art and architecture are highlighted Glossary expedition a journey undertaken with the purpose of war prolonged lengthy subdued conquered rebellious showing a desire to resist authority bestowed awarded hereditary inheritance of a title office or right Enduring lasting over a period of time Babur Ahmednagar Durgavati Jaipur Rani Chand Bibi Akbar Din IIahi Chanderi Raja Man Singh Central Province Babur inherited Farghana a small kingdom in Central Asia Humayun succeeded in recapturing Delhi in Aurangzeb married a girl of a notable Rajput family Jahangir ordered execution of Sikh leader Guru Arjun for helping his son Khusrau During Aurangzeb’s reign architecture received much patronage I Kamran was the son of Afghan noble Hasan Suri ruler of Sasaram in Bihar Akbar abolished the jizya poll tax on non-Muslims and the tax on Hindu pilgrims Aurangzeb acceded the throne after killing his three brothers IV Prince Akbar entered into a pact with Shivaji’s son Shambuji in the Deccan Father Son Akbar Dilawar Khan Daulat Khan Lodi Rana Pratap Hasan Suri Humayun Babur Sher Shah Uday Singh Jahangir UnitIII Rise of Marathas and Peshwas Learning Objectives To trace the origin and the growth of Maratha kingdom with particular emphasis on the role played by Shivaji in strengthening it To know about the administrative structure introduced by Shivaji To examine how far the Marathas were responsible for the decline of the Mughals To assess the role of Peshwas in carrying on Maratha power Introduction The rising power of the Marathas in the south-west posed the real danger to the Mughal Empire Shahji Bhonsle Shivaji’s father an officer of the Ahmednagar State and later Bijapur proved to be a thorn in the flesh of the Mughals even in Shah Jahan’s period But it was his son Shivaji who attained glory among the Marathas as he could stop the Mughal Empire’s expansion in the Deccan Shivaji was a gallant fighter army general and a guerilla leader He built up a band of brave mountaineers who were loyal to him With their help he captured many forts and gave Aurangzeb’s commanders a tough time As Marathas grew stronger the Mughal Empire weakened The Mughal Emperor had to recognise the right of the Marathas to collect their Chauth tax all over the Deccan Warfare opened opportunities for talented commanders who contributed to the vigorous expansion of Maratha power early in the eighteenth century The prime minister of Maratha rulers called the Peshwas from the time of Shahu held real power Under the aegis of Maratha power the Peshwas continued their supremacy until Factors Responsible for the Rise of Marathas Geographical Features The physical features of the Maratha country developed certain peculiar qualities among the Marathas which distinguished them from the rest of the people of India During the sixteenth century the sultans of Bijapur and Ahmednagar had recruited them to serve in cavalry Their presence was helpful to the sultans in balancing the political ambitions of the Muslim soldiers in their service The rocky and mountainous terrain gave protection to the Marathas from invaders It proved to be advantageous in guerrilla warfare for Marathas Bhakti Movement and the Marathas The spread of the Bhakti movement in Maharashtra helped the Maratha people develop consciousness of their identity and oneness It promoted a feeling of unity especially in terms of social equality among the Marathas In the Maratha region the religious leaders were drawn from different social groups Eknath Tukaram and Ramdas were the noted Bhakti saints Tukaram and Ramdas had considerable influence on the life of Shivaji Tukaram Ramdas Literature and Language of the Marathas Marathi language and literature also served to develop unity among the people Hymns composed in the Marathi language by Bhakti saints were sung by people of all castes and classes Shivaji Shivaji born in grew up under the care of his mother Jijabai who influenced him Shivaji with stories from the Hindu epics Ramayana and the Mahabharatha Shivaji’s teacher and guardian Dadaji Kondadev trained him in the art of horse riding warfare and state administration At the age of eighteen in when he had just entered the military career he successfully captured Kondana a fort near Poona The following year he took the fort of Torna Then he succeeded in conquering Raigarh which was rebuilt by him Shahji Bhonsle Jijabai Shivaji’s Confrontation with Sultan of Bijapur Shivaji became totally independent after the death of his guardian Kondadev He also got his father’s jagir transferred to him which was earlier looked after by Kondadev The strength of his army was Mavali foot soldiers With their help Shivaji conquered many of the hill forts near Poona He captured Puranthar from the Mughals Shivaji’s military raids angered the Sultan of Bijapur He held Shivaji’s father captive and released him only after Shivaji promised to suspend his military raids Shivaji kept his word and remained at peace with Bijapur from then on till his father Shahji’s death During this period he toned up his administration N S W E Marathas Surat MAHARASHTRAM BAY OF BENGAL ARABIAN SEA INDIAN OCEAN Sri lanka Diu Mumbai Ratnagiri Goa Karwar Calicut Tiruchi Thanjavur Vellore Ko Chennai lar Bellari Belgaum Solapur Godavari Ahmednagar Aurangabad Nagpur Daman Poona Rajgiri Prathapgarh Satara Hyderabad Kochi Kollam Arni Senji Parangipettai Consolidation of Maratha Power Shivaji resumed his raids after his father’s death and conquered Javali from the Maratha chief Chandrarao More He also reduced all the lesser Maratha chiefs around Pune to subordination The soldiers of Bijapur from the hill fortresses acquired by Sultan of Bijapur were driven out and replaced with his own commanders These moves and the defeat of Bijapur army sent to punish Shivaji alarmed the Mughal officials When the Mughals made a punitive expedition Shivaji boldly confronted them In he killed Afzal Khan a notable general of Bijapur In he wounded and chased away the Mughal general and Aurangzeb’s uncle Shaista Khan To cap these bold acts he audaciously directed his soldiers to plunder Surat the major Mughal port on the Arabian Sea Shivaji and Aurangzeb After Shivaji plundered Surat Aurangzeb swung into action An army under the command of a Rajput general Raja Jai Singh was ordered to destroy Shivaji and annex Bijapur Shivaji finally sought peace yielded the fortresses he had seized and accepted service as a mansabhdar in the Mughal service for the conquest of Bijapur He also agreed to visit the imperial court at Agra on the advice of Jai Singh only to suffer humiliation which led him to escape by hiding in a basket Aurangzeb was determined to stop the Maratha interference in his expeditions against the Deccan kingdoms He attempted to patch up with Shivaji but those efforts failed In the Mughal army was helpless when Shivaji again plundered Surat In Shivaji crowned himself by assuming the title of Chhtrapati and the coronation of Shivaji was celebrated with great splendour at Raigarh as the occasion was the founding of a new kingdom and a new dynasty Shivaji’s aged mother Jijabai who had lived to see her son crowned the king passed away a few days after the coronation with her life wish fulfilled Shivaji spent his last years trying to bring his son Shambhuji into his ways as he had defected to the Mughals He fell ill with fever and dysentery and died in Chhatra parasol pati master or lord is the Sanskrit equivalent of king or emperor and was used by the Marathas especially Shivaji Maratha Administration under Shivaji Shivaji’s political system consisted of three circles At the centre was the swaraj Shivaji was caring and would not allow the people to be harassed in any way In the second circle Shivaji claimed suzerainty but he did not administer them himself He protected the people from loot and plunder for which they were required to pay Chauth one-fourth of the revenue as protection money and Sardeshmukhi an extra one-tenth as the chieftain’s due In the third circle Shivaji’s only objective was plunder Deshmukhs held sway over rural regions and their control was over between twenty and hundred villages Each village had a powerful headman Patil who was assisted by a village accountant of a keeper of records Kulkarni In the absence of a strong central government these local community level officials functioned as the true government Army Shivaji gave utmost attention to his army and training of its personnel In the beginning the backbone of his army was the infantry But as his campaigns extended into the plains his cavalry grew in size and importance Every soldier was selected personally by Shivaji and was taken into service on the assurance of a soldier already in service Shivaji took great care in the maintenance and security of his forts Retired captains holding a high reputation were put in charge of guarding the forts Ashtapradhan Shivaji designated eight ministers as the Ashtapradhan each holding an important portfolio Peshwa was the equivalent of a modern prime minister in the Maratha Empire Originally they were subordinates to the Chhatrapati But in course of time especially from the time of Sahu Maharaja Peshwa became the de facto Maratha ruler while the Chhatrapati was reduced to the position of a nominal ruler Shivaji was influenced by the Mughal revenue system The assessments were made on the actual yield with three-fifths left to the cultivator and two-fifths taken by the government In judicial administration civil cases continued to be decided by the panchayat the village council while criminal law was based on the shastras the Hindu law books Responsibilities of the Ashtapradhan Pantpradhan Peshwa Prime Minister Amatya Mazumdar Finance Minister Shurunavis Sacheev Secretary Waqia-Navis Interior Minister Sar-i-Naubat Senapati Commander-in- Chief Sumant Dubeer Foreign Minister Nyayadhish Chief Justice Panditrao High Priest Shambhuji Shambhuji succeeded Shivaji after a succession tussle with Anaji Datto There were family feuds splintering the Maratha kingdom Durgadas of Rathore Marwar and Aurangzeb’s rebel son Akbar arrived in Maharashtra and took shelter in Shambhuji’s court Aurangzeb viewed these developments very seriously and took all out efforts to finish off Shambhuji Marathas under Shambhuji were in no position to resist the Mughals Aurangzeb himself arrived in the Deccan in Aurangzeb’s main goal was the annexation of Bijapur and Golconda These two sultanates fell to Aurangzeb by In little over a year Shambhuji was captured by the Mughals and after torture put to death Shambhuji Shambhuji was under the wicked influence of his family priest Kavi Kalash Kavi Kalash was the caretaker of Shambhuji in Varanasi during Shivaji’s flight from Agra He later brought Shambhuji safely to Raigarh His dominance in the Court became absolute in course of time as Shambhuji looked to his advice for everything Kavi Kalash was a distinguished scholar and poet But he was a practitioner of witchcraft So the orthodox Hindus in the court had developed a deep hatred for him When Shambhuji was captured by the Mughal army he was found to be in the company of Kavi Kalash So both of them were subjected to all forms of torture and then executed by the orders of Aurangzeb Shahu Maharaja Shivaji's grandson Shahu means honest originally a name given by Aurangzeb to contrast his character with that of Shivaji ruled from to During the first half of the eighteenth century consolidation of royal power was achieved through conferment of royal entitlements upon those who served Shahu Shahu Maharaja During Shahu’syear reign there was increase in the territory under the Maratha control from which tribute was regularly extracted More centralised and strong state structure also began to take shape Every household including that of landed household profited from state employment Peshwas Balaji Vishwanath began his career as a small revenue official and became Peshwa in Much against the advice from his close circles Shahu appointedyear-old Viswanath’s eldest son Bajirao to occupy the office of Peshwa Balaji Vishwanath Bajirao Bajirao decided to launch a major Maratha onslaught against the Mughals and the Nizam of Hyderabad He assumed the powers of the commander-in-chief He was wise in his choice of commanders for these campaigns Instead of relying on the traditional elite group namely Deshmukhs he gave commands to the Gaikwad Holkar and Shinde or Scindhia families who had been loyal to the emperor Shahu his father Balaji Viswanath and to him Bajirao The Prominent Maratha families Gaikwad at Baroda Bhonsle at Nagpur Holkar at Indore Shinde or Scindhia at Gwalior Peshwa at Pune Bajirao proclaimed wars against Malwa and Gujarat and freed them from Mughal domination The Mughal army and the troops of the Nizam that intervened on behalf of the Mughals were defeated Bajirao succeeded in getting the recognition of Shahu as the king of Maharashtra and overlord of the rest of the Deccan from which the tribute of Chauth and Sardeshmukhi could be legally collected by the Maratha officials Bajirao centralised the fiscal functions in Pune This helped to receive the prompt transmission of tribute from the Deccan The Maratha army which consisted of no more than horsemen and no artillery had by had doubled in its size Yet they were no match for the Mughals and the Nizam The success of Marathas against the Mughals was mainly due to the weakness of the latter The Maratha dominance in the Deccan is also attributed to the qualities of Maratha officials and generals who grew up under Shahu and the Peshwas Balaji Bajirao Balaji Bajirao When Balaji Bajirao was the Peshwa Emperor Shahu died A possible succession struggle among factions of the royal family was averted thanks to the timely intervention of Balaji Bajirao He summoned all the contending factions and forced them to accept the conditions he laid down He decided that the capital of the kingdom would henceforward be Pune not Satara All power and authority was now concentrated in the Peshwas’s office Balaji Bajirao now commanded an army of paid soldiers The Maratha peasant warrior band was reconfigured and its run came to an end Maratha soldiers were not permitted now to retire from battle fields each year for the purpose of cultivating their land Soldiers were required to live in forts and towns far away from their home They were trained as infantrymen as well as horsemen The large guns were nominally under the command of Maratha officers But those who fired and maintained them were mostly Portuguese French and British During the period of the Peshwa Balaji Bajirao the northern frontiers of the Maratha state were rapidly touching Rajasthan Delhi and the Punjab At some point the Maratha tributary regime extended itself to within fifty miles of Delhi The Marathas launched raids from Nagpur against Bihar Bengal and Odisha Notwithstanding the conflict between the Marathas and the Nizam over Karnataka Tamil Kannada and Telugu regions were effectively brought under the control of the Marathas Between and plundering expeditions were launched yearly by the Maratha chieftain Rahuji Bhonsle Maratha Administration under Peshwas The revenue administration of Peshwas was headed by a key official called the Kamavisdar He was appointed by the Peshwa He was empowered to maintain a small body of soldiers to police the administrative area from where tribute or tax had to be collected A small staff of clerks and servants were employed to maintain the revenue records These records were randomly checked by the office of the Peshwa The contracts for revenue collection was auctioned annually after the revenue for a particular place was estimated by the Peshwa’s civil servants based on previous years yields A prospective tax or revenue collector who won the contract was expected to have a reputation for wealth and probity He was required to pay a portion of the whole of the anticipated revenue one-third to one half either out of his own wealth or from the money borrowed from bankers Judging from the ledgers of correspondence and account books it is evident that the Peshwas were keen on accurate record- keeping The Peshwa regimes looked distinctly modern in comparison with the Mughals to whose fall they contributed militarily The Fall of Marathas The imperial moment of the Marathas sadly ended at Panipat near Delhi in The Marathas attempt to extend their domain beyond Punjab was checked by the king of the Afghans Ahmad Shah Abdali Ahmad Shah Abdali Abdali invaded eight times before finally marching onto Delhi The Marathas were now divided among several commanders who approached the battle with different tactics Artillery decided the battle in January The mobile artillery of the Afghans proved lethal against both Maratha cavalry and infantry The Maratha army was shattered and the surviving men took six months to return to Maharashtra from Panipat to report the tragedy By then Maratha supremacy over the sub-continent was effectively over Summary The factors responsible for the rise and expansion of Maratha rule are explored Early life of Shivaji and the influences that worked on him are traced Shivaji’s military raids and victory over Bijapur Sultan’s army inviting Aurangzeb’s intervention are discussed Confrontation of Shivaji with Aurangzeb and their fallout in the Deccan are dealt with Maratha administration under Shivaji is highlighted Maratha affairs after the death of Shivaji under Shambhuji and Sahu are analysed Peshwas emerging de facto rulers and their contribution to the continuance of Maratha power are explained Modernisation of administration under the Peshwas and the end of Maratha supremacy after the Third Battle of Panipat are detailed Glossary hymns poems in praise of God audaciously boldly fortresses a strongly fortified town suzerainty the right of a country to rule over another country conferment granting of a title summoned ordering the presence of shattered heart broken broken glass upset Shaji Bhonsle Mother of Shivaji Shambhuji General of Bijapur Shahu Shivaji’s father Jijabai Son of Shivaji Afzal khan Shivaji’s grandson The rocky and mountainous terrain gave protection to the Marathas from invaders Hymns composed in Sanskrit by the Bhakti saints were sung by people of all castes and classes Shivaji captured Puranthar from the Mughals Deshmukhs held sway over rural regions and their control was over between twenty and hundred villages Abdali invaded ten times before finally marching on Delhi Gaikwad Baroda Peshwa Nagpur Holkar Indore Shinde Gwalior I Shivaji became totally independent after the death of his guardian Kondadev Emperor Shahu died when Balaji Bajirao was Peshwa Shivaji resumed his military raids after his father’s death and conquered Javali IV Balaji Vishwanath became Peshwa Amatya Foreign Minister Waqia Navis Commander-in-Chief Sumant Finance Minister Senapati Interior Minister ICT CORNER Explore The Marathas Lets Explore Quiz and Play The Marathas URL https wwwmarathaempirein ICT CORNER GEOGRAPHY UnitI Resources Learning Objectives To know the importance of resources To describe the renewable resources To understand the non-renewable resources To identify the fossil fuel resources Introduction A country’s social economic and political strength lies in the distribution utilization and conservation of its resources Anything which can be used for satisfying the human needs is called resource Natural resources are resources that exist without action of humankind Natural resources are obtained from environment Many natural resources are essential for human survival Resources always cannot be consumed in their original form but they must be processed into usable commodities and usable things Importance of resource Natural resources satisfy daily needs of man such as food clothing and shelter Natural resources also contribute immensely to boost up a nation’s economy NATURAL RESOURCES Basis of origin Biotic resources Abiotic resources Renewable resources Non-renewable resources On the basis of origin resources may be divided into two types They are Biotic resources Abiotic resources Biotic resources Biotic resources are found in the biosphere which are obtained from living and organic materials It includes forests crops birds animals fishes man and materials that can be obtained from them Fossil fuels such as coal and petroleum are also included in this category because they are formed from decayed organic matter Abiotic resources Abiotic resources are the non-living parts of an environment Examples of abiotic resources include land water air sunlight and heavy metals including ores such as gold iron copper silver etc On the basis of renewability resources can be divided into two types They are Renewable resources Non renewable resources Renewable resources A renewable resource is a resource which can be used repeatedly and replaced naturally Renewable resources harvested and used rationally will not produce pollution The use of renewable resources and energy sources is increasing worldwide Example solar energy wind energy and hydropower Solar energy The sun produces energy in the form of heat and light Solar energy is not harmful to the environment Photovoltaic devices or solar cells directly convert solar energy into electricity Individual solar cell in group panel can perform small applications from charging calculator watch batteries to large such as to power residential dwellings Photovoltaic power plants and concentrating solar power plants are the largest solar applications covering acres India China Japan Italy and States of America are major utilizers of solar energy in the world Kamuthi solar power project is one of the largest solar power projects in the world It is situated in Ramanathapuram District in Tamilnadu The Kamuthi solar power project was completed on st September Investment of this project is around Crores The installed capacity of this project is MW Kamuthi solar power plant Wind energy Wind power is clean energy since wind turbines does not produce any emissions In recent years wind energy has become one of the most economical and renewable energy technologies The Classic Dutch windmill harnessed the wind’s energy hundreds of years ago Modern wind turbines with three blades dot the landscape today turning wind into electricity Major wind energy producing countries are United States China Germany Spain India United Kingdom Canada and Brazil Wind mill Major wind farms in India S No Wind Forms District State Installed Capacity MW Muppandal Kanyakumari Tamil Nadu Jaisalmer Jaisalmer Rajasthan Brahmanvel Dhule Maharashtra Dhalgaon Sangli Maharashtra Damanjodi Damanjodi Odisha Hydropower Water is considered as a great source of energy At present water is used for producing hydroelectric power Hydroelectricity is generated from moving water with high velocity and great falls with the help of turbines and dynamos Hydroelectricity power is the cheapest and most versatile source of energy out of all the known energy Hydroelectric power is a renewable resource China Canada Brazil United States of America Russia India Norway and Japan are some countries producing hydroelectricity China is the largest producer of hydro-electricity Itaipu Dam Brazil and Paraguay Hydro electricity project Installed Capacity MW State Tehri Dam Uttarakhand Srisailam Dam Andhra Pradesh Nagarjuna Sagar Dam Andhra Pradesh Sardar Sarovar Dam Gujarat Bhakra Nangal Dam Punjab Koyna Dam Maharashtra Mettur dam Tamil Nadu Idukki dam Kerala SNo Name of the Project Country River Installed Capacity in MW Three gorges Dam China Yangtze Itaipu Dam Brazil and Paraguay Parana Xiluodu Dam China Jinsha Guri Dam Venezuela Caroni Tucurui Dam Brazil Tocantins Three Gorges Dam in China is the largest hydroelectricity project in the world It’s construction started in and ended in The installed capacity of the dam is MW Three Gorges Dam China Non-renewable resources Natural resources that once consumed and cannot be replaced is called non-renewable resources Continuous consumption of non-renewable resources ultimately leads to exhaustion Examples of non-renewable resources include fossil fuels such as coal petroleum natural gas and mineral resources such as iron copper bauxite gold silver and others Non-renewable resources can be divided into three types They are Metallic resources Non Metallic resources Fossil fuel resources Metallic resources Metallic resources are the type of resources that are composed of metals These are hard substances which are the good conductors of heat and electricity Example for metallic resources are iron copper gold bauxite silver manganese etc Iron Iron is the fourth most common element in the Earth’s crust and the most widely available metal Magnetite and hematite are the common ore for iron which occurs normally in the rocks of the crust Iron ore is the key raw material in making steel and of the iron ore extracted is used to make Steel Pure iron ore is very soft but its strength is increased many folds by adding small amount of carbon and manganese It’s low cost and high earth strength makes it usable in engineering applications such as the construction of machinery and machine tools automobiles construction of large ships structural components of building bridges etc Iron ore is mined in about countries Among the iron ore producing countries China Australia Brazil India and Russia are the principal producers accounting for of the world’s total output of iron ore These countries have of the total reserves of the world Jharkhand Odisha Madhya Pradesh Chhattisgarh Karnataka and Goa account for over per cent of the total reserves of India Iron ores found at Kanjamalai in Tamil Nadu Copper Copper is one of the first metals known and used by man Copper ranks as the third most consumed industrial metal in the world after Iron and Aluminium Copper is good conductor of heat and electricity About three quarters of copper is used to make electrical wires telecommunication cables and electronics Chile is the world’s number one country in the production of copper Other copper producing countries are Peru China United States Congo and Australia Gold It is a rare and precious metal Hence it has high demand in world markets Formerly it was used for minting coins but now it is used for making ornaments and in dentistry It is regarded as a symbol of prosperity and a form of wealth China is the world’s largest producer of gold Also Australia Russia United States South Africa and Canada are the major producers of gold Among these countries Australia has tons reserves of gold ore and it is world’s leading country in gold ore reserves Karnataka is the largest producer of gold in India Kolar Gold Field is one of the deepest mines of the world Kolar Gold Field Bauxite Aluminium is produced from bauxite ore There are several ores that contain aluminium but bauxite contains more aluminium Aluminium has wide range of uses compared to other metals Aluminium is light in weight tough and cheaper which makes it popular metal for constructional purpose It is mainly used in the construction of aircrafts ship automobiles railway coaches and etc Aluminium is a good conductor of electricity and heat hence it is used for making electrical cables It is highly resistant to corrosion By the addition of small quantities of other metals to aluminium it creates superior alloy than pure aluminium Eg Duralumin Australia is the world’s leading bauxite producer Apart from that China Brazil India Guinea Jamaica and Russia also play an important role in bauxite production One fourth of the bauxite mineral deposits found in Guinea alone Odisha Gujarat Jharkhand Maharashtra Chhattisgarh Tamil Nadu and Madhya Pradesh are the main bauxite producing states in India The bauxite deposits are mainly found in the Shervaroy hills of Salem district Tamil Nadu Silver Silver is also a precious metal like gold It has a wider variety of uses than gold It is used in making jewellery dentistry photographic goods electroplating industry and in the manufacture of luxury goods About two-third of silver is used for monetary purposes Like gold silver also resists corrosion Mexico is the world’s leading silver producer Following Mexico Peru China Russia Australia and Chile produce more silver More than of silver is found only in South American countries Manganese Manganese is a steel-greyed hard shiny and brittle metal The common ores of manganese are Pyrolusite Manganese Psilomelane and Rhodochrosite Manganese is essential for the production of good quality Steel Manganese is used in making electrical batteries It is also used as colouring material in bricks pottery floor tiles Manganese compounds are used in making disinfecting liquids bleaching powder fertilizers etc South Africa is the world’s leading producer of manganese The significant producers of manganese in the world are China Australia Gabon Brazil and India All these producers have large reserves of manganese and are significant exporters in the world Non-metallic resources Non-metallic resources can be described as the resources that do not comprise of metals These are not hard substances and are not good conductors of heat and electricity Example for non-metallic resources are mica limestone gypsum dolomite phosphate etc Mica Muscovite and Biotite are the common ores of Mica It is one of the indispensable minerals used in electrical and electronics industry It is used as an insulating material in electrical industry In powder form it is used for making lubricating oils and decorative wallpapers China is the world’s top producer of mica Russia Finland United States Turkey and Republic of Korea also play a major role in the production of mica About per cent of India’s mica is found in just three states of Andhra Pradesh Rajasthan and Jharkhand Limestone Limestone is a sedimentary rock composed mainly by skeletal fragments of marine organisms such as coral foraminifera and molluscs About of sedimentary rocks are limestones Mostly limestone is made into crushed stone and used as a construction material It is used for facing stone floor tiles stair treads windows sills and many other purposes Crushed limestone is used in smelting and other metal refining process Portland cement is made from limestone China produces more than half of limestone production in the world Beside this United States India Russia Brazil and Japan also produce more Limestone Madhya Pradesh Rajasthan Andhra Pradesh Gujarat Chhattisgarh and Tamil Nadu Produce over three-fourths of the total limestone of India In Tamil Nadu Large scale limestone reserve found in Ramanathapuram Tirunelveli Ariyalur Salem Coimbatore and Madurai districts Fossil fuel resources Fossil fuel resources are normally formed from the remains of dead plants and animals They are often referred to as fossil fuels and are formed from hydrocarbon When fossil fuels are burned they become a great source of heat energy Example for fossil fuel resources are coal petroleum and natural gas Coal This is the most abundantly found fossil fuel that forms when dead plant matter is converted into peat It is used as a domestic fuel in industries such as iron and steel steam engines to generate electricity Electricity produced from coal is called Thermal Power Coal is classified into four types based on carbon content They are Anthracite Bituminous Lignite Peat The leading coal producers of the world is China Beside this India USA Australia Indonesia and Russia also produce more coal The coal producing areas of India are Raniganj in West Bengal Neyveli in Tamil Nadu Jharia Dhanbad and Bokaro in Jharkhand Neyveli coal field Most of the coal deposite that we use now where formed about million years ago Much of the earth was covered with steamy swamps As the plants and trees are dead their remains were buried underneath the swamps Eventually they were transformed into coal beneath the ground due to excessive heat and pressure Petroleum Petroleum is found between the layers of rocks and is drilled from oil fields located in Offshore and coastal areas This is sent to refineries which process crude oil and produce variety of products like diesel petrol kerosene wax plastics and lubricants Petroleum and its derivatives are called Black Gold as they are very valuable The chief petroleum producing countries are Saudi Arabia Iran Iraq and Qatar The other major producers are USA Russia Venezuela Kuwait UAE and Algeria The leading producers in India are Digboi in Assam Bombay High in Mumbai and the deltas of Krishna and Godavari rivers Bombay High oil field Natural gas Natural gas is found with petroleum deposits and is released when crude oil is brought to the surface It can be used as a domestic and industrial fuel More than of the global natural gas reserves are found in United States of America Russia Iran and Qatar In India Krishna and Godavari Delta Assam Gujarat and some areas of offshore in Mumbai have natural gas resources Wrap up Natural resources are obtained from environment Renewable resources can be used repeatedly and replaced naturally Non-renewable resources once consumed cannot be replaced Solar energy is not harmful to the environment Hydroelectricity is generated from moving water with high velocity and great falls with the help of a turbines and dynamos Metallic resources are iron copper gold bauxite silver manganese etc Non-metallic resources are mica limestone gypsum dolomite phosphate etc Fossil fuels resources are normally formed from the remains of dead plants and animals Glossary Biotic resources obtained from living and organic materials Abiotic resources obtained from non-living non-organic materials Hydroelectricity generated from moving water with high velocity and great falls with the help of turbines and dynamos Metallic resources resources that are composed of metals Non-metallic resources resources that do not comprise of metals Duralumin a hard light alloy of aluminium with copper and other elements Fossil fuel formed from the remains of dead plants and animals Thermal Power Electricity produced from coal Black Gold Petroleum and its derivatives Precious metal a metal that is valuable and usually rare Renewable resource Iron Metallic resource Mica Non-metallic resource Wind energy Fossil fuel Sedimentary rock Limestone Petroleum Biotic resources and abiotic resources Renewable resources and non-renewable resources Metallic resources and non-metallic resources Aluminium has wide range of uses compared to other metals Water is considered as a great source of energy The leading coal producers of the world Considered as a great source of energy Precious metal like gold Used as an insulating material in electrical industry Down Used in making electrical batteries Good conductor of heat and electricity The largest producer of gold in India Produces energy in the form of heat and light UnitII Tourism Learning Objectives Define the concept of tourism Appreciate the basic and geographical components of tourism Understand the types of tourism Identify the places of tourist attraction in India Explain the places of tourist attraction in Tamil Nadu Introduction The word tourist was derived from an old English word tourian which refers to a person who travels out of his usual environment for not more than one year and less than hours The purpose of travel may be religious recreation business historical and cultural The Basic components of Tourism Tourism has become an important source of income for many regions and even for the entire countries of the world Tourism is an essential part of the life of the society because of its direct impact on social cultural educational and economic sector of the nation and on their international relations too The three main components of tourism are Attraction Accessibility Amenities These three components are together known as A concept Attractions Attractions mainly comprise of two types such as Natural attraction Cultural attraction Natural attraction includes landscape seascape beaches climatic condition and forests Cultural attraction are historic monuments and other intellectual creations Apart from this cultural attractions also includes fairs and festivals Accessibility Accessibility means reachability to a particular place of attraction through various means of transportation such as road rail water and air Transport decides the cost of travel and the time consumed in reaching or accessing a specific attraction Amenities Amenities are the facilities that cater to the needs of a tourist Accommodations in terms of hotels restaurants cafes and other staying units Travel organizers Tour operators and Travel Agents Foreign exchange centres passport and visa agencies Sectors related to Travel Insurance Safety and Security Types of Tourism From the ancient times travel is a fascination for mankind Tourism can be divided on the basis of nature utility time and distance as indicated below Religious tourism Cultural tourism Historical tourism Eco-Tourism Adventure tourism Recreational tourism Religious Tourism Religious tourism is one of the oldest type of tourism wherein people travel individually or in groups for pilgrimage to a religious location such as temples churches mosques and other religious places Religious tour to Kasi Varanasi by Hindus to Jerusalem by Christians and to Mecca by Muslims are few of the examples for religious tourism Historical Tourism It focuses on visiting historically important places like museums monuments archaeological areas forts temples and so on Angkorwat of Cambodia Tajmahal of India and Pyramids of Egypt are some of the examples to quote for Historical Tourism Eco-Tourism Eco tourism typically involves travel to destinations where plants and animals thrive in a naturally preserved environment Amazon rain forest African forest safari trekking in the slopes of Himalayas are the famous incredible Eco friendly attractions Gastronomy refers to an aspect of cultural tourism Adventure Tourism Adventure tourism is a type of tourism involving travel to remote or exotic places in order to take part in physically challenging outdoor activities For sky dive in Australia Bungee jumping in New Zealand mountaineering in the peaks of Himalayas rafting in the Brahmaputra River at Arunachala Pradesh Recreational Tourism This type of tourism aims at enjoyment amusement or pleasure are mainly for fun activity Waterfalls hill stations beaches and amusement parks are the attractive spots for recreational tourism Apart from this there are certain modern types of tourism which got developed in recent years They are Annual Holiday tourism Industrial Tourism Seasonal Tourism International Tourism Group Tourism Sports Tourism Health Tourism Farm and Rural Tourism Inbound Tourism Touring within the native country Outbound Tourism Touring in foreign countries International Tourism International tourism is undertaken to visit the places of international importance and to gather knowledge about international culture and customs For this there are certain travel forms and formalities to be fulfilled by the tourists such as passport Visa Foreign Currency Air ticket Travel insurance and other immigration details VISA A document issued to a person or a stamp marked on the passport of a person who wants to visit other country Tourist VISA Recreation sight seeing Student VISA Higher education Employment VISA Work in a country Medical VISA Medical treatment in a reputed hospital of a country Basic Elements of Tourism attractions Certain elements are fundamental to attract tourists as travel destinations They are Pleasant weather Scenic beauty Historical and cultural monuments Geographical Components of Tourism Landforms Mountains Plateaus Canyons Valleys Caves Cirques Sand dunes Coral reefs Cliffs etc Water Rivers Lakes Waterfalls Hot springs and Geysers Snow and Glacier Water Currents Tides and Waves Vegetation Forest Grasslands Moors Deserts etc Climate Sunshine Clouds Admirable Temperature Rain and Snow Animal life a Wildlife Birds Game Reserves Zoos b Hunting and Fishing Settlement features a Towns Cities Villages b Historical remains and Monuments Singapore Culture Ways of life traditions folklore arts and crafts Game Reserves An area of land set aside for the protection of wild animals Tourism Attractions in India India is a country known for its gentle hospitality with spicy food and culture Visitor friendly traditions with varied life style culture heritage colourful fairs and festivals are abiding attractions for the tourists All types of land form varied climate rich resources for eco and adventure tourism are the versatile specialty of India Technological parks and science museums pilgrimage centers with wonderful art and architecture are an added advantage for tourists Yoga Ayurveda and Natural remedial Health resorts attract tourists from all over the world Religious Tourism India being a multi-religious country religious tourism is the most popular type of tourism Various package tours are organized for the people to attend the religious rituals and to visit places of religious importance Most famous religious spots of India are as follows Rameswaram Tamil Nadu Kanchipuram Tamil Nadu Varanasi Kasi Uttarpradesh Saranath Uttarpradesh Vaishnavadevi temple Jammu Kashmir St Francis Xavier Cathedral Goa Amritsar Punjab Monasteries of Ladakh Jammu Kashmir Scenic attraction is a very important factor in tourism Scenery consisting of Mountains Lakes Waterfall Glacier Forests and Deserts are the major features attracting people to visit them India is blessed with nature and gifted with immense beauty from rolling hills to deep valley and snow covered mountains to lush green carpet Hill Stations in India The Indian sub continent has seven principal mountains ranges and the largest of all is the Himalayas that lie in the northern part of India Most of the Himalayan hill stations in India are located in states of Jammu and Kashmir Himachal Pradesh Uttarakhand Sikkim West Bengal Arunachal Pradesh Nagaland and Meghalaya Maharashtra Karnataka Tamil Nadu and Kerala have hill stations in the Western Ghats Andhra Pradesh Odisha have hill stations in the Eastern Ghats Kodaikanal Hill Station The beautiful hill stations in India Kodaikanal Ooty Tamil Nadu Nainital Mussoorie Uttarakhand Darjeeling West Bengal Gulmarg Jammu Kashmir Shillong Meghalaya Shimla Manali Himachal pradesh Munnar Kerala Gangtok Sikkim ITC Inclusive Tour Charter IATA International Air Transport Association IATO Indian Association of Tour Operators TAAI Travel Agents Association of India TTTHA Tamil Nadu Tour Travel and Hospitality Association TTDC Tamil Nadu Tourism Development Corporation Water falls in India In India there are many spectacular and wonderful waterfalls covered by dense forest huge walls of rock and lush green trees Among these waterfalls some are seasonal while some are perennial Few of the amazing waterfalls are in swing during the monsoon season This season brings lot of tourists to these bubbling waterfall sites Notable waterfalls of India are given below Jog Falls SNo Water falls Geographical location Thalaiyar waterfalls Horse tail type located in Dindugul district of Tamil Nadu Jog water falls Segmented waterfall Raja Rani and thunder located in Shimogo district of Karnataka Nohkalikai waterfalls Tallest plunge type of waterfall situated in the East khasi hill district of Meghalaya Talakona waterfalls It is the highest waterfall in Andhra Pradesh A lot of medicinal herbs are seen around the region Aathirappally waterfalls The Niagara of India is located in Thrissur district of Kerala Wild life and Bird Sanctuaries India possesses a wide range of forests and grasslands Diversity of these lands makes it one of the hotspot for flora and fauna The dense and dark forest of Indian States provides suitable habitat for a wide and an unique variety of animals and birds Royal Bengal Tigers Indian Lions Elephants Rhinoceros Indian leopard and Reptiles are the major tourist attractions Bird sanctuaries attract attention for their exclusive variety of birds Diverse range of climate of India invite birds from remote places to feed breed and to nurture their young ones in the Indian bird sanctuaries Wildlife Sanctuaries in India SNo Wildlife sanctuary State Animals Mudumalai wildlife sanctuary Tamil Nadu Tiger Elephant Bison Deer Kaziranga National Park Assam Tiger Deer Buffalo Ranthambor National Park Rajasthan Tiger Kanha National Park Madhya Pradesh Swamp Deer Sundarbans National Park West Bengal Bengal Tiger Gir National Park Gujarat Lions Bhadra Wildlife Sanctuary Karnataka Bison Leopard Gaur Periyar National Park Kerala Elephant Deer Corbett National Park Uttarakhand Tiger Bird Sanctuaries in India SNo Bird Sanctuary State Koonthankulam bird sanctuary Tamil Nadu Kumarakom bird sanctuary Kerala Bharatpur bird sanctuary Rajasthan Mayani bird sanctuary Maharashtra Uppalapadu bird sanctuary Andhra pradesh Nal Sarovar bird sanctuary Gujarat Nawabganj bird sanctuary Uttar Pradesh Push factors in Tourism are Prestige Pull factors in Tourism are Amenities Kaziranga National Park Beaches India is a country with km long coastline comprising the most beautiful beaches bounded by Arabian sea and Bay of Bengal Indian beaches are enriched with diverse coastal land forms filled with aquatic flora and fauna Lush backwater in the lagoons of Kerala and picturesque beaches of Goa such as calangute Aguda are the notable tourist destinations for water sports activities The most charming and enchanting beaches of India are listed below Beach in Goa SNo Beaches State Geographical features Dhanushkodi Tamil Nadu Turquoise blue sea water Varkala Beach Kerala Sea Cliffs for wonderful sunset views Tarkarli Beach Maharashtia Coral reefs and marine adventure OM Beach Karnataka Two semi circular caves that join together forming the inverted symbol of OM Aguda Beach Goa A huge hill dominates the southern side of the beach Marari Beach Kerala Saddle like rock Hammock Beach Tourist Attraction in Tamil Nadu Tamil Nadu has various tourist attractions like religious centres spiritual retreat centres beaches hill stations waterfalls wildlife art culture architecture crafts heritage monuments etc The Government of Tamil Nadu has recognized the importance of tourism long ago and facilitated its development in desired directions Exploring new avenues like medical tourism and adventure tourism in the past decades have helped Tamil Nadu tourism to achieve more than twenty percent annual growth Tamil Nadu earns the largest share of income from tourism in India Religious Tourism Tamil Nadu is a state popularly known as land of Temples and has been the greatest source for spiritual rejunuvation for travellers all over the world The state is home to around ancient temples that mainly belongs to Dravidian style of architecture Some of the world renowned religious destinations are as follows Thanjavur Big temple Madurai Meenakshi temple Rameswaram Ramanathaswami temple Temples of Kancheepuram Velankanni Madha church Nagore Dargah Hill Stations in Tamil Nadu Tamil Nadu being situated in the Southern end of the Western and Eastern Ghats is the home for several hill stations Popular among them are Udagamandalam Ooty Kodaikanal Yercaud Coonoor Valparai Yelagiri Sirumalai Kalrayan Hills and Palani Hills Shevroy hills and Cardamom Hills They are also abodes of thick forest and wild life Ooty Queen of Hills Yercaud Lake forest Poor Man's Ooty Yelagiri hairpin bends Kodaikanal Princess of Hill Stations Kotagiri Green Hills Velliangiri Hills Kailash of the South Kolli Hills motor able terrain with hairpin bends Anaimalai Hills Top slip Meghamalai High wavy mountains Javadi Nature’s Heaven Waterfalls in Tamil Nadu Mountains and rivers of Tamil Nadu combined together created many endearing waterfalls Waterfalls in Tamil Nadu with its inspiring natural wonders attracts many tourists A trek amidst thick green trees steep hills and a bath in the gushing water is most rejuvenating Here is the list of famous water falls of Tamil Nadu SNo Waterfalls Geographical location Hogenakal falls It is a beautiful waterfall located in Dharmapuri district Kumbakkarai falls River Pambar cascades to form this fall at the foot hills of Kodaikanal in Theni district Monkey falls This waterfall lies on Anaimalai hills range in Coimbatore surrounded by Evergreen forests Killiyur falls Situated in the shervarayon hill ranges of the Eastern Ghats Courtallam Courtallam is located in Tirunelveli district It is known for medical spa Agaya Gangai It is a waterfall in Puliacholai on Kolli Hills in Eatern Ghats of Namakkal district Suruli Falls This falls is also called as Cloud Land falls or Meghamalai falls It is located in Theni district Wildlife and Bird Sanctuaries in Tamil Nadu Wildlife sanctuary in Tamil Nadu includes Bird sanctuaries and National Parks Tamil Nadu is also well known for the diverse natural heritage that it possesses Hence tourists are highly excited about the wildlife tour across the state The total area of Tamil Nadu is approximately sqkm of the land area comprises of thick forests Visitors will get to watch a smooth blend of wet evergreen forest dry and wet deciduous forests grasslands sholas mangroves and thorny scrubs Besides varied natural vegetation another prized possession of Tamil Nadu is wildlife Sanctuaries including Tiger Elephant Deer Monkey Bison etc for protecting the entire flora and fauna Wildlife Sanctuaries of the state are enlisted below Wildlife Sanctuaries SNo Name of Wildlife Sanctuary District Mudumalai Wildlife Sanctuary Nilgiris Mundanthurai Wildlife Sanctuary Tirunelveli Point Calimere Wildlife Sanctuary Nagapattinam Indira Gandhi Wildlife Sanctuary Coimbatore Kalakad Wildlife Sanctuary Tirunelveli Bird Sanctuaries in Tamil Nadu SNo Name of Birds Sanctuary District Vettangudi birds Sanctuary Sivagangai Karaivetti birds Sanctuary Ariyalur Vellode birds Sanctuary Erode Vedanthangal birds Sanctuary Kancheepuram Mudumalai Wildlife Sanctuary Vedanthangal birds Sanctuary National Parks in Tamil Nadu SNo Name of National Parks District Guindy National Park Chennai Gulf of Mannar Marine Park Ramanathapuram Indira Gandhi National Park Coimbatore Mukurthi National Park Nilgiris Mudumalai National Park Nilgiris Beaches in Tamil Nadu Tamil Nadu being a Coastal state in India which consists of several beaches Some of them are world famous tourist spots Beach is a lovely place to hang around with friends families and kids All these are ideal destinations for sun bath relaxation and water sports activities SNo Beaches Geographical features Kovalam Beach Kanchipuram Small fishing village Marina Beach Chennai Second longest urban beach Kanyakumari Beach Multi-coloured sand Rameshwaram Beach Waveless beach Elliot Beach Chennai Beautiful beach active in day night Mahabalipuram Beach Kanchipuram Architectural and Archeological beach Silver Beach Cuddalore Water sports is the entertainment Muttukadu Beach Kanchipuram Calm and Shallow Marina Beach in Chennai Environmental Impact of Tourism The quality of the environment is essential for tourism The tourism industry created several positive and negative impacts on the environment Positive Impacts Direct financial Contributions Contributions to government revenues Improved environmental management and planning Increasing environmental awareness Protection and reservation of environment Negative Impacts Depletion of Natural Resources Water resources Local resources Land degradation Pollution Air and Noise Pollution Solid Waste and Litering Sewage Destruction and Alteration of Eco system Air Water Soil Wrap up The word tourist was derived from an old English word tourian The basic components of tourism are Attraction Accessibility and Ameneities Tourism can be divided on the basis of nature utility time and distance Geographical component of Tourism are location climate settlement and culture Industrialization and urbanization had created great pressure on modern living India is a country known for its gentle or hospitality to all visitors The Indian sub-continent has seven principal mountains ranges Scenery consisting of Mountains Lakes Waterfalls Glaciers Forests and Deserts The dense and dark forest of Indian states provide home to wild life Tamil Nadu is also well known for the diverse natural heritage that it possesses Glossary Geyser a natural hot spring Accessibility the quality of being easily to obtain or use Amenities attractiveness of a place Recreation the feeling of being relaxed Amusement park a large outdoor area with fairground rides shows and other entertainments Bird sanctuary an area of land in which birds are protected and encouraged to breed Wildlife sanctuary an area which provides protection and favourable living conditions to the wildlife Land degradation Loss of natural fertility of soil because of loss of nutrients Transport Attraction Accommodation Amenities Nainital Shillong Munnar Digha Corbett Sunbarbans periyarMayani Hogenakal Kumbakkari Suruli Kalakad Rishikesh ladakh Gulmarg Kotagiri Anamalai hills West Bengal Monkey falls Goa Darjeeling Coimbatore Nature’s Haven Top slip Aguda Beach Javadi a Nal sarovor in Gujarat b Koonthakulam in Tamil Nadu c Bharatpur in Rajasthan d Kanha in Madhya pradesh International Tourism and Historical Tourism Religious Tourism and Adventure Tourism Attraction and Accessibility This activity should be done by students under the supervision of the subject teacher The students are grouped with six members in a group Each student will discuss in the group about their last tour Each group will collect photographs and information The information will be shared in the class as well as displayed on the notice board of the class room Tourism Let’s go for a tour Tourism Attraction URL URL https wwwincredibleindiaorg content incredibleindia en ICT CORNER UnitII Media and Democracy Learning Objectives Understand media and its classification Analyse the role of media in facilitating interaction between the government and citizen Know the ethic and responsibility of media Gain a critical sense of the impact of media on people’s lives and choices Let noble thoughts come to us from every side Introduction Traditionally India has many folk form of communicating with people in rural areas Harikatha and koothu are originally a religious media from in which the stories were propagated It is a collective form of music dance speech storytelling with comic interludes It has tremendous effect in communicating the messages straight into the hearts of the people Then socially relevant messages were passed through this medium Modern methods to address small and medium gatherings include seminars dramas public meetings and workshops etc Print media has been referred to as Peoples University because they perform the role of public informer educate and custodian of public interest Let us discuss about Media and its role What is Media Every individual person is a medium of expression An individual interacts through the media to reach other individual and institutions Media is generally the agency for inter-personal communication Media includes every broadcasting and narrowcasting medium Media is the plural of the word medium Such a medium or media allows to communicate messages thoughts ideas views etc Classification of Media Narrowcast Media Cable Television Direct mail Seminar Broadcast Media Films Television Radio Print Media Newspapers Magazine Journals Books Posters Reports Web Media Google website and Blogs Social Media Twitter Facebook whatsApp and Instagram This communication can be classified into Personal communication these are meant for personal use like letters telephone cell phone E-mail and fax Mass communication these are used for communicating with the masses Newspapers Radio TV Collectively they are termed as media Printing press was invented by Johannes Gutenberg in Fourth Pillar of Democracy The four pillars of democracy are Legislature Executive Judiciary and Media Media ensures the transparency in the working of all the above three systems This fourth pillar of democracy ensures that all people living in far off areas of country are aware of what’s happening in rest of the country In fact mass media is the most important vehicle for information knowledge and communication in a democratic polity Importance of the Media Media is very powerful entity on the earth It is a mirror which shows various social political and economic activities around us People depend on the media for various needs including entertainment and information Media keeps the people awakened and it has become one of the major instruments of social change Media not only bring out the day to day happenings in the world but also exposes the strength and weakness of the government It also advertises the various products produced by the private companies It creates the awareness All the TV channels broadcasts national and international news Social problems are portrayed in many cinemas Media provide a balanced report on any matters It fights against the socio-political evils and injustice in our society while bringing empowerment to the masses and facilitating development All India Radio AIR Officially known as Akashvani since voice from the sky is the radio broadcaster of the Government of India launched in Media and public opinion The media plays a prominent role in the formation of public opinion general opinion of the public on particular issue It is the powerful tool in contemporary times It has become a part of the everyday life of the people They play a significant role in shaping a person’s understanding and perception about the events occurred in our daily lives The mass media play a significant role in providing honest intelligent and usually unbiased accounts of events The newspaper reflects the response of the people to the government policies Thus print media and electronic media helps the people to express their opinion on important social issues Ethic and Responsibility Ethics is a code of values which govern our lives So they are very essential for moral and healthy life In the context of media ethics may be described as a set of moral principles The media is expected to follow a code of conduct which should be reflected in their reporting and writing Sensational and distorted news should be avoided The fundamental objectives of media are to serve the people with news views comments and information on matters of public interest in a fair accurate unbiased and decent manner and language An awakened and free media is very much essential for the function of the government It has right to collect information from any primary authentic sources which are important to the society and then report the same with the aim to inform not to create sensation The media has a massive responsibility in providing factual coverage Role of Media in Democracy Media is the back bone of democracy In our democratic society mass media is the driving force of public opinion Media strengthens the democratic value It enlightens and empowers the people It can educate the voters and ensures that government is transparent and accountable Media carry every report of action of administration of the government Based on the information the citizen can learn about the functioning of the government and day to day happenings taking place around them Theory of Democracy Democracy means rule by the people It combines two Greek words Demos refers to citizen Kratos means either power or rule It arranges the debate on current affairs so that we can get the different views for the same issue Media reminds the government of its unfulfilled promises to the public It educates masses in rural areas Parliamentary democracy can flourish only under the watchful eyes of media Media not only reports but acts as a bridge between the state and public Thus the media acts as a watch day of the democratic government A democracy without media is like vehicle without wheel Local Media Usualy the media reports the news which of national and global importance where as local media addresses public locality Name some local media of your locality Conclusion The media in the contemporary world of information and technology plays a very significant role in educating masses The media should always keep in mind that it should not publish anything which corrupts the public mind and disturbs social peace For healthy society sharing of views free flow of information free communication and expression plays a crucial role Media being powerful and important instruments of expression have got lot to contribute Mass media have made the world smaller and closer Summary A medium is a means or way of communication media is the plural of medium Modern media such as TV radio newspaper and the internet reach millions of people all over the world So the common term used for them is mass media Changing technology helps media to reach more people Media has brought the world closer to us It brings the news and happenings from across the world to the public in a fair and realistic way In a democracy the media plays a very important role in providing news It is working out to be an effective tool to create public opinion on issues by improving awareness among the masses Glossary Broadcast transmit by radio or television Polity system of government Contemporary present day Ethics moral principles Unbiased impartial Authentic genuine original Narrowcast media films Social media posters Print media seminar Web media google web site Broadcast media facebook a newspapers b magazine c journals d twitter e posters a Media is generally the agency for inter- personal communication b Media is very powerful entity on the earth c Media plays a prominent role in the formation of public opinion d Media does not have any responsibility CIVICS UnitI State Government Learning Objectives Recognise the difference between Parliament and State Legislature Understand the election procedures Know the powers and functions of Governor and Chief Minister Wonder how the Government works Identify the three main organs of the government the legislative executive and judiciary Teacher Good Morning my dear students Students Good morning teacher sir Teacher after taking attendance All are present today Very good Coming Monday we have a function in our school All Should be present on that day without fail Yogitha Do we have any cultural programme Teacher Yes We are going to open the new building of our school Students Yeah We are going to a new class room Muthu Who will be the Chief guest Teacher We have invited our MLA as the chief guest for the opening ceremony Rahim MLA I have heard But I don’t know who is he Teacher MLAs are representatives of the people He is one among us He is the Member of Legislative Assembly Saran What is Legislative Assembly Will you explain in detail Teacher Sure showing pictures of fort St George Assembly session Chief Minister and other ministers Meena What is that building Where is it It looks like a fort Teacher Yes You are correct It is a fort in Chennai First English fortress in India The fort currently houses the Tamil Nadu legislative assembly and Secretariat of Tamilnadu Legislative Assembly has the lower house where all the MLAs meet to discuss various matters related to the welfare of the state Kayal Who will be there in that Legislative Assembly Teacher Listen India has separate system of administration for the Union States and Union territories Do you know how many states and union territories are there in India Ravi Shall I tell states and union territories including our capital territory Delhi Am I right teacher Teacher Exactly As I said already power is divided between two sets of governments one at the central in Delhi and separate governments for all the states This is called as federal system India is a Parliamentary democratic republic where the President of India is the Head of Indian Union and the Prime Minister and all the Ministers are responsible for smooth running of the government This is called central government Nila Do we have a separate government for states Teacher Yes All the states and union territories have separate governments to run its own administration Governor Chief Minister and all the ministers constitute the Government The member of the Parliament is called MP whereas the member of the Legislative Assembly is called MLA Both the Central and State Governments work according to our constitution John Oh Is MLA going to inaugurate the function Who appoints him Teacher No my child MLAs are not appointed They are elected by the people through general election In the previous lesson we have studied about the political parties Do you remember These political parties play a vital role in election For election the entire state is divided into several constituencies on the basis of the population Political parties nominate their candidates to each constituency All the people residing in that constituency who has completed years of age cast their vote The candidate who gets the more number of votes is declared as elected and becomes MLA The Election Commission of India conducts and monitors the elections After the election the party which gets the more number of MLAs is declared as the majority party The Governor calls the leader of the majority party to form the state government In simple words a party whose MLAs has won more than half the number of constituencies in the state are called ruling party and forms the government And the party which gets the total number of seats next to the majority party acts as an opposition party in the legislature But all the MLAs of other political parties who do not belong to the ruling party are called opposition party Shanmi It’s very interesting to hear Who are all included in the State Government Teacher The Governor the Chief Minister Council of Ministers The Governor is appointed by the president of India for the term of five years The leader of the majority party is appointed as the Chief Minister by the Governor The Chief minister in consultation with the Governor constitutes a cabinet which includes members of his party as ministers The term of the office is five years Laya Teacher Shall I become the Governor Or Chief Minister Teacher Why not My child That is very simple To become a Governor you should be the citizen of India and should have completed years of age and should have sound mind And should not hold any public office of profit To become a Chief Minister you should have completed years of age and should be an MLA or in case of an MLC should have completed years of age Arya Who is an MLC I never heard Teacher Usually a state Legislature has two houses Upper House and Lower House This is called Bi-cameral Legislature Upper House is called Legislative Council The members are called MLCs and they are not elected directly by the people The Lower House is called Legislative Assembly The members are called MLAs As I said earlier they are directly elected by the people In India some of the states have two houses in their state legislature But in Tamil Nadu we have Lower House only This is called unicameral Legislature Ammar Oh Now can you please tell me the powers and functions of Governor and Chief Minister Teacher Sure The Governor is an integral part of the State Legislature Governor is the head of the state executive and he has enormous powers All the administration is carried on in his name He is the chancellor of Government universities in the state All bills become law only after his assent He appoints important officials of the state government such as advocate General Chairman and members of State Public Service Commission State Election Commissioner Vice chancellors of state universities etc The Chief Minister is the real executive head of the state administration He allocates the portfolios among the ministers The Council of Ministers are collectively responsible to the State Legislature All the ministers work as a team under the Chief Minister The Chief Minister formulates programmes and policies for the welfare of the people of the state The council of Ministers is collectively responsible to the Legislative Assembly of the state The three main organs of government are the legislative executive and judiciary The legislative branch makes laws the executive branch enforces the laws and the judiciary interprets the laws Nandhu Judiciary Are you saying about the courts teacher Teacher Yes The High courts are the highest judicial organ at the State level It is an independent body As per the constitution there shall be a High Court in each state The state high court consists of a Chief Justice and other judges The number of Judges in the high court is not uniform and fixed President appoints the Chief Justice and can hold the office until he completes the age of years Apart from High court there are district courts and tribunals They ensure justice to the people without any bias Apart from this Family Courts are established to settle the disputes relating to marriages and family affairs Lok Adalat people’s court also have been established by the Government of India to settle dispute through conciliation and compromise Children This topic is very interesting to hear Thank you very much teacher Teacher Thank you children A cultural programme is being allotted to our class for the inaugural function So let us think We have to practice and perform well Summary India is divided into states and Union territories Each state has a legislative assembly State executive comprises the Governor and the Chief Minister with his Council of Ministers The head of the state is the Governor And he is appointed by the President for a period of five years He is an integral part of the State Legislature The real executive power in a state in India vests with the Chief Minister The leader of the majority party is appointed as Chief Minister The Chief Minister and the Council of Ministers are collectively responsible to the State Legislature The High courts are the highest judicial organ at the state level State High courts have jurisdiction over the whole state Glossary Legislative law making body Cabinet the committee of senior ministers Executive administrative Judiciary a system of courts of law Government departments in the states Legislative Assembly President Prime Minister Governor Chief Minister President Prime Minister Governor Election Commissioner Leader of the Majority party Leader of the opposition party Mayor governor MLA Panchayat municipality corporation Village City State Legislative executive and judiciary MLAs Secretariat Governor Chief Minister Head of the state Union territories Legislative Assembly Fort St George leader of the Majority party To become a governor one a should be the citizen of India b should have completed years of age c should have sound mind d should not hold any office of profit All the MLAs of other political party who do not belong to the ruling party are called opposition c MLAs are not the representatives of people It means that there are cameras in the legislature b It means that the legislature has men and women members c It means that there are two houses like upper house and lower house d It means that the governor is the leader over the members of the legislature ICT CORNER State Government Let’s know about our state government departments PROCEDURE Step Type the following URL http wwwtngovin or scan the QR code given below to view the home page of the Government of Tamilnadu website Step Click Departments which is listed below the title Government Step You can see the list and link of various departments of our Government Step Click on a particular department to know about its Minister’s name with image Secretary to Government their contact numbers department profile Unit New Religious Ideas and Movements Introduction Medieval India saw an extraordinary production of devotional poetry which were not restricted to one particular religion but inspired by different religious movements The exponents of these movements held the view that total devotion bhakti to God could save man from the pitfalls of life and earn him salvation It was also believed that one does not have to go to temples or perform rituals for God is omnipresent and resides inside every human The Bhagavad Gita proposed that the path of bhaktimarga the path of bhakti is superior to the two other religious approaches namely the path of knowledge jnana and the path of rituals and good works karma providing inspiration to the exponents of Bhakti cult Bhakti Movement The Beginnings The Bhakti movement or the resurgence of devotional practices started in Tamil Nadu around seventh century AD It included reciting the name of the God or Goddess singing hymns in their praise wearing religious marks or carrying identity emblems and undertaking pilgrimages to sacred places associated with the deity It emphasised the mutual emotional attachment and love of a devotee towards a personal God and of the God for the devotee This view was also preached by Sufism which appeared as a reaction against worldliness of the early Islam Sufis believed that realisation of God can be achieved only through passionate devotion to God and intense meditation Sufis were of the view that this type of meditation would enable the devotee to understand the true nature of God They argued that doing so would liberate the devotee from all worldly bonds and help them become one with God Several mystical religious movements in both Hinduism and Islam had no hesitation to freely include elements of different faiths in their teachings There is only one god though Hindus and Muslims call him by different names stated Haridasa Devotional Movement in Tamizhakam Azhwars and Nayanmars The Azhwars the Vaishnavite Bhakti sages and the originators of Bhakti cult and the Nayanmars the worshipers of Siva or the Saivites composed devotional hymns in Tamil language dedicated to their respective gods Siva-bhakti is associated with Siva’s manifestations on earth Poems to Siva and Vishnu particularly to Krishna were composed in Tamil and other South Indian languages such as Kannada and Telugu These poet-saints criticised caste-based social status and advocated gender equality in order to make it good to stand the onslaught of Buddhism or Jainism Vishnu-bhakti or Vaishnavism is based on Vishnu’s avatars incarnations particularly Krishna and Rama The Tamil Azhwars are chiefly known for their immortal hymns Two Azhwars stand out distinctly for their contribution to the promotion of the Bhakti movement Nammazhwar’s fame lies in his -stanza Tiruvaimozhi Nathamuni collected the poems of Nammazhwar in the form of Divya Prabandham Andal the only female Azhwar is another Periyazhwar who was earlier known as Vishnu Chittar made lots of songs on Krishna putting himself in the place of mother Yashoda Periyazhvar is said to have found Andal as a baby in the tulsi garden at Srivilliputhur temple and adopted her She grew up in the temple town of Srivilliputhur and became known as Andal-she who ruled The Thiruppavai The Path to Krishna and the Nachiyar Thirumozhi The Sacred Songs of the Lady are her celebrated works Her poems expressing her love for Ranganatha the incarnation of Vishnu worshipped at a temple at Srirangam are used in Vaishnava wedding ceremonies in Tamil Nadu Vaishnavite Saints Azhwars Three Muthal Azhwars Poigai Azhwar Bhoothathu Azhwar and Pei Azhwar Other Azhwars Thirumalisai Azhwar Periyazhwar Thondaradippodi Azhwar Thirumangai Azhwar Thiruppanazhwar Kulasekara Azhwar Nammazhwar Mathurakavi Azhwar and Andal Saivite Saints Nayanmars There are legendary Nayanmars Among them Gnanasampandar Appar and Sundarar often called the trio are worshipped as saints through their images in South Indian temples Nambi Andar Nambi AD is said to have compiled the songs of all of the Nayanmars that form the basis of Tirumurai the basic Tamil Saivite sacred canon It consists of books and of them were assembled by Nambi The book is Sekkizhar’s Periyapuranam a Adi Shankara Adi Shankara or Shankarachariar c AD preached the Advaita philosophy The essence of this philosophy is that the soul atma unites with the universal soul brahma through the attainment of knowledge He set up mathas mutts centres of learning and worship at Badrinath Puri Dwarka and Sringeri These places have become prominent pilgrim centres today Shankara enthusiastically endeavoured to restore the orthodox Vedic tradition without paying attention to the Bhakti movement of his time His masterpiece is the commentary on the Brahma-sutra which is a fundamental text of the Vedanta school His commentaries on the principal Upanishads are also considered equally important b Ramanuja Ramanuja a century Vaishnava saint was the most influential thinker of Vaishnavism His philosophy known as vishistadvaita proclaims that the soul retains its identity even after uniting with brahma After a long pilgrimage Ramanuja settled in Srirangam Ramanuja articulated ideas of social equality and condemned caste-based restrictions on entering the temples He established centres to spread his doctrine of devotion Srivaishnavism to God Vishnu and his consort Lakshmi In the and centuries Vaishnavism spread across India The Vadakalai Vaishnavism originally flourished around Kanchipuram which was a popular centre for Sanskrit learning Thenkalai Vaishnavism centred on Srirangam Vadakalai sect focused on Vedic literature which is written in Sanskrit The Thenkalai sect stressed the importance of Divya Prabandhams written by the Azhwars in Tamil Bhakti Movement in North India While dealing with the religious movements of the fourteenth and fifteenth centuries in northern India one has to keep in mind the two very different attitudes which Hindu religious leaders had towards Islam One group accepted what was best in Islam the other adopted a few elements in order to prevent conversion to Islam Both reacted to Islam but one was sympathetic while the other was hostile Kabir and Guru Nanak and other founders of new sects are included in the first group while the movement in Bengal associated with Chaitanya deva or Chaitanya Mahaprabu belongs to the latter tendency a Exponents of Bhakti Movement It was Ramananda who spread the Bhakti ideology in northern India where it became a mass movement Vallabhacharya a Telugu philosopher built a temple for Lord Krishna on the Govardhan Hills near Mathura Surdas a blind poet and musician was associated with this temple as well as that of Agra His famous collection of poetry is called Sursagar Meera Bai wife of the crown prince of Mewar was an ardent devotee of Lord Krishna She was a disciple of Ravidas Meera Bai gained popularity through her bhajans Chaitanyadeva popularised Krishna worship through ecstatic songs and dancing that had a profound effect on Vaishnavism in Bengal In the century in Tulsidas’s Hindi retelling of the story of Rama in the Ramcharitmanas the sentiment of friendship and loyalty is stressed Many of those poems continue to be recited and sung often at all-night celebrations Ramananda Vallabhacharya Surdas Meera Bai Chaitanya Tulsidas Tukaram Panduranga Temple Pandaripuram Tukaram a century saint poet of Maharashtra is known for his spiritual songs abangas or kirtanas devoted to Vitthoba an avatar of Krishna There is a Vitthoba Panduranga temple at Pantharpur or Pandaripuram in Solapur district Maharashtra What is Chaitanyadeva to Bengal is Tukaram to Maharashtra Sufism in India The advent of Sufis to India dates back to the Arab conquest of Sind It gained prominence in the and centuries during the reign of the Delhi Sultans Sufism adopted many native Indian concepts such as yogic postures music and dance Sufism found adherents among both Muslims and Hindus Sufism The word Sufitakes its origin from suf meaning wool The Sufis wore course garments made of wool and hence They were called Sufis Sufism was basically Islamic but was influenced by Hindu and Buddhist Mahayana ideas It rejected the stringent conduct code of the ulemas Sufis lived in hermitages akin to monasteries and functioned outside society Sufism in mediaeval India were divided into three major orders They were Chisti Suhrawardi and Firdausi Moinuddin Chishti made Chisti order popular in India He died in Ajmer and his resting place is in the Ajmer Sharif Dargah in Ajmer Rajasthan The best known Sufisage of the early mediaeval period was Nizamuddin Auliya of the Chishti order who had a large number of followers among the ruling class in Delhi Poet Amir Khusru was one of its distinguished followers Suhrawardi order was founded by an Iranian SufiAbdul-Wahid Abu Najib The Firdausi order was a branch of Suhrawardi order and its activities were confined to Bihar a Kabir As a Muslim Kabir came under the influence of Varanasi-based Saint Ramananda He accepted some Hindu ideas and tried to reconcile Hinduism and Islam However it was the Hindus and particularly those of the lower classes to whom his message appealed Kabir believed that God is one and formless even though different religious sects give him different names and forms He opposed discrimination on the basis of religion caste and wealth He also condemned meaningless rituals Kabir’s verses were composed in Bhojpuri language mixed with Urdu The Kabir’s Granthavali and The Bijak contain collections of Kabir’s verses b Guru Nanak Early Life Guru Nanak born in a village near Lahore in showed interest in religious discussions with other saints right from his early childhood His parents were keen to involve him in worldly life But he was inclined towards spiritualism He visited many holy places and finally settled in Kartarpur near Lahore He died there in To mark the birth anniversary of Guru Nanak a corridor is being constructed by the Indian government that will link the Nanak shrine in Gurdaspur with Gurudwara Darbar Sahib at Kartarpur in Pakistan Guru Nanak Gurudwara Granth Sahib Kartarpur Guru Nanak’s Teachings Guru Nanak preached that God is without form and wanted his followers to practise meditation upon the name of God for peace and ultimate salvation He is considered the first guru by the Sikhs Guru Nanak had great contempt for Vedic rituals and caste discrimination The teachings of Guru Nanak formed the basis of Sikhism a new religious order founded in the late century His and his successors teachings are collected in the Guru Granth Sahib which is the holy book of the Sikhs Guru Nanak’s teachings were spread through the group singing of hymns called kirtan The devotees gathered in rest houses which became gurudwaras in course of time Guru Nanak nominated his disciple Lehna succeeded him as the guru Following this precedent the successors are named by the incumbent Sikh Guru At the time of Guru Gobind Singh the custom of pahul baptism by sweetened water stirred with a dagger was introduced Those who got baptised became members of a disciplined brotherhood known as the Khalsa meaning the pure The men were given the title Singh lion Every member of the Khalsa had to have five distinctive things on his person These were kesh uncut hair kangha comb kirpan dagger kada steel bangle and kachera underpants After Guru Gobind Singh the holy book Guru Granth Sahib is considered the guru and its message is spread by the Khalsa Impact of the Religious Bhakti Movement Vedic Hinduism was regenerated and thus saved from the onslaught of Islam The Islamic tenets unity of God and universal brotherhood emphasised by the saints promoted harmony and peace Bhakti was a movement of the common people it used the language of the common people for its devotional literature Bhakti movement opened up space for Indian languages to grow It stimulated literary activity in regional languages What sustained Sanskrit despite its decline during this period was the support extended by the rulers of Hindu kingdoms Tamil was the only ancient Indian language remained vibrant during this period But the ethos of Tamil literature in medieval time had changed In the classical period it had secular literature depicting the everyday life its joys and sorrows but under the influence of devotional cults its emphasis shifted to religion and religious literature Caste system and social disparities came to be criticised Summary The Bhakti movement is explained Azhwars initiatives followed by Nayanmars in Tamil country are described Adi Shankarar’s advaita philosophy and Ramanujar’s vishistadvaita philosophy are explained The devotional paths of saints notably Tulsidas and Meera Bai in northern India and Chaitanyadeva in Bengal are examined Mutual influence of Islam and Hinduism and birth of Sufism Sikhism and mystical Hinduism are discussed in brief Radical versions of Bhakti Movement Contribution of Kabir and Guru Nanak are detailed The essential features of Bhakti Movement are highlighted The impact of the Bhakti Movement on the medieval Indian society is analysed Glossary salvation a way of being saved from danger loss or harm omnipresent present everywhere at the same time incarnation a living being embodying a deity or spirit hostile showing enmity or dislike unfriendly prominence importance adherent supporter of a person cause or belief stringent severe harsh Ulema Islamic scholar trained in Islamic law hermitage the dwelling of persons living in seclusion akin similar dagger short pointed knife that is sharp on both sides depicting showing portraying Unit Art and Architecture of Tamil Nadu Introduction Dravidian architecture is of indigenous origin It advanced over time by a process of evolution The earliest examples of the Tamil Dravidian architectural tradition were the century rock-cut shrines at Mahabalipuram The absence of monuments in South India prior to the century is attributed by scholars to temples ought to have been built in wood which were eventually destroyed by forces of nature In Tamil Nadu the evolution of temple architecture took place in five stages The Pallava Epoch AD to Early Chola Epoch AD to Later Chola Epoch AD to Vijayanagara Nayak Epoch AD to and Modern Epoch After AD Pallava Epoch The Pallava epoch witnessed a transition from rock-cut to free-standing temples Rock-cut temples were initially built by carving a rock to the required design and then rocks were cut to build temples The Pallava king Mahendravarman was a pioneer in rock-cut architecture Mandagapattu temple was the first rock-cut temple built by him The rock-cut cave structure has two pillars in the front that hold it All the cave temples have simple sanctum cut on the rear side of the wall with a frontage-projecting mandapa pavilion Kanchi Kailasanatha Temple Kanchi Vaikuntha Perumal Temple On either side are two dwarapalas gatekeepers This cave architecture reached its decadent phase after AD and gave way to the large structural temples probably because the structural temples provided a wider scope to the sculptor to use his skill The Shore Temple at Mahabalipuram also called the Seven Pagodas was built by the Pallava king Narasimhavarman It is the oldest structural temple in South India The structural temples were built using blocks of rock instead of a whole block as earlier Narasimhavarman II also known as Rajasimha built the Kanchi Kailasanatha temple The Vaikuntha Perumal temple at Kanchipuram was built by Nandivarman Mahabalipuram Mamallapuram is built of cut stones rather than carved out of caves It has two shrines one dedicated to Siva and the other to Vishnu The Tamil Dravida tradition is exemplified by rock-cut monuments such as Pancha Pandava Rathas namely Draupadi ratha Dharmaraja ratha Bheema ratha Arjuna ratha and Nagula- Sahadeva ratha The outer walls of the rathas especially of Arjuna Bhima and Dharmaraja are decorated with niches and motifs The niches have the sculptures of gods goddesses monarchs and scenes from mythology The Arjuna’s Penance carved on the face of a granite boulder is a magnificent relief measuring approximately ft long by ft high Arjuna’s Penance The Mamallapuram monuments and temples including the Shore Temple complex were notified as a UNESCO World Heritage Site in Pandya Temples in the Pallava Epoch Early Pandyas were the contemporaries of the Pallavas Unlike the Pallavas Pandyas installed deities in the sanctums in their cave temples More than fifty cave temples have been found in different parts of the Pandyan Empire The most important of them are found in Malaiyadikurichi Anaimalai Tiruparankundram and Trichirappali These caves were dedicated to Siva Vishnu and Brahma In the Siva temple of Pandyas the linga is carved out of the mother rock The figure of Nandhi is also carved out of the rock The Siva lingam in the sanctum is installed in the centre with enough space all around it The sanctum also has a drainage canal The pillars are divided into three parts and are of different sizes The pillars have no uniform ornamentation The back side walls are divided into four niches on which the bas- relief images of Siva Vishnu Durga Ganapathy Subramanya Surya Brahma and Saraswathi are carved out The dwarapalas figure on either side of sanctum Rock-cut and structural temples are significant part of the Pandya architecture The illustrious example for rock-cut style is unfinished Kazhugumalai Vettuvankoil temple The Vettuvankoil a monolithic temple at Kazhugumalai is hewn out of a huge boulder on four sides At the top of the temple sculptures of Uma Maheswarar Dakshinamoorthy Vishnu and Brahma are found Meenakshi Amman Temple in Madurai and Nellaiappar Temple in Tirunelveli represent examples of Pandyas architectural style Monolithic Temple Kazhugumalai Nellaiappar Temple Corridor Tirunelveli Sculptures The walls of the caves are decorated with the bas relief of the gods and goddesses In the case of structural temples the walls of the sanctums are free from image decorations Instead the superstructures and the pillars have the sculptures The sculptures look majestic having elaborate shoulders slim bodies beautiful ornaments and high crowns Vettuvankoil Temple Sculptures Tiruparankundram Anaimalai and Kazhugumalai have the bas relief of many deities Siva Vishnu Brahma Parvathi Subramanya Ganapathi and Dakshinamoorthy These are some remarkable images of the cave temples Many early Pandya images unearthed from Madurai and its surrounding areas are now in Tirumalai Nayakkar museum at Madurai Paintings Caves at Sittanavasal kilometres away from Pudukkottai and at Tirumalapuram in Sankarankovil taluk Tirunelveli district have outstanding early Pandya paintings Sittanavasal was a residential cave of the Jain monks They painted the walls with fresco painting Unfortunately we have lost many of those paintings Among the surviving ones the lotus pond is notable for its excellent execution of colours and exposition of the scene The image of lotus flowers leaves spread all over the pond animals elephants buffalos swans and a man who plucks the flowers look brilliant Sittanavasal Paintings Thirumalaipuram Sculptures The Sittanavasal paintings have similarities with the Ajantha paintings Tirumalaipuram from where we get early Pandya paintings are in a damaged condition The Early Chola Epoch The Cholas came to limelight in AD under Vijaylaya Chola and continued to govern the region for about four hundred years For the Early Chola epoch the temple at Dadapuram near Tindivanam in TamilNadu is worth mentioning The early Chola architecture followed the style of Sembian Mahadevi Temples with the increased number of devakoshta niche figures can be classified as belonging to the Sembiyan style Tiruppurambiyam is an illustrious example of early temple that was re-fashioned in the days of Sembiyan Mahadevi Tirupurambiyam Temple Later Chola Epoch The maturity attained by Chola architecture is reflected in the two magnificent temples of Thanjavur and Gangaikonda Brihadeeshwara Temple Thanjavur Gangaikonda Cholapuram Temple Cholapuram The magnificent Thanjavur Big Temple dedicated to Siva completed around AD is a fitting memorial to the material achievements of the time of Rajaraja Thanjavur Big Temple At the time the Big Temple of Thanjavur was constructed it was a huge temple complex The feet vimana structure over the garbhagriha is notable as it is one among the tallest man-made shikaras of the world Due to its massive height the shikara is called the Dakshina Meru The huge bull statue Nandi measures about feet long and feet height and is carved out of a single rock Gangaikonda Cholapuram Gangaikonda Cholapuram served as the Chola capital for about years until the decline of the Cholas and the rise of the Pandyas The Brihadeeshwara temple of Gangaikonda Cholapuram built by Rajendra Chola is undoubtedly as worthy a successor to the Brihadeeshwara temple of Thanjavur The height of the temple is metres The sanctum has two storeys as in the big temple at Thanjavur The outer wall has many projections with niches and recesses on three sides In the niches there are the images of Siva Vishnu and other gods This temple complex has the shrines of Chandeeswarar Ganesa and Mahishasura Mardhini Dharasuram Dharasuram near Kumbakonam is a Later Chola period temple rich in architectural splendour dedicated to Iravatheswara Siva as god of lord Indira’s elephant Rajaraja constructed this temple This temple is another landmark of the Chola architecture The Mahamandapam is an elaborate structure The entire structure looks like a ratha because it has four wheels at the Mahamandapam The sanctum and pillars have many sculptures which are miniatures of various mythological figures A compound wall runs round the temple with a gopuram Iravatheswara Temple Later Pandyas The contribution of Later Pandyas to South Indian art was significant A case in point is the cave temple at Pillayarpatti near Karaikudi TamilNadu belonging to century This temple is important both for its sculptures and for an inscription A beautiful Ganesha is carved facing the entrance The importance of the figure referred to Desivinayaga in the cave inscription is that there are two arms with the trunk turning to the right Pillayarpatti Temple and Karpaka Vinayagar Vijayanagara Epoch During the Vijayanagara epoch a new form of construction emerged It is the mandapam pavilion to where the gods are carried every year Pillared outdoor mandapams are meant for public rituals with the ones in the east serving as the waiting room for devotees which adorn the large temples These mandapams attract attention for its monolithic pillars On these pillars are sculptured horses lions and the gods The kalyana mandapam at Kanchipuram Varadaraja Perumal temple and at Vellore Jalagandeshwar temple are notable examples The most celebrated of these mandapams in temple of Madurai is the Pudumandapam Vellore Jalagandeshwar Temple Kalyana Mandapam The main features of the Vijayanagar and Nayak architecture are decorated mandapas ornamental pillars life-size images gopuras prakaras music pillars floral works and stone windows during the to centuries Tanks are attached to the temples Gateways to temple are constructed from four directions with massive gopurams The practice of fitting the niches with sculptures continued during the Nayak period There was an increased use of major sculpted figures relief sculpture as found at the Alakiya Nambi temple at Tirukkurungudi Tirunelveli district and the Gopalakrishna temple in the Ranganatha temple complex at Srirangam The southern festival mandapam of Adinatha temple at Azhwar Tirunagari and the porch of the Nellaiyappar temple at Tirunelveli are other notable examples Mandapam of Adinatha Temple Azhwar Tirunagari In TamilNadu the image of deities attached to composite columns gradually freed themselves from the core column Thepillar mandapam of the Meenakshi- Sundareswarar temple Pudumandapam at Madurai Rathi Mandapam at Tirukkurungudi and Vanamamalai Temple at Nanguneri are illustrious examples for the mandapam architecture of this periodPillar Mandapam Madurai Meenakshiamman Temple The pillars of this period are more decorative than the previous period Monolithic gigantic yazhi pillars horse pillars with life-size portraits of mythological and royal family members common folk animals and floral works were made Musical pillars were the peculiar feature of this time A sitting lion at the top of the pillars is a common feature in the mandapams The windows are carved out on the walls of the sanctum and mandapams The Jalagandeshwara temple at Vellore the temples at Thadikompu near Dindugal and Krishnapuram near Tirunelveli and the Subramanya shrine in the Big Temple Thanjavur are most remarkable edifices of this time Vijayanagar and Nayak paintings are seen at Varadharaja Perumal temple at Kanchipuram Kudalazhagar Temple at Madurai and the temples of Srivilliputhur Tiruvellarai Azhaharkoil Tiruvannamalai and Srirangam The paintings mostly have the stories from Ramayana palace scenes and mythological stories Sculptures in Varatharaja Temple Kanchipuram Modern Period After AD The Sethupathis as the feudatories of Madurai Nayaks ruled Ramanathapuram and contributed to the Ramanathaswamy temple architecture In the temple of Rameswaram the predominance of corridors is striking It is claimed that this temple has the longest set of corridors in the world The temple has three sets of corridors The outer set of the temple’s corridors has a height of almost metres and stretches for about metres in both the eastern and western directions The corridors to the north and to the south on the other hand are about metres in length The outer corridor is also remarkable for the number of pillars that support it which is over in number Moreover many of these pillars are decorated by ornate carvings The innermost set of corridors is the oldest of the three Ramanathaswamy Temple Corridor Rameswaram Summary In sum the Pallava period featured sculptural rocks The early Chola period was marked by grand vimanas The Later Chola period was known for beautiful gopurams Vijayanagar period’s unique feature was the mandapam and the modern period was when corridors were given prominence Glossary indigenous native epoch era age sanctum a sacred place set apart in a temple decadent corrupt a state of moral decline exemplified illustrated represented niche a cavity especially in a wall to display a statue motif a decorative design forming a pattern in an artistic work boulder a very large rock contemporaries living or occurring at the same time hewn cut out and shaped bas-relief a sculpture carved into a wall execution carrying out recesses hollow spaces inside the wall or a structure Unit Jainism Buddhism and Ajivika Philosophy in Tamil Nadu Introduction During the century BC BCE according to the Bigha Nitaya an ancient Buddhist tract as many as different philosophical and religious schools flourished in India However among these numerous sects only the Ajivikas survived till the late medieval times But Jainism and Buddhism continued to flourish until the modern times Buddha and Mahavira the founders of these two faiths based their ethical teachings against the sacrificial cult of the Vedic religion Their teachings were preserved and passed on through monks who were drawn from various social groups Sources and Literature Jainism Mahavira's preaching was orally transmitted by his disciples over the course of about one thousand years In the early period of Jainism monks strictly followed the five great vows of Jainism Even religious scriptures were considered possessions and therefore knowledge of the religion was never documented Two hundred years after the attainment of nirvana death of Mahavira Jain scholars attempted to codify the canon by convening an assembly at Pataliputra It was the first Jain council to debate the issue but it ended as a failure because the council could not arrive at a unanimous decision in defining the canon A second council held at Vallabhi in the century AD was however successful in resolving the differences This enabled the scholars of the time to explain the principles of Jainism with certainty Also over time many learned monks older in age and rich in wisdom had compiled commentaries on various topics pertaining to the Jain religion Around AD CE the Jain acharyas teachers realised that it was extremely difficult to keep memorising the entire Jain literature complied by the many scholars of the past and present In fact significant knowledge was already lost and the rest was tampered with modifications Hence they decided to document the Jain literature as known to them Five Great Vows of Jainism Non-violence Ahimsa Truth Satya Non-stealing Achaurya Celibacy Chastity Brahmacharya Non-possession Aparigraha A major split occurred in Jainism st century BC giving rise to two major sects namely Digambaras and Swetambaras Both the Digambaras and the Swetambaras generally acknowledge the Agama Sutras to be their early literature while they do differ with regard to their content and interpretation Jain Literature Jain literature is generally classified into two major categories Agama Sutras Agama Sutras consists of many sacred books of the Jain religion They have been written in the Ardha-magadhi Prakrit language Containing the direct preaching of Mahavira consisting of texts they were originally compiled by immediate disciples of Mahavira The Agama Sutra is said to have been lost Non-Agama Literature Non-Agama literature includes commentary and explanation of Agama Sutras and independent works compiled by ascetics and scholars They are written in many languages such as Prakrit Sanskrit old Marathi Rajasthani Gujarati Hindi Kannada Tamil German and English Recognition was given to books and among them there are sutras commentaries and one Maha Bhasya or great commentary The sutras include Angas scriptures followed by Swetambaras Upangas instructions manuals five Chedas rules of conduct for the monks five Mulas basic doctrine of Jainism and eight miscellaneous works such as Kalpasutra of Bhadrabahu It is believed that the Panchatantra has a great amount of Jain influence The Jainacharitha of Kalpa Sūtra is a Jain text containing the biographies of the Jain Tirthankaras notably Parshvanatha founder of Jainism as well as the first Tirthankara and Mahavira the last and the Tirthankara This work is ascribed to Bhadrabahu who along with Chandragupta Maurya migrated to Mysore about BC and settled there Tirthankaras are those who have attained nirvana and made a passage from this world to the next In addition to these we have some Jain texts composed in Indian vernacular languages such as Hindi Tamil and Kannada Jivaka Chintamani a Tamil epic poem is a good example composed in the tradition of Sangam literature by a Jain saint named Tiruthakkathevar It narrates the life of a pious king who rose to prominence by his own merit only to become an ascetic in the end Another scholarly work in Tamil Naladiyar is also attributed to a Jain monk Thirukkural was composed by Tiruvalluvar believed to be a Jain scholar Jains in Tamil Nadu There is a clear evidence of the movements of the Jains from Karnataka to the Kongu region Salem Erode and Coimbatore areas to the Kaveri Delta Tiruchirapalli southwards into Pudukkottai region Sittannavasal and finally into the Pandya kingdom Madurai Ramanathapuram and Tirunelveli districts Tamils broadly come under Digambara sect It is believed that the Kalabhras were the patrons of Jainism The Sittanavasal Cave Temple Sittanavasal cave in Pudukkottai district is located on a prominent rock that stands m above the ground It has a natural cavern known as Eladipattam at one end and a rock-cut cave temple at the other Behind the fenced cavern there are rock beds marked on the floor The stone berths aligned in rows are believed to have served as a Jain shelter The largest of these ascetic beds contains a Tamil-Brahmi inscription that dates to the nd century BC There are more inscriptions in Tamil from the century AD bearing the names of monks It is believed that they should have spent their lives in isolation here Sittanavasal Cave The Sittanavasal cave temple named Arivar Koil lies on the west off the hillock The facade of the temple is simple with four rock-cut columns Constructed in the early Pandya period in the century AD it has a hall in the front called the Ardha-mandapam and a smaller cell at the rear which is the garbha graha sanctum sanctorum Fresco Paintings Sittanavasal The murals in the temple resemble the frescoes of the famous Ajanta caves The Archaeological Survey of India ASI took over the caves only in Thereafter it took two decades to cover the cave and regulate the entry of visitors There are the bas- relief figures of Tirthankaras on the left wall of the hall and acharyas on the right before one enters the inner chamber the sanctum sanctorum Jains in Kanchipuram Tiruparuttikunram Jainism flourished during the Pallava reign In his writings Chinese traveller Hiuen Tsang has mentioned about the presence of a large number of Buddhists and Jains during his visit to the Pallava country in century AD Most of the Pallava rulers were Jains Mahendravarman was a Jain initially The two Jain temples in Kanchipuram are Trilokyanatha Jinaswamy Temple at Tiruparuttikunram on the banks of the river Palar and the Chandra Prabha temple dedicated to the Tirtankara named Chandraprabha The architecture of these temples is in Pallava style but it has deteriorated in due course of time During the Vijayanagar rule Irugappa a disciple of Jaina-muni Pushpasena and a minister of Vijayanagar King Harihara expanded the Trilokyanatha Temple by adding the Sangeetha mandapa The grand murals were added only at this time Jain Temple Tiruparuttikunram Mural paintings in the temples show scenes from the lives of Tirtankaras Unfortunately the paintings of the Trilokyanatha temple at Tiruparuttikunram have been ruined by over- painting done during renovation There is rich inscriptional evidence inside the second shrine the Trikuda Basti containing information on the development of the temple and the contributions of various donors over the centuries Paintings on the walls of the Trilokyanatha Temple In the Kanchipuram district apart from Tiruparuttikunram Jain vestiges have been found over the years in many villages across the state The total population of Jains in Tamil Nadu is or per cent of the population as per the census Kazhugumalai Jain Rock-Cut Temple The century Kazhugumalai temple in Kovilpatti taluk in Thoothukudi district marks the revival of Jainism in Tamil Nadu This cave temple was built by King Parantaka Nedunjadaiyan of the Pandyan kingdom Polished rock-cut cave beds popularly known as Panchavar Padukkai at Kazhugumalai cavern host the figures of not only the Tirtankaras but also the figures of yakshas and yakshis Male and Female attendants respectively Sculptures in Kazhugumalai Cave Temple Jain Temples in other parts of Tamil Nadu Vellore Fourteen Jain monk beds dating back to the century AD have been excavated inside three caverns on top of a hill in Vellore district The beds are found at the Bhairavamalai in Latheri Katpadi taluk Vellore district Of the three caverns two of them house beds One houses four rock beds while the other houses one bed Unlike many rock beds found elsewhere these ones have no head-rests Tirumalai Tirumalai is a Jain temple in a cave complex located near Arni town in Tiruvannamalai district in Tamil Nadu The complex dated to the century AD includes three Jain caves two Jain temples and ametre-high sculpture of Neminatha the nd Tirthankara This image of Neminatha is considered to be the tallest Jain image in Tamil Nadu Madurai There are caves stone beds inscriptions and over sculptures in and around Madurai The Kizha Kuyil Kudi is a striking example This hillock is kilometres west of Madurai on the Madurai–Theni Highway The sculptures are assigned to the period of Parantaka Veera Narayana Pandyan who ruled from AD to There are eight sculptures The images of Rishab Nath or Adinath Mahavira Parshvanath and Bahubali are found here Rock-cut Jain Temple Kizha Kuyil Kudi Contribution to Education Jaina monasteries and temples also served as seats of learning Education was imparted in these institutions to the people irrespective of caste and creed The Jainas propagated their doctrines and proved to be a potential media of mass education The Bhairavamalai we have mentioned earlier is situated near a small village called Kukkara Palli Palli is an educational centre of Jains and villages bearing the suffix of Palli are common in many places in Tamil Nadu The educational institutions had libraries attached to them Several books were written by the preachers of Jainism highlighting the important aspects of Jainism The permission for women to enter into the order provided an impetus to the spread of education among women Buddhism Buddha’s original name Siddhartha Sakya- muni Gautama if translated into English would mean Gautama who belongs to the Sakya tribe and who has reached the goal of perfection Gautama Buddha was a contemporary of Mahavira His father ruled the tribe of Sakya in a region near the present-day Nepal Gautama found that he had nothing to learn from the teachers of the old religions The religions proclaimed that the only way to salvation was through living the life of an ascetic But despite practicing asceticism Gautama could not arrive anywhere near the truth And one night as he sat under a bodhi-tree struggling with his doubt and his loneliness a great peace descended on him He was no longer Gautama the sceptic but became Buddha the Enlightened At last he had succeeded in understanding the great mystery of human suffering its causes and its cure Asserting that both the king passion for pleasures and the hermit self-mortifications were wrong he discovered the middle path The middle path is based on an eight-fold path of Right understanding Right thought Right speech Right action Right livelihood Right effort Right mindfulness Right concentration Buddha taught not the glory of God but the power of love He held the view that all men are born to an equality of rights He undertook long journeys and carried his message far and wide Buddha preached his teachings in Prakrit His four noble truths are as follows Life includes pain getting old disease and ultimately death Suffering is caused by craving and aversion Suffering can be overcome and happiness attained True happiness and contentment are possible if one pursues the eight-fold path Buddhist Literature Buddha’s teachings for a long time were transmitted through the memory of teachers and disciples They were reduced to writing by BC and were written in the Pali language The Pali canon Tripitaka has three divisions also known as the Threefold Basket They include Vinaya Pitaka Sutta Pitaka and Abhidhamma Pitaka Vinaya Pitaka contains the rules of the order of Buddhist monks which must be observed for achieving purity of conduct Sutta Pitaka lays down the principles of religion by citing discourses as evidence Abhidhamma Pitaka is the latest of the Tripitaka It deals with ethics philosophy and meta-physics Other prominent canonical literary works in Buddhism include Jatakas various stories of the lives of Buddhavamsa A legend in verse containing a narration of the life and activities of the Buddhas who are believed to have preceded Gautama Apart from the above canonical literature there is a long series of non- canonical literature in Pali They include Milindapanha which means questions of Milinda It contains a dialogue between Milinda the Graeco-Bactrian king and the monk Nagasena over some problems that faced Buddhism It was originally written in Sanskrit The two famous Ceylonese chronicles are Mahavamsa and Dipavamsa The former deals with the royal dynasties of the Indian subcontinent including Sri Lanka while the latter deals with the arrival of the Buddha’s teachings and preachers in Sri Lanka Buddhagosha’s Visuddhimagga is a later work He is the first Buddhist commentator Sanskrit literature became prominent in Buddhism with the rise of Mahayana Buddhism However some of the Sanskritic works were produced by the Hinayana school as well Buddhacharita written by Asvaghosa is an epic style Sanskrit work It tells the life history of Gautama Buddha Buddhism in Tamizhakam Buddhism is believed to have spread to the Tamil country by the Ceylonese missionaries The evidence in support of this is some monuments of the Pandya country which are assigned to the rd century BC BCE The monuments are in caverns known as Pancha Pandava Malai Buddhism seems to have flourished and co-existed peacefully with Jainism Ajivikam and also with various sects of Hinduism Since the time of Bhakti Movement Buddhism came to be challenged by its exponents and began to lose royal patronage The Thevaram hymns of Saiva saints and the Nalayira Divyaprabandam of Vaishnava Azhwars provided evidence to the challenges Buddhism faced in Tamil country When Hieun Tsang the Chinese traveller visited south India in the century Buddhism was almost on the decline But contrary to popular perception the Buddhism did not disappear completely The presence of Virasozhiyam a century Later Chola period grammar text composed by a Buddhist and the discovery of century Buddhist bronzes in Nagapattinam testify to the presence of Buddhism in later periods The sculptures of Buddha in Thiyaganur village in Salem district strengthen this conclusion Buddha image Thiyaganur Though Buddhism faced challenges from Saiva and Vaishnava sects from the Pallava period onwards One of the exceptions was Nagapattinam which was supported by Chola kings not for religious but for political reasons Chudamani Vihara of Nagapattinam was constructed by the Srivijaya king with the patronage of Rajaraja Chola This vihara has been since destroyed The Tamil epic Manimekalai written by Kulavanigan Sithalai Sattanar is considered a typical representation of Tamil Buddhism Sattanar indigenised Buddhism into Tamil Buddhism by communicating a large set of Buddhist terms in Tamil as translations from Sanskrit and Pali There is a record about a Buddhist monk named Vajrabodhi who was skilled in tantric rituals but this monk left the Pallava court for China Mahendravarman’s Mattavilāsa Prahasana describes Buddhism as a religion in decay In the field of education Buddhist Sanghas and Viharas served as centres of education Students from various parts of the world came here to receive education Nalanda Taxila and Vikramshila gained reputation as great educational centres They were originally Buddhist Viharas Students from Tibet and China were influenced by Buddhism and they took effective steps to spread Buddhism A Vihara in Sanskrit means dwelling or house Originally viharas were dwelling places used by wandering monks during the rainy season Later they transformed into centres of learning through the donations of wealthy lay Buddhists Royal patronage allowed pre-Muslim India to become a land of many viharas that imparted university education and were treasure troves of sacred texts Many viharas such as Nalanda were world famous Viharas Buddhist Vihara of Nalanda in ruins Excavations of Buddhist Vihara and a temple at Kaveripoompattinam and hundreds of stone and bronze sculptures by ASI from over sites have proved the spread of the religion in the state A metre Buddha statue in padmasana pose in remote Tirunattiyattankudi village in Tiruvarur district was unearthed when digging a tank in a field Buddha in padmasana pose Ajivika Philosophy The Ajivikas believed in the doctrine of karma transmigration of the soul and determinism The head of Ajivika sect was Gosala Mankhaliputta The Ajivikas practiced asceticism of a severe type The Ajivika religious order and school of philosophy is known from the Vedic hymns the Brahmanas the Aryankas and other ancient Sanskrit compilations and treatises of the pre-Jaina and pre-Buddhist age Gosala’s ideas live on in other religions though no Ajivika literature has survived Gosala was closely associated with Mahavira for six years and then they parted company The Mauryan emperor Asoka and his grandson Dasaratha patronised the Ajivikas After the collapse of the Mauryan Empire the sect declined in northern India but had by then spread into southern India where it continued to exist for many centuries Representational Image of Ajivika ascetics Throughout history Ajivikas had to face persecution everywhere Village communities under Pallavas Cholas and Hoysalas imposed special taxes on them Despite such obstacles Ajivikas continued to have influence along the Palar river in the modern states of Karnataka and Tamil Nadu Vellore Kanchipuram and Tiruvallur districts till about the century In the end they seemed to have been absorbed into Vaishnavism Summary Sources and literature for study of Jainism are highlighted Presence of Jains in the Tamil country is examined Jain monuments and art in Tamizhakam in particular Sittanavasal and Kazhugumalai are illustrated The Jain contribution to education through Palli is explained Buddhist teachings are analysed Buddhism in the Tamil country is explored Buddhist legacy in Tamizhakam is discussed The essence of Ajivika philosophy and its presence in Tamil Nadu is detailed Glossary heterodox not conforming to orthodox beliefs especially religious ones unorthodox canon a rule an accepted principle unanimous all sharing the same view ascetic monk hermit deteriorate to grow worse vestiges things left behind remains trace cavern a large deep underground cave hillock small hill mound facade the front of a building frescoes paintings done in water colour on a wall or ceiling mural a large picture painted on a wall impetus motivation stimulus salvation saving from harm ruin or loss sceptic skeptic someone who habitually doubts accepted beliefs craving a strong desire persecution unfair treatment of a person or a group especially because of their religious or political belief GEOGRAPHY Unit Exploring Continents North America and South America Introduction Students Good morning madam Teacher Good morning students Did you all enjoy your half yearly exam holidays Students Yes madam Teacher Fine How many continents are there in the world Can anyone of you name them Students Madam there are seven continents They are North America South America Europe Asia Antarctica Australia and Africa Teacher Last year how many continents you have studied Students Madam we studied about two continents They are Europe and Asia Teacher Ok this year we will be learning about North America and South America A North America North and South America are often referred to as the new world because they were discovered in the late fifteenth century In North America was discovered by Christopher Columbus while he was trying to find a new sea route to India The landmass was named America in after the Italian explorer America Vespucci who landed on the continent In this lesson we can learn location boundaries relief features rivers climate natural vegetation minerals and transportation Location and Area The continent of North America lies between N and N latitude which lie entirely in the Northern Hemisphere The Tropic of Cancer N passes through the Mexico and Arctic Circle N runs through northern part of Canada Longitudinally it extends between W and W and lies entirely in the western hemisphere This continent has a great longitudinal extent which results in Seven Time Zones North America covers an area of about Sq km Which occupies percent of the entire land area Boundaries North America is surrounded by the Pacific Ocean in the West the Atlantic Ocean in the east Arctic Ocean in the north and South America in the south The North America is joined with the South America by the Isthmus of Panama The Bering Strait separates North America from Asia Political Division North America is the third largest continent next to Asia and Africa North America has three large countries and several smaller ones Canada is largest country of North America followed by the United States of America and Mexico The seven small countries which lies to the south of Mexico are referred to as central America These include Nicaragua Honduras Guatemala Panama Costa Rica El Salvador and Belize Isthmus A narrow stretch of land joining two large land masses Strait A narrow stretch of water joining two large water bodies NORTH PACIFIC OCEAN NORTH ATLANTIC OCEAN ARCTIC OCEAN Great salt lake UNITED STATES Gulf of Mexico Lake Michigan Lake Erie Lake Ontario Lake Huron Lake Superior Mexico City Guatemala City EL SALVADOR NICARAGUA Haiti CUBA Dominican Republic HONDURAS COSTA RICA PANAMA SOUTH AMERICA San salvador GUATEMALA Tegucigalpa Belmopan BELIZE MEXICO CANADA ALASKA Hudson bay Beaufort Sea GREENLAND DENMARK Labrador Sea Not to Scale Political division of North America Physiography North America is a continent of great physical diversity Mount McKinley is about m above the sea level and is the highest peak Death Valley is about m below the sea level and is the lowest part of the continent of North America It has some of the oldest and the youngest rocks in the world On the basis of physiography North America can be classified into the following physical divisions The Rocky Mountains The Great Plains The Appalachian Highlands and The Coastal Plain The Rocky Mountains The western part of the continent is occupied by long ranges of young folded mountains interspersed with high plateaus narrow valleys and broad interior basins This mountain range extends for about km from Alaska in the North to the Panama Strait in the South The width varies from to Kms They are parallel ranges and are known as the Rockies in the east and the Coast Range Mountains in the west The Sierra Nevada is a mountain range in the Western United States between the Central Valley of California and the Great Basin In Mexico they are called Sierra Madre The Rockies and the Coast Range are together called the Western Cordilleras There are high inter montane plateaus between the ranges The prominent ones are the Mexican plateau the Colorado Plateau and the Columbian plateau The Cordilleras are also part of the Fire Ring of the Pacific because there are a number of active volcanoes and this area is also subject to earthquakes Banks Island Great Bear Lake Yukon Mackenzie Peace Lake Athabasca Lake Winnipeg Great Salt Lake Missouri L Nicaragua Panama canal Gulf of panama Saskatchewan Coumbia Snake Fox Basin Hudson Bay Mississippi River Delta MtElbert Peninsula Florida Mexican Plateau MtMc Kinley MtLogan Mt Rabson BAHAMAS CUBA JAMAICA South America Yucatan Basin Ban Bay Beaufort Sea Lake Superior Lake Huron Lake Michigan Red Rio Grande Gulf of California Mississippi Lake Erie Lake Ontario BERMUDA UK Ottawa St Lawrence Laurentian Plateau Labrador Labrador Sea Albany Great Slave Lake Ban Island Ellesmere Island Devon Island Victorial Islanad Alaska Range Gulf of Alaska Brooks Range Newfoundland Queen Charlotte Islands Alexander Archipelago Vancouver Island Colorado Death Plateau valley Lower californa Western Sierra Madre Grand canyon Ozark Plateau Mt Mitchell Mt Washington Yucatan Peninsula Coast Moutains Sierra Nevada Queen Elizabeth Islands Highest peaks in different continents Asia Mount Everest meters South America Mount Aconcagua meters North America Mount McKinley meters Africa Mount Kilimanjaro meters Europe Mount Elbrus meters Antarctica Mount Vinson Massif meters Australia Mount Kosciuszko meters The Great Plains To the east of the Rockies and the west of the Appalachian Mountains lies the great plains of North America It covers about three fifth of the continent This plain stretches from the Arctic Ocean in North to the Gulf of Mexico in the South and from the Appalachian Highlands in the east to the Rockies in the west The western part of the plains is called the High Plains spreading roughly over the foothills of the Rockies Most of the rivers of this region have their source in the Western Highlands and the plains generally slope eastwards and southwards They are drained by rivers like the Mississippi and the Missouri The Appalachian Highlands The Appalachian Highlands do not form a continuous chain like the Western Highlands The Rockies These Highlands are low and wide They have a very few peaks more than m They include the High Plateaus of Greenland Labrador or Laurentian Plateau in Canada and the Appalachian Mountains in the United States These old fold mountains are worn down by weathering and are much lower than the Western highlands This region is rich in mineral reserves like coal iron ore copper etc which play a vital role in the North American economy The Coastal Plains The coastal plains of North America are the youngest in age Most of the Atlantic Plain has been drowned lies underwater This is low and relatively plain area with sandy soil which is infertile in nature Here swamps and marshes are abundant and the coast is indented by river mouths and bays on which many important seaports are located Drainage Many rivers flow across this land and some of them following the valleys are formed by the glaciers The Mississippi and Missouri rivers are the longest rivers in North America and together they form the fourth longest river system in the world and stretching more than km from Montana to Gulf of Mexico After km running the Missouri river joins the Mississippi river The Mackenzie River is the second largest drainage basin of North America It has it source from Great Slave Lake and drains into Arctic Ocean St Lawrence has its origin in Lake Ontario which flows north east and drains into the Atlantic Ocean The plateau of the west has been cut deeply by the River Columbia and its tributary which forms many Gorges called Canyons The most famous is the Grand Canyon cut by the river Colorado which all flows over the plateau of Columbia These rivers form a barrier to communication but whose water has been dammed for irrigation and power The River Yukon rising in the north-west of the Western mountain system is frozen for eight months in the year The River Rio Grande flows into the Gulf of Mexico and forms the boundary between USA and Mexico Grand Canyon is a steep-sided Canyon carved by the Colorado River in Arizona State of USA Numerous lakes are found in the glaciated parts of the continent and especially in North Minnesota These lakes are small and they are used for recreational purposes The Great Lakes are formed across the continent from west to east The most important chain consists of five lakes The biggest is Lake Superior and it is the largest freshwater lake in the world Lake Winnipeg Great Bear Lake and Lake Athabasca are some of the other lakes in Canada Mississippi River The Mississippi river has been given the nickname The Big Muddy because it erodes a lot of sand and mud as it rushes down the Mountains Some of the States of the United States are named after the tributaries of two mighty rivers the Mississippi and Missouri Climate The vast latitudinal extent from the Tropics to the Polar Regions makes the climate of North America as varied as that of Asia Unlike the Himalayas the Rockies run north to south which do not form climatic barrier and do not prevent the icy winds from the Arctic region and penetrating the central plains which therefore have a very long cold winter and very short hot summer Precipitation occurs due to cyclonic storms The Arctic region is cold and mostly dry and has a very short summers and a very long bitterly cold winter As one proceeds southwards the short summers become warm but the winters are very cold The central plains have extreme climate from freezing conditions in winter to tropical heat in summer The South is usually warm all the year round and the regions around the mouth of the Mississippi-Missouri and the Gulf Coast have summer rain from the North East Trades which blow on-shore in summer The warm moist South Westerlies not only bring rainfall to the North West coast and also keep it warm The warm Alaskan Current keeps the North West coast ice free The State of California in USA has a Mediterranean Climate with moist winter and dry summers The Westerlies or Anti- trades are prevailing winds from the west toward the east in the middle latitudes between and degrees latitude Natural Vegetation North America is endowed with a diverse and extensive forest cover Approximately percentage of the total land area is under forest cover Lumbering is a well developed industry particularly in Canada North America is a major producer of timber plywood wood pulp and paper It accounts for approximately percentage of the world's production of timber This diversity is brought about primarily because of the different latitudes and variations in altitude soil and precipitation Forest Flora and Fauna of different regions of North America S No Types of forest Climate Region Flora Fauna Tundra winter is long and severely cold Summer is short and cool Rainfall is scanty northern coast of Canada and Northern Islands Mosses lichens and Dwarf willows Arctic Fox Reindeer Musk Ox Polar Bears Wolverin Sable and Blue Fox Taiga or the Cold temperate Coniferous Forest winter is very cold Summer is warm and short Heavy snowfall in winter alaska and Canada south central Alaska and north eastern Canada Pine Fir Cedar and Spruce Beaver Fox Sable Ermine Skunk Caribou Moose Elk Black Bears and Grizzly Bears Temperate Prairie Grasslands winter is very cold Summer is hot and rainfall is moderate central USA and Central Canada Grasses shrubs herbs Coyote Gophers Rabbits Prairie Dogs and Bison The Mediterranean type summer is hot and dry cool wet winter western Coastal margin and Southern California Olive Grapes Orange Cork Oak Walnut and Fig Not much wildlife is found here Desert Type winter is cool and summer is hot The rainfall is very little southwest USA northern Mexico Desert Cactus Saguaro Cholla Cacti and yucca Desert Fox Gazelles Scorpions Lizards and Rattle Snakes Cool Temperate Deciduous Forests summer is hot winter is mild and moderate rainfall florida Gulf Coast southeast USA Chestnut Oak and Poplar Cypress Foxes Squirrels Deer Raccoon Rabbits and Musk Ox The Tropical rain forests high temperatures the year round and heavy rainfall mainly in summer southern Mexico Central America and West Indies Palms Logwood Mahogany Rubber and Cacao Trees Monkeys and Snakes Mountain Forests temperature falls with rise in attitude The rainfall received on the slopes varies rocky Mountains Pine Fir Mosses and Lichens Deer and Bear Natural Regions of North America GULF OF MEXICO Hudson bay Barren land Not to Scale Agriculture Though least proportion of the total workforce is engaged in agriculture America's agriculture is most productive in the world Extensive agriculture system is practiced in Canada and USA Both Canada and USA are the major exporter of wheat than the other countries of the world Wheat Corn Maize Oats Soybean Barley and many other food crops are grown throughout the vast interior plains Wheat Wheat was introduced by European settlers in North America It is grown extensively in the Prairies of North America North America is the largest exporter of wheat Vast wheat producing area are called wheat belt Maize It is the Native Food Crop of North America which is the main staple food grains in Mexico It is grown in southern Prairies North America produces more than half of the world total Maize Barley and Oats These are temperate crops which withstand cold climate and need less water The Barley is grown in the United States and are produced in Minnesota North Dakota and Washington Barley and Oats is used as cattle fodder Cotton Cotton grows well in Southern and Western States and it is dominated in Texas California Mississippi South of the Prairies and the Mexico Warm summer with frequent rainfall and fertile soil are favourable conditions for growth of cotton crop Agriculture of North America NORTH PACIFIC OCEAN NORTH PACIFIC OCEAN NORTH ATLANTIC OCEAN ARCTIC OCEAN Gulf of Mexico SOUTH AMERICA Hudson bay Beaufort Sea GREENLAND DENMARK Labrador Sea Wheat Maize Cotton Sugar cane Soya beans Potatoes Fruits Cattle Dairy Fishing Not to Scale Sugar cane Sugar cane is cultivated along the Gulf of Mexico Parts of Central America and West Indies It is an important Cash Crop of West Indies Cuba is known as the sugar bowl of the world and it is the world's largest exporter of sugar Soya beans It is raised in the same area where Maize is grown It is used for extraction of edible oil Potatoes and Sugar beet Prairie Region North Dakota and Minnesota are the producers of Sugar Beets and Potatoes Sugar beet is used for making Sugar Potato and Sugar Beet are used to feed cattle and pigs Fruits Mainly Citrus Fruits are cultivated in Texas California Great Lakes regions and St Lawrence Valley The important Fruits of North America are Cranberries Blueberries Concord Grapes Strawberries Gooseberries and the other fruits Cattle rearing Cattle rearing are carried on a commercial scale in the drier parts of the Prairies in the south Western part of United States Vast herds of Cattle and Sheep are kept on large Ranches Richer pastures are used for cattle and poorer sparse pastures are used for sheep North America is the largest producer of meat and about one fourth of the world production Dairy farming Dairy farming refers to rearing cattle for milk It is an important industry of USA and Canada Dairy farming is found in the cooler and humid part of the Prairies Great Lakes areas and north east region along the Atlantic coast North America produces about percent of the world total milk and dairy products Fisheries Fishing is locally important in the seas around the continent Grand bank is one of the world's best fishing grounds It is located in the island of Newfoundland in Canada Here the meeting of Cold Labrador current and Warm Gulf Stream current provides suitable condition for fish to thrive The cold Labrador Current brings plenty of plankton which provides food for fish Cod Herring Mackerel Salmon and Halibut are the major varieties of fish in North America Grand Banks The Grand Banks is among the world's largest and richest resource areas renowned for both their valuable fish stocks and petroleum reserves Minerals North America has rich mineral resources North America is the leading producer of Iron Ore Petroleum Natural Gas Copper Silver Sulphur Zinc Bauxite and Manganese Lead and Uranium are the other important minerals North America has vast deposit of Oil and Natural Gas The United States Canada and Mexico are among the world top Oil producers Industries North America has plenty of resources and is needed for industrial development Industries are highly concentrated in the north eastern part of the continent because of large minerals deposits like coal iron ore etc and good transportation network like Roads Railways and Canals The United States is one of the most industrialized countries in the world Industry contributes about of Gross National Product The United State ranks first in Iron and Steel industry They use the latest technology in developing their industries Minerals of North America Important Minerals in North America Mineral Major industries in North America Iron and Steel Industry The North American continent is the world's most important Iron and Steel industrial centre Iron and Steel industries require Iron Ore Coal and cheap transportation The important centres of the Iron and Steel industries are Pittsburgh Chicago and Birmingham in the United States and Hamilton in Canada Area Iron Ore Copper Canadian shield Great Lake region Appalachian Highlands central Alabama Minnesota's Great lakes Arizona Utah New Mexico Nevada Montana and Rocky mountains ontario British Columbia Nevada utah British Columbia ontario Quebec CanadaOntario Quebec USA- California Colorado Utah Nevado Silver Gold Heavy Engineering Industries Industries which require heavy and bulky raw materials using enormous amounts of power involvement of huge investment and large transport costs are called heavy industries These industries depend heavily on the Iron and Steel industry The important Heavy Industries are automobile industries aircraft industries ship building industries Railway Wagon industries and farm equipment industries USA is the largest producer of automobiles The important Centres of heavy engineering industries are Detroit Chicago Buffalo Indianapolis Los Angeles Saint Louis Philadelphia New York Baltimore and Atlanta in USA and Windsor in Canada Coal Appalachians Pennsylvania Ohio Alabama Alberta and Columbia USA Alaska to Texas Petroleum Canada Mexico Central low lands gulf coast Rockers Appalachian Oil and Natural Gas Alaska Wood Pulp and Paper Industry About per cent of the world’s wood pulp and newsprint is produced by North America Canada is the largest producer and exporter of all kinds of paper in the world Paper industries are particularly concentrated in Ontario and Canada Textiles Industry The textiles industry includes the manufacturing of all textiles like cotton woolen and synthetic The United States is the largest producer of Cotton Textiles The industries are mainly located in Texas California Arizona Mississippi Arkansas and Louisiana Toronto Cornwell and Kingston are the major centres in Canada Moreover the cool and wet climate of the area is most suitable for spinning and weaving as the yarn does not break frequently The Woolen Textile industries are located in the east of the Alleghany Plateau The New England region contains woolen textile industries North America is the second largest producer of synthetic fibers Rayon and other synthetic fibers are made up of cellulose obtained from wood Pulp The Meat Packing Industry This is an important industry in Canada and USA where cattle rearing is done on a large scale in the Prairies Chicago Kansas City Saint Louis in the United States and Calgary and Winnipeg in Canada are the important meat-packing centres Population Most of the people in North America are descendants of settlers from other parts of the World The first among them were the Europeans arrived in the century Today the small groups of Native Americans that remain have their own territories and followed a traditional way of life Population distribution The current population of North America as in the year North America has about of the total world's population The largest country by land area is Canada The largest city by population is Mexico City The population density is about present per Sq km Population and Density of North America S No Country Population in Millions Density United States persons Canada persons Mexico persons Densely populated areas Eastern part of North America Great Lakes region Florida California Mexico and Central America are the mostly densely populated areas Moderate populated areas Central part of United States Central Highland Highlands of Mexico Central and western Canada are the Moderate populated areas Sparsely populated areas Northern Canada Alaska Rocky Mountain regions and desert regions are sparsely populated areas Languages and Religions most of the people speak English Spanish and French Various faiths have been a major influence of culture philosophy and law Between them of the people follow Christianity United States of America is known as Melting Pot where hundreds of different cultures meet blend and creating a new culture Eskimos live in the very cold and inhospitable region where plenty of fish varieties are available They were able to dress themselves in thick warm clothes made of fur they live in igloos Eskimos Igloos Their lives were very simple and they could not alter the environment to any extent They specially designed a house by ice and is known as igloos Transport North America has developed a well- designed Network of Roadways Freeways Railways Waterways and Airways A Roadways North America especially USA and Canada have the best laid roadways in the world They are made of Asphalt and Concrete roads can be used in all weather conditions The Super Ways or Free ways make travelling easy and fast The Pan American highway runs from Alaska in the far North west to Panama in the south B Railways North America is extensively served by an efficient network of railway Tarns- Continental railways and Tarns-Canadian railways are link the east and west coast of Canada and United States Chicago has the biggest railway junction in the world The New York railway junction is one of the busiest railway stations in the world C Waterways The Great Lakes region along St Lawrence and Mississippi rivers are the most important inland waterway in North America Quebec City Montreal Boston New York Philadelphia Charleston and New Orleans are some of the important inland ports New York is the most important port along the East coast Vancouver and San Francisco are important ports on the West Coast of North America Panama Canal In a Canal was cut across the Isthmus of Panama for kms long which connects the Atlantic with Pacific Ocean Panama Canal It greatly reduced the distance between Europe and the West Coast of North and South America D Airways Airways provide in valuable means of transport All the cities and industrial centres in North America are linked by airways New York Chicago Los Angeles Atlanta Toronto Montreal and Mexico City are some of the international airports in North America Trade North America exports a host of agriculture and industrial products The main exports are Industrial Machinery Automobile Paper Fish Wheat Bananas Meat Aircraft Telecom Equipments Chemical Plastics Fertilizers Wood Pulp Timber Crude Oil Natural Gas Aluminum Nickel and Lead The countries of North America Imports include Coffee Cocoa Sugar Textiles Iron ore and Electronics goods The countries of Europe Japan China and India are the major trading partners B South America Next to Asia Africa and North America South America is the fourth largest country in the World Most of the South American continent lies within the Southern Hemisphere and hence called as the Southern Continent The Isthmus of Panama in the North West connects South America with North America Together with the Central America South America is also known as Latin America having been discovered and colonized mostly by the Latin’s ie The Spanish and the Portuguese Location South America lies between o N and o S latitudes and o W and o W longitudes The Equator o latitude passes through the mouth of the Amazon River The Tropic of Capricorn o S longitude passes through the Rio de Janeiro in Brazil South America is inverted triangular shaped landmass The area of the continent is Sq Km which occupies percent of the world's land area Political division of South America N W E S Not to Scale ARGENTINA Port Stanley FALKLAND ISLANDS UK Strait of Magellan URUGUAY Monterideo BRAZIL Brasilia PARAGUAY BOLIVIA Sucre PERU ECUADOR COLOMBIA VENEZUELA GUYANA SURINAME FRENCH GUIANA FRANCE Buenos Aires Asuncion Lima Quito Bogota Costa Rica Equator Equator Tropic of Capricorn GULF OF PANAMA Caracas Caribbean Sea South Pacic Ocean South Atlantic Ocean North Atlantic Ocean Georgetown Port of Spain TRINIDAD AND TOBAGO Paramaribo Cayenne Santiago CHILE Physiography South America has marked resemblances in structure and relief of North America South America has some of the oldest and the youngest rocks of the world On the basis of topographical features the continent may be divided into the following physiographic divisions The Andes Mountains The River Basin or Central Plains The Eastern Highlands The Andes Mountains The Andes are Fold Mountains like the Himalayas This is the longest mountain range in the world and extends for more than km along the Pacific Coast The highest peak in the Andes is Mount Aconcagua an extinct volcano in Argentina border which reaches at an elevation of m In Chile the mountains run very close to the coast The slopes are steep on the western side and gentle on the eastern side like Rockies in North America The Andes being a part of the Pacific Ring of Fire these places are subject to great volcanic eruption and earthquake activities There are some active volcanoes like Cotopaxi m on the Andes range The Andes are rich in minerals like Copper Tin and Precious Gems including Emeralds Mt Aconcagua Cotopaxi The River Basins or the Central Plains Nearly half of the Continent is covered by the plains Three great rivers drain into the Atlantic Ocean The biggest of them is the Amazon The Amazon basin consisting mainly of the alluvial deposits is the thickly forested part of the world It is widest near the Andes and narrowest near the mouth of the Amazon River The Orinoco basin is separated from the Amazon basin by low interfluves It is also one of the most productive parts of the continent The Parana Paraguay plain is an ancient rocky surface covered with alluvial deposits and is rich in petroleum deposits The Eastern Highlands These are considerably older than the Andes and are mainly Plateau which is cut by many rivers They lie to the north and south of the Amazon River The Guiana Highland is located in the northern part of the continent which has a number of waterfalls including the Angel Falls The Brazilian Highlands are found to the south of the Amazon basin They are gently rolling plateaus with steep cliffs along the east coast Climate The climate of the continent of South America has been closely influenced by the latitudes attitudes and the proximity of the Pacific and Atlantic Oceans It is hot in the Amazon basin as the equator passes through it whereas Quito situated almost on the same latitude on the Andes has Eternal Spring That is it has a pleasant climate throughout the year because of its high altitude at feet or meter above the sea level Most of South America regions have its summer from November to January When it is quite hot in Brazil Argentina has a relatively cooler climate because of its location in more southerly latitudes The rainfall distribution is mainly controlled by the physical features and the distance from the sea The trade winds bring a lot of rain to the east coast and the Westerlies to the west coast However the Amazon basin gets rainfall everyday because of its equatorial location The regions around the Equator get what is called o Clock Rains which are convectional rains Rainfall decreases towards the interior In equatorial regions convectional rain occurs almost daily in the afternoons It generally occurs at pm that’s why it is known as o Clock Rain Drainage Owing to the position of the Andes all the great rivers of the continent drain into the Atlantic The Pacific streams are short and swift but along the coastlands of Peru their waters are used for irrigation and to some extent for hydro-electric power Amazon is the longest river of South America km and is the largest river system in the world This river have over a thousand of tributaries The rivers Rio Negro Madeira and Tapajos are important tributaries At the point where it enters the sea the river is so wide and powerful that it flows even at a distance of km into the high seas The Orinoco River originates in the Guiana Highlands and flows northwards into the Caribbean Sea The river Paraguay has the Paraná and Uruguay rivers as the main tributaries which together form and known as the Platte River system All the rivers are navigable for quite some distance in the interior Amazon is the greatest river of South America and the largest drainage system in the world in terms of the volume of its flow and the area of its basin Natural Vegetation There are four main natural vegetation areas of South America and are the Amazon basin the Selvas the Eastern Highlands the Gran Chaco and the slopes of the Andes The Selvas of the equatorial regions are called the lungs of the world The Amazon rainforest are the largest of their kind in the world They abound in hardwood trees such as mahogany and Ebony which are very valuable The other common species are Rosewood Cinchona and a variety of Palm trees The bark of the cinchona tree is used for making quinine the drug to cure Malaria The Amazon rainforest are gradually getting depleted Various developmental activities such as construction of transportation lines human settlements and agriculture have led to widespread deforestation Environmentalist fear that this might lead to serious ecological disturbance in future Amazon rainforest The Eastern Highlands have many varieties of trees which are of economic importance The leaves of the Yerba Mate tree are used to make you tea like drink The Gran Chaco region has thick deciduous forests An important hardwood tree found in these forests is the Quebracho Tree axe breaker Quebracho tree yields tannin which is used for tanning leather The forests on the slopes of the Andes have coniferous such as pine fir and spruce These forests are also called Montana They yield valuable softwood for the paper and pulp industry Coastal Equatorial Hot desert Mediterranean Temperate Temperate desert Tropical HIGH LANDS Equator Equator Tropic of Capricorn Caribbean Sea South Pacic Ocean South Atlantic Ocean North Atlantic Ocean N W E S Not to Scale Climatic Region of South America Wildlife South America is blessed with a variety of wildlife The dense forests swamps and rivers of the Amazon basin are particularly rich in different species of animals birds and reptiles More than types of birds are found in the continent The Condor is the largest bird prey Rhea is the flightless bird much like the ostrich of Africa Toucans Macaw Hummingbirds Flamingoes and different type of Parrots are also found here The forest is home to a variety of monkeys The spider monkeys howler monkeys owl monkeys and squirrel monkeys are very gentle The Anaconda which is one of the largest snakes in the world is also found here Ancient madammals such as anteaters and armadillos are found in South America Llamas are animals typical found only in South America The rivers of South America have a rich variety of fish The Piranha found in the Amazon is a fierce flesh eating fish Types of Forest Flora and Fauna in South America S No Type of Forest Climate Region Flora Fauna Equatorial Forest Hot and wet climate throughout the year Amazon Basin North eastern Brazil and Coastal Columbia Rubber Mahogany Ebony Log wood Brazil nuts and Ceiba Anaconda Armadillo Piranha Monkey Snake Crocodile and Parrots Temperate Forest Mild and wet climate throughout the year Southern Brazil Southern Chile Brazilian Highlands Paraguay and Uruguay Beech Conifers Parana Pines and Quebracho White tailed Deer Rraccoons Opossums Porcupines and Red Fox The Mediterranean Forest Summer is hot and dry Winter is mild and wet South Atacama desert Central Chile Thorny Shrubs Cactus Evergreen Laurel and Acacia Not much wildlife is found here The Savanna Grassland Summer is hot and Moist winter is cold and dry Guiana Highlands Brazilian highland Northern Argentina and Paraguay Tall coarse grass and Acacias Capybara Marshy Deer White-bellied and Spider Monkey The Pampas Grassland Summer is quite warm Winter is cold and moderate rainfall North Eastern part of Argentina Uruguay and Southernmost Brazil Short grass Rhea Pampas Deer Jaguar Guanaco Camel Mule and Stag The Desert Summer is hot and winter is cold Southern Argentina Atacama desert Southern Peru Northern Chile and Northeast Brazil Scrubs Cactus Scrubs Cactus Cacti Lichens and Acacia Geckos and Iguana Rhea Flightless bird Llamas Agriculture More than half of the people of South America live by farming Subsistence farming is practiced in this continent Most of areas are covered by forest like the Amazon basin Only three countries the Argentina Uruguay and Brazil have well developed agriculture Argentina is one of the leading agricultural countries of South America The agricultural activities are mainly concentrated in the wet Pampas The Geo climatic condition of Pampas are ideal for agriculture Wheat and Maize are grown on extensive forms in the Argentine Pampas In the piedmonts of Andes where rivers descend and the climate is favourable the farmers concentrate on the agricultural vineyards and other citrus fruits Cash crops like coffee cocoa sugarcane banana cotton etc are also grown in this continent Wheat The major wheat producers are Argentina Brazil Paraguay Uruguay and the Chile The Wheat is grown extensively on the Pampas of Argentina Argentina is one of the largest producer and exporter of wheat in the world Wheat Cotton Sugar cane Cattle Cocoa Coee Fishing N W E S Not to Scale Caribbean Sea South Pacic Ocean South Atlantic Ocean North Atlantic Ocean Equator Equator Tropic of Capricorn Sugarcane Sugarcane has been cultivated in the humid tropics of South America Spanish and Portuguese introduced sugarcane to the West Indies and Brazil Brazil is the largest producer of sugar in South America Maize Maize is also known as corn Maize is grown in the warmer part of the Pampas and coastal regions of Brazil and in some parts of the Amazon basin It requires warm climate and frequent showers in summer Argentina is one of the largest producer and exporter of maize in the world Coffee and Cocoa Coffee and Cocoa are the most important crops of South America These crops need a warm temperature with frequent heavy rainfall and well-drained soil They grow well in the red soil of the Brazilian Highland Brazil is essentially an agrarian country Brazil stands first in the production of Coffee and third in Cocoa in the world Minas Gerais and Sao Paulo are the important Coffee growing areas in Brazil It is also known as the coffee pot of the world Colombia and Venezuela also grow large quantities of coffee Coco is also grown in Ecuador and Colombia Cotton Cotton is another important cash crop of South America Warm climate with frequent rainfall provides suitable condition for growing cotton Cotton is the second most important crop in Brazil Sao Paulo State produces half of the Country’s total cotton Equator Venezuela and Peru are the other important cotton growing countries in South America Barley Rye and Oats These are grown extensively in the Pampas Barley is a member of the grass family and is a major cereal grain grown in temperate climates Oats are grown in Argentina Uruguay Chile Andean region highlands of Bolivia Ecuador and Peru In most countries Oats are more important as fodder for livestock in the field Animal rearing Animal rearing is an important activity in South America The Llanos and Campos in South America are the extensive Tropical Grasslands Beef cattle are raised in Pampas in Argentina Here cattles are mainly raised for draught purposes and meat Llano grassland are found in the basin of Orinoco of Venezuela Brazil and Columbia Here most of the cattle are of Criollo breed well suited to the climatic conditions Cattles are fed on alfalfa and the breeds raised here on large pasturelands known as Estancias Sheep are reared in the drier parts of South America The temperate grasslands of Tierra Del Fuego and Falkland Islands are well suited for Sheep grazing Argentina and Uruguay are the important sheep rearing countries Argentina is one of the largest exporters of beef in the world Sheep in South America Estancias The Breeds raised on large pasture lands is known as Estancias These are divided into several paddocks Besides this there are small yards known as corrals where animals are sorted and branded The owner is the Estanciera who has a number of gauchos Fisheries Peru is one of the world's largest producers of tropical fish Here the cool Humboldt Current helps to bring plankton which is the main food for fishes Commercial deep sea fishing off of Peru’s coastal belt of over km Peruvian waters normally abound with sword fish mackerel yellow fin pompano and shark More than species are caught commercially There are over fishing ports on the Peruvian coast Paita and Callao are being the most important centers in Peru Besides coastal fishing inland fishing are also carried out in South America River Amazon is a great aquarium As many as varieties of fish inhabit this river Minerals South America is rich in minerals These mineral deposits are unevenly distributed South America has many valuable deposits of minerals particularly of iron ore manganese petroleum copper and bauxite There are some active mines producing silver and gold The continent has little coal which is still one of the mainstays of industrial economies Northern Chile has the world's only natural deposits of sodium nitrate an important ingredient of fertilizers Iron ore South America contains about one fifth of the world's iron ore reserves Brazil and Chile both have massive deposits of iron ore Brazil has the second largest iron ore deposits in the world after Russia Brazil is estimated to have about of the world export of iron ore High grade iron ore has long been mined at Itabira Minas Gerais and new site in the Carajas Manganese Brazil also has large deposits of Manganese Manganese ore is mined at Lafaiete Minas Gerais and in the Northern State of Amapa Petroleum Venezuela is rich in petroleum deposits Argentina Colombia Ecuador Peru Chile and Bolivia are the other valuable oilfields Petroleum is the only mineral produced in substantial quantity Argentina is almost self-sufficient in petroleum Venezuela is one of the world's leading producers of oil and largest oil exporter outside the Middle East Copper Chile is the third largest producer of copper in the world Copper provides over of exports by value Some of the biggest copper mines of the world are located in Peru It is found in the Atacama Desert Bauxite Brazil is the third largest bauxite producing country An important bauxite mining centre is located near the mouth of the Amazon River Bauxite is used for aluminum production Industries Industries in South America have developed slowly Argentina Brazil and Chile are the most highly developed industrial countries in this continent Until World War I the continent exported most of its mining production and large amount of minerals particularly Petroleum Copper and iron are still exported The continent lacks infrastructure especially transport which is an essential need for Industrialisation Railways and the roads could not be developed sufficiently owing to a rugged terrain The Amazon and the La Plata rivers provide cheap water transport In spite of having an abundance of natural resources industrialisation started quite late in South America Recently new industries are being set up with locally available raw materials Brazil is the most industrialized country in the continent followed by ArgentinaSNo Country Industries Brazil Iron and steel cotton textiles sugar food processing oil refining chemicals and automobiles Argentina Meat processing and Canning dairy products food processing leather processing woolen textiles sugar and oil refining Chile Oil refining chemical fertilizers and copper smelting Peru Mining and the processing of minerals chemicals fertilizers sugar coffee and wool textiles Uruguay Dairy products meat processing and woolen textiles Venezuela Oil refining chemical fertilizers and copper smelting Trade South America has significant role in the world trade More than half of the South America’s trades are shared by Brazil Argentina Venezuela Peru and Chile South America’s major exports are mostly primary commodities such as sugar coffee cocoa tobacco beef corn wheat petroleum natural gas linseed cotton iron ore tin and copper South America's products include mostly exported to North America and Europe It’s imports are machinery vehicles chemicals pharmaceuticals paper are textiles These are imported from North America and Europe Transport Unlike North America South America still does not have an adequately integrated transportation network Significant efforts have been made to improve both the connection within the countries and the linkages between them Roadways South America has an extensive and rapidly expanding network of roads In many countries however only a relatively small percentage of roads are paved and the most remote areas they may be barely wide enough for two Vehicles to pass easily A Road linking Venezuela and Brazil allows north to south movement through the Amazon Basin Brazil continues to have the largest network of roads belonging to the Pan American Highway System which extends throughout the America's South America- Roadways Railways In most South American countries railways have lost their dominant position of the major mode of transportation and havebeen replaced by the road networks that have developed rapidly since the s Moreover rail transport is plagued by operational problems as well as by obsolete equipment Almost all lines are single-tracked which makes traffic slow and discourages passenger service Many countries have two or more track gauges which impedes the efficient integration of the rails system South America- Railways Waterways Seaways have long been a vital component of the transport systems of South American countries Majority of imports and exports to and from the continent are moved by ship South America has a number of outstanding natural harbours They are Rio de Janeiro Salvador Montevideo and Valparaiso Several countries such as Chile and Brazil are making a determined effort to develop and enlarge their sea routes South America- Railways-Waterways There are two inland waterways system of international importance They are i The Paraguay Uruguay basin which includes territory in four countries and The Amazon basin which includes six countries Each has several thousand miles of navigable waterways Airways Airways have developed rapidly since World War The increase is particularly significant with respect to passenger traffic and also handling of bulky freights All the South America capitals and most of the large cities are linked by direct air services to the major traffic centres of the United States and Europe Population South America contains the world's most mixed population Many people in South America are descended from European especially the Spanish and Portuguese who begin to arrive during the century The descendants of African slaves brought over by the Europeans Native people still live in the mountain and the rainforests and keeping their own languages and traditions There are three major races found in South America and are i American Indian European and Blacks The mixed population of Native Indians and Europeans is known as Mestizo The mixed population of European and the Blacks is called Mulato and the mixture of Native Indians and Blacks is called Zambo The current population of South America is cores Population density of South America is persons per square kilometer South America is positioned rank in total population among the continentsPopulation distribution High densely populated areas are Guiana Venezuela Suriname Columbia Brazil and Peru Moderate populated areas are Paraguay Chile and Uruguay and Sparsely populated areas are Argentina Bolivia and Amazon Basin Languages and Religions Portuguese and Spanish are the primary languages of the South America Among other languages used by many South Americans are Dutch French English German and Hindi Christianity is the dominant religion in South America Other than Christianity Hinduism and Islam are also followed by South Americans South American nations have variety of music Some of the most famous genres include Samba from Brazil Tango from Argentina and Uruguay and Cumbia from Colombia North America and South America S No North America South America Geographical extent N to N latitude and W to W longitude N to S latitude and W to W longitude Major countries Canada United States of America Mexico Argentina Bolivia Brazil Chile Colombia Ecuador Guyana Paraguay Peru Suriname Uruguay Venezuela Smallest country Grenada Suriname Highest point Mount McKinley Lake Maracaibo Surrounding water bodies Arctic Ocean Pacific Ocean Atlantic Ocean Gulf of Mexico Pacific Ocean Atlantic Ocean Caribbean Sea Southern Ocean Major rivers Mississippi River Missouri River Colorado River Rio Grande Yukon River Amazon Parana Madeira Tocantins Orinoco Largest lake Lake Superior Portuguese Spanish Dutch English French Major deserts Great Basin Mojave Sonoran and Chihuahuan deserts Atacama deserts Patagonian deserts Major animals Brown bear bald eagle humming bird bullfrog beaver red cockaded woodpecker red fox bison Llama anaconda anteater agouti armadillo and chinchilla Major crops grown Maize wheat soyabean Wheat maize rice potato Major language spoken English Spanish French Cerro Aconagua Andes Mountains Wrap Up North America is the third largest continent next to Asia and AfricaIt is divided into four physical divisions The vast latitudinal extent from the tropics to the Polar Regions makes the climate of North America as varied as that of Asia North America is endowed with a diverse and extensive forest cover Approximately percentage of the total land area is under forest cover Wheat Corn Maize Oats Soybean Barley and many other food crops are grown throughout the vast interior plains of North America North America is the leading producer of Iron Ore Petroleum Natural Gas Copper Silver Sulphur Zinc Bauxite and Manganese United States of America is known as Melting Pot where hundreds of different cultures meet blend and creating a new culture Next to Asia Africa and North America South America is the fourth largest country in the World It is divided into three physical divisions The climate of the continent of South America has been closely influenced by the latitudes and the proximity of the Pacific and Atlantic Oceans There are four main natural vegetation areas of South America and are the Amazon basin the Selvas the Eastern Highlands the Gran Chaco and the slopes of the Andes Wheat Sugarcane Maize coffee cocoa sugarcane banana cotton etc are grown in South American continent South America has many valuable deposits of minerals particularly of iron ore manganese petroleum copper and bauxite Portuguese and Spanish are the primary languages of the South America Glossary Isthmus A narrow stretch of land joining two large land masses Strait A narrow stretch of water joining two large water bodies Cellulose Obtained from wood Pulp Prairies A temperate grassland of North America Igloos The specially designed a house by ice The Pacific Ring of Fire These places are subject to great volcanic eruption and earthquake activities Selvas A tract of land covered by dense equatorial forest in the Amazon basin Pampas A temperate grassland of South America o Clock Rain In equatorial regions convectional rain occurs at pm Estancias The Breeds raised on large pasture lands Unit Map Reading Introduction Reading of maps will give clear understanding of geographical location physiographic features like mountains plateaus and plains water features river lake ocean etc and cultural features such as roads settlement etc The maps are meant to be the preserving records of the past which will helps us to understand the past and perceive the future Maps portraits political boundaries of different countries and states It helps the students to visually understand the size and shape of various countries continents etc Maps clearly refer to the properties that people own and the geographical boundaries Maps A map is an essential tool of a geographer Map is a representation of the earth as a whole or a part of the earth drawn on a flat surface according to a given scale It can show continents countries cities and even a local area are drawn with specific details It is easy to handle and carry as it can be rolled up or folded and stored in computers In the early times various materials such as animal skin cloth parchment papyrus wet earth and clay tablets were used to make maps Types of Maps As each map is unique in its design content and construction On the basis of certain common features maps can be classified into several types Maps on the basis of scale Large scale maps show small areas in greater details because they are drawn on a relatively large scale Cadastral maps are village and town maps which show individual fields and house sites Topographical maps shows smaller areas in much greater details about small area These maps are prepared by Survey of India These are also large scale maps which show both natural features like hills and valleys as well as man-made features like buildings road and canals Small scale maps that show large areas like continent or countries These maps are drawn on cm kms These are called small-scale maps Wall maps are small-scale maps showing large areas They are useful for students in classrooms and offices small scale maps covers a larger area and depicts with limited information Atlas is a collection of maps in a book Atlas maps are small-scale maps covering large areas like continents and countries Only prominent relief features main roads and railways important towns are shown in Atlas maps The study of geographic On the basis of Scale Maps On the basis of Content Large Scale Small Scale Physical Cultural characteristics of a large area is possible at the time with the help of an atlas The science of map-making is called cartography carte means map and graphic means drawing One who draws maps is called a Cartographer Types of Atlas School Atlas contains the maps giving sufficient details of the home and country Advanced Atlas contains detailed maps of even small regions of the continents and are used as reference atlases Regional Atlas contains detailed maps of small areas prepared with a view to help in regional planning National Atlas contains detailed maps of a country The maps of a national atlas are comparatively large-sized and they depict general and characteristic features of the geography of a country Maps on the basis of content Physical maps show natural features such as relief geology soils drainage elements weather and vegetation Relief maps show general topography like mountains valleys plains plateaus and rivers Geological maps are drawn to show geological structures rocks and minerals Climatic maps show the distribution of temperature rainfall clouds relative humidity direction and velocity of winds and other elements of weather Soil maps which are drawn to show the distribution of different types of soil and their properties Cultural maps which shows the man-made features are called cultural maps Political maps show the administrative divisions of a country state or district These maps facilitate the administration in planning and management of the concerned administrative units Population maps show the distribution density and growth of population occupation structure and literacy Economic maps depict the production and distribution of different types of crops and minerals location of industries trade routes and flow of commodities Transportation maps show roads railway lines and the location of railway station airports and seaports etc Thematic maps represent the distribution of a particular feature or theme and its spatial variation Digital maps is a web-based service that provides detailed information about geographical regions and sites around the world Elements of maps Maps provide us with a lot of information and one must know how to read and interpret them Every map is provided with certain features that help us to study the information presented in it The basic essential elements of a map are title direction scale and legend or key and signs and symbols Title Every map has a title that describes the information given in the map For example a map with the title India Rivers shows Rivers of India Direction In general maps are drawn with North orientation It helps us to find other direction on the map like East West and South In addition to the North notation latitudes and longitudes are depicted in the margins The North is notified by letter N with an arrow mark Scale The scale of a map is the ratio between the distance on the map between two points and actual distance between the two places on the ground For example the scales can be represented as cm km It means cm on the map is equal to km on the ground It helps to find the distance on the map between two points Legend or key A legend or key of a map explains the symbols that are used on it to represent various physical and cultural features The common signs and symbols which are internationally accepted and used in maps are called conventional signs and symbols Every map has a legend or a key which explains the different colours and symbols used in it On a map it is difficult to show the real shape such as settlements bridges post offices railway lines and forests They are depicted by using certain colours symbols or letters India Physical Features Pamir Knot Hindu Kush Shimla Mussourie Nainital Ranikhet Almora Darjeeling Paradip Vishagapanam Purvanchal Mount Abu Guru shikhar Dhupgarh Garwal Palani Hills Arma Konda K o n k a n c o a s t INDIA PHYSICAL DIVISIONS Kailash Range Tsangpo River EW N S Not to Scale Colours Features White Snow Yellow Agriculture Green Forest Blue Water bodies oceans seas and rivers Brown Mountain Hill and Contour Red Settlements Road Black Railway line Conventional signs and symbols A sign is a widely used symbol or a line pattern or a colour on a map It represents a feature on the ground The Survey of India SOI have standardized a set of convectional signs and symbols Several colours are commonly used in the map Major Road Minor Road Bridge Railway Station Railway Broad Gauge Railway Metre Gauge River Canal Dam Lake Wetland Mountain Volcano Grass Shrub Forest Country Capital Internal Administrative Capital Temple Post Oce Telegraph Oce Police Station Fort A map is a two dimensional form of the Earth A globe is three dimensional model of the Earth A map shows a small or a large area A globe is a true model of the earth A map can show a detailed information about an area A globe cannot show the detailed information for an area A map is very easy to carry A globe is not easy to carry The cardinal direction are North South East and West The scale of a map is the ratio between the distance on the map between two points A legend or key of a map explain the details in the map The Survey of India SOI have standardized a set of conventional signs and symbols Glossary Map Representation of Earth on a flat surface Scale Ratio between the Actual distance of two points on the earth and the distance on a map Legend It is a representation of different geographical features by using different colours and symbols Relief maps map that shows the physical appearance of hills mountains ridges valleys Atlas Collection of several maps Cardinal direction North south east and west are called cardinal direction Thematic map Represent the distribution of a particular feature Graduated Arranged in a series Wrap up Map is a representation of the Earth as a whole or a part of the earth drawn on a flat surface according to given scale Maps classified into two types on the basis of scale and on the basis of content The basis essential elements of a map are title direction scale and legend or key or symbol Unit Natural Hazards Understanding of Disaster Management in Practice Introduction Everyday almost all the newspapers and television news channels carry reports on Natural hazards and disasters that occurred in several parts of the world Neither all the hazards nor all the disasters can be preventable but the destruction can be minimized For better understanding we must know what is a Natural Hazard What is a Disaster What is Disaster Management and so on Let us learn about some important terminologies along with disaster management techniques Hazard Generally a hazard is a dangerous phenomenon substance human activity or condition that may cause loss of life injury health impacts property damage loss of livelihoods services social and economic disruption or environmental damage Natural hazards are natural phenomenon that might have negative impact on human or the environment Natural hazards are classified into two broad categories Geophysical and biological Disaster A disaster can be generally defined as A serious disruption in the society causing widespread material economic social or environmental losses which exceed the ability of the affected society to cope using its own resources Disaster impacts may include loss of life injury disease and other negative effects on human physical mental and social well-being together with damage to property destruction of assets loss of services social and economic disruption and environmental degradation Hazards are termed as Disasters when they cause widespread destruction of property and human lives Example Hurricane is a natural hazard It develops at sea When it reaches land and destroys buildings and kills people it can be described as a disaster Natural Disasters Earthquake A sudden movement or trembling of the earth crust is called as earthquake The movement of the tectonic plates mass wasting landslides surface fault etc causes earthquake Effects Due to a strong earthquake loss of lives buildings roads bridges and dams are damaged Earthquake cause floods tsunamis landslides fires break down of water supply and electrical lines It may change the course of a river too Effect of Earth Quakes Recent hazard in India and Tamilnadu On nd to rd May a high velocity dust storms swept across the parts of North India and more than people died and over were injured In Uttar Pradesh died in the city of Agra and about died other parts of the state In neighbourhood of Rajasthan state people died and over were injured The wind downed more than electricity posts and uprooted hundreds of trees After tsunami cyclone Gaja is the worst natural disaster to hit Tamilnadu It left Types of Disasters Types of Disaster Sources Events Natural Disaster Beneath the Earth Surface Earthquakes tsunamis and volcanic eruptions On the Earth Surface Landslides and Avalanches Meteorological Hydrological Windstorms Tornadoes Hailstorms and Floods Health Epidemics Man-made Disaster Socio technical Technological Transportations disasters Structural collapse and production failures Warfare National and International a trail of destruction in several coastal districts and took a toll on agriculture to a serious extent Destruction of Cyclone Gaja Dust storms swept across the parts of North India Tsunami When earthquake jolts the ocean floor the sudden dislocation of the sea bed occurs and the resulting displacement of water can produce one or more huge destructive waves known collectively as a Tsunami The sea waves rise to several meters and may reach the coast within a few minutes Effects It causes flooding and disrupts transportation power communication and water supply The word Tsunami is derived from the Japanese word Tsu means harbour and nami means waves Flood Sudden overflow of water in a large amount caused due to heavy rainfall cyclone melting of snow Tsunami or a dam burst Effects Loss of life and property Displacement of people Spread of contagious diseases such as Cholera and Malaria etc Cyclone A low-pressure area which is encircled by high pressure wind is called a cyclone Effects of cyclone The main effects of tropical cyclone include heavy rain strong wind large storm surges near landfall and tornadoes Effects of cyclone Severe cyclonic storm Gaja crossed the coasts of Tamilnadu and Puducherry around Vedaranyam and Nagapattinam in the early hours of November Friday with wind speed gusting of around Kmph reported the Indian Meteorological Department Effects of Storm Gaja in Nagapattinam Man-made Disasters Stampede The term stampede is a sudden rush of a crowd of people usually resulting in injuries and death from suffocation and trampling It is believed that most major crowd disasters can be prevented by simple crowd management strategies Human stampedes can be prevented by organization and traffic control such as barriers following queues and by avoiding mass gathering Fire Fire is a disaster caused due to electrical short circuit accidents in chemical factory match and crackers factory Fire involves basic aspects Prevention Detection Extinguishing Forest fire in hilly regions Fire accidents in Cracker Factories Public awareness of what to do before fire during fire and after fire is of critical importance Industrial Disaster Industry faces multiple risks involved with its production transportation storage usage and disposal of the effluents containing residuals and hazardous materials from nuclear and chemical industries Example Bhopal gas leakage What is Disaster Management The systematic process of applying administrative directives organizations and operational skills and capacities to implement strategies policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster is called Disaster Management Disaster Management is necessary or expedient for Prevention Mitigation Preparedness Response Recovery Rehabilitation Disaster Management Cycle or Disaster cycle The six disaster management phases that have been used in the concept of disaster cycle are as follows Pre Disaster Phase Prevention and Mitigation Reducing the risk of disasters involves activities which either reduce or modify the scale and intensity of the threat faced or by improving the conditions of elements at risk The use of the term reduction to describe protective or preventive actions that lessen the scale of impact is therefore preferred Mitigation embraces all measures taken to reduce both the effects of the hazard itself and the vulnerable conditions to it in order to reduce the scale of a future disaster In addition to these physical measures mitigation should also be aimed at reducing the physical economic and social vulnerability to threats and the underlying causes for this vulnerability Therefore mitigation may incorporate addressing issues such as land ownership tenancy rights wealth distribution implementation of earthquake resistant building codes etc Preparedness The process includes various measures that enable governments communities and individuals to respond rapidly to disaster situations to cope with them effectively Preparedness includes for example the formulation of viable emergency plans the development of warning systems the maintenance of inventories public awareness and education and the training of personnel It may also embrace search and rescue measures as well as evacuation plans for areas that may be at risk from a recurring disaster All preparedness planning needs to be supported by appropriate rules and regulations with clear allocation of responsibilities and budgetary provision Early Warning This is the process of monitoring the situation in communities or areas known to be vulnerable to slow onset hazards and passing the knowledge of the pending hazard to people harmless way To be effective warnings must be related to mass education and training of the population who know what actions they must take when warned The Disaster Impact This refers to the real-time event of a hazard occurrence and affecting elements at risk The duration of the event will depend on the type of threat ground shaking may only occur in a matter of seconds during an earthquake Where as flooding may take place over a longer sustained period During Disaster Phase Response This refers to the first stage response to any calamity which include setting up control rooms putting the contingency plan in action issue warning action for evacuation taking people to safer areas rendering medical aid to the needy etc simultaneously rendering relief to the homeless food drinking water clothing etc to the needy restoration of communication disbursement of assistance in cash or kind The emergency relief activities undertaken during and immediately following a disaster which includes immediate relief rescue and the damage needs assessment and debris clearance The Post- Disaster Phase Recovery Recovery is used to describe the activities that encompass the three overlapping phases of emergency relief rehabilitation and reconstruction Rehabilitation Rehabilitation includes the provision of temporary public utilities and housing as interim measures to assist long-term recovery Reconstruction Reconstruction attempts to return communities with improved pre- disaster functioning It includes replacement of buildings infrastructure and lifeline facilities so that long-term development prospects are enhanced rather than reproducing the same conditions which made an area or population vulnerable Development In an evolving economy the development process is an ongoing activity Long-term prevention disaster reduction measures like construction of embankments against flooding irrigation facilities as drought proofing measures increasing plant cover to reduce the occurrences of landslides land use planning construction of houses capable of withstanding the onslaught of heavy rain wind speed and shocks of earthquakes are some of the activities that can be taken up as part of the development plan Let us see in detail about a few disaster management measures that are in practice in India Why mitigating the Hazards essential It is more cost-effective to mitigate the risks from natural disasters than to repair damage after the disaster Hazard mitigation refers to any action or project that reduces the effects of future disasters Warning System in India Department of Science and Technology DST Department of Space DOS and CSIR Laboratories have set up early warning system for tsunami and storm surges in the Indian Ocean Disaster Management in India National Disaster Management Authority abbreviated as NDMA is an agency of the Ministry of Home Affairs whose primary purpose is to coordinate response to natural or man-made disasters and for capacity-building in disaster resiliency and crisis response NDMA was established through the Disaster Management Act enacted by the Government of India on rd December The National Disaster Response Force NDRF is a specialized force constituted for the purpose of specialist response to a threatening disaster situation or disaster under the Disaster Management Act National Institute of Disaster Management NIDM is a premier institute for training and capacity development programs for managing natural disasters in India on a national as well as regional basis Disaster Management in Tamilnadu Tamilnadu State Disaster Management Authority TNSDMA is responsible for all measures for mitigation preparedness response and recovery are undertaken under the guidance and supervision of the Authority Tamilnadu State Disaster Response Force SDRF has been constituted with a strength of Police Personnel They have been trained in disaster management and rescue operations in consultation with National Disaster Response Force NDRF District Disaster Management Authority DDMA is responsible for Disaster Management at district level State Disaster Management plan The perspective plan prepared by the Revenue and Disaster Management Department Hot line between Indian Meteorological Department and the State Emergency Operation Centre is established and mitigation in the District is done through telephone fax and IP phones also available which connect the State with District Head Quarters Taluks and Blocks of the State Wireless radio network with both high frequency and very high frequency are also available in the State General Survival Techniques During the earthquake be under the table chair kneel to the floor and protect yourself Go near a sturdy wall sit on the floor and hold the floor strongly and protect yourself Use only torch lights During flood forecast store up necessary things like first aid Listen to the local Radio TV for instructions Cut off all the electrical supplies during flood and earthquake In case of fire accidents dial for fire service If clothes are on fire Don’t Run Stop Drop and Roll Road accidents can be avoided by permitting the persons only who have license are allowed to drive Learn preach and practice safety rules during walking and driving along the road Rail Safety Tips Stay alert Trains can come from either directions at any time Never sit on the edge of the Station Platform Cross the tracks safely While on boarding the Air craft pay attention to the flight crew safety demonstration and read the safety briefing card available in the seat pocket carefully Wrap up Both the hazard and the disaster cause enormous physical damage to property and even make huge loss of life Disaster management refers to conservation of lives and property during a natural or man-made disaster Preparation Mitigation Preparedness Response Recovery and Development are the six Disaster management cycles The state and the central government have various disaster management organisations Earthquake Tsunami Flood Cyclone are some of the natural disaster Fire and Industrial accidents are few man-made disasters If any accidents occur dial for Police for Fire service and for the Ambulance If clothes are fire Don’t Run Stop Drop and Roll Glossary Hazard a dangerous event Disaster an event which causes enormous damage to property and fife Vulnerability severity Mitigate reduce or make something less severe Meteorology forecasting of weather Trembling shaking or vibration Preventive stop something before it happens Extinguish to stop a fire or light Emergency a serious or dangerous situation Psychological Mental or emotional state of a person CIVICS Unit Women Empowerment Introduction Feminism is not about making women stronger Women are already strong It’s about changing the way the world perceives that strength The story of women’s struggle for equality belongs to no single feminist nor to any one organisation but to the collective efforts of all who care about human rights You educate a man you educate a man You educate a woman you educate a generation To call woman the weaker sex is a libel it is man’s injustice to woman Mahatma Gandhi The empowerment and autonomy of women and the improvement of their political social economic and health status is a highly important end in itself In addition it is essential for the achievement of sustainable development Women’s empowerment and achieving gender equality is essential for our society to ensure the sustainable development of the country Social Aspects of Gender In sociology we make a distinction between sex and gender Sex is the biological trait that societies use to assign people into the category of either male or female When people talk about the differences between men and women they are often drawing on sex on rigid ideas of biology rather than gender which is an understanding of how society shapes our understanding of those biological categories Gender is more fluid it may or may not depend upon biological traits More specifically it is a concept that describes how societies determine and manage sex categories the cultural meanings attached to men’s and women’s roles and how individuals understand their identities including but not limited to being a man woman transgender and other gender positions Gender involves social norms attitudes and activities that society views as more appropriate for one sex over another Gender is also determined by what an individual feels and does The sociology of gender examines how society influences our understandings and perception of differences between masculinity what society views appropriate behaviour for a man and femininity what society views appropriate behaviour for a woman We examine how this in turn influences identity and social practices The essential factors for empowerment are Education Education gives one the ability to think wisely and take thoughtful decisions Gender Discrimination A Society which discriminates between the two genders can never be empowered Discrimination based on caste creed religion etc Woman’s Education Education is one of the most important means of empowering women with the knowledge skills and self-confidence necessary to participate fully in the development process More than years ago the Universal Declaration of Human Rights asserted that everyone has the right to education Educating the girl child produces mothers who are educated and who will in turn educate their children care for their families and provide their children care and support The girl child needs to be educated to acquire knowledge and skills needed to advance her status for social interactions and self-improvement The sustainability and progress of all regions depend on the success of women across the globe As the former President Barrack Obama said while addressing the United Nations General Assembly in the future must not belong to those who bully women It must be shaped by girls who go to school and those who stand for a world where our daughters can live their dreams just like our sons The Unmatched Importance of Female Education Increased Literacy Of the illiterate youth across the globe nearly percent are female Offering all children education will prop up literacy rates pushing forward development in struggling regions Human Trafficking Women are most vulnerable to trafficking when they are undereducated and poor according to the United Nations Inter-Agency Project on Human Trafficking Through providing young girls with opportunities and fundamental skills Human Trafficking can be significantly undermined Political Representation Across the globe women are under represented as voters and restricted from political involvement The United Nations Women’s Programmes on Leadership and Participation suggest that civic education training and all around empowerment will reduce this gap Thriving Babies According to the United Nations Girls Education Initiative children of educated mothers are twice as likely to survive past the age of five Later Marriage As suggested by the United Nations Population Fund in underdeveloped countries one in every three girls is married before reaching the age of In a region where a girl receives seven or more years of education the wedding date is delayed by four years Income Potential Education also increases a woman’s earning capabilities According to the United Nations Educational Scientific and Cultural Organisation UNESCO a single year of primary education has shown to increase a girl’s wages later in life by percent Prospering GDP Gross Domestic Product also rises when both girls and boys are being offered educational opportunities When percent more women attend school GDP increases by three percent on average Poverty Reduction When women are provided with equal rights and equal access to education they go on to participate in economic activity Increased earning power leads to reduction in poverty level Savitribai Phule as a tradition breaker the first female teacher at the first girls school when we talk about the girls education only Jyotirao Phule is remembered as the champion of women’s education in India He along with his wife Savitribai Phule opened the first school for girls in First in the World Woman First woman Name Country Prime Minister Sirimavo Bandaranaike Sri Lanka In space Valentina Tereshkova USSR To scale Mt Everest Junko Tabei Japan To win the Olympic gold Charlotte Cooper England First in India Woman First Women’s University Maharshi Karve starts SNDT University in Pune with five students in First Women to hold a Union Cabinet post Vijaya Lakshmi Pandit First Women to hold a Union Foreign Minister’s post Sushma Swaraj First Women youngest minister of a state Sushma Swaraj She became the cabinet minister of Haryana when she was only yrs old First Women governor of Independent India Sarojini Naidu in charge of United Provinces First Women president of UN General AssemblyVijaya Lakshmi Pandit First Women Prime Minister of India Indira Gandhi First Women IPS Officer of India Kiran Bedi First Women to win Nobel Peace Prize Mother Teresa First Indian Women to climb Mount Everest Bachendri Pal First Indian Women to win Booker Prize Arundhati Roy First Women President Pratibha Patil First Women Speaker of LokSabha Meira Kumar First Women judge in Supreme Court Meera Sahib Fatima Bibi First Women President of the Indian National Congress Annie Besant First Women Chief Minister of an Indian State Sucheta Kripalani First Women Director General of Police DGP Kanchan Chaudhary Bhattacharya First women defencse Minister of India Nirmala Sitharaman First woman Finance Minister of India Nirmala Sitharaman Factors Responsible for Poor Female Literacy Rate Gender based inequality Social discrimination and economic exploitation Occupation of girl child in domestic chores Low enrolment of girls in schools Low retention rate and high dropout rate Male Female literacy rate in India Census year Persons Males Females Male- Female gap in literacy rate Role of woman in the economic development Importance of women’s economic empowerment in society is inevitable Empowerment is one of the main procedural concerns when addressing human rights and development Women’s empowerment and achieving gender equality is essential for our society to ensure the sustainable development of the country Benefits of Economic Empowerment of Woman Women’s economic empowerment is central to realising women’s rights and gender equality Empowering women in the economy and bridging gender gaps in the world of work are key to achieving the agenda for Sustainable Development When more women work economies grow Increasing women’s and girls educational attainment contributes to women’s economic empowerment and more inclusive economic growth It is estimated that companies with three or more women in senior management functions score higher in all dimensions of organisational performance The need for Economic Empowerment of Woman Gender differences in laws affect both developing and developed economies and women in all regions Women remain less likely to participate in the labour market than men around the world Women are more likely to be unemployed than men Women are over-represented in informal and vulnerable employment Globally women are paid less than men Women bear disproportionate responsibility for unpaid care and domestic work Unpaid care work is essential to the functioning of the economy but often goes uncounted and unrecognised Women are less likely to be entrepreneurs and face more disadvantages starting businesses Women are less likely than men to have access to financial institutions or have a bank account Women are still less likely to have access to social protection Violence and harassment in the world of work affects women regardless of age location income or social status Indian society is known for its unity in diversity Social inequality also prevails in this society which has given birth of weaker section of society which is as diverse as Indian society itself women Scheduled caste scheduled tribes children poor landless farmers are considered as weaker sections They have faced socio-economic and political discrimination in hands of dominating section since ancient time and their fight for rights and access to justice is almost as old as the discrimination against these marginalised and weaker group Summary Women empowerment and issues related nowadays gained its importance worldwide Personal rights Social equality Political power and Economic opportunity are the important aspects of woman empowerment World governments both developed and developing countries are sincerely working towards achieving the goal of Women empowerment Almost the women population shared of the total population of the world we can’t imagine world peace and prosperity without empowering each and every woman on this planet It is everyone’s responsibility to make each woman into an independent and empowered woman Glossary bully to hurt or frighten someone terrorise trafficking the act of buying or selling people thriving very lively and profitable successful chores task duty retention the act of retaining something with holding entrepreneur a person who sets up a business or businesses harassment aggressive pressure irritation Unit Market and Consumer Protection Introduction When we talk about a market we generally visualise a crowded place with a lot of shops and consumers People are buying different types of goods like groceries clothing electronics etc in the market And the shops are also selling a variety of products and services as well So in a traditional sense a market is where buyers and sellers meet to exchange their goods and services But what is a market in economics In economics we do not refer to a market as a physical place Economists described a market as coming together of the buyers and sellers ie an arrangement where buyers and sellers come in direct or indirect contact to sell buy goods and services For example the market for books will constitute all the sellers and buyers of books in an economy It does not necessarily refer to a geographic location A set up where two or more parties engaged in exchange of goods services and information is called a market Ideally a market is a place where two or more parties are involved in buying and selling The two parties involved in a transaction are called seller and buyer The seller sells goods and services to the buyer in exchange of money There has to be more than one buyer and seller for the market to be competitive Features of a Market In economics the term market refers to the shops for one commodity or a set of commodities For example a market for rice a market for cloth a market for electronics goods etc A market is also not restricted to one physical or geographical location It covers a general wide area and the demand and supply forces of the region There must be a group of buyers and sellers of the commodity to constitute a market And the relations between these sellers and buyers must be business relations Both the sellers and buyers must have access to knowledge about the market There should be an awareness of the demand for products consumer choices and preferences fashion trends etc At any given time only one price can be prevalent in the market for the goods and services This is only possible in the existence of perfect competition Classification of Markets Commodities Market Capital Markets Buyers Market Sellers Markets Perfect Market Imperfect Market Retail Market Wholesale Market Regulated Markets Unregulated Markets Short-Term Market Long-Term Market Local Market Regional Markets National Markets International Markets Broadly there are two classifications of markets the product market and the factor market The factor market refers to the market for the buying and selling of factors of production like land capital labour etc The other classification of markets are as follows I On the Basis of Geographic Location Local Markets In such a market the buyers and sellers are limited to the local region or area They usually sell perishable goods of daily use since the transportation of such goods can be expensive Regional Markets These markets cover a wider are than local markets like a district or a cluster of few smaller states National Market This is when the demand for the goods is limited to one specific country Or the government may not allow the trade of such goods outside national boundaries International Market When the demand for the product is international and the goods are also traded internationally in bulk quantities we call it as an international market On the Basis of Time Very Short Period Market This is when the supply of the goods is fixed and so it cannot be changed instantaneously Say for example the market for flowers vegetables Fruits etc The price of goods will depend on demand Short Period Market The market is slightly longer than the previous one Here the supply can be slightly adjusted Example Long Period Market Here the supply can be changed easily by scaling production So it can change according to the demand of the market So the market will determine its equilibrium price in time Example III On the Basis of Nature of Transaction Spot Market This is where spot transactions occur that is the money is paid immediately There is no system of credit Future Market This is where the transactions are credit transactions There is a promise to pay the consideration sometime in the future IV On the Basis of Regulation Regulated Market In such a market there is some oversight by appropriate government authorities This is to ensure there are no unfair trade practices in the market Such markets may refer to a product or even a group of products For example the stock market is a highly regulated market Unregulated Market This is an absolutely free market There is no oversight or regulation the market forces decide everything Example V On the basis of nature of competition Types of Market Structures Perfectly Competitive Market Purely Competitive Market Imperfectly Competitive Market Imperfect Competition Monopolistic Competition Monopoly Oligopoly Figure- Types of Market Structures Figure- Types of Imperfect Competition Monopoly Monopoly refers to a market structure in which there is a single producer or seller that has a control on the entire market This single seller deals in the products that have no close substitutes Monopolistic Competition The term monopolistic competition was given by Prof Edward H Chamberlin of Harvard University in in his book Theory of Monopolistic Competition The term monopolistic competition represents the combination of monopoly and perfect competition Monopolistic competition refers to a market situation in which there are a large number of buyers and sellers of products However the product of each seller is different in one aspect or the other Oligopoly The term oligopoly has been derived from two Greek words Oligoi means few and poly means control Therefore oligopoly refers to a market form in which there are few sellers dealing either in homogenous or differentiated products Who is a Consumer A Consumer is a person who purchases a product or avails a service for a consideration either for his personal use or to earn his livelihood by means of self employment The consideration may be Paid Promised Partly paid and partly promised It also includes a beneficiary of such goods services when such use is made with the approval of such person Who is not a Consumer A person is not a consumer if he she Purchases any goods or avails any service free of charge Purchases a good or hires a service for commercial purpose Avails any service under contract of service What is Unfair Trade Practice An unfair trade practice means a trade practice which for the purpose of promoting any sale use or supply of any goods or services adopts unfair method or unfair or deceptive practice Some of these practices include False representation When goods and services are not of stated standard quality or grade When second hand renovated goods are sold as new ones When goods and services do not have the claimed use usefulness or benefit When products services do not have the claimed warranty guarantee When the price of product or service is misleading False and misleading advertisement of selling at bargain price Offering gifts prizes etc to lure customers with no intention of providing them Selling goods which do not fall within the safety standards set up by competent authority Hoardings or destroying goods with the intention of raising the cost of these or similar goods manufactured in greater number so as to manipulate higher prices Manufacturing or offering spurious goods or adopting deceptive practices in the provision of services Goods once sold will not be taken back or No exchange or No refund under any circumstances It amounts to Unfair Trade Practice and does not carry any legal weight Consumer protection Consumer protection is a group of laws enacted to protect the rights of consumers fair trade competition and accurate information in the market place The laws are designed to prevent the businesses that engage in unfair practices from gaining an advantage over competitors They may also provide additional protection for those most vulnerable in society Consumer protection laws are a form of government regulations that aim to protect the rights of consumers For example a government may require businesses to disclose detailed information about products particularly in areas where safety or public health is an issue such as food Consumer protection is linked to the ideas of consumer rights and to the formation of consumer organisations which helps consumers make better choices in the marketplace and get help with consumer complaints Other organisations that promote consumer protection include government organisations and self-regulating business organisations Example Telecom Regulatory Authority of India TRAI Insurance Regulatory and Development Authority of India IRDAI The Eight Basic Consumer Rights The Right to Basic Needs The Right to Safety The Right to Information The Right to Choose The Right to Representation The Right to Redress The Right to Consumer Education The Right to a Healthy Environment The Consumer Protection Act COPRA This Act enacted in in the Parliament of India to protect the interests of consumers It makes for the establishment of consumer councils and other authorities for the settlement of consumer's grievances and for matters connected there with it The act was passed in Assembly in October and came into force on December COPRA is regarded as the Magna Carta in the field of consumer protection for checking unfair trade practices defects in goods and deficiencies in services as far as India is concerned It has led to the establishment of a widespread network of consumer forums and appellate courts all over India It has significantly impacted how businesses approach consumer complaints and has empowered consumers to a great extent Consumer Protection Councils are established at the national state and district level to increase consumer awareness To increase the awareness of consumers there are many consumer organisations and NGOs that have been established Consumer Disputes Redressal Agencies National Consumer Disputes Redressal Commission NCDRC Established by the Central Government It deals with matters of more than million State Consumer Disputes Redressal Commission SCDRC Also known as the State Commission established by the State Government in the State It is a state level court that takes up cases valuing less than million District Consumer Disputes Redressal Forum DCDRF Also known as the District Forum established by the State Government in each district of the State The State Governments may establish more than one District Forum in a district It is a district level court that deals with cases valuing up to million Consumer protection Act of Indian Parliament in August passed the landmark Consumer Protection Bill which aims to provide the timely and effective administration and settlement of consumer disputes in this Digital Age The New Act will come into force on such date as the Central Government may so notify The New Act seeks to replace more than three decades old Consumer Protection Act Act Highlights of the New Act E-Commerce Transactions The New Act has widened the definition of consumer The definition now includes any person who buys any goods whether through offline or online transactions electronic means teleshopping direct selling or multi-level marketing Enhancement of Pecuniary Jurisdiction Revised pecuniary limits have been fixed under the New Act Accordingly the district forum can now entertain consumer complaints where the value of goods or services paid does not exceed INR Indian Rupees Ten Million The State Commission can entertain disputes where such value exceeds INR Indian Rupees Ten Million but does not exceed INR Indian Rupees One Hundred Million and the National Commission can exercise jurisdiction where such value exceeds INR INR One Hundred Million E-Filing of complaints The New Act contains enabling provisions for consumers to file complaints electronically and for hearing and or examining parties through video-conferencing Establishment of Central Consumer Protection Authority The New Act proposes the establishment of a regulatory authority known as the Central Consumer Protection Authority CCPA with wide powers of enforcement The CCPA will have an investigation wing headed by a Director- General which may conduct inquiry or investigation into consumer law violations Unfair Trade Practices The New Act introduces a specific broad definition of Unfair Trade Practices which also includes sharing of personal information given by the consumer in confidence unless such disclosure is made in accordance with the provisions of any other law Penalties for Misleading Advertisement The CCPA may impose a penalty of up to INR on a manufacturer or an endorser for a false or misleading advertisement The CCPA may also sentence them to imprisonment for up to two years for the same In case of a subsequent offence the fine may extend to INR and imprisonment of up to five years The CCPA can also prohibit the endorser of a misleading advertisement from endorsing that particular product or service for a period of up to one year For every subsequent offence the period of prohibition may extend to three years Consumer courts in India National Consumer Disputes Redressal Commission NCDRC A national level court works for the whole country and deals compensation claimed exceeds rupees one core The National Commission is the Apex body of Consumer Courts it is also the highest appellate court in the hierarchy The National Consumer Disputes redressal Commission NCDRC is a quasi-judicial commission in India which was set up in under the Consumer Protection Act of Its head office is in New Delhi The commission is headed by a sitting or retired judge of the Supreme Court of India State Consumer Disputes Redressal Commission SCDRC A state level court works at the state level with cases where compensation claimed is above lakhs but up to one core The State Commission also has the appellate jurisdiction over the District Forum District Consumer Disputes Redressal Forum DCDRF A district level court works at the district level with cases where the compensation claimed is up to lakhs Important Acts The Consumer Protection Act The Legal Metrology Act The Bureau of Indian Standards Act The Essential Commodities Act The prevention of Black Marketing and maintenance of supplies of essential Glossary Commodities trade goods supplies Prevalent very common frequent Cluster a grouping of a number of similar things bunch Instantaneously immediately without hesitation Spurious invalid fake Vulnerable attacked either physically or emotionally helpless Redress compensate remedy rectify Pecuniary relating to money financia Unit Road Safety Introduction The revolutionary invention of the wheel has given rise to modern technologies from transport to machinery It is one of the most fundamental inventions we use in our daily life Invention of wheel may be a mystery but the history of vehicles prove the intelligence of man Can you imagine a world without two wheelers three wheelers and four wheelers Road safety We have to travel via roads almost every day to go to school college office shops visit relatives and friends We need to be safe on the roads Road safety refers to the methods and measures used to prevent road users from being killed or seriously injured Need for safety on Roads It is a saddening fact that India is the world’s largest contributor to road accidents India accounts for about of road accident fatalities at worldwide Road crashes have a threatening impact on Indian lives growth and economy Causes for Road Accidents Distracted driving This is a larger threat and the leading cause for road accidents It is the distraction of the driver engaging in any other activity while driving It may be talking over the mobile phone or texting message or engaging in any activities with attention diverted from driving Reckless driving It is a major traffic violation of rules It is defined as the mental state in which the driver purposely disregard the rules of the road Night driving An extra alertness is needed while driving at night The uncontrolled sleep tiredness due to long drive poor lighting on the road can cause fatal accidents Tailgating Tailgating refers to a condition where a driver drives behind another vehicle without leaving sufficient distance between them In this condition if the vehicle in front of him stops suddenly his own vehicle will crash with it Heavy Traffic Increase of vehicles on the road create heavy traffic jam and cause more pollution Impatience of Pedestrians Impatience of Pedestrians and violation of traffic rules result in accidents Other causes Drunken driving jumping red light over speeding and unmanned railway crossings cause great damage to valuable lives Due to this many families lose their breadwinners Road Safety Rules Every country has its own road safety rules and regulations for the best interests of its citizens India also has designed road safety rules for protecting the road users from meeting with accidents and injury Road conditions Road expansion is very slow when compared to the expansion of vehicles Avoidance of safety gears Avoiding the use of helmets for two wheelers and seat belts for four wheelers lead to unwanted happenings As per the Indian law one should be eligible to get a driving license at the age of While driving use of mobile phone is prohibited Sound horn is prohibited near a hospital or a school zone STOP OR SLOW DOWN Allow Pedestrians to cross first at uncontrolled zebra crossing They have the Right of Way Rule BUCKLE UP So that your family and you are sate in the car Section Seat Belts reduce changes of death of a car occupant in accident by over OBEY TRAFFIC RULES AND SIGNS To prevent road accidents Section OBEY SPEED LIMITS For your own safety and that others Section In residential area and market places that ideal speed is kmph and the limit is kmph KEEP VEHICLE FIT To prevent frequent breakdowns and difficulty in controlling vehicle which may lead to accidents on road Section NEVER USE MOBILE WHILE DRIVING To avoid distraction that lead to accidents Section WEAR HELMET To protect your head while riding a two wheeler Section A good quality helmet reduces the chances of severe head injury by over NEVER DRIVE DANGEROUSLY To ensure your own safety and that of other road user Section BE COURTEOUS Share the road with all and be considerate Never range on the road It is dangerous for your and other road users NEVER MIX DRINKING AND DRIVING Be Responsible Don’t drink and Drive Section Rules of Road Regulations The Central Motor Vehicle Rules The Motor Vehicle Act GOLDEN RULES FOR ROAD SAFETY Use standard helmets while driving two wheeler vehicle and strap it before mounting the vehicle Fasten the seat belts while driving a car for both the driver and co-passenger Avoid carrying heavy load while riding a two wheeler Two wheeler can carry one adult pillion rider and not the whole family Keep a safe distance from the vehicle ahead of yours Slow down on bends and turns especially in hill stations The Motor Vehicle Act passed by the Parliament came into force in and it is applicable to across the country Preventive Measures Government Through the Ministry of Road Transport and Highways Government of India has taken earnest steps for reducing the number of road accidents i Taking steps for the rectification of accident black spots and improvement of road engineering Ensuring the good functioning of the traffic signals and road signs at busy crossing roads Constructing proper roads both in urban and rural areas iv Installation of CCTV cameras to record high speed offences which can detect the offenders v Prohibiting the act of digging or hoarding soil from roads vi Remove encroachments and maintain proper pedestrian ways for ensuring road safety If the public are violating the traffic rules it is the duty of government to correct the public and maintain order Stringent actions are to be taken for the violation of any road safety rules Individuals One who drives a vehicle should have undergone the training and tests to obtain a driving license It is compulsory to have the following documents driving license registration certificate of the vehicle Insurance certificate Taxation certificate fitness certificate and permit Brake failure can result in crucial collisions So the vehicle should be in good condition and serviced at regular intervals To avoid accidents because of potholes and road humps users can opt to use the Raksha safe drive device It is attached with velcro to the car and alerts the driver about road humps bad roads and on crossing the speed limits Carpooling is the sharing of car journeys so that more than one person travels in car and prevents the need for more cars to the same location Raksha safe drive It is a device capable of automatic crash detection two way call connectivity GPS tracking engine health monitoring and smart panic button Carpooling will reduce the number of vehicles on the road Many people use one vehicle and so fuel money and time are saved It will pave way for a cordial relationship and better understanding among the fellowmen Parents and Teachers Parents and Teachers play a vital role in imparting road safety Education to young ones If a child’s parent violates the traffic rules the child too will initiate the same in future So the elders have to set an example for them in adhering to the safety rules and regulations Video and computer games that simulate driving should be banned by the government or discouraged by parents as it will develop racing habit in children Help your children learn about the traffic signals and rules Instruct them to wait for the right signal and to use the zebra crossing while crossing the road Warn them not to run across or along the road Teach them to use the footpath while walking on the road Provide Road Safety education since childhood It has to be made a part of school curriculum syllabus text book and included in competition on road safety Activities like writing of slogans essays and paintings on this theme should be conducted for reinforcement Media Media like radio TV films and advertisement could take up this responsibility of creating awareness of road safety On Sachin Tendulkar’s birthday Mumbai police has released his video to create awareness among the motorists The little master set great records wearing a helmet How about simply following his footsteps Traffic Signs Traffic signs act as silent conductors of the traffic on the road Some traffic signs are mandatory like stop speed limit turn right no left turn etc Some signs are cautionary which warn the driver about the danger ahead like steep ascent or descent narrow bend Some signs are informatory providing information about hospital petrol pump resting place parking or no parking area Road Safety Week This is a national event which aims at promoting public awareness about traffic rules and to reduce causalities due to road accidents It is observed annually It is celebrated with great joy and enthusiasm A variety of programmes related to road safety is conducted Educational banners safety posters leaflets and pocket guides related to road safety are distributed to the public The Government of India observes Road Safety Week awareness during January every year Suggestions Walking is a good alternative and cycling is a good exercise for a distance of to kms Use eco-friendly vehicles Implement the idea of installing bollards near unmanned railway crossings A separate unhindered passage for cyclists would yield many benefits and also reducing road crashes Cycling is a healthy habit and reduces pollution Motorcycle manufacturers should be asked to design two wheelers with a designed maximum speed of km ph An awareness programme can be used by narrating live examples and also projecting videos Recap Road safety refers to the methods and measures used to prevent road users and vechicle users from fatal accidents and injuries Violation of road rules and regulations cause road crashes and a threatening impact on a country's growth and economy Traffic signs act as silent conductors of the traffic on the road Mandatory signs Cautionary signs and informatory signs are the three types of traffic signs Every country celebrates road safety week We should strictly follow the rules and regulations road safety and save our nation Glossary Pedestrians persons walking on the road Fatalities deaths due to accident Breadwinner one who earns money to support the family Stringent severe மிகவும் Collision crash Rectification correction Potholes holes in a road surface Mandatory compulsory Bollards short concrete posts used to prevent vehicles on the road Pillion seat behind in a two wheeler ECONOMICS Unit Tax and its Importance Introduction For the welfare of the society the government has to perform various functions so it requires revenue Modern governments have a wider variety of sources of revenue The principal sources of the revenue are taxes fees prices special assessment and Raffle Scheme Like any other country taxes form the most important part of revenue of India Taxation Taxation is a term for when a taxing authority usually a government levies or imposes a tax The term taxation applies to all types of involuntary levies from income to capital gains to estate taxes Though taxation can be a noun or verb it is usually referred to as an act the resulting revenue is usually called taxes Taxes Taxes are compulsory payments to the government without expectations of direct or return or benefit to the taxpayers According to Prof Seligman taxes are defined as a compulsory contribution from a person to the government to defray the expenses incurred in the common interest of all without reference to special benefits conferred Why are Taxes Imposed Everybody is obliged by law to pay taxes Total Tax money goes to government exchequer The government decides how are taxes to be spent and how the budget is to be organized Tax payment is not optional An individual has to pay tax if any income comes under the income tax slab It is a duty of every citizen to pay taxes More collection of tax allows the government to implement more and more welfare schemes Principle of taxation Adam Smith’s principles or cannons of taxation still form the basis of the tax structure of a modern state Adam Smith's four Canons of Taxation Canon of Equality Canon of Certainity Canon of Convenience Canon of Economy Canon of Equality the government should impose taxes in such a way that people have to pay according to their ability It does not mean equal amount of tax but it means that the burden of a tax must be fair and just Canon of Certainty Certainty creates confidence in the taxpayers cost of collection of taxes and increases economic welfare because it tends to avoid all economic waste Canon of Convenience Taxes should be levied and collected in such a manner that it provides a maximum of convenience to the taxpayers It should always be kept in view that the taxpayers suffer the least inconvenience in payment of the tax Canon of Economy Minimum possible money should be spent in the collection of taxes Collected amount should be deposited in the Government treasury Taxation Types There are three types of Taxation Proportional Tax Progressive Tax Regressive Tax and Y b PROGRESSIVE O X d DIGRESSIVE a PROPORTIONAL c REGRESSIVE BASE INCOME MARGINAL TAX RATE R Taxation Types Proportional Taxation is a method where the rate of tax is same regardless the size of the income The tax amount realized will vary in the same proportion as that of income If tax rate is on income and Mr X gets an income of Rs he will pay Rs Mr B gets an income Rs he will pay tax of Rs In short proportional tax leaves the relative financial status of taxed persons unchanged Progressive Taxation is a method by which the rate of tax will also increase with the increase of income of the person If a person with Rs income per annum pays a tax of ie Rs a person with an income of Rs per annum pays a tax of ie Rs and a person with income of lakh per annum pays the tax of that is Rs Regressive Taxation A regressive tax is a tax applied uniformly taking a larger percentage of income from low income earners than from high income earners It is in opposition to a progressive tax Importance of Tax Without taxes governments would be unable to meet the demands of their societies Taxes are crucial because governments collect this money and use it to finance under the following social projects Health Without taxes government contributions to the health sector would be impossible Taxes go to funding health services such as social healthcare medical research social security etc Health Education Education could be one of the most deserving recipients of tax money Governments put a lot of importance in the development of human capital and education is central in this development Education Governance Governance is a crucial component in the smooth running of country affairs Poor governance would have far reaching ramifications on the entire country with a heavy toll on its economic growth Good governance ensures that the money collected is utilized in a manner that benefits citizens of the country Digital India Other important sectors are infrastructure development transport housing etc Apart from social projects governments also use money collected from taxes to fund sectors that are crucial for the wellbeing of their citizens such as security scientific research environmental protection etc Some of the money is also channeled to fund projects such as pensions unemployment benefits childcare etc Taxes can affect the state of economic growth of a country Taxes generally contribute to the gross domestic product GDP of a country Environmental Protection Scientific Research Types of tax In modern times taxes are classified into two types There are Direct Tax Indirect Tax Direct Taxes Indirect Taxes Income Tax Wealth Tax Corporate Tax Capital Gains Tax Securities Transation Tax Service Tax Luxury Tax Sales Tax Excise Duty Etc Entertainment Tax Customs Duty Value Added Tax Securities Transation Tax Types of Taxes Tax payer pays directly to Govt Imposed on the manufature or sales of goods and services Direct Tax A Direct tax is paid directly by an individual or organisation to imposing entity A tax payer for example pays direct taxes to the Government for different purposes including real property tax personal property tax income tax or taxes or on asserts Income Tax Central Board of Revenue bifurcated and a separate Board for Direct Taxes known as Central Board of Direct Taxes CBDT constituted under the Central Board of Revenue Act Other examples of direct tax are Corporation Tax Corporation Tax It is levied on profit of corporations and companies It is charged on royalties interest gains from sale of capital assets located in India fees for technical services and dividends Wealth Tax House Cash Urban Land Motor Car Jewellery Yachts Boats Aircras WEALTH It is imposed on property of individuals depending upon the value of property The same property will be taxed every year on its current market value Gift Tax It is paid to the Government by the recipient of gift depending on value of gift Estate Duty Estate Duty It is charged from successor of inherited property It is not desirable to avoid payment of taxes They are levied directly on income and property of persons who pay directly to the government Indirect Tax On the other hand when liability to pay a tax is on one person and the burden of that tax shifts on some other person this type of tax is called an indirect tax Indirect Tax is a tax whose burden can be shifted to others For example Service Tax It is raised on provision of Service This tax is collected from the service recipients and paid to the Central Government Sales Tax or VAT It is an indirect tax on sale of goods because liability to collect tax is that of shopkeeper but the burden of that tax falls on the customer The shopkeeper realizes the tax amount from the customer by including it in the price of the commodity that he sells Excise Duty Excise Duty It is paid by the producer of goods who recovers it from wholesalers and retailers This tax in India is levied by the Central Government Entertainment Tax Entertainment Tax Entertainment Tax The state governments charge such tax on every transaction related to entertainment Some examples are movie tickets video game arcades stage shows exhibitions amusement parks and sports-related activities Goods and Services Tax GST Goods and Services Tax is a kinds of tax imposed on sale manufacturing and usage of goods and services This tax is applied on services and goods at a national level with a purpose of achieving overall economic growth GST is particularly designed to replace the indirect taxes imposed on goods and services by the Central and State Introduction to GST Previous Indirect Tax Structure and its difficulties The history of Indian taxation goes back to ancient period According to Arthshastra the book written by Kautilya in ancient time taxes were levied and collected in both cash and kind The modern history of Indirect taxes starts from the early century when Central Excise Duty was imposed on Salt Sugar Motor Spirit etc Gradually the base of Excise duties was widened At the time of independence the system of Central Excise Duty at the national level and the Sales Tax at the State level was prevailing After prolonged efforts and amendments VAT was introduced first in Indian State of Haryana in and thereafter in States UTs including Punjab Chandigarh HP J K and Delhi in If the VAT was a major improvement over the pre-existing Sales Tax regime then the Goods and Services Tax GST is indeed an remarkable improvement and the next logical step towards realising perfection in taxation system in the country Initially it was proposed that there would be a single and national level GST However the GST tax regime has been finally implemented from st July across India With thus there is a economic union of the country with ONE TAX ONE MARKET AND ONE NATION Goods and Services Tax GST is a tax on all the goods and services that we buy It has two parts the Central Goods and Services Tax CGST and State Goods and Services Tax SGST It is a transparent tax If you get a bill for the products you buy you will find the following information Value of the Product Rs SGST Rs CGST Rs Total Rs In the bill the GST is and it is divided equally as for the Central and State Governments Therefore Rs will go to Tamil Nadu Government and another Rs will go to Central government If a seller in Tamil Nadu sells a commodity to a buyer in other state for example Karnataka it is called inter-state trade In the case of inter-state trade the bill will be as given below Value of the Product Rs IGST Rs Total Rs Rs will go to Central government Central government will take Rs and send another Rs to Karnataka government The tax is divided into five slabs per cent per cent per cent per cent and per cent Although GST is collected by the central government taxes on petroleum products alcoholic drinks electricity are separately collected by the state government and almost all the necessities of life like vegetables and food grains are exempted from this tax Toll Tax Road Tax Toll tax is a tax you often pay to use any form of infrastructure developed by the government example roads and bridges The tax amount levied is rather negligible which is used for maintenance and basic upkeep of a particular project Swachh Bharat Cess This is a cess imposed by the government of India and was started from November This tax is applicable on all taxable services and the cess currently stands at Swachh Bharat cess is levied over and above the service tax that is prevalent in the present times Distinction between Direct and Indirect tax Direct Tax Indirect Tax Burden cannot be shifted by taxpayers Easily be shifted to another person Tax is imposed on personal income and corporate income Taxes imposed on various goods and services Direct tax has no inflation pressure This tax has inflation pressure The impact and incidence are the same in case of direct tax The impact and incidence are different in case of indirect tax Direct tax is less elastic Indirect tax is more elastic The levying of taxes aims to raise revenue to fund governing It helps alter prices in order to balance the affect of demand States and their functional equivalents throughout history have used money provided by taxation to carry out many functions Some of these include expenditures on economic infrastructure like transportation sanitation public safety education health-care systems military scientific research culture and the arts public works public insurance etc A government's ability to raise taxes is called its fiscal capacity When expenditures exceed tax revenue a government accumulates debt A portion of taxes may be used to serve past debts Governments also use taxes to fund welfare and public services These services can include education systems pensions for the elderly unemployment benefits and public transportation Energy water and waste management systems are also common public utilities According to the proponents of the list theory of money creation taxes are not needed for government revenue as long as the government in question is able to issue flat money The purpose of taxation is to maintain the stability of the currency express public policy regarding the distribution of wealth subsidizing certain industries or population groups or isolating the costs of certain benefits such as highways or social security Summary Taxation is a term used for when a government taxing authority levies or imposes a tax The term taxation applies to all types of involuntary levies from income to capital gains to estate taxes Taxes are compulsory payments to the government without expectations of direct or return or benefit to the taxpayers Proportional Taxation is a method where the rate of tax is same regardless size of the income Governance is a crucial component in the smooth running of country affairs A Direct tax is the tax whose burden is directly borne by the person on whom it is imposed ie its burden cannot be shifted to others Estate is charged from successor of inherited property It is not desirable to avoid payment of taxes Indirect Tax is a tax whose burden can be shifted to others Excise duty in India is levied by the Central Government Goods and Services Tax is a kinds of tax imposed on sale manufacturing and usage of goods and services The levying of taxes aims to raise revenue to fund governing or to alter prices in order to affect demand States and their functional equivalents throughout history have used money provided by taxation to carry out many functionsGlossary Equality equal opportunities Convenience the state of being able to proceed with something without difficulty Proportional equivalent Regressive taking a proportionally greater amount from those on lower incomes Inherited received as an heir at the death of the previous holder Accumulate gather Subsidize contribute to Persecution unfair treatment of a person or a group especially because of their religious or political beliefs A Happy Child Enjoy this poem My house is red a little house A happy child am I I laugh and play the whole day long I hardly ever cry I have a tree a green green tree To shade me from the sun And under it I often sit When all my play is done Three Little Pigs Once there were three little pigs Sonu Monu and Gonu Sonu lived in a house of straw Monu lived in a house of sticks and Gonu lived in a house of bricks One day a big bad wolf came to Sonu’s house He said I will huff and puff and I will blow your house down So he huffed and he puffed and he blew the house Down Sonu ran to Monu’s house The wolf came to Monu’s house He said I will huff and puff and I will blow your house down So he huffed and he puffed and he blew Monu’s house down Sonu and Monu ran to Gonu’s house The wolf came to Gonu’s house He said I will huff and puff and I will blow your house down So he huffed and he puffed but he could not blow the brick house down It was very strong The wolf went away and Sonu Monu and Gonu lived happily together in the red brick house After a Bath After my bath I try try try to wipe myself till I’m dry dry dry Hands to wipe and fingers and toes and two wet legs and a shiny nose Just think how much less time I’d take if I were a dog and could shake shake shake The Bubble the Straw and the Shoe Once upon a time there lived a Bubble a Straw and a Shoe One day they went into the forest They came to a river They did not know how to cross it The Shoe said Bubble let us float on you No Shoe Let Straw stretch himself from one bank to the The Bubble the Straw and the Shoe other Then we can cross the river So the Straw stretched himself from one bank to the other When the Shoe jumped on the Straw it broke The Shoe fell into the water with a loud splash The Bubble shook and shook with laughter and burst with a big bang One Little Kitten One little kitten Two big cats Three baby butterflies Four big rats Five fat fishes Six sad seals Seven silly seagulls Eight happy eels Nine nervous lizards Ten brave bees Eleven smelly elephants Twelve fat fleas Thirteen alligators Fourteen whales Fifteen donkeys With fifteen tails Lalu and Peelu There was a hen She had two chicks Lalu and Peelu Lalu was red He loved red things Peelu was yellow He loved yellow things One day Lalu saw something on a plant It was red He ate it up Oh no It was a red chilli It was very hot Lalu’s mouth started burning He screamed Mother Hen came running Peelu came too Peelu said I'll get something for you Peelu brought a yellow laddu Lalu gobbled up the laddu His mouth stopped burning Mother Hen and Lalu kissed Peelu Mother Hen and the Chicks Come to me chicks I want you here What do you want mother Look at me Do what I do Down and up Up and down Mother Mother I can do what you do Look at me Down and up Up and down Look at me chicks Do what I do Up-down Oh Oh Look at me chicks Do what I do Up-down Oh Oh Oh Percy Percy Once I Saw a Little Bird Once I saw a little bird Come hop hop hop I cried Little bird Will you stop stop stop I was going to the window To say How do you do But he shook his little tail And away he flew Mittu and the Yellow Mango Mittu was a parrot A green parrot with a red beak One day Mittu was flying He loved to fly He looked down He saw a big yellow mango on a tree Mittu liked mangoes I want to eat that yellow mango he said He flew down to the tree Caw caw go away This is my tree said a voice Mittu looked up He saw a big black crow Caw caw go go the crow shouted He had a very loud voice Mittu was afraid of the crow He flew away Mittu saw a red balloon It was under a tree He had an idea He picked up the red balloon He was careful not to burst it He flew to the mango tree The crow was sitting on the tree Mittu went behind the tree He pecked the balloon with his red beak Pop The balloon burst It made a loud noise Caw said the crow And he fell off the tree Caw caw a big gun is after me said the crow He flew away He never came back to the tree Mittu came to the tree He ate the big yellow mango Yummy yummy what a nice mango he said He was very happy Clever Mittu Merry-Go-Round I climbed up on the merry-go-round And it went round and round I climbed up on a big brown horse And it went up and down Around and round And up and down Around and round And up and down I sat high up On a big brown horse And rode around On the merry-go-round On the merry-go-round Around And round And Round And rode around On the merry-go-round I rode around Circle One day Mohini was sitting with her grandmother Grandmother drew a circle Can you draw a circle Mohini Yes I can Soon Mohini drew a circle Now I’ll draw a ball Grandmother drew three lines on the circle Mohini drew three lines on her circle It really looked like a ball Now let’s draw a balloon Grandmother added a zig-zag line to the circle Oh It really looks like a balloon Mohini clapped with joy Mohini drew many circles big and small circles red blue green and yellow circles She also added zig-zag lines to these And now there were many balloons Can you draw something else with a circle asked Grandmother Yes said Mohini She drew a wheel a moon a sun a rabbit and her own face If I Were an Apple If I were an apple And grew on a tree I think I’d drop down On a nice boy like me I wouldn’t stay there Giving nobody joy I’d fall down at once And say Eat me my boy Our Tree A little bird sees Ripe fruit on our tree And eats a tasty berry The bird flies tall And a berry seed falls The rains have come Hurry let’s run Clouds rain and sun Our plant is born a little one Now a tree With branches long Crows and bird-song Crawling ants and spiders’ webs Caterpillars with tiny legs Rich green leaves life aplenty The tree has fruit Some big some small Let us pluck them But do not fall Strong branches With pretty swings Our beautiful tree Has so many things Crows perch squirrels run And see the monkeys Having fun Murali’s Mango Tree One day Murali ate a mango He threw the seed behind his house Many months later he saw a plant He watered the plant every day The plant grew into a big mango tree Every summer many mangoes grow on it Now Murali’s children eat the mangoes A Kite I often sit and wish that I Could be a kite up in the sky And ride upon the breeze and go Whichever way I chanced to blow Sundari Sundari was a big red white and blue kite When Bobby made her she smiled at him You are beautiful and I will call you Sundari he said One day Bobby took Sundari to the fair The band was playing and everyone was smiling A merry-go-round was playing a happy little tune It was carrying lots of boys and girls round and round on its wooden animals Bobby looked for an open space where he could run and fly his kite Sundari looked too Out in the grass ran Bobby holding up his kite as high as he could Puff The wind came along Sundari started to fly up But she could not go very high A little dog was holding on to her long tail It was in his mouth Bobby shooed the dog away We’ll try again Bobby said This time Sundari leaped up in the air She tugged hard Oh how she wanted Bobby to let go of her string She gave a big tug Bobby had to let her go Wheee cried Sundari Now I can fly as high as I please And away she went She flew up up up in the air A Little Turtle I am a little turtle I crawl so slow I carry my house Wherever I go When I get tired I put in my head My legs and my tail And I go to bed The Tiger and the Mosquito A tiger was dozing under a tree A mosquito came buzzing by The tiger said Hey Mosquito Go away The mosquito said Why should I go away I am not afraid of you The tiger was angry He hit out with his paw The mosquito flew off The paw struck his own cheek The blow scraped his cheek It began to bleed The mosquito buzzed away The tiger struck with his other paw The mosquito flew off This time too he hit himself The tiger was helpless The mosquito continued to buzz The tiger got up and quietly walked away The mosquito called out after him Don’t be so proud my friend Everyone is great in his own way Clouds It is hot The sky is blue A little cloud comes looking for you More clouds come They bring rain Sing and dance It’s cool again Anandi's Rainbow It was raining outside Anandi was fast asleep dreaming of rainbows She woke up to look out of her window There was a huge bright rainbow across a clear blue sky Anandi ran out to the garden with Milli her favourite cat Anandi loved to draw and paint Today she wanted to paint the flowers of her garden with the colours of the rainbow She coloured one flower with the violet and another with the indigo of the rainbow One with the blue and leaves with the green One with the orange One with the red But she left the yellow so that the Sun may look bright and gay And lo There were beautiful flowers all over the garden The Sun was up there shining in its yellow glory After giving colours to the flowers and the Sun the rainbow was gone Flying-Man Flying-man Flying-man Up in the sky Where are you going to Flying so high Over the mountains And over the sea Flying-man Flying-man Can’t you take me The Tailor and his Friend Kalu the tailor had a shop near the river He made colourful pants and shirts for children Appu the elephant was his friend Appu came to his shop everyday Kalu gave him many nice things to eat One day Kalu wanted to play a trick He did not give Appu anything to eat He took out his needle instead and pricked Appu’s trunk Appu ran away in pain Two days later Appu came down to the river and filled his trunk with water He reached Kalu’s shop and threw water everywhere All the new clothes became wet Appu shook his trunk and said An elephant never forgets Kalu said I am sorry Appu Let’s be friends again Kalu and Appu became good friends CLAP CLAP CLAP Clap clap clap Tap tap tap Hop hop hop Stop stop stop Jump jump jump Run run run Clap clap clap Stop stop stop ONE TWO One two Cows moo Three four Lions roar Five six The clock ticks Seven eight It's getting late Nine ten Let’s say it again THE LITTLE BIRD Once I saw a little bird Coming hop hop hop So I cried out Little bird Will you stop stop stop I was going to the window To say How are you But he shook his little tail And away he flew BUBBLES Bubbles bubbles here and there Blow up blow up in the air Blowing bubbles is such fun Blowing bubbles one by one CHHOTU Chhotu is a baby mouse Chhotu runs around Chhotu’s mother calls Come back Chhotu Come down now Chhotu does not listen A crow picks Chhotu up in its beak Chhotu squeaks A parrot comes by Good morning he says Hello says the crow Chhotu falls into the soft grass He turns around and runs home Sorry Mother he says I’ll never run away again ANIMALS AND BIRDS a dog a donkey a rat a hen a duck a sparrow a cat a crow a sparrow a frog FRUITS AND VEGETABLES Potato peas Brinjal beans banana Lemon pumpkin Apple Orange guava WHO AM I I am Mani My name is Hussein I am Molly I am Kala HIDE AND SEEK Moti wants to play He looks for Rani I’m hungry says Rani I want to eat Jimmy and Rimmy are sleeping in the basket Moti wakes them up Come out and play with me he barks Not now says Jimmy I am tired I’m sleepy says Rimmy Moti goes outside He sees Happy in her pond in the garden Will you come and play with me he asks But Happy says No I’m looking for flies Moti sees Bunny and stops Will you play with me he asks Bunny looks at him Hello Moti he saysI am eating a carrot so I can’t come and play with you Moti is sad He lies down on the grass Then he gets up again He walks around the garden Moti finds a basket He turns it upside down and hides under it Rani Jimmy Rimmy Happy and Bunny search for Moti But they can’t find him Happy hops near the basket He stamps Moti’s tail Moti barks aloud Everyone now knows where he is Then they chase him round and round the garden fUN WITH NuMBERS One two three four five Once I caught a fish alive Six seven eight nine ten Then I let it go again Why did you let it go Because it bit my finger so Which finger did it bite The little finger on my right SHAPES Binni and Ginni are back from school They have their lunch Binni's plate is round Ginni's plate is oval Mother gives them a each The is square In the evening Binni and Ginni go to the park with their mother The gate of the park looks like this Ginni points to the gate and says Mamma what shape is the gate Mamma says That is a square What is the shape in the middle the gate asks Binni Mamma says That is a circle Ginni says Can you see another shape Binni says Oh I know there is a triangle Cats Cats sleep anywhere Any table any chair Open drawer empty shoe Anybody’s lap will do Anywhere they don’t care Cats sleep anywhere Colours RAJU Hello Can I play with you ALL How nice RAJU Thank you Wow Your dress is so nice It is a lovely colour PARROT Oh my dress It is green it is bright CROW My dress is black It is not bright It is as black as night STORK My dress is white PEACOCK My dress is green and blue I dance for children like you ACTIONS WE DO She is washing her face She is wearing a garland around her neck He is combing his hair She is dancing He is brushing his teeth He is eating an apple LEFT AND RIGHT MOTHER Bina get the mat please BINA Where is it Mamma MOTHER It is to your right It is near the wallBina gives the mat to her mother MOTHER Will you get the needle and thread BINA Where is it Mamma MOTHER It is on the table to the left THE LION AND THE MOUSE A lion was sleeping A little mouse was playing nearby The lion woke up The lion caught the mouse The mouse said Let me go please I shall help you some day The lion said I am big You are small You cannot help me Go away Some days later the lion was caught in a large net It roared and roared The mouse came running It nibbled at the net The lion was now free Thank you said the lion to the mouse MORNING AND EVENING Tick tock says the clock Wake up says the sun Kukarakoo says the cock It's morning little one Tick tock says the clock Time to sleep says the moon Sweet dreams no more talk Till morning it'll be soon May I come in May I come in Teacher Please come in Ashok What's the matter I have a bad headache Do you want to go home and rest Yes please Can you go alone Or should I call your father My house is nearby I can go alone All right then Take care Thank you Action song Hop a little Jump a little One two three Run a little Skip a little Touch your knee Bend a little Stretch a little Close your eyes Clap a little Laugh a little Touch your thighs A Happy Child Enjoy this poem My house is red a little house A happy child am I I laugh and play the whole day long I hardly ever cry I have a tree a green green tree To shade me from the sun And under it I often sit When all my play is done Three Little Pigs Once there were three little pigs Sonu Monu and Gonu Sonu lived in a house of straw Monu lived in a house of sticks and Gonu lived in a house of bricks One day a big bad wolf came to Sonu’s house He said I will huff and puff and I will blow your house down So he huffed and he puffed and he blew the house Down Sonu ran to Monu’s house The wolf came to Monu’s house He said I will huff and puff and I will blow your house down So he huffed and he puffed and he blew Monu’s house down Sonu and Monu ran to Gonu’s house The wolf came to Gonu’s house He said I will huff and puff and I will blow your house down So he huffed and he puffed but he could not blow the brick house down It was very strong The wolf went away and Sonu Monu and Gonu lived happily together in the red brick house After a Bath After my bath I try try try to wipe myself till I’m dry dry dry Hands to wipe and fingers and toes and two wet legs and a shiny nose Just think how much less time I’d take if I were a dog and could shake shake shake The Bubble the Straw and the Shoe Once upon a time there lived a Bubble a Straw and a Shoe One day they went into the forest They came to a river They did not know how to cross it The Shoe said Bubble let us float on you No Shoe Let Straw stretch himself from one bank to the The Bubble the Straw and the Shoe other Then we can cross the river So the Straw stretched himself from one bank to the other When the Shoe jumped on the Straw it broke The Shoe fell into the water with a loud splash The Bubble shook and shook with laughter and burst with a big bang One Little Kitten One little kitten Two big cats Three baby butterflies Four big rats Five fat fishes Six sad seals Seven silly seagulls Eight happy eels Nine nervous lizards Ten brave bees Eleven smelly elephants Twelve fat fleas Thirteen alligators Fourteen whales Fifteen donkeys With fifteen tails Lalu and Peelu There was a hen She had two chicks Lalu and Peelu Lalu was red He loved red things Peelu was yellow He loved yellow things One day Lalu saw something on a plant It was red He ate it up Oh no It was a red chilli It was very hot Lalu’s mouth started burning He screamed Mother Hen came running Peelu came too Peelu said I'll get something for you Peelu brought a yellow laddu Lalu gobbled up the laddu His mouth stopped burning Mother Hen and Lalu kissed Peelu Mother Hen and the Chicks Come to me chicks I want you here What do you want mother Look at me Do what I do Down and up Up and down Mother Mother I can do what you do Look at me Down and up Up and down Look at me chicks Do what I do Up-down Oh Oh Look at me chicks Do what I do Up-down Oh Oh Oh Percy Percy Once I Saw a Little Bird Once I saw a little bird Come hop hop hop I cried Little bird Will you stop stop stop I was going to the window To say How do you do But he shook his little tail And away he flew Mittu and the Yellow Mango Mittu was a parrot A green parrot with a red beak One day Mittu was flying He loved to fly He looked down He saw a big yellow mango on a tree Mittu liked mangoes I want to eat that yellow mango he said He flew down to the tree Caw caw go away This is my tree said a voice Mittu looked up He saw a big black crow Caw caw go go the crow shouted He had a very loud voice Mittu was afraid of the crow He flew away Mittu saw a red balloon It was under a tree He had an idea He picked up the red balloon He was careful not to burst it He flew to the mango tree The crow was sitting on the tree Mittu went behind the tree He pecked the balloon with his red beak Pop The balloon burst It made a loud noise Caw said the crow And he fell off the tree Caw caw a big gun is after me said the crow He flew away He never came back to the tree Mittu came to the tree He ate the big yellow mango Yummy yummy what a nice mango he said He was very happy Clever Mittu Merry-Go-Round I climbed up on the merry-go-round And it went round and round I climbed up on a big brown horse And it went up and down Around and round And up and down Around and round And up and down I sat high up On a big brown horse And rode around On the merry-go-round On the 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Ripe fruit on our tree And eats a tasty berry The bird flies tall And a berry seed falls The rains have come Hurry let’s run Clouds rain and sun Our plant is born a little one Now a tree With branches long Crows and bird-song Crawling ants and spiders’ webs Caterpillars with tiny legs Rich green leaves life aplenty The tree has fruit Some big some small Let us pluck them But do not fall Strong branches With pretty swings Our beautiful tree Has so many things Crows perch squirrels run And see the monkeys Having fun Murali’s Mango Tree One day Murali ate a mango He threw the seed behind his house Many months later he saw a plant He watered the plant every day The plant grew into a big mango tree Every summer many mangoes grow on it Now Murali’s children eat the mangoes A Kite I often sit and wish that I Could be a kite up in the sky And ride upon the breeze and go Whichever way I chanced to blow Sundari Sundari was a big red white and blue kite When Bobby made her she smiled at him You 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middle the gate asks Binni Mamma says That is a circle Ginni says Can you see another shape Binni says Oh I know there is a triangle Cats Cats sleep anywhere Any table any chair Open drawer empty shoe Anybody’s lap will do Anywhere they don’t care Cats sleep anywhere Colours RAJU Hello Can I play with you ALL How nice RAJU Thank you Wow Your dress is so nice It is a lovely colour PARROT Oh my dress It is green it is bright CROW My dress is black It is not bright It is as black as night STORK My dress is white PEACOCK My dress is green and blue I dance for children like you ACTIONS WE DO She is washing her face She is wearing a garland around her neck He is combing his hair She is dancing He is brushing his teeth He is eating an apple LEFT AND RIGHT MOTHER Bina get the mat please BINA Where is it Mamma MOTHER It is to your right It is near the wallBina gives the mat to her mother MOTHER Will you get the needle and thread BINA Where is it Mamma MOTHER It is on the table to the left THE LION AND THE MOUSE A lion was sleeping A little mouse was playing nearby The lion woke up The lion caught the mouse The mouse said Let me go please I shall help you some day The lion said I am big You are small You cannot help me Go away Some days later the lion was caught in a large net It roared and roared The mouse came running It nibbled at the net The lion was now free Thank you said the lion to the mouse MORNING AND EVENING Tick tock says the clock Wake up says the sun Kukarakoo says the cock It's morning little one Tick tock says the clock Time to sleep says the moon Sweet dreams no more talk Till morning it'll be soon May I come in May I come in Teacher Please come in Ashok What's the matter I have a bad headache Do you want to go home and rest Yes please Can you go alone Or should I call your father My house is nearby I can go alone All right then Take care Thank you Action song Hop a little Jump a little One two three Run a little Skip a little Touch your knee Bend a little Stretch a little Close your eyes Clap a little Laugh a little Touch your thighs First Day at School I wonder if my drawing will be as good as theirs I wonder if they’ll like me or just be full of stares I wonder if my teacher will look like Mom or Gran I wonder if my puppy will wonder where I am HALDI’S ADVENTURE One morning as Haldi walked to school she met a giraffe The giraffe wore big glasses and held a book in his hand He smiled and said Good morning Haldi Haldi looked up at him I’m sorry to stare she said but I have never met a giraffe like you My name is Smiley said the giraffe Whenever you see me you will smile Haldi was surprised and happy too Then she remembered that she would be late for school So she said to the giraffe I would love to talk to you but I must rush to school or I will be late The giraffe said Not if you ride on my back If you climb on my back I will run so fast that you will feel you are flying to school Do you go to school every day Yes said Haldi I go to school on Mondays Tuesdays Wednesdays Thursdays and Fridays On Saturdays I play games at school What do you do in school asked the giraffe I learn about the stars the trees the birds and the animals That is good said the giraffe I love books too They are lots of fun Now jump on my back I will take you to school the the the Haldi then jumped on the giraffe's back and found that she could see so many things from the top And before she knew it she had reached the school playground She climbed down When she turned back to thank the giraffe she found that he had gone Away O Haldi thought What a wonderful adventure I have had I’M LUCKY If I were a butterfly I would be thankful For my wings If I were a myna in a tree I would be thankful That I could sing If I were a fish in the sea I would be thankful That I can wriggle and giggle with glee So I just think I am lucky to be me Not you but me If I were an elephant I would be thankful That can raise my trunk If I were a kangaroo I would try to hop Right up to the moon If I were an octopus I would be thankful my eight arms So I just think I am lucky to be me Not you but me What do you think you want to be Do you want to be like me Or just you Just you I WANT I want to be big says Little Monkey I want to be strong A wise woman hears him Take this magic wand she says and all your wishes can come true A giraffe comes by He stretches his long neck He eats the sweet leaves at the top of the trees I want a long neck says Little Monkey pop His neck grows long just like the giraffe's Little Monkey is happy An elephant comes down to the river He fills his trunk with water He blows it all over himself I want to do that too says Little Monkey BANG Just like that he grows a trunk He is very happy This is fun he says Next Little Monkey sees a zebra I want stripes like those he says WHIZZ Little Monkey has stripes all over his body just like the zebra He is very very happy He goes to the river to try out his new trunk He looks down He sees himself in the water Mother he cries Help A monster 'That's not a monster says his mother 'That's you You want a giraffe's neck an elephant's trunk and stripes like a zebra Don't you remember Little Monkey cries and cries I look AWFUL he says I want to be myself again There is a POP a BANG and a WHIZZ Little Monkey is himself again He jumps for joy He throws the magic wand into the river He never wants to be anyone else again A SMILE A smile is quite a funny thing It wrinkles up your face And when it's gone You'll never find Its secret hiding place But far more wonderful it is To see what smiles can do You smile at one He smiles at you And so one smile makes two THE WIND AND THE SUN WIND Sun can you see that man walking down the road I can get his coat off more quickly than you can SUN smiling: We will see who is stronger I will let you try first WIND blowing harder Whooooooooooooooooooh whooooooooooooooooooooo MAN puling his coal more tightlyHow cold it is WIND Sun I give up I cannot get his coat off SUN Now it is my turn Let me try He shines hard MAN What a funny day It was so cold and now it is so hot SUN shining harderI will make him feel hotter and hotter MAN wiping his face: I must take off my coat SUN Wind I have won I have made him take off his coat RAIN The rain is raining all around It falls on field and tree; It rains on the umbrellas here And on the ships at sea Storm In the garden Sunusunu the snail is playing with his friends the ants Suddenly there is a storm He hurries' to his mother arid tells her all he saw and heard Sunusunu the snail was visiting his friends the ants They climbed all over him Hee Hee Hee They climbed under him Hee Hee Hee Suddenly a great white light crashed through the clouds Sunusunu quickly pulled in his head pulled in his tail and sat very still Outside the sky grew dark and the crows flew past Kaa Kaa Kaa Kaa Oh but where were the ants Sunusunu stuck out his feelers and looked for them They were hiding under a flower pot Go home Sunusunu the ants cried out Huriy huriy your mother will worry Sunusunu went to his mother where she sat under a stone near the well Amma said Sunusunu there's a storm in the garden I heard the wind blow blow blow Ooo Ooo Ooo Ooo I saw trees sway sway sway Shay I Shay Shay Shay I saw lightning flash flash flash Zzzak Zzzak Zzzak Zzzak I heard thunder roll roll roll Gadaam Gudooml Gadaam Gudooml I heard rain fall fall fall Sittasitta Pittapitta Sittasitta Pittapitta I heard f water drip drip drip Plip Plip Plip Plip It was the biggest storm Sunusunu had ever been in Ooo Ooo Shay Shay Zzzak Zzzak Gadaam Gudoom Sittasitta Pittapitta Sittasitta Pittapitta Plip Plip Plip Plip And do you know what Sunusunu didn't get wet Do you know why ZOO MANNERS Be careful what You say or do When you visi t the animals At the Zoo Don't make fun Of the Camel's hump He's very proud Of his noble bump Don't laugh too much At the Chimpanzee He thinks he's as wise As you or me And the Penguins Strutting around the lake Can understand Remarks you make Treat them as well As they do you And you'll always be welcome At the Zoo FUNNY BUNNY One day a nut fell on Funny Bunny Ouch The sky is going to fall said Funny Bunny I must tell the King On the way he met Henny Penny 'The sky is going to fall said Funny Bunny I'm going to tell the King I'll come too said Henny Penny And off they went to find the King Soon they met Cocky Locky The sky is going to fall said Funny Bunny I'm going to tell the King I'll come too said Cocky Locky And off they went to find the King On the way they met Lucky The sky is going to fall said Funny Bunny I'm going to tell the King I'll come too said Lucky Ducky And off they went to find the King On the way they met Poosey Goosey The sky is going to fall said Funny Bunny I'm going to tell the King I'll come too said Poosey Goosey And off they went to find the King On the way they met Woxy Foxy The sky is going to fall they all said We're going to tell the King 'The King lives here said Woxy Foxy Follow me And that was the end of Funny Bunny Henny Penny Cocky Locky Lucky Ducky and Poosey Goosey MR NOBODY I know a funny little man As quiet as a mouse Who does the mischief that is done In everybody's house There's no one ever sees his face And yet we all agree That every plate we break was cracked By Mr Nobody CURLYLOCKS AND THE THREE BEARS Once there was a girl with curly hair Her name was Curlylocks One day she went into the forest near her house She saw a cottage Is anybody in she asked There was nobody The Bear family lived in the cottage They had gone for a walk Curlylocks went in She wanted to see who lived there She saw three bowls of porridge on the table There was a big bowl for Papa Bear a middle size bowl for Mama Bear and a tiny little bowl for Baby Bear Curlylocks was hungry She ate the porridge from the big bowl It was very hot She ate from the middle size bowl It was too cold She ate from the tiny little bowl It was just right Curlylocks ate up all the porridge Then she went to the bedroom There was a big bed for Papa Bear a middle size bed for Mama Bear and a tiny little bed for Baby Bear The big bed was very hard The middle size bed was too soft But the tiny little bed was just right Curlylocks fell asleep in the tiny little bed The Bear family came back Somebody ate my porridge shouted Papa Bear in his big gruff voice Somebody ate my porridge too said Mama Bear Somebody finished all my porridge said Baby Bear in his tiny little voice The Bear family went to the bedroom Somebody slept in my bed shouted Papa Bear in his big gruff voice Somebody slept in my bed too said Mama Bear Somebody is sleeping in my bed said Baby Bear in his tiny little voice Curlylocks woke up She saw the three Bears She jumped down and ran out of the cottage as fast as she could ON MY BLACKBOARD I CAN DRAW On my blackboard I can draw One little house with one green door Two brown gates that open wide Three red steps that lead inside Four little chimneys painted white Five little windows shining bright Six yellow marigolds straight and tall Growing up against the wall MAKE IT SHORTER One day Akbar drew a line on the floor and ordered Make this line shorter but don't rub out any part of it No one knew what to do Each minister looked at the line and was puzzled No one could think of any way to make it longer No one could think of how it could be made shorter without erasing it Birbal started smiling When it was his turn he went near the line Discuss with your partner what Birbal would do Now read further Birbal drew a longer line under the first one He didn't touch the first line Everyone in the court saw what he drew and said That's true The first line is shorter now I’M THE MUSIC MAN I am the music man I come from far away And I can play What can you play I play the piano Pia pia piano piano piano Pia pia piano pia piano I am the music man I come from far away And I can play What can you play I play the big drum Boomdi boomdi boomdi boom Boomdi boom boomdi boom Boomdi boomdi boom Pia pia piano piano piano Pia pia piano pia piano THE MUMBAI MUSICIANS Once upon a time there lived a donkey named Goopu He had worked for many years in the house of a farmer He had carried many heavy sacks of corn and sugarcane from the farm to the factory He was now very tired and old The farmer said to Goopu You are a good donkey Take this sack of corn and go and see the world before you become too old Goopu smiled and said goodbye He set off towards the city of Mumbai I am good at music I will go to Mumbai and be a musician there On the way he met a dog Where are you going asked Doopu I am going to Mumbai to be a musician Would you like to come too asked Goopu Yes I would replied Doopu Off went the two friends on the dusty road to Mumbai They saw a ball of fur in the middle of the road Who are you they asked I am Funy the cat said the cat Would you like to come with us to become a musician asked Goopu and Doopu together Oh I would love to come along replied Furry So off went the three together to become Mumbai musicians Soon they met Cuckoo the cock I love music and wish to join your band They all reached a house with a light They were tired and hungry They peeped in through the window and saw a table with delicious food They decided to sing to let the people inside know that they were musicians They sang The people inside thought that ghosts had come to scare them They ran away as fast as they could Goopu Doopu and Furry went into the house and ate the food till they could eat no more GRANNY GRANNY PLEASE COMB MY HAIR Granny Granny Please comb my hair You always take your time You always take such care You put me to sit on a cushion Between your knees; You rub a little coconut oil Parting gentle as a breeze Granny You have all the time in the world And when you're finished You always turn my head and say Now who's a nice girl THE MAGIC PORRIDGE POT Once there was a little girl named Tara She lived with her mother They were very poor One day she went to a forest There she met an old woman The old woman gave her a pot She said This is a magic pot It will cook porridge for you when you say Cook pot Cook It will stop making porridge when you say Stop Pot Stop Tara was very happy She ran to her mother and said Mother we will no longer be hungry as I have got a magic pot Tara said to the pot Cook Pot Cook and the pot cooked porridge Her mother was very happy and they both ate porridge One day when Tara had gone out her mother felt hungry She said to the pot Cook Pot Cook The pot started cooking porridge After eating it her mother said Do not cook Pot But the pot went on cooking Soon the porridge started spilling on floor Mother called out again Wait do not cook anymore But the pot did not stop Mother ran out of the house and the porridge followed her Soon there was porridge everywhere The whole village saw it They ran to eat the porridge When Tara came back she saw that the road was full of porridge She ran home as fast as she could She heard her mother shout 'Tara the pot is cooking and it will not stop Tara called out Stop Pot Stop and it stopped cooking porridge STRANGE TALK A little green frog lived under a log And every time he spoke Instead of saying Good morning He only said Croak croak A duck lived by the waterside And little did he lack But when we asked How do you do He only said Quack quack A little pig lived in a sty As fat as he could be And when he asked for dinner He cried aloud Weewee Three pups lived in a kennel And loved to make a row And when they meant May we go out They said Bowwow Bow wow If all these animals talked as much As little girls and boys And all of them tried to speak at once Wouldn't it make a noise THE GRASSHOPER AND THE ANT Once there lived a lazy grasshopper He didn't like to work All day long he sang songs and played in the warm sunshine Hee Hee Look at me I'm as happy as can be The grasshopper laughed at the hardworking ants as they worked day and night We are storing grain for the long winter ahead they replied The lazy grasshopper only laughed louder Summer ended and the cold winter arrived The wind blew strong and it started snowing The grasshopper now began to worry 'There is no food to eat no grass no flowers or leaves I can't see even the tiniest fly or worm What will I do I will surely starve he cried Let me meet my kind neighbour the ant The grasshopper remembered how the hardworking ant had stored away grain for the winter He knocked at her door Dear ant I am hungry and cold I have nothing to eat Please can you give me some food The ant shook in anger Lazy one What were you doing all summer You were only singing and dancing You should have thought of the cold winter months ahead Go away She slammed her door shut The lazy grasshopper was left as hungry as before What is Long What is Round Children love Uncle Meeku He plays with them every day Today he has kept different things in his bag The game is Guess its Name Guess what I have in my hand I will tell you what it feels like Uncle Meeku puts his hand in a bag Team A sings a song Find out with your eyes shut well touch it with your hands and tell Tell us tell us how it feels We guess its name and win the game Pointed at one end flat at the other but round like a pipe Guess what it is Now it is the turn of team A to touch and guess Everybody sings: Tell us tell us how it feels We guess its name and win the game A child from team A puts his hand in the bag Others in team A have to guess Can you help them Round all around has no corners I can roll it in my hand Guess what it is Then is the turn of team B to feel and guess And so the game goes on How Much Can You Carry The Clever Donkey and His Heavy Sack Sandesh has a donkey It carries sacks full of salt on its back On the way to the market they have to cross a river One day while crossing the river the donkey slipped and fell into the river When it got up the sacks felt very light Guess why the sacks felt lighter The donkey was very happy This also gave it an idea Next day while crossing the river the clever donkey decided to take a dip This time Sandesh understood the donkey’s trick Raju Wants to Ride a Seesaw Raju needs a friend to ride a seesaw Rani comes to help Raju But still Raju cannot ride it Counting in Tens Tikloo farmer has many chickens in her farm One day a clever fox saw these naughty chickens playing around From that day she started stealing and eating chickens every day Tikloo came to know about it She asked the fox Hey do you eat may chickens No dear I am your friend how can I eat your chickens Tikloo thought of counting her chickens every morning and evening But the chickens kept moving around here and there She said I will put chickens in one basket and count them And if I find any of them missing Patterns Binni and Ginni were going home On the way they saw some people making the pavement The titles used were of different colors and designs This is what they saw On reaching home they saw their mother’s sari hanging on a rope It also had a nice design with different colours In the evening they were playing in a park They saw iron grills on the boundary wall Looking at the grills Binni said these same grills make a different pattern in our windows at home We see many such patterns around us on tiles clothes durries Bholu has eaten a part of the shawl of Binni's mother Poonam’s Day Out Ma please let me go to school today I have been at home for the past two days I am getting bored said Poonam But you still have fever Go outside and lie down on the cot replied Ma Poonam fell asleep on the cot Suddenly something fell on her face Poonam woke up at once and touched her cheek Oh no whose mischief is this Is it the crow’s or the pigeon’s It seems it’s the crow's Poonam picked up a leaf from the ground and wiped her cheek with it But her cheek was still sticky She thought Let me go and wash my face in the nearby pond Different animals move in different ways to go from one place to another Some animals walk some crawl some fly and some swim For this some animals use their feet some use their wings Some animals even take the help of their tail Can you act like the animals seen at the pond Which animal makes what kind of sounds and movements Try to make similar sounds The Plant Fairy Last Sunday we went to a garden in the neighbourhood We played Hide and Seek Chhupanchhupai and Antakshari We had a lot of fun After sometime Didi said Let us play a new game today We had played this game in the camp last year I will become a plant fairy The plant fairy will call out a name of something and you all will have to touch it The game began Didi said The plant fairy asks you to touch a plant At once all the children ran towards the plants Ammu held the marigold plant Shabnam sat touching a jasmine plant Michael touched a mehendi bush Dayaram caught hold of a neem tree and stood there Didi said Very good Every one has touched a plant But have you noticed that all the plants are different from each other Didi you are also sitting on little plants said Shabnam The children ran again to touch the trees with thick or thin trunks Have you seen a tree with a trunk as thick as the one shown in the picture Michael found the game very interesting He thought how lucky the fairy was She could order everyone around Now I want to be the plant fairy said Michael The children laughed aloud A boy fairy They were now ready to take orders from the new Plant fairy Michael said Get me some leaves quickly But remember you are not to pluck the leaves from the plants said Didi The children ran to collect the leaves which were lying on the ground Can you name the plant on which Didi was sitting The game started again The Plant fairy now said Touch a tree which has either a thick or a thin trunk The children ran again to touch the trees with thick or thin trunks Have you seen a tree with a trunk as thick as the one shown in the picture Michael found the game very interesting He thought how lucky the fairy was She could order everyone around Now I want to be the plant fairy said Michael The children laughed aloud A boy fairy They were now ready to take orders from the new plant fairy Michael said Get me some leaves quickly But remember you are not to pluck the leaves from the plants said Didi The children ran to collect the leaves which were lying on the ground Dayaram said I did not know that there were so many types of leaves Look some are round some are long and some are triangular Ammu said They are of so many different colours as well Some are light green and some are dark green Some are even yellow red and purple There is one which is green but has white patches on it Look even the margins of these leaves are different from each other Some have straight margins and some uneven Some of these margins even look like a saw said Shabnam Ammu and Shabnam shouted together We also want to be the Plant fairy Didi said Not today may be next Sunday It is time to go home now On the way back Didi recited a poem for everyone Leaves Red purple and even yellow Some green wet and loose Leaves are of different kinds And of different shapes and shades Some are like the elephant’s ears And some are playful like the devil Some are torn and some are folded And some even eaten like the betel And in the early dawn’s darkest hue You’ll find the flowers cry tear-like dew Some are like butterflies some like bees Some are hairy and some plain Some dry up to look thorns And some even resemble cranes Children like to recite poems but they should not be forced to memorise them It will be good if all the children recite the poem as a group in the class Whoosh whoosh scuttle and flutter In the breeze they all do mutter All day long they smile and play And in the night they sleep away Leaves are of different kinds And of different shapes and hues Water O’ Water Water I’ll wash my face with water Said Munna to his Nani We all quench our thirst with water We are all alive because of water Water has been with us for ages Its story can fill so many pages Somewhere it is dew Somewhere it is snow steam is also water as you know Water has forms so many that is what says my Nani The river flow the waterfalls sing And water swells in lakes and springs Life on earth it has brought watered fields and life they got But when the water breaks in floods Great misfortune it always works Our First School We learn so many things when we come to school But do you know which is our first school Yes it is our family We learn so many things from our family much before we learn from anywhere else This is because we are so close to our family But we really never give it a thought Let us think about our family and talk about it Who all are there in your family Write their names and how they are related to you Write the relationship between any two members of your family such as husband-wife brother-sister mother-daughter What do your family members call you lovingly Do you have a pet name How do you call your family members Look at the picture carefully Two persons in the picture look a lot like each other How do you think they are related Chhotu’s House Chhotu came to Mumbai for the first time How much time in a day do you spend in each part of your house Is there any part of your house where a particular member of your family spends more time Is there any part of your house where a particular family member never goes or goes for a short time Home Sweet Home You always tell me mother The house belongs only to us But how do I believe that mother When I know it belongs to many more Look mother how these mice Are all playing ‘catch-catch’ together And look how these mosquitoes fly Any how peaceful lies the happy spider And look mother at the lazy lizard How slowly it crawls to and fro And look at so many black ants All marching in a row And look outside in the courtyard The birds are all pecking about Just like when my sister and I Sometimes fight quarrel and shout That is why I say dear mother Don’t think this house is only ours It’s dear to us and all who live here And have been living for many years Simmi noticed that her friend Billu was getting uncomfortable He was not talking to her Simmi Billu What happened You look so dull Billu I don’t know how to use the toilet properly Heera Ma’am would be on her round and again she would scold me as usual for not using the toilet properly Simmi Why don’t you use the toilet properly then Billu I am scared that I would fall in the toilet pit Simmi How stupid And now I know it is you and many of our friends like you who make our toilets so dirty by not using the toilet properly Don’t be scared Be responsible Use the toilet by sitting properly Always flush it with water after use Wash yourself properly Wash yours hands thoroughly Foods We Eat Last night I ate a chapati made of bajra with jaggery gur I cooked dal and rice Yesterday no food was cooked in my house I went to the gurudwara with my grandmother for the langar We ate dal and chapati Ammi had cooked kheer and poori which I don't like So I ate an omelette instead My mother brought noodles for us from the house where she works We enjoyed eating it My mother cooked fish I ate lots of it It was really tasty Vipul’s family In Vipul's family there are some members who do not eat what Vipul eats Do you think these people ‘do not eat’ or ‘cannot eat’ what Vipul eats Let us read about Vipul's family While returning home from school Vipul bought a bhutta corncob He reached home and asked his mother Where is Chhutki I want to see her His mother replied Chhutki is in the room upstairs Vipul caught his grandmother’s hand and said You also come upstairs with me His mother stopped him I have soaked Ba’s chapati in dal Let her first have her meal Have you put sugar in the dal After coming to Nagpur you have forgotten our own way of making food said Dadi to Vipul’s mother I have tasted the dal It has been prepared well replied Vipul’s mother Vipul picked up his grandmother’s plate and ran upstairs He asked her to follow him quickly When I was your age I could run up a hill in the same time said Dadi Vipul gave the bhutta he was eating to his Mami washed his hands and lifted little Chhutki Suddenly Chhutki started crying She is hungry said Mami She sat down to feed Chhutki Li chen I live in Hongkong My mother and I both love to eat snakes Whenever we feel like eating snakes we go to a nearby hotel and eat Ling hu fen Juni I live in Kashmir I like fish cooked in mustard oil Once we had gone to Goa We ate fish there but it tastes very different My mother said that it was sea fish cooked in coconut oil It had to be different Thomas I live in Kerala I really like to eat two things Both grow in our courtyard One grows on a tall tree and the other underground It is great to eat boiled tapioca with any curry made using coconut It tastes very good Saying without Speaking Dumb Charades Have you ever seen anyone talking through actions When do people need to talk like this Let us play a game In this game everyone has to let others know what they want to tell without speaking Divide yourselves into groups of seven Your teacher will give each group a piece of paper with a situation written on it Each group will read what is written on the paper and prepare a silent act Keep in mind that you cannot speak You can express through your face and body actions When all the groups are ready with their act they have to perform one by one in front of the other groups The others will have to guess what is being acted out How did you like this game Did you find it difficult to act without speaking Most of us can hear and speak but there are some people who can neither hear nor speak These people talk through actions They understand what the other person is saying by studying their lip-movements All of us cannot do everything Some of us sing well others write good poetry Some can climb trees quickly while others can run fast Some can draw well others can sing in tune We are all special in our own ways Hence in schools we can learn from each other Like all children children who cannot speak and hear also go to school to read and write In schools sign language is taught to them Let us read about a child who cannot hear yet who can do many things I have a sister My sister cannot hear I have a sister My sister is deaf She is special There are not many sisters like mine My sister can play the piano She likes to feel the deep rumbling chords But she will never be able to sing She cannot hear the tune She likes to leap to tumble to roll to climb to the top of the monkey bars Now my sister has started going to my school although our mother still helps her lip-read at home The teacher and children do not understand every word she says like sister or water or thumb I wore my sunglasses yesterday The frames were very large The lenses are very black My sister made me take them off when I spoke What do my brown eyes say to her brown eyes Flying High On my head I have a crest All say I dance the best Of my feathers I am proud Before the rain I cry aloud Long and grooved is my tail High up in the sky I sail I pick and eat all the mice The is what you call me My feathers are green My beak’s red Guava and green chilli I’m fed I love to imitate people’s voice And keep making a lot of noise Black are my feathers and black is my kau-kau I do all day long Koohu-Koohu is my sound Everywhere I am found My sweet voice gives me fame is my name Dead animals I do eat Making places clean and neat High up in the I fly Vulture is what I’m called by My beak is very special I use it like a needle Stitching leaves I make my home The bird is how I’m known My beak is pink feathers grey Guter Ghoo I go on all day In houses I make my home A is how I’m known In trunk of trees holes I make Hidden insects I intake Tuk-tuk-tuk I work all day The woodpecker is what people say Why is there so much noise in the jungle I just cannot sleep Dear Owl the birds are all praising themselves and shouting The owl said Stop this hullabaloo Why are you quarrelling We are all special in our own ways Our claws beaks feathers and sounds are different yet we are all birds If we all looked alike ate the same food and made the same sounds think how dull the world would be It’s Raining Appu ate bananas Appu likes bananas very much He plucks and eats bananas from the trees every day One day he saw that the banana trees were drooping It had not rained for a long time I must get water in my trunk said Appu He started walking towards the river Appu drank water till he was happy He bathed his body with his trunk Then he carried water in his trunk and poured it on the banana trees As soon as the banana trees got water they came alive Appu said From now on I will get water for you everyday After all you also give me ripe and tasty bananas Clouds Fair and white grey and black The clouds arrive in a magic pack Elephants and horses Dogs and fawns Sometimes they look Like a pair of swans In moments they come In moments they go Sometimes they freeze and for weeks they stay And sometimes they disappear For many a day Sometimes they pour Sometimes they thunder Spreading the colours In a rainbow of wonder And sometimes they hail Pelting the ground Breaking the glass In ringing chimes What is Cooking We do not cook all the things that we eat Have you seen a chapati being made in the kitchen or any where else There are so many things to be done for this taking out flour in a utensil kneading it into a dough making small balls of the dough rolling out the balls and then cooking it on fire After all this the chapati reaches your plate after so much of effort You have seen that food items are cooked in a variety of ways Some are baked and some are fried Some are roasted while some are steamed From Here to There The Train Come on children let’s play a game Climb aboard the chugging train Blow your whistles and take your seats Onto shoulders if you please Forward backward backward forward But in a line don’t run outward Blow your whistles and take your seats Onto shoulders if you please Stay in line and shut your eyes With open eyes you’ll nothing spy On roads of iron we move to and fro Here come the lights and there they go Forward backward backward forward But in a line don’t run outward Blow your whistles and take your seats Onto shoulders if you please Chhuk Chhuk chhuk the train is on its way Stop stop stop all the stations say Stay in line and shut your eyes With open eyes you’ll nothing spy Across the meadows over the hills Past aging farmers temples mills Past village wells and a lush green field With broken walls and a potato field Chhuk Chhuk chhuk the train is on its way Stop stop stop all the stations say Smoky clouds Fairs and crowds Village fairs Riders on mares Flocks of birds Clustered huts Bridges and paths Dhobi ghats Small tea-shops Puddles and flocks Chhuk Chhuk chhuk the train is on its way Stop stop stop all the stations say Work We Do Like other days Balbir reached the tea stall after his breakfast His brother Satvinder who had come from the village was also with him The worker at the tea stall gave him a cup of tea and said Here is today’s newpaper How do you spend your whole day sitting here Don't you get bored asked Satvinder Oh no One does not realise how the time flies Look at that group of children As usual they are late for school Everyone is running The teacher is also late today Oh it seems her sandal has broken She is going to Jaggu Bhai to get it repaired It’s good for him he will get some money early in the morning Champa is sitting there with her basket full of flowers The lady working in the post-office buys flowers from her everyday The construction work has started again The truck is bringing materials The workers will again be busy the whole day Look there the doctor and the nurse are entering the hospital together See Ramulu with his fruit cart These days he also brings Chinamma with him Chinamma runs around delivers fruits and collects money Nanu the barber has laid out his shop but whom will he shave Right in the middle of the crossing stands Iqbal Singh Throughout the day he blows his whistle and keeps shouting move your vehicle from here Hey have you not heard me take the cart away Saying this Balbir put down his empty cup and walked to a nearby shop Household work Deepali is also one such girl who does not go to school Let us read about her Deepali is the eldest child in her family Her father sells vegetables He leaves for the mandi very early in the morning Her mother washes utensils in some houses She also leaves for work early in the morning Deepali cooks food for her brothers and sisters She cleans the house and also washes the utensils She is very fond of listening to the radio She listens to songs while she works After finishing the work at home she goes to leave her brother with their father She then takes her younger sisters Suman and Sheila to school After that Deepali helps her mother in her work In the afternoon she brings her brother and sisters back home In the evening she plays with other children in the neighbourhood Her mother comes back home late in the evening Deepali helps her mother cook dinner for the family Her father comes home very late at night At night Deepali loves to lie in bed and read her sister's school books She has studied up to class three Three years back when her little brother was born she had to stay back home to take care of him She could not study any more She feels that reading books helps her to relax Now she is back to school and goes regularly Saramma asked her grandmother Nani the same question Nani replied When I was a child I would help my elders to collect firewood make cowdung cakes and plaster walls with cowdung But now we have a stove that works on gobar gas The floor and the walls of our house are cemented There is no need for Saramma to do some of the jobs that her grandmother did in her childhood Sharing Our Feelings After returning home from school there are two people with whom I like to share all my news They enjoy listening to my tales The first person is my nani She is always anxious to listen to me She waits for me to return from school She is quite old and often has back pains She cannot see or hear well Everyday in the morning papa reads the newspaper aloud to her She does the rest of her work herself If someone tries to help her she gets very upset Though she cannot see properly she is very fond of cutting vegetables She says these days children do not know how to cut vegetables properly Sharing Our Feelings know what our relationship is but he is a very loving brother He is always ready to answer my questions He never says I will tell you later Ravi bhaiya teaches in a college The students of the college respect him a lot A few of them come home to study from him Ravi bhaiya is very fond of listening to music and taking part in plays He enjoys chatting with his friends and going out with them He has a good sense of humour and makes all of us laugh The second person is my Ravi bhaiya He lives with us I call him Ravi bhaiya and he calls my parents bhaiya-bhabhi I do not Bhaiya carries a white stick when he goes out Looking at him moving around in the house no one can say that he cannot see He likes to do all his work himself If someone tries to help him against his wish he gets angry Whenever he needs any help he asks for it Some of Bhaiya’s students take books from him and return them after recording them on tapes Ravi bhaiya listens to these tapes Bhaiya has many other books too The pages of these books are thick and have rows of raised points dots He reads by running his fingers on the raised dots To have fun with bhaiya I sometimes change the place of his stick He does get upset but never gets angry After all I am his favourite sister Seema I had hardly reached the door that bhaiya spoke up Seema you seem to be very happy today Bhaiya recognises not only me but all the other family members from the sound we make as we move He can even tell whether I am happy or sad Bhaiya Finally I am in the football team I shared my news with him He patted me and said lovingly From today you are my football coach The Story of Food Do all the people in your family eat together If not why Who eats last in the family Who does not help in cooking food in the family and why Making Pots Once there was a sparrow called Phudgudi and a crow called Bhanate They were fast friends One day Bhanate said O Phudgudi If you lay eggs first then I will eat them and if I lay eggs first then you can eat them Agreed Phudgudi agreed A few days later Phudgudi laid an egg Bhanate said Give me your egg I will eat it Do give it Give it Give it Phudgudi was scared She said Yes but I want you to first go and wash your beak in the river Bhanate went to the river bank and said to it O river Yes brother said the river Bhanate O river please give me some water With cold water I’ll wash my beak Eating the egg is what I seek The river said But how will you fill water Get a pot Bhanate went to the potter and said O potter please give me a pot In the pot I will get water from the river With cold water I will wash my beak Eating the egg is what I seek The potter said But how do I make a pot Go and get some clay from the clay-pit Bhanate went to the clay-pit and said to it O clay-pit please give me some clay The potter will make a pot for me I will fill water in the pot With cold water I will wash my beak Eating the egg is what I seek The clay-pit said But how do I dig the soil Get me a trowel from the blacksmith Bhanate went to the blacksmith and said to him O blacksmith The blacksmith said Yes brother Bhanate What do you want Bhanate said Please give me a trowel The clay-pit will dig out clay for me with the trowel I will get a pot made and get water in it The potter will make a pot for me I will fill water in the pot With cold water I will wash my beak Eating the egg is what I seek With cold water I will wash my beak Eating the egg is what I seek The blacksmith said Sure you can take the trowel but do remember to return it Bhanate took the trowel and went to the clay-pit It dug the soil and got some clay The potter made a pot for him Bhanate filled water in the pot and washed its beak He then ran to eat Phudgudi’s egg By that time the sparrow’s egg hatched A little bird came out of it and flew away Far away from Bhanate Games We Play All the children were playing stappoo hop-scotch in the lane Avantika and her sister Nandita were also playing But Nandita was not able to play the game in the right way Avantika Listen to me carefully Nandita Understand the game Throw the marker thippi in the first box Then on one leg jump over this box into the next one Keep in mind you can put both your feet down together only in the boxes marked - and - Take care your feet should not touch the lines If it touches you are out of the game When you reach the last box turn around When coming back pick up the marker and bring it back Now throw the marker in the next box Similarly keep throwing the marker in all the boxes one by one and continue the game The children started playing again Since long Chachi was watching them play She too felt like playing with them She could not keep herself from asking — Can I play with you The children laughed aloud Avantika Chachi You will play Chachi Do you think I do not know how to play hop-scotch At your age we played so many different games Nandita Which games did you play Chachi Chachi Langrhi-taang hide and seek seven tiles and so many more In kabaddi our team was the best among ten villages Rajat Chachi how did you get so much time We hardly get any time to play Chachi You are so busy watching T V all the time Nandita Chachi did Chacha play these games too Chachi Your Chacha says that he used to play marbles seven tiles wrestling kabaddi gilli danda and so many other games the whole day While flying kites he would even forget his meals Nandita Chachi do come and play Chachi started playing with the children They had been playing just for a short while when it started raining All the children Oh no Chachi Let us go to my house We’ll play inside The children were happy to hear this All the Come on Let us go to Chachi’s house to play children The children came to Chachi ’s house Inside the house chacha and bua were playing chess Avantika What should we play Rajat Let us play house-house Many children Yes let’s play house-house Rajat If we had a doll we could have played with it Chachi Do you want a doll Let us make one right away Chachi took out some old cloth With Chachi’s help children made a doll Some children wanted to play carrom and others ludo They formed groups and started playing Here Comes a Letter I am a letter A letter written with a pen and paper by Reena to her friend Ahmed I was put in a letter box The postman took me out and put me in a big bag Taking a ride on the postman’s bicycle I reached the post office There I was taken out of the big bag and stamped hard The stamp was of Agartala from where my travel began After getting stamped I reached another big bag This bag had many more letters all heading for Delhi The red postal van dropped me at the railway station There I got into a train going to Delhi After a long journey of five to six days I reached Delhi I was sorted as per the area mentioned in the address written on me One more stamp was put on me Finally the postman dropped me at Ahmed’s house Aapaa do you know today we learnt about the journey of a letter in the class I want to write a letter to nani You can write a letter I am going to make a phone call If you want you can also come along Razia and Aapaa went out to make a phone call from a shop in the village Aapaa dialled the phone number and both of them talked to nani They gave money to the shopkeeper and returned home happily A House Like This My name is Naseem I live in Srinagar Since yesterday there is lot of activity in our school It will go on for a week Do you know why There is a camp being held in our school Children have come from many places for the camp Tents have been put up in the ground for everyone to stay We have decorated the school beautifully Some children have used pieces of cloth to make streamers for the doors Some have made posters using almond shells while others have made rangolis using dry leaves and saw dust Today is the first day of the camp We are very happy In the morning we all got together and sat down on the ground in a circle Each of us introduced ourselves and spoke about where we came from and what we liked to eat Children brought pictures of their families and their homes Everyone spoke about their homes Bhupen’s group was the first to talk Bhupen introduced himself and said I have come from Molan village in Assam It rains heavily in our place Hence our houses are made almost ten to twelve feet above the ground They are made on strong bamboo pillars The insides of our houses are also made of wood Now it was Chameli’s turn She said I have come from Manali which is a hilly area At our place it rains heavily and snows as well When it is very cold we like to sit in the sun Our houses are made of stone or wood Mitali and Anuj said Mitali and Anuj have come from Delhi They showed pictures of Delhi to everyone In one picture seeing very high buildings Bhupen said Oh such tall houses How do you climb up Kanshiram told everyone I have come from Rajasthan Rainfall is very scarce in our area It is very hot too We live in mud houses The walls of the houses are very thick These walls are plastered with mud The roofs are made of thorny bushes In the same way all the groups spoke about their houses After the introduction a cultural programme was held The children performed various dances They sang folk songs in their own languages Everybody had kahwa with almonds and cardamom We really enjoyed ourselves In the evening we all went to the Dal lake We saw a houseboat We sat in a shikara and some children moved the oars We saw the Char Chinari surrounded by blue mountains Our Friends — Animal The children in the class were startled on hearing the sound tak The sound came from the ceiling fan Kalyani shouted — Look look a bird is hurt Peter got up at once and picked up the bird It was in pain Navjyot and Ali quickly brought water in a bowl Peter lovingly patted the bird They held the bowl to the bird’s beak It drank a little water and slowly started flapping its wings Navjyot told all the children to move back They noticed that the bird was trying to fly In a while the bird flew away Next day the children saw a bird circling above them in their classroom The children tried to find out whether it was the same bird that was hurt the previous day They quickly switched off the fan and started to clap Shankar was very happy A cat had given birth to four kittens in the courtyard of his house He started spending his free time with them One morning shankar was woken up by the cat’s cry Do you know how a cat cries He ran towards the courtyard He saw that the cat was crying and cuddling its three kittens One of the kittens was missing He went outside and found Malini patting a kitten Shankar called Malini into his courtyard Malini saw the cat crying Bholi is Meenu’s cow Meenu takes Bholi to the field to graze daily One day a speeding scooter hit Bholi and hurt her leg The wound was bleeding heavily The Queen's Garden - The gardener has brought mangoes from the queen’s Garden So many mangoes Good Your majesty there would have been double the amount Of mangoes if the birds had not eaten them What did you say The birds have eaten the mangoes Why did you allow the birds into the garden Please forgive me I will not let any bird come into the garden Next Year Fewer mangoes than last year Why did you not stop the birds from entering the garden I stopped them your majesty I did not let a single bird enter But this year the insects have eaten the mangoes If there had been birds then they would have eaten the insects we would not have lost so many mangoes Drop by Drop Madho lives in Bajju — a small village in Rajasthan It is hardly a village All you see is sand all around One can see some houses when the sand does not blow Everyone in Madho’s family is upset Every summer there is water scarcity in his place This year it is worse It did not rain at all His mother and sister have to walk a longer distance to fetch water as the nearby pond has also dried Each day they spend hours just to get four pots of water While walking on the hot sand their feet burn and blisters just cannot be avoided When the train carrying water comes they are very happy Madho’s father goes to fetch water in his camel-cart But this does not happen often People keep waiting days and days for water Some people collect rain water This is done by a special method by making tanks tanka Do you know what a tanka is and how it is built To build a tanka a pit is dug in the courtyard and it is made pucca The tanka is kept covered with a lid The roof of the house is made sloping so that the rainwater collected here flows through a pipe into the tanka A sieve is attached to the mouth of the pipe so that no dirt goes into the tanka This water is used for drinking after it is cleaned Sometimes Madho is allowed to take water from one of the tankas of the village Just like Madho Sonal also faces water scarcity in her house She lives in Bhavnagar Water is supplied only for half an hour in a day All the people of the area depend on only a single tap Can you imagine what happens Sonal is determined to take water from the tap Whenever she gets a chance she fills her bucket even if it is just drop by drop Let us find out how many drops will fill a bowl or a mug Families can be Different Come let us play a game together You must be familiar with this game All the children stand in a circle Let one child stand in the centre and play a tune Everyone must run in a circle as long as the music plays The child who is playing the music will suddenly stop it and call out a small number like ‘five’ ‘four’ or ‘two’ loudly Children have to form groups according to the number called out The children who cannot join any group will have to leave the game Continue to play this game till only two children are left in the circle All of us prefer to live with people than to live alone We always live in groups Let’s see one such group Gurleen Nagarajan and their children Tanya and Samar Sitamma Sitamma lives in her ancestral house in a small city Guntoor Her dada dadi younger chacha and bua live on the ground floor In one portion of the first floor Sitamma lives with her father mother and younger sister Gitamma In the other portion live her tauji and his three children Her taiji died just a few months ago Her elder chacha and the new chachi live in one of the rooms on the terrace They are newly married Before dinner Sitamma’s mother teaches all the children Food for the whole family is cooked in the same kitchen on the ground floor They all make special effort to be together at dinner time Nowadays tauji’s younger daughter sleeps with Sitamma’s mother at night In the morning Sitamma helps her get ready for school Tara lives with her amma and nana in Chennai Her amma Meenakshi is not married She has adopted Tara Meenakshi goes to the office in the morning and returns in the evening When Tara returns from school her nana takes care of her He is the one who feeds her helps her to do homework and also plays with her During vacations the three of them go to far off places and enjoy themselves At times Tara’s mausi mausa and their children also come to their house At such timesthey play together for long hours and also chit chat Sara and Habib Sara and Habib live in a city Both are employed Habib is a clerk in a government office and Sara teaches in a school Habib’s abbu is retired and lives with them In the evening the three of them sit together and watch television or play cards Abbu enjoys watching television with the others He enjoys the discussion as well On holidays the neighbour’s children come to their house and create a lot of fun Everybody enjoys together They play games go out and at times go for plays and movies Totaram Totaram lives with his father uncle and cousin brothers in a colony in Mumbai Totaram and his brothers have come to Mumbai to study His father and uncle work here Everybody does the household work together Food cooked by Totaram’s chacha is liked by everyone Totaram’s father does the shopping A part of the Money earned is sent to Totaram’s dada in the village Totaram’s mother dada dadi chachi and Younger brothers and sisters live in their parental house in the village Once a year Totaram goes to his village He misses his mother very much He writes long letters to her Krishna and Kaveri Krishna and Kaveri live with their father In the morning all the three leave home together Krishna leaves Kaveri at school and goes to college Their father goes to the shop for the day Kaveri returns from school in the afternoon She unlocks the house and waits for Krishna On returning from college Krishna and Kaveri eat food together Kaveri goes out to play after doing her school work On returning she either plays carrom with her brother or watches television When father returns home they cook food and then eat together During vacations Kaveri goes to stay with her mother Krishna also stays there for a few days but he likes to stay in his own house all his things and his father are here Left Right Given below is the picture of a hand Place your hand on it so that the palm faces the paper Your thumb and fingers should be placed on those drawn in the picture The hand which fits on the hand in the picture is your right hand Place your other hand on a page in your notebook and trace its outline with your right hand to get a picture The hand whose outline you have just traced is your left hand Let us sing a song Put your right hand in Put your right hand out Put your right hand in and just turn around Put your left hand in Put your left hand out Put your left hand in and just turn around A Beautiful Cloth Sajida's sister gave her a very beautiful dupatta The dupatta had beautiful embroidery and small mirrors stuck on it After finishing dinner Sajida tried to wear the dupatta in different ways Soon she got tired playing with the dupatta and fell asleep wearing it She was thinking about the dupatta even in her dream How would such a beautiful dupatta have been made Web of Life Water Plants Grass Snake Sun Squirrel Moon Bird Soil Rat House Air Cow Good Morning Good morning sky Good morning sun Good morning little winds that run Good morning birds Good morning trees And creeping grass and brownie bees How did you find out it was day Who told you night had gone away I’m wide awake I’m up now too I’ll be right out to play with you The Magic Garden The magic garden was in a school playground It was very pretty Sunflowers and roses stood high against the wall There were also marigolds poppies and pansies The sunshine fell on this garden more than on any other and the flowers danced and sang happily They said to one another We have hundreds of little gardeners They were the children from the school One sunny morning the flowers were talking to the birds I love all the children but I love the dear little ones most of all said a poppy I like them to bring their watering cans and water my thirsty roots We love the little children said a tiny bird They are kind and they bring bread for us All the flowers said We must work hard to make our dresses very pretty for the children will be here soon The sun said I will help you also for nothing pleases me better than to see the children running about in the golden sunshine Suddenly the children came out laughing and singing and the flowers stopped their songs to listen to them Oh look at the tall sunflower said one child and the sunflower lifted its head very proudly Another child said I love the marigold in its golden dress The marigold smiled happily It was indeed a magic garden because it had fairies too They danced and sang sweet songs which only the children could hear After a time the fairies came out dancing and talked with the children Their dresses were made of flowers and their wings of sunshine The magic garden was quiet that night The flowers and birds were asleep and dreaming of the next day when the children would come again Bird Talk Think said the robin Think said the jay sitting in the garden talking one day ‘Think about people the way they grow they don’t have feathers at all you know They don’t eat beetles they don’t grow wings they don’t like sitting on wires and things Think said the robin Think said the jay Aren’t people funny to be that way NINA AND THE BABY SPARROWS There was great joy in Nina’s house Nina's aunt was getting married Nina her father mother and little brother were all going to Delhi for the wedding Everyone was happy except Nina Her mother took her to the market to buy a new dress What colour would you like Mother asked I don't want a new dress Mother said Nina Salwar-kameez then Nina shook her head What about those lovely white shoes you saw last week I don't want those either Thank you Mother Nina’s mother was upset but she said nothing They went back home and had lunch After lunch mother came and sat near Nina What is it child she asked Why did you say 'no' to everything Mother I don’t want to go to the wedding But why Nina said nothing Instead two big tears rolled down her cheeks Mother put her arms around Nina Don’t cry my pet she said Why don't you tell me what’s bothering you More tears rolled down Nina’s cheeks Mother she said there’s a sparrow’s nest on the bookshelf in my room And there are two baby sparrows in the nest I see said mother They’re just beginning to get their feathers And growing up makes them so hungry All day long they cry ‘cheep-cheep’ asking for food I see said Mother If we go the whole place will be locked And how will papa and mama sparrows feed their babies Oh Nina cried Mother giving her a big hug Is that why you don’t want to go to the wedding But that’s no problem at all We’ll leave the window open Oh can we Mother Can we Really Yes yes We’ll remove all your things from the room and lock the door on the outside So the house will be perfectly safe and papa and mama sparrows can come and go freely too Just think Nina While you enjoy yourself at the wedding the baby sparrows will be getting nice and fat in their nest Good idea isn’t it It a good idea When Nina came back from the wedding there were two plump little sparrows flying all over the room And wasn't Nina thrilled Little by Little Little by little an acorn said As it slowly sank in its mossy bed I am improving every day Hidden deep in the earth away Little by little each day it grew Little by little it sipped the dew Downward it sent out a thread-like root Up in the air sprang a tiny shoot Day by day and year by year Little by little the leaves appear And the slender branches spread far and wide Till the mighty oak is the forest’s pride The enormous turnip Once upon a time an old man planted some turnip seeds The turnip seeds grew The turnip seeds grew and grew I want to pull up the enormous turnip said the old man The old man pulled and pulled But he could not pull up the enormous turnip An old woman came I want to pull up that enormous turnip said the old man I will help you said the old woman The old man and the old woman pulled and pulled But they could not pull up the enormous turnip A boy came We want to pull up that enormous turnip said the old woman I will help you said the boy The old man and the old woman and the boy pulled and pulled But they could not pull up the enormous turnip A girl came We want to pull up that enormous turnip said the boy I will help you said the girl The old man and the old woman and the boy and the girl pulled and pulled UP came the enormous turnip We will help you to eat the enormous turnip said the old woman and the boy and the girl And they did Sea Song I found a shell a curly one Lying on the sand I picked it up and took it home Cold inside my hand Mummy looked at it and then She held it to my ear And from the shell there came a song Soft and sweet and clear I was surprised I listened hard But it was really true I wish you’d find a nice big shell And hear it singing too A Little Fish Story There are a great many million fish in the seas but this story is about just one of them and a very small one at that Now this little fish had everything in the seas to make him contented but he was not happy You will laugh when I tell you why he was not He was unhappy because he was so very small It is very hard to be such a little mite of a fish he would say over and over again If I were only larger how much happier I could be And he said it so many times that I think he believed it One day he was swimming along with the rest of his school and thinking no doubt how much more the larger fish had to be thankful for than he when suddenly with no warning they found themselves in the meshes of a great net There was much floundering and splashing as the net was drawn up out of the water into the sunlight and just as its haul was being emptied into the boat the smallest fish in the school wriggled through the mesh and slipped back into the cool clear water How good it felt He swam here and there and everywhere and some of the fish who knew him well all the rest of his life said that they never again heard him say that he wished to be anything but a fish The Balloon Man He always comes on market days And holds balloons a lovely bunch And in the market square he stays And never seems to think of lunch They're red and purple blue and green And when it is a sunny day The carts and people get between You see them shining far away And some are big and some are small All tied together with a string And if there is a wind at all They tug and tug like anything Some day perhaps he'll let them go And we shall see them sailing high And stand and watch them from below — They would look pretty in the sky THE YELLOW BUTTERFLY A yellow butterfly flew around in Sonu’s garden Sonu saw the butterfly He ran to catch it The butterfly flew to the rose bed It sat on a red rose Now I can catch it said Sonu He walked slowly and silently to catch the butterfly He came closer closer and still closer but then Off flew the butterfly Where did the butterfly go Near the garden was a pond In the pond was a white lotus Around it grew round leaves They floated in the water The butterfly sailed on a floating leaf Sonu went splash into the water and Off flew the butterfly Where was it Sonu looked up he looked down Near the wall was a peach tree It had pink flowers The butterfly sat on a pretty flower I can catch you shouted Sonu He climbed up the tree Up up he climbed but Back it flew down from the tree Sonu jumped down too He chased the butterfly From the rose to the lotus and Up the peach tree but He could not catch the butterfly Sonu could not see it at all He looked everywhere At last he saw the butterfly There was a big spider's web in the peach tree The butterfly was caught in the spider's web It looked sad as it tried to escape It fluttered its wings It twisted and turned But it could not escape The spider’s web held it tight Poor butterfly In the middle of the web was a big spider It looked hungry It wanted to catch the butterfly Closer and closer crawled the black spider Before the hungry spider could grab it Sonu ran and he caught the butterfly It was so pretty It had black spots on its yellow wings Sonu loved the little butterfly But it looked sad in Sonu’s hand Sonu wanted it to be happy Go said Sonu Fly away He let the butterfly go It sat on the red rose It flew to the peach tree and then sailed on a lotus leaf It flew merrily from flower to flower Sonu watched it fly and fly The butterfly flew all around Sonu’s garden happy and free once again Trains Over the mountains Over the plains Over the rivers Here come the trains Carrying passengers Carrying mail Bringing their precious loads In without fail Thousands of freight cars All rushing on Through day and darkness Through dusk and dawn Over the mountains Over the plains Over the rivers Here come the trains the story of the road It is early morning The road is asleep Everything is quiet But listen The birds are calling softly Chirrup chirrup chirrup say the sparrows Chirrup chirrup chirrup Caw caw caw says the crow Caw caw caw wake up wake up Here is someone else now Tring-a-ling tring-a-ling It is the newspaper vendor Tring-a-ling tring-a-ling says his bicycle Tring-a-ling wake up Chirrup chirrup chirrup say the sparrows Chirrup Chirrup Caw caw says the crow wake up Who is this coming now It is the vegetable man Peas cauliflowers cabbages says the vegetable vendor Potatoes cucumbers radishes carrots Caw says the crow wake up Chirrup chirrup say the sparrows Tramp tramp tramp tramp Chatter chatter chatter chatter Who are these They are children going to school Chatter chatter chatter talk the school children Tramp tramp tramp go their shoes Peas carrots cabbages calls the vegetable vendor Chirrup chirrup chirrup say the sparrows Caw caw says the crow wake up Caw caw caw says the crow Caw caw wake up Wake up asks the road Can't you see you foolish bird I am wide awake ‘The Bus’ The wheels on the bus go round round round round round round round round round The wheels on the bus go round round round all through the town The horn on the bus goes beep beep beep The wipers on the bus go swish swish swish The money on the bus goes clink clink clink The babies on the bus go waa waa waa The driver on the bus says Move on back The bell on the bus goes ding ding ding The windows on the bus go up and down The Race I am going home in a bus There is a railway line alongside the road Look there is a train coming I tell the bus driver Go fast Go faster than the train But the driver slows down There is a railway gate I must stop says the driver The train whistles loudly I am first it says Puppy and I I met a Man as I went walking We got talking Man and I Where are you going to Man I said I said to the Man as he went by Down to the village to get some bread Will you come with me No not I I met a Horse as I went walking We got talking Horse and I Where are you going to Horse today I said to the Horse as he went by Down to the village to get some hay Will you come with me No not I I met a Puppy as I went walking We got talking Puppy and I Where are you going this fine day I said to the Puppy as he went by Up in the hills to roll and play I’ll come with you Puppy said I Little tiger big tiger There was a mother tiger and her small tiger cub They lived near a river in a shady jungle When the sky was dark the mother tiger hunted for deer and pig The tiger cub stayed close by his mother's side When the Langur monkey saw her he called a loud harsh call Watch out A tiger is coming The sambhar deer bellowed the kakar deer barked and sometimes the game got away She hunted then for jungle fowl for pheasant and for frog or went to the river for fish But she did not hunt every night If the moon was bright the mother tiger lay down and waited for the dawn She twitched the tip of her tail and the tiger cub pounced on her tail again and again If he went too far away the mother tiger called him with a low quiet grunt The tiger cub came back but he did not like to stay near his mother in the jungle at night One night the mother tiger was tired and closed her eyes The tiger cub saw a tiny frog hopping along the ground The tiger cub pounced but the frog hopped away He chased the frog and caught it and turned to show his mother But she was not in sight Instead he saw a tiger bigger than his mother near him in the jungle The tiger's green eyes glistened as he watched the tiger cub The tiger cub was frightened He could not hide or run He let the frog hop away The tiger crept up closer to the little tiger cub But a roar filled the jungle the roar of the mother tiger She faced the other tiger and he went away The mother tiger liked to roar a loud big tiger roar to tell all the other animals in the jungle that she was there All the other animals in the jungle kept far far away The tiger cub also liked to roar a loud tiger-cub roar to tell all the other animals in the jungle that he was there But all the other animals in the jungle were not afraid at all and none of them ran away But there came a year when the small tiger cub was a full-grown tiger He walked for miles alone hunting for game at night When he roared to tell all the other animals in the jungle that he was there all the other animals in the jungle kept far far away And the great big tiger that had been a small tiger cub hearing his own loud roar smiled to himself a great big tiger smile What’s in the Mailbox Most always when the postman comes With letters two or three They’re for my Mother or my Dad But never one for me I'm going to some letters though That’s what I'm going to do And then my friends will answer me And get letters too MY SILLY SISTER Mother your baby is silly She is so very childish She does not know the difference between the lights in the streets and the bright stars When we play with pebbles she thinks they are real food She even tries to put them into her mouth When I open a book before her and ask her to learn her she tears the pages with her hands and roars with joy at nothing This is your baby’s way of doing her lessons When I shake my head at her in anger and scold her or call her naughty she laughs and thinks it great fun Everybody knows that Father is away but sometimes I call out Father playfully She looks quickly about her in excitement and thinks that Father is near Sometimes I hold a class with the donkeys that our washerman brings to carry away the dirty clothes I warn her that I am the schoolmaster and that she better not make any noise Only then she keeps quiet I insist that she should call me dada Your baby wants to catch the moon She is really funny Mother your baby is silly She is so very childish Don’t Tell There are lots of things They won’t let me do I'm not big enough yet They say So I patiently wait Till I’m all grown-up And I’ll show Them all One day I could show Them now If they gave me the chance There are things I could do If I tried But nobody knows No nobody knows that I’m Really a giant Inside He is my brother Once upon a time there was a small hill A path went up the hill It went through thick and lovely woods of pine and fir trees People often walked on it to a holy place One day when the sun shone high in the sky many people were seen climbing up the hill They were climbing slowly and carefully A girl also climbed the hill with them Her name was Meena Meena was twelve years old She carried a small boy on her back He was four years old His hair was curly His eyes were black and his face was as fresh as the morning dew As the sunshine danced through the trees Meena climbed the hill slowly and steadily Meena was happy The boy was also happy A man in the group looked at Meena He felt sorry for her He asked her My child why are you carrying a boy on your back Don't you feel his load Meena looked at him in wonder She could not understand him Meena Load Of course not He is my brother How Creatures Move The lion walks on padded paws The squirrel leaps from limb to limb While flies can crawl straight up a wall And seals can dive and swim The worm he wiggles all around The monkey swings by his tail And birds may hop upon the ground Or spread their wings and sail But boys and girls Have much more fun They leap and dance And walk and run THE SHIP OF THE DESERT Lion roaring Who are you Camel looking down at the Lion I am the Ship of the Desert Who are you Lion Don’t you know me I’m the King of the Forest Camel Are you Oh I see Lion frowning You call yourself the Ship of the Desert How can you be a ship you’re an animal Camel smiling So I am but people call me the Ship of the Desert I can walk across the desert even on a hot afternoon The sand burns but it doesn’t bother me Lion I can’t believe it Camel Can you walk across a desert Lion blinking No I can’t but I can run in the forest Camel with disdain Every animal can do that I alone can run on sand I can run on sand at kilometres an hour Lion wonderingly How can you do that Camel Look at my feet They are thick and padded The hot sun does not burn them Lion My feet are padded too Thorns don’t prick them and I can run kilometres an hour Camel That is true You can run kilometres an hour in the forest but can you run even a mile on the hot sand Lion May be not but Camel interrupting And you can't live without water for a week can you Lion No I can’t I need water everyday But don’t tell me you can do without water Camel Yes I can There are no rivers or lakes in a desert But that does not bother me I can drink bottles of water at a time Lion Really You must have a big stomach Camel Yes I have a big stomach I can store water for a week I can store food for two weeks even Lion Do you store food in your stomach Camel No I don’t I store it in my hump I eat a lot of food at one time Then I don’t need to eat for a fortnight Lion That’s interesting But what do you eat Camel I eat leaves but there are no trees in a desert Lion What do you eat there Camel There are thorny bushes in the desert I eat the thorns The thorns don’t prick my thick tongue Lion How funny Camel Mr King of the Forest please come with me to the desert Lion No I’d better not I can’t walk on burning sand I can’t store food and water and I can’t eat thorns Good bye and good luck Mr Ship of the Desert Wake up Wake up Wake up It’s a lovely day Oh Please get up And come and play The birds are singing in the trees And you can hear the buzzing bees Wake up Wake up It’s a lovely day Oh Please get up And come and play It’s much too late to lie in bed So hurry up you sleepy head Wash and dress And come on out Everyone is up and about The cow the horses the ducks And the sheep The tiniest chicken Cheep-cheep-cheep Wake up Neha’s Alarm Clock Narrator Ring Ring Ring Off goes the alarm clock at six in the morning Neha makes a face and covering her ears with a pillow snuggles under the warm blanket But she knows she has to get up She mutters to herself Neha This alarm clock always rings at six and pulls me out of the bed It’s so unfair Oh how I would love to sleep a little longer in the morning I wish this clock would forget its job sometimes Narrator Something falls Neha smiles Neha Oh My clock has fallen How happy I am Tomorrow I can get up late Narrator Next morning there is no alarm So Neha sleeps and sleeps The small chirpy birds which come to the window sill every morning find Neha still sleeping Birds Wake up dear Wake up fast Narrator Neha gets up with a start Neha Oh no If it’s not the alarm clock it’s these birds why don’t they leave me alone Narrator Even this wish of Neha’s comes true The next morning there is not only no alarm clock there are no birds either But there is someone else who does not want her to miss the school bus Can you guess who it is The big bright Sun He fills Neha’s room with a warm smile Neha Oh my eyes Now it’s the Sun waking me up Why can’t he let me be Narrator Even this wish of Neha’s comes true Next morning the Sun is behind the clouds So Neha snores till she hears her mother’s voice Mother Wake up sleepy head You will miss the bus Neha Oh no Why does mother have to wake me up Narrator There is no escape now Neha gets up and gets ready Can you imagine what happens the next day Neha wakes up with a start Her watch says it is six o’clock She calls out to her mother Neha Ma who woke me up today Narrator Mother smiles Mother Who else You of course Neha But I was sleeping how could I Mother Now tell me why do you eat your lunch every day at one in the afternoon Neha I feel hungry Mother Why do you sleep at nine every night Neha Because I feel sleepy Mother There is a clock inside you which tells you when to eat when to sleep and when to wake up Neha Oh Ooh I better rush now I don’t want to miss the bus Mother RELAX Today is Sunday Neha Oh Oh Oh Noses I looked in the mirror and looked at my nose it’s the funniest thing the way it grows stuck right out where all of it shows with two little holes where the breathing goes I looked in the mirror and saw in there the end of my chin and the start of my hair and between there isn’t much space to spare with my nose like a handle sticking there If ever you want to giggle and shout and can’t think of what to do it about just look in the mirror and then no doubt you’ll see how funny YOUR nose sticks out The Little Fir Tree Shetty the magician was returning home when all of a sudden it began to rain It rained heavily Shetty looked around for shelter and saw a pretty little fir tree He ran towards it as fast as he could Soon the rain stopped Shetty was happy that he did not get wet Thank you you have been kind to me I would like to reward you Ask for four wishes and I will grant them said the magician The sad fir tree had leaves like needles and no birds ever made their nests on it So it said I wish I had green leaves like my other friends Next morning its wish was granted Soon a goat came along and ate all the green leaves Oh dear said the fir tree I wish I had gold leaves as goats do not eat gold leaves When the little fir tree woke up the next morning it was surprised to see gold leaves How happy I am it said Two em n came along and stole the gold leaves I wish I had glass leaves instead Men do not steal glass leaves The next day its glass leaves shone in the bright sun How happy I am it said At night the wind blew whoo oo oo All the glass leaves broke Oh dear said the fir tree I like my old needle-like leaves best for goats do not eat them No man can steal them The wind will do them no harm The tree went to sleep When it woke up the next morning it had all its needles back again Oh I never was so happy said the little fir tree Run AWAY from the city And into the sun Out to the country Run Run Run Run in the raindrops Run ’neath the trees Run little races With each little breeze Run down the hillside Run up the lane Run through the meadow Then run back again Run and be merry All through the day Run to the country Away Away Nasruddin’s Aim One day Nasruddin was chatting with his friends He began to boast No one can match my skill in archery I string the bow take aim and shoot the arrow Whoosh The arrow is sure to hit right on target Hearing this one of his friends immediately brought a bow and some arrows Giving them to Nasruddin he said Here Nasruddin Take this bow and arrows Then pointing towards a target he said Aim at that target and shoot an arrow Nasruddin held the bow in his hands strung it aimed at the target and shot an arrow Wh o o o o The arrow didn’t hit the target Instead it fell down somewhere in the middle Ha ha ha ha His friends started laughing They said Hey Nasruddin Is this your best aim Oh no Not at all said Nasruddin defending himself This wasn’t my aim It was Azad’s aim I just showed you how Azad shoots an arrow Saying this Nasruddin picked up another arrow Once again he strung the bow aimed at the target and shot the arrow This time the arrow fell a little further from where it had fallen before But it certainly didn’t hit the target They asked Nasruddin And this must be how you shoot an arrow Of course not argued Nasruddin Even this aim was not mine It was the chief guard’s aim Now somebody remarked Well Now who’s next on the list Hearing this all the friends burst out laughing Nasruddin didn’t say a word He quietly picked up one more arrow And again And this time Nasruddin was really lucky The arrow hit right on the target Everybody stared at Nasruddin their mouths agape in amazement Before anyone could say anything Nasruddin said triumphantly Did you see that It was my aim Why I know a curious little boy Who is always asking Why Why this why that why then why now Why not why by-the-by He wants to know why wood should swim Why lead and marble sink Why sun should shine and wind should blow And why we eat and drink He wants to know what makes the clouds And why they cross the sky Why sinks the sun behind the hills And why the flowers die Some of these why’s are not too hard To answer if you’ll try Others no one ever yet Has found the reason why Alice in Wonderland One day Alice was lying under a tree listening to her sister reading a story Suddenly she saw a white rabbit scamper by He had pink eyes and was wearing a blue coat He took out a big watch from his waistcoat pocket and as he hurried away he said Oh dear I will be too late She thought there was something very different about this rabbit It could talk it wore a red waistcoat and it carried a watch Alice wondered A talking rabbit A rabbit who wears a waistcoat Alice was burning with curiosity and she followed the white rabbit The rabbit started running and Alice followed the rabbit The rabbit suddenly popped down a large rabbit hole Alice jumped into the rabbit hole too The rabbit went down and down and down and down into the rabbit hole Alice said aloud Where am I How many miles down have I fallen I must be getting somewhere near the centre of the earth She wondered Will I slip through the earth to the other side Alice landed on a pile of dry leaves She looked around quickly and suddenly saw the white rabbit again It disappeared saying Oh my ears and whiskers How late it’s getting Alice stood up and saw a small door about fifteen inches high It was too small for her to go through She saw a glass table with a golden key on it She tried the little golden key in the lock and to her delight it fitted Alice opened the door and looked into the loveliest garden she had ever seen How she longed to be among those beds of bright flowers and those cool fountains But she could not even get her head through the doorway Oh How I wish I could become smaller she exclaimed loudly Don’t be Afraid of the Dark Don’t be afraid of the dark little one The earth must rest when the day is done The sun must be harsh but moonlight never And those stars will be shining forever and ever Be friends with the Night there is nothing to fear Just let your thoughts travel to friends far and near By day it does seem that our troubles won’t cease But at night late at night the world is at peace Don’t Give Up If you keep on going And never stop You can keep on going You can make it to the top Life is full of mountains Some are big and some are small But if you don’t give up You can overcome them all So keep on going Try not to stop When you keep on going You can make it to the top Helen Keller It was the summer of A healthy baby girl was born in a small town in Alabama Her parents loved her dearly and named her Helen Keller But one day the baby became ill and day after day her fever stayed high Everyone in the family tried to help her to get better but all they could say was There is nothing more we can do The baby may not live Helen lived But she was not the same after her illness Something is very wrong her mother said At last they found out what was wrong The child could not see or hear The baby grew into a little girl Her parents felt sorry for her Helen often cried and held on to her mother Give the poor child what she wants her father would say Though Helen could not hear or see she was a bright little girl Some people thought Helen could not learn anything Her mother did not agree Helen is very smart she said and added the problem is how can we reach her She is locked up inside herself Helen began to grow wild She would not let anyone comb her hair Her clothes were always dirty She was often angry Sometimes she even lay on the floor and kicked her feet Her parents thought that they should find a teacher for her Miss Sullivan a young teacher agreed to help Helen to learn to see the world Miss Sullivan gave Helen a doll D O L L spells doll She spelt the word with her fingers into Helen’s hand She made the letters with special hand signs Helen copied her teacher and spelt D O L L too but she did not understand what she was doing Helen liked Miss Sullivan She was strict but kind She spelt a lot of words for Helen on her hand day and night to make Helen understand One day her teacher made Helen put her hand into running water Then she spelt W A T E R Suddenly Helen understood that W A T E R meant something wet running over her hand She understood that words were the most important things in the world Words would tell her everything she wanted to know Hiawatha Hiawatha was a young Native American boy He lived with his old grandmother Nokomis in a wigwam Nokomis taught Hiawatha about the wonders around them She told him about the stars the trees the insects the birds the animals and many other things Hiawatha grew up to love them all He could talk to the birds and the animals and they to him Then the little Hiawatha Learned of every bird its language Learned their names and all their secrets How they built their nests in Summer Where they hid themselves in Winter Talked with them whene’er he met them Called them Hiawatha’s chickens Of all beasts he learned the language Learned their names and all their secrets How the beavers built their lodges Where the squirrels hid their acorns How the reindeer ran so swiftly Why the rabbit was so timid Talked with them whene’er he met them Called them Hiawatha’s Brothers The Scholar’s Mother Tongue A learned Pundit once visited the court of Akbar He told the King and his courtiers that he had mastery over many different languages The Pundit could speak many languages fluently He was so fluent that no one could find out what his mother tongue was He challenged everybody at the court to name his mother tongue When everyone failed the challenge was taken up by Birbal That night Birbal went quietly to the Pundit’s room when he was asleep He whispered into the Pundit’s ear and tickled it with a feather The Pundit half-awake cried out suddenly and shouted out words in his mother tongue Birbal came to the court the next day and told everyone that the Pundit’s mother tongue was Telugu The Pundit was surprised and accepted the truth King Akbar then asked Birbal How did you find the truth Birbal answered In times of difficulty a person speaks only in his mother tongue He also told the King how he had gone to the Pundit’s room at night to find out the truth A Watering Rhyme Early in the morning Or the evening hour Are the times to water Every kind of flower Watering at noonday When the sun is high Doesn’t help the flowers Only makes them die Also when you water Water at the roots Flowers keep their mouths where We should wear our boots Soak the earth around them Then through all the heat The flowers will have water For their thirsty feet The Giving Tree Narrator Once there was a tree and it loved a little boy Every day the boy would visit the tree and enjoy its company Tree Come here my boy Come and climb up my trunk and swing from my Branches Boy swinging from branches Ah what fun Tree Are you hungry Eat my apples Boy eating apples How delicious Narrator When the boy was tired he slept under the tree The tree was happy to give its shade But time went by And the boy grew older and went away The tree was often alone After some years One day the boy came to the tree and the tree was very happy Tree Come my boy come and climb up my trunk and swing from my branches Boy I am too big to climb and play I want to buy things and have fun I want some money Can you give me some money Tree I’m sorry but I have no money I have only leaves and apples You can pluck my apples and sell them in the market Then you will have money Narrator The boy happily plucked the apples and carried them away The tree was also happy But the boy stayed away for a long time and the tree was sad One day the boy came back and the tree shook with joy Tree Come Boy come and climb up my trunk Swing from my branches eat my apples play in my shade and be happy Boy I am too busy to climb trees I am getting married and I need a house for my wife and children Can you give me a house Tree I have no house but you may cut off my branches and build a house Narrator So the boy cut off the tree’s branches and carried them away to build a house The tree was very happy But the boy stayed away for a long time and the tree was sad again And when he came back after some years the tree was so happy that it could hardly speak Now the boy was a young man Tree Come Boy come What can I do for you Young man I am going on a business trip I want a boat to take me away Can you give me a boat Tree All I have left is a trunk Cut down my trunk and make a boat Then you can sail away Narrator The young man cut the trunk of the tree and sailed away in a boat The tree was left only with a stump And after a long time the young man came back again Now he was an old man but the tree recognised him Tree I am sorry friend but I have nothing left to give you My apples are gone Old man My teeth are too weak for apples Tree My branches are gone You cannot swing on them Old man I am too old to swing on branches Tree My trunk is gone You cannot climb Old man I am too tired to climb Tree sighing I am sorry I wish that I could give you something but I have nothing left I am just an old stump I am sorry Old man Dear tree you have always given But now I don’t need much just a quiet place to sit and rest Tree happily Well an old stump is good for sitting and resting on Come friend sit down and rest Narrator The old man did And the tree was still happy Books Come in come in Said the library door I opened it wide And saw books galore Tall skinny books Up high on the shelves Little fat books That stood by themselves I opened one up And sat down to look The pictures told stories What a wonderful book Going to buy a Book One day grandfather gave my brother and me some money Go and buy books he said We were both very happy We both love to read Should we go now Should we go later Should we go today Should we go tomorrow We decided to go right now Should we go to the big market Should we go to the small shop Should we go with somebody Should we go alone We decided to go to the small shop just the two of us We like the small bookshop It is small but it has many books The man in the shop likes us He always helps us Should I buy a book with a lot of pictures Should I buy a book with a lot of stories Should I buy a thin book I could not decide We did not know which book to buy The man in the shop smiled at us Relax come with me he said These books are about animals Those are about machines Those over there are about wars Take what you want I picked some books My brother picked some books I sat on the floor He sat on the chair And we read and we read and we read It was very quiet There was no sound One hour passed Two hours passed Finally we knew which books to buy The man in the bookshop smiled at us I got a fat book with many stories My brother got a big book with many pictures We ran home to our grandfather We climbed on his bed He put his arms around us and then We read and read and read The Naughty Boy There was a naughty boy And a naughty boy was he He ran away to Scotland The people there to see Then he found That the ground Was as hard That a yard Was as long That a song Was as merry That a cherry Was as red That lead Was as weighty That fourscore Was as eighty That a door was as wooden As in England So he stood in his shoes And he wondered He wondered He stood in his shoes And he wondered Pinocchio Once upon a time an old carpenter bought a very queer piece of wood As he used his plane on it he heard a little laughing voice say Stop You’re tickling me The old man was puzzled by the voice He said This is a strange piece of wood What shall I do with it I think I’ll make it into a puppet He set to work and as the puppet boy took shape the old man said He must have a name I will call him Pinocchio As soon as he finished making the eyes the carpenter was amazed to see them move Before the mouth was made it began to laugh Stop laughing the old man said It did stop but as soon as his back was turned it put out its tongue And its nose grew long No sooner were its hands ready than it snatched off the carpenter’s wig and put it on its own head And then Pinocchio’s nose grew longer When its legs and feet were made they were too stiff to use so the carpenter showed Pinocchio how to use them Now the carpenter decided to send Pinocchio to school But there Pinocchio did nothing but look for fun He often ran away from school Why don’t you go to school asked the carpenter Pinocchio told him a lie and his nose started growing longer and longer Each time he was rude to someone or told a lie his nose grew longer Finally Pinocchio said I’m glad to be a real boy I’ll never lie again EVS Going to school It It rains so much where we live Sometimes after the rain there is knee-high water everywhere But that does not stop us from getting to school We hold our books in one hand and bamboo with the other We quickly cross the bamboo and rope bridge to reach school The Troley Everyday we have to cross the river to get to school The river is wide and deep There is a strong iron rope across the river On both the sides it is tied tightly with strong trees or rocks There is a trolley an open box made of wood attached with the rope Four or five of us sit in the trolley A pulley helps the trolley to move across the rope We reach the other side of the river in a short time Cement Bridge We often need to go across some water bodies so we use bridges These are made of cement bricks and iron rods The bridge may also have steps Vallam In some parts of Kerala we use a vallam small wooden boat to reach school Camel-cart We live in the desert There is sand all around It gets very hot in the day We ride in a camel-cart to reach school Bullock-cart We ride in our bullock- cart going slowly through the green fields If it is too sunny or raining we use our umbrellas Bicycle ride We ride our bicycles on the long road to school At first girls here did not go to school because it was too far But now groups of girls easily ride even through the difficult roads Jugad What a Vehicle Look at our special transport It sounds phut-phut-phut when it runs Is it not something special The front looks like a motorcycle but the carriage at the back is made out of planks of wood Moving on the Snow See how we reach school We go to school through miles of snow We hold hands and walk carefully If the snow is soft our feet sink into it When the snow is frozen we may slip and fall Rocky Paths We live in the mountains The paths are rocky and uneven The children who live in the plains will find it difficult to walk on these But we can easily race up and down Ear to Ear You know very well that ears help us to hear In some animals you can see the ears in some you can not We can not see a bird’s ears A bird has tiny holes on both sides of its head Generally the holes are covered with feathers They help the bird to hear If you look carefully you will see tiny holes on a lizard’s head These are its ears A crocodile also has ears like this but we can not see them easily The different patterns on the animals are due to the hair on their skin Those animals whose ears you can see have hair on their body These animals give birth to the young ones Those animals that do not have ears on the outside do not have hair on their body These animals lay eggs Many many years ago there were dinosaurs on earth but not any more A Day with Nandu Nandu Wakes Up Nandu woke up and opened his eyes For a few seconds he was not sure where he was It seemed to him that he was surrounded by a forest of big grey tree trunks He blinked his eyes and looked around Oh There was Amma The grey forest that he had imagined he was in was actually the legs and trunks of his family members The sun was overhead and it was getting hot Nani ma trumpetted made a loud sound Nani ma is the oldest in this herd of elephants She started moving towards the jungle The other female elephants saw her and started to follow her Nandu also went with them When they reached the jungle the members of the herd started spreading out Each member went to eat her favourite leaves and twigs After they had eaten the herd moved towards the river The baby elephants enjoyed playing in the water The mothers lay down in the water and mud on the river bank Do you know that an adult elephant can eat more than kilograms of leaves and twigs in one day Elephants do not rest very much They sleep for only two to four hours in a day Elephants love to play with mud and water The mud keeps their skin cool Their big ears also work like fans The elephants flap these to keep themselves cool Nandu saw his brothers and sisters pulling each other’s tails He thought I better not go near them What if they fall on me I am still small He quietly went and stood near his mother Amma gently pushed Nandu towards the water as if she was telling him to go and play Nandu loved to play in the water His cousins were already there Just as he reached near a strong fountain of water fell on his head He got wet Oh this was the work of his naughty cousins Nandu joined them in the game Before sunset the herd started back towards the jungle By then Nandu was very tired He settled himself between his mother’s front legs and fell asleep as he drank her milk You have read about Nandu and the elephant herd An elephant herd has mainly females and baby elephants The oldest female is the leader of the herd A herd may have to female elephants and young ones Male elephants live in the herd till they are years old Then they leave their herd and move around alone Nandu will also leave his herd when he is that old Like elephants some other animals also live together in groups These animal groups are called herds Animals in herds usually move around together searching for food The Story of Amrita This is a true story from long long ago Almost three hundred years ago in a village called Khejadli lived Amrita Khejadli village is near Jodhpur in Rajasthan The village got its name because of the many Khejadi trees that grew there The people of this village took great care of the plants trees and animals Goats deer hares and peacocks roamed fearlessly there The people of the village remembered what their elders used to tell them They used to say Agar perh hain to hum hain Plants and animals can survive without us but we can not survive without them Amrita’s Friends Amrita would get up early every morning and greet her friends the trees She would choose a special tree for the day She would put her arms around the tree trunk and whisper to the tree Friend you are strong and beautiful You care for us Thank you tree I love you very much Give your strength to me also Like Amrita the other children also had their special trees They would play for hours in the shade of the trees Trees in Danger Time went by Amrita was now grown up One day she went to greet her trees She saw that there were some strangers in her village They had axes with them They said that the King had sent them to cut trees for wood The wood was needed for building the King’s palace Amrita was shocked She went to the tree that the men were about to cut She put her arms around the tree and hugged it tightly The men shouted and threatened her but Amrita did not let go of the tree The King’s men had to follow his order They had to cut the tree On seeing this Amrita’s daughters and hundreds of villagers old and young hugged the trees to protect them Many people including Amrita and her daughters died to save the trees When the King heard of this he could not believe that people gave up their life for trees He visited the village himself There he learned about villagers’ respect for trees and animals The Village is Protected The villagers’ strong feelings for trees affected the King greatly He ordered that from then on no tree would be cut and no animal would be harmed in that area Even today almost three hundred years later the people of this area called Bishnois continue to protect plants and animals Even though in the middle of the desert this area is green and animals roam freely without fear The Khejadi tree is found mainly in desert areas It can grow without much water Its bark is used for making medicines People cook and eat its fruits beans Its wood is such that it will not be affected by insects Animals in this area eat the leaves of the Khejadi And children like you play in its shade Anita and the Honeybees My name is Anita Khushwaha I live in Bochaha village This is in Muzzafarpur district in Bihar I stay with my parents and two younger brothers I study in college Besides studying I teach young children I also keep honeybees All this has not been easy for me When I was young I used to spend all my time with my goats as they grazed for food I always wanted to go to school but my parents did not like the idea of girls going to school This is a true story Anita Khushwaha is a Girl Star Girl Stars is a project which tells extraordinary tales of ordinary girls who have changed their life by going to school A Dream of School One day I peeped into the school in our village I could not stay away I silently went and sat down behind the children I felt so happy I went home and picked up courage to talk to my parents about going to school But they told me clearly that I could not do so That day I cried and cried One of the teachers in my village explained to my parents why it is important to study The teacher told them that they would not have to pay anything for my education up to Class The teacher said that it was the right of every child to go to school Somehow my parents agreed I started going to school I did not get high marks but I always asked many questions Staying in School Time passed and soon I completed Class I knew that we would need to spend more in Class My parents said that it was time for me to leave school but I wanted to study more I found a way to do this I started to teach younger children From the money that I got I was able to continue my own studies One Sweet Memory I remember some older boys in my village also used to teach young children They did not like it when I started teaching They started to scold and scare the children so that they would not come to me For some time all the children except two stopped coming to me But soon they all came back because I used to teach them with love and care What is RTE Act This provides the right of free and compulsory education to each child aged to years Slowly I started talking to other parents in the village about sending their daughters to school My parents also started helping me in my work My mother used to do all the house work so that I could get more time to study From School to Bee-keeping There are many litchi trees in our area Honeybees are attracted to the litchi flowers Many people do bee-keeping and collect honey I thought that I could also do this I joined a course run by the government to learn about this I was the only girl in this course During my training I found that honeybees lay their eggs from October to December This was the best time to start bee-keeping Becoming a Bee-keeper I completed my bee-keeping course But I did not have money to keep my own bees and start work I continued to teach and with time could collect ₹ With this money I bought two boxes for keeping bees Each box costs ₹ With the remaining money I bought sugar to make the syrup for honeybees and medicines to clean the beehives That was in September By December I had so many bees that I had to buy two more boxes I was still learning about bee-keeping Many times the bees would sting me and my hands and face would get swollen It would pain a lot How could I complain to anybody I myself had decided to do this workThe litchi trees come to flower in February I put all my four boxes near the litchi orchards I got kilograms of honey from each box I sold this honey in the market This was my first earning from my bees Now I have boxes Every day I cycle to my college My college is in the town five kilometres away When I go to college my mother prepares the syrup for the bees My father looks after the bees and takes the honey out of the boxes Anita is known by everyone in all the villages nearby She goes to all the village meetings and talks about how important it is for everyone to study Sometimes people make fun of her but Anita knows what she wants to do She does exactly what she wants to Anita wants to become a wholesaler so that she can help the villagers to get the right price for their honey Every beehive has one Queen Bee that lays eggs There are only a few males in the hive Most of the bees in the hive are worker bees These bees work all day They make the hive and also look after the baby bees They fly around flowers in search of nectar They collect nectar from flowers for honey When one bee finds flowers with nectar it does a special kind of dance by which the other bees can know where the nectar is The worker bees are very important for the hive Without worker bees there would be neither hive nor any nectar collection All bees in the hive would go hungry The male bees have no special role as workers Ants live and work together like honeybees The Queen Ant lays the eggs the Soldier Ants look after and guard the ants’ nest Worker Ants are always busy looking for food and bringing it to the nest Termites and wasps also live like this Omana’s Diary As soon as we had reached the station we checked our names on the reservation chart Soon the train reached the platform We saw that the coach was already full The train had started early in the morning from Gandhidham in Kutch When the train came there was so much confusion People were getting off and others were pushing and trying to put their luggage inside all from one door We somehow managed to get in find our seats and put our luggage under them By the time the train started most people had found their seats and arranged their luggage After some time the ticket collector came and checked our tickets to see that we were in our proper seats Amma and Appa had the lower berths Unni and I have the middle berths There are two college students who have the upper berths On the other berths there is a family with two children They seem to be about our age I will go and talk to them later Now I am sitting near the window and I have started writing about our journey just as I had promised you I will stop now because Amma has opened the tiffin box Amma had packed a lot of food dhokla with chutney lemon rice and some mithai My mouth is watering I will write more later After lunch some people slept But I was not sleepy I kept looking out of the window I saw many fields but they all were brown and dry Sometimes we passed small villages They seemed to be flying by Do you know that when the train is at a very high speed things outside seem to be running in the opposite direction Earlier it was really hot Now that it is evening there is some breeze The sun is slowly setting and the sky has become orange I have never seen it look like this in Ahmedabad We have just passed a station called Valsad The train stopped for only two minutes but even for the short time there was so much noise Chai garam chai one man was calling batata vada batata vada puri-shaak doodh-thanda-doodh People were selling and buying food on the platform We quickly bought some bananas and chikoos through the window itself I have made some friends They are Sunil and Ann They are going to their grandmother’s house in Kozhikode Sunil has given me some story books to read A little while ago I went to brush my teeth but there was no water in the bathroom Somebody said that it will only be filled at the next big station From the Window It is morning now Last night I went to sleep early It was too dark to see anything outside When the train stopped early this morning I woke up It was Madgaon That was written on the board at the platform Appa said that we were going through the state of Goa We got off at the station and had some hot tea and filled our water bottles The train started again I find it difficult to describe the scene outside It is so beautiful It is green everywhere fields with red soil and green crops hills covered with trees Sometimes I can see small ponds and far away behind the hills more water I can’t make out if it is a river or the sea The air is cooler and not so dry as in Ahmedabad The train passed a ‘level crossing’ People are waiting on both the sides of the crossing for the train to pass There are buses full of people cars trucks autorickshaws cycles motor cycles scooters and even tongas and bullock-carts with people and goods in them Some people do not switch off the engines of their vehicle even while waiting at the level crossing There is a lot of smoke and noise I see some people going under the bars of the level crossing How dangerous this is At times our train crosses another train Unni and I tried to count the carriages in one such train but both the trains were going so fast We always got confused Later I was sitting near the window with my eyes closed Suddenly the sound of the moving train changed khud khud khud I opened my eyes Guess what I saw Our train was crossing a very big river on a very long bridge As it was crossing the bridge it sounded very different The wheels rattled as there was no ground only the tracks and the water down below When I first looked down I felt giddy It was really quite scary The river down below was full of water and had some boats I could also see some fishermen on the banks I waved at them but I did not know if they could see me Alongside our bridge there was another bridge for buses and cars This was built differently from ours I think going over our bridge was more adventurous The last few hours have been so exciting After breakfast I climbed on to the upper berth to read my comics It was bright and sunny outside Suddenly everything became dark It also felt a little cold inside I was afraid Then the lights in the train came on But outside it was very dark Somebody said We have entered a tunnel This goes right through the mountain The tunnel seemed to go on and on And then just as suddenly we were in daylight again Outside it was sunny bright and green The train had crossed the tunnel Appa explained that we were on the other side of the mountain Since then we have passed through four smaller tunnels Now I am enjoying going through the tunnels Now it is afternoon For lunch we had idli-vada that we bought from Udipi station We also bought some bananas These were very small and very tasty The scene outside has changed again Now we can see many coconut trees and green fields everywhere Amma says that these are paddy fields The houses and villages look very different People’s clothes are also different from what we see in Ahmedabad Most people are wearing white or cream-coloured dhotis and sarees Many people who were with us from Ahmedabad have got off People have also got on to the train from different stations Sunil’s family is getting off at Kozhikode which comes at around O’clock We have exchanged addresses and plan to meet in Ahmedabad You will also like Sunil and Ann Now it is night We have also started packing up The train will reach Kottayam in about three hours That is where we have to get off Tonight we will go to Valiyamma’s house Tomorrow we will take the bus that will take us to Ammumma’s village We all are quite tired After all we have been on the train for two days What a long journey it has been We had a lot of fun I will put my diary away now I will write again after we reach Ammumma’s house Reaching Grandmother’s House After our long train journey we reached Kottayam in the night Valiyamma’s house was not far from the station and we had to take two auto-rickshaws to get there By then I was very sleepy and did not even wait to eat anything I took a bath and slept I thought I had just fallen asleep when Amma woke me up again We got ready took our luggage and went to the bus stand Valiyamma’s family also came with us We were ten people and had a lot of luggage too The bus conductor came and Appa bought tickets for all of us We managed to get seats As it went along the bus got very crowded People were sharing the seats We also had to share our seats After a long ride the bus reached the last stop I was happy to get off My legs were stiff I could hardly stand I thought that we had finally reached Ammumma’s village But no Our travel had not ended yet The bus had dropped us by the water side Look Amma pointed across the water That is where we have to go But how will we get there I wondered Just then I saw a boat coming There is the ferry Amma said Immediately a big crowd of people started getting off school children men women all with their own packets and luggage Amma explained that the ferry was used by people to cross the water and reach the other side As soon as the ferry got empty the big rush started from our side Everyone had to pay the fare before getting on Very soon the ferry was full It started off again I managed to get a place to stand along the railing I saw the rippling of the still water as the ferry moved It was moving smoothly on the water There were rows of coconut trees on the banks of the river As we moved swiftly I could see people fishing washing bathing and working along the banks Just before the sun disappeared into the water the ferry reached the island and stopped It was time for us to get off At last we reached Ammumma’s place What a long and interesting journey it has been A railway time table gives details about the route of every train the stations along the route what time the train will reach and leave each station the distance covered etc We can buy a railway time table from a railway station Changing Families A New Arrival There is great excitement in Nimmi’s family She has a new baby sister New Place Tsering’s father received a letter from his office The letter said that he was being promoted and would have to move to another city When Tsering’s father showed the letter to his family how do you think the different members would have felt It’s a Wedding There is great joy in Nazli’s home today Her elder cousin brother is getting married There are many girls who get married before they are years old Many of them have to even leave school There are many true stories of girls like Susheela of Ranga Reddy district who are going back to school She also got the help of the Panchayat The Panchayat said that young children should play and study and not be married off A group of people of Andhra Pradesh holds special camps to help married girls to go back to school Jangamma and Chitti say We would like to study and stand on our own feet Hu-Tu Tu Hu Tu Tu Hu tu tu Hu tu tu Hu tu tu Hu tu tu Out out all the girls on one side shouted loudly Hu tu tu Hu tu tu Hu tu tu hold from here Hu tu tu Hu tu tu hold from the leg the leg the leg hold her leg Hu tu tu Hu tu tu Vasudha you come here you hold her from here Hey Make sure that Shyamala’s hand does not touch the line Hold her hand Hu tu tu Hu tu tu Oh She has touched She has touched it Out out out All out Ho ho ho Your team is all out What are these girls doing They are shouting ‘out’ ‘out’ ‘out’ it is clear that they are playing a game What do you call this game Chedduguddu Hu tu tu Choo Kit Kit Ha du du or Kabaddi or something else When six girls surrounded Shyamala and caught her everyone thought that she was ‘out’ Somebody caught her legs and somebody her arms while one girl caught her by the waist But Shyamala was not the one to give up She dragged herself and managed to touch the line in the centre When Shyamala touched the line all the girls of the opposite team were holding her So all of them got ‘out’ But Rosy argued that Shyamala had taken a breath in between so the team was not ‘out’ Shyamala insisted that this was not true She said that if she had taken a breath why did the girls keep holding her There was a big argument Finally Shyamala won The Game of Kabaddi So this is what a game of Kabaddi is like Pushing and pulling screaming and shouting dragging and falling on the ground It is a rough game yet it has many rules It is lots of fun and lots of exercise Holding your breath while running and continuously saying Kabaddi Kabaddi and also trying to touch the players of the opposite team So many things to do in Kabaddi You can do this as long as you can hold your breath You need to use both your body and mind in this game You have to use your strength to pull or stop the players At the same time you have to think about how to enter the other side You have to decide whom to touch quickly and come back If you get caught then how do you reach the line in the centre Next time when you play Kabaddi focus your attention on your legs arms and eyes You will notice that good coordination is required between eyes legs and arms Karnam Malleshwari Have you seen or read about her in the newspapers Karnam Malleshwari is a weight lifter She lives in Andhra Pradesh Her father is a police constable Malleshwari started lifting weights when she was years old Now she can lift a weight of kilograms Karnam has won medals in international events Her four sisters also practise weight lifting A Story of Three Sisters The picture is of the three sisters Jwala Leela and Heera They live in Mumbai All three of them played Kabaddi and taught the game to others Jwala tells When we were young girls were not allowed to play this game People thought that if girls played such rough games nobody would marry them They also said that the girls had to wear boys’ clothes to play Kabaddi That is why they stopped girls from playing The sisters were young when their father died Their mother and mamas maternal uncles brought them up Both uncles used to play Kabaddi and Kho Kho They encouraged the three girls to play Kabaddi Jwala and Leela talk about their experiences Almost fifty years ago when we started to play Kabaddi girls never got a chance to play this game Parents did not let them play the game But we always felt that we should play and my uncles and mother supported us We three learnt the game and some other girls also joined us We formed a Kabaddi Club which is active even today Remembering Those Days Leela and Heera still get very excited when they talk about their matches They tell how they won some matches which they were about to lose This was possible because of their strong will During those matches some very interesting things happened Once they had to go to a different town for a big match Leela tells The match had to start at in the evening We went to see a movie from to o’clock We thought we would be back in time for the match As soon as the movie started we noticed some noise and disturbance It was created by our mama who was looking for us in the hall with a torch When he found us he gave a big scolding right there in the cinema hall The sisters had to face many difficulties because of Kabaddi but that did not reduce their fun Heera the youngest sister became a Kabaddi coach She wishes that children like you should enjoy and play many games especially Kabaddi The Valley of Flowers In the hills of Uttarakhand there is a place where there are flowers everywhere This place is called the ‘Valley of Flowers’ In some places one sees red flowers blooming on bushes while in others one finds white flowers peeping out between the stones There are wide areas carpeted with the brightest yellow flowers And suddenly elsewhere blue flowers shining like tiny stars between the grass All this seems like a beautiful dream doesn’t it Yes because like a dream these flowers bloom only for a few weeks in the year The design in the picture is called ‘Madhubani’ It is a very old form of folk art Do you know why it is called Madhubani There is a district in Bihar called Madhubani Here during festivals and happy occasions the walls of the houses and their courtyards are painted with such pictures These paintings are made out of paste of powdered rice in which colour has been mixed The colours used in Madhubani painting are very special too To make them indigo Neel turmeric Haldi colours from flowers and trees etc are used The paintings show human beings animals trees flowers birds etc Blooming buds You must have seen buds on the plants If there are any flower bearing plants growing near your school or home look carefully at their buds Flowers are even eaten What are the different ways we use flowers in our daily life Do you know that flowers can be eaten as well Many flowers are cooked as vegetables Firoza and Nilima from Uttar Pradesh enjoy eating a vegetable made of kachnar flowers Yamini from Kerala wants her mother to cook her a vegetable made of banana flowers Mamta and Omar who are from Maharashtra love pakoras made of sahjan flowers Flowers in medicines Flowers are used to make many medicines as well Colours from flowers Colours are made from many flowers like marigolds zenia etc These colours can also be used to dye cloth You may have heard of some of Granny’s old recipes which use flowers Here is a recipe for which rose water is used GRANNY RECIPE Mix equal part of rose water and glycerine Fill this in a bottle Add a few drops of lemon juice In winters use this mixture on your skin Your skin will not crack or dry The Kannauj district in Uttar Pradesh is famous for Itr Truckloads of flowers are brought from neighbouring areas for this purpose Itr rose water Kewra water are prepared from flowers here Thousands of people in Kannauj are engaged in this work Changing Times My name is Chetandas Many years ago I used to teach children like you These days I spend my time by writing about the days when I was young I would love to share some of these with you A Big Move I remember the time when I was nine years old It must have been over sixty years ago That was when we lived in Dera Gazikhan Today this place is in Pakistan At that time there were a lot of problems all around us I could not understand what was happening One day Baba told us that we had to leave our village and move to another place I was sad to leave my house and my village That was where I had all my friends All of us Baba Amma my younger brothers and sisters and I took a train to come here near Delhi Like us many people from our area also moved People were saying that our country was being divided into two India and Pakistan Many people from India went to Pakistan just like we moved to India For some time we all stayed in a camp We lived in big tents that were put up in a huge ground A New Home One day Baba told us that we had been given some land in Sohna village He said that we could build our house there I was very happy Baba and Amma worked hard to make the house We children also helped Baba dug the soil and we quickly filled the pans and passed them on to Amma Gudiya and Amma mixed husk in it Baba put up the walls We brought cow dung from nearby houses Amma mixed it with the mud She coated the floor with this mixture just like she used to do in our old house Amma used to say that this would keep the insects away Then it was the turn for the roof to be made Baba made a frame by joining strips of wood and fixed it on the four walls We put branches of neem and keekar trees on the frame so that termites would not harm the wood Amma put old gunny bags on this and covered them with mud Most of the houses around our house were made like ours A few were different But I liked my house the best It was just like our old house A Changing House Time passed quickly I finished my studies and got a job Amma Baba wanted me to get married I thought that before I got married we should repair our house and build one more room In those days people in cities were using cement They said that this made the houses stronger We also thought we would use cement We used iron and cement for making the roof of the new room In those days unbaked bricks were also available in the market We made the walls with them The use of bricks was useful we did not need to coat the wall every week Once a year we would whitewash the walls We also built a small kitchen in the courtyard The kitchen had a mud chulha and place to keep the vessels Then I got married and my wife Suman came to our new house To cook Suman used to sit on the floor in the kitchen We all used to sit on mats in the kitchen and eat together It was a happy time People used to go out to the field for their toilet in those days Some of the houses had a separate place for this We also made a small toilet with unbaked bricks behind the house Chetandas tells that people from the basti used to come to clean the toilets and take away the waste More Changes My two sons and a daughter were born in that house Time passed The children completed their studies Fifteen years ago our daughter Simi got married and moved to Palwal When Raju was to get married we felt that we should get the house ready for the new bride By then everyone was using baked bricks We also used them for the walls and put a lintel for the roof We used marble chips and cement for a strong and fancy floor In the toilet we put pipes to take away the waste The kitchen was made bigger Now Raju's wife does not use the clay chulha She stands while cooking on the gas stove Seeing New Things My younger son Montu moved to Delhi when he got a job there Now he stays there with his family Suman and I stay with Montu for some months in a year and with Raju in Sohna for the rest of the time On the way to Delhi from Sohna we go through Gurugram So many big high rise buildings have come up there A few years ago Raju renovated the toilet and the bathroom He used coloured tiles in his bathroom Imagine spending so much money for a place to have a bath I am now seventy years old In all these years I have seen so many changes even in my own house I don't know where my grandchildren will want to live and how their house will be I wonder what the houses are like in Dera Gazikhan today And how about all my friends where will they be A River Tale How does Water become Dirty You saw in the pictures that as the river flowed through or near many villages towns and cities the water changed The people used the river water for many different things such as washing clothes bathing animals and cleaning utensils Many of these activities made the water dirty The water in the river kept changing as it flowed through various places Water in ponds and lakes can also become dirty due to similar reasons Basva’s Farm I am Basva My father is a farmer We live in Belvanika village in Karnataka It is the month of July Like every year Appa my father is preparing the field to sow the onion crop There are so many things to be done at this time To help him I too go to the field with Appa In the last few days Appa has been using the Khunti an iron rod to dig the soil loosen it and make it soft Sowing the Seeds This year also my father will sow onion seeds in the field The bullocks will pull the Kurige and Appa will walk behind them sprinkling the seeds I would also like to do this just like my Appa But Appa says that it is necessary to drop the right amount of seeds at a regular distance This is not so easy to do He says that I may drop too many seeds at one place I must wait till I am a little older to be able to do this properly The Sprouts Appear It is now twenty days since the seeds were sown The onion plants have started to sprout Along with onion plants weeds have also come up Weeds grow in fields and gardens without being planted Appa says that we must remove the weeds so that they do not take up all the water and fertilisers If there are too many weeds then the onion plants will not be healthy Amma Uncle and I we all help Appa to take out the weeds Growing Plants I am happy to see the plants growing They are tall enough to reach my knees The leaves have started turning yellow and drying up This means that the onions are ready to be taken out Everyone at home will have to work to take the onions out It is important that this should be done at the right time Appa Amme Kaka and Choti Maa will do it together If we are late the onions will rot in the ground itself and all our hard work will be wasted The Onion Crop Everyone at home is happy This time the onions are big and healthy Amma and aunty use the illige to cut the dried leaves from the top of the onions The illige is sharp and you have to be careful not to cut your fingers Appa and Uncle fill the sacks with onions Appa will take them in a truck to sell in the big market From Market to Home Day at night My name is Vaishali My father is a vegetable seller My whole family Amma Bhaiya Chhotu and I help him with his work Can you guess at what time we begin our work At o’clock in the morning When most people are fast asleep we start our work Our day’s work begins when Babuji Amma Bhaiya and I take out the previous day’s vegetables from the gunny bags and baskets This is to prepare for bringing the fresh vegetables from the mandi Sometimes Chhotu also helps us As we finish doing this and are having some tea we hear the horn of the tempo It is time for Babuji Bhaiya Chachu uncle and some others from our street to leave for the mandi Preparing for the Day While Babuji is away Amma Chhotu and I put the previous day’s vegetables on gunny bags and sprinkle some water on them By a m Babuji is back from the mandi with baskets and sacks full of fresh vegetables At that time our house looks more like a small vegetable market There are brinjals potatoes tomatoes okra Bhindi pumpkin gourds chillies and many other vegetables all around Everybody helps in sorting the vegetables The vegetables which are not fully ripe and ready to sell are kept aside We have to sort the vegetables fast so as to reach the bazaar as early as possible By o’clock Babuji arranges all the vegetables on the handcart and leaves for the bazaar He says that if he is late then his regular buyers may buy their vegetables from someone else As soon as Babuji leaves I quickly get ready as I have to reach school by a m In the Bazaar Chhotu attends school in the afternoon He rests for a while and goes to the bazaar later with food for Babuji and Bhaiya He stays with them at the vegetable cart until it is time for him to go to school Sometimes he goes back after school to help Babuji Babuji tries to see that the previous day’s vegetables are sold first As the previous day’s vegetables get sold Bhaiya takes out fresh vegetables from the sacks and puts them in the cart He also keeps sprinkling water on the vegetables so that they do not dry up especially in summers Babuji and Bhaiya return home after a long day only around o’clock at night By then Chhotu and I are asleep Everyone else sleeps around or at night And at o’clock next morning only four hours later our family is up again Another day has begun A Busy Month Dear Children It is o’clock in the afternoon There are no clouds in the sky The sun is burning hot The sparrows doves and sunbirds have started working in pairs as they prepare to make their nests Some of the birds have already made their nests In some of the nests the eggs have hatched The parent birds are busy feeding the chicks with different kinds of insects and other things In our courtyard also there is a baby dove There is another egg in the nest but it has not hatched yet On the way to Gopalbhai’s house there are many stones along the roadside In the space between these stones an Indian Robin has laid its eggs Bachubhai showed it to me I looked through the binoculars I saw that the nest was made of grass On top therewere softtwigs roots wool hair and cottonwool This is how the robin makes its nest What a soft and cozy home for its chicks The robin is not like the crow A crow’s nest is made of all kinds of things even pieces of wire and wood I saw a baby bird in the robin’s nest It was sitting with its beak wide open The mouth was red from inside In a little while the robin flew to the nest and put something in the chick’s open beak may be a few small insects By then it was evening The robin settled down with its chick There is a small tree nearby It has a nest hanging from its branch Birds are so wonderfully different The crow builds its nest high up on a tree The dove makes its nest among the thorns of a cactus plant or a mehendi hedge The sparrow can be found in and around our own house It makes its nest anywhere on top of a cupboard behind a mirror on a ledge Pigeons also make their nest like this Often they make nests in old or deserted buildings The barbet or coppersmith bird can be heard in the summer with its tuk tuk tuk call It makes its nest in a hole in a tree trunk And the tailor bird uses its sharp beak to stitch together two leaves on a bush It lays its eggs in the fold of the leaf that it has made This is its nest The sunbird makes a nest that hangs from the branch of a small tree or a bush The same evening we saw a sunbird’s nest Can you guess what its nest is made of The nest has hair grass thin twigs dry leaves cottonwool bits of tree bark pieces of cloth rags and even spider’s cobwebs When I looked through the binoculars I could see a chick in the nest It was sitting near the small opening in the nest It was waiting for its mother to bring some food What else can it do just eat and sleep All the birds are so busy these days Making a nest and laying the eggs is only the first step It is a difficult task to raise the young ones in the nest which had been made with so much effort Birds have many enemies humans and other animals too Crows and squirrels cats and rats all of them wait for a chance to steal the eggs Many times they even break the nest To keep oneself safe from danger to find food make a nest hatch the eggs and raise the chicks safely all these are tests for every bird And see how the birds still sing with joy and spread their wings and fly freely The male weaver bird make beautifully woven nests The female looks at all the nests and chooses the one that she likes the best and decides in which to lay her eggs Birds use the nest only to lay their eggs After the eggs have hatched and the chicks have grown they leave the nest Imagine how it would be if we also had to leave our homes as soon as we learnt how to walk and talk After they leave their nest different kind of birds live at different places some on trees some near or on water and some on land Other animals also have different places where they live on land under the ground in water on trees Bird Beaks According to the Food To tear and eat meat To make holes in wood and tree trunks To suck nectar from flowers To find insects and worms from mud and shallow water To break and crush seeds To cut and eat many kinds of food Cows have short front teeth for snipping grass The teeth on the sides are large and flat for chewing the grass Cats have sharp teeth for tearing and cutting meat Snakes have sharp curved teeth but they do not chew their prey Snakes always swallow their food whole Squirrel’s front teeth keep growing throughout their life They have to keep gnawing on things to keep their teeth from becoming too long Nandita in Mumbai I came to Mumbai a month ago Since we came mother has been admitted in the hospital We had to come to Mumbai for her treatment The Big City Mumbai I have slowly got used to the city I still remember the day when mother and I got off the train at the Mumbai station It was so crowded I quickly caught hold of mother’s hand I was thinking about how Mama would find us in the crowd Just then I heard someone calling loudly from behind Nandita Nandita I turned back and there was Mama We left the station and were soon on our way to Mama’s house But again it was so crowded everywhere There were many huts lined all along the narrow street We went through the street to reach Mama’s house Mama Mami their two daughters and a son all live in one room Now I too live here with them It is here that we sit sleep cook and wash all in one room My house in the village also has only one room but we have separate places for cooking and for bathing We also have a courtyard outside Water Water Mami Seema and I get up at o’clock every morning and go to the public tap to fill water Oh no You won’t believe how many fights there are for water If we are just a little late then we are not able to fill water for the day There is no tap in our house in the village too The pond in the village has water It takes twenty minutes to walk to it In summer sometimes the water in the pond dries up Then we have to walk for almost one hour to the river to get water But in the village there were no fights for water In the street where Mama lives there is a toilet at one end Everyone in the street uses that toilet It is always very dirty and smells so bad At first it used to make me want to vomit At times there is no water We have to take water with us Now I am getting used to all this In the village people go to the open places or fields for toilet The men and women go to different places Learning New Things Everyday I go to the hospital by bus to see my mother At first I was too scared to get into such crowded buses I was not at all used to it I was afraid But now it is not like that I know how to stand in line how much to pay for the ticket where to get down Where we stay there is a tall building nearby My Mami works in seven houses there She washes utensils and cleans the houses One day I went there with her When I first saw the building I thought that it was one big house But I found that there were many houses one on top of another I was wondering how I would climb so many stairs but there was a lift to take people up and down It was like a big iron cage with fan and light and even a bell So many of us got into the lift Somebody pressed the button and lift went up quickly To tell you the truth I was very scared in the beginning Another House Mami took me first to Babloo’s house His house was on the twelfth floor What a big house So many rooms one to sit in one to eat in one to sleep in and one to cook in Their toilet was also in the house It took Mami a lot of time to clean Babloo’s house but she could work easily There was a tap in the kitchen and water flowed from it Babloo put a bucket under the tap to fill water for his bath Then he sat down to watch TV So much water was wasted I did not like it I went and closed the tap Babloo’s house had big glass windows Mami told me to look down from the window I could see Mama’s street and the houses but I could not make out which was his house From up there everything below looked like small toys I was quite afraid to look down from such a height A New Worry Mama had said that he would take me around to see Mumbai Th e children around here talk a lot about Chowpatti They say that big film stars also come there May be when I go there I might see a film star These days Mama is so worried I cannot ask him to take me to Chowpatti Last week some people had come with a notice that everyone should move out of this place They say a big hotel will be built there Mama was saying that this is the third time in the last ten years that he got such notices People who live here have been given another place to make their houses But it is very far away another corner of the city There is no drinking water no electricity I don’t even know if any bus goes there How will Mama reach his work place from so far How much money will he have to spend and how much time also And Mami will she get some other work there If Mama moves to a new place how will I be able to visit my mother Mother is not even completely well as yet Too Much Water Too Little Water What to Drink Nallamada Andhra Pradesh Suguna was reading her book when she heard someone at the door She saw that there was a visitor from the city Appa welcomed the guest He told Selva to bring a cold drink for him The guest said I do not take cold drinks I will just have a glass of water Appa said These days we are not getting water that is fit for drinking It does not even look clean It would be better if you do not drink this water We do not have a choice so we drink it Water Games Bazaar Gaon Maharashtra There was a big water park near Bazaar Gaon One day Rohan and Reena went with their parents to the water park There were many waterfountains Reena said Look Rohan there are so many rides in the water And look at all these big ponds Rohan said Splash Splash Splash Both turned around They saw a long thick water hose going zoom zoom zoom Children were sliding down a big tall slide and landing in water with a loud splash Rohan got into a swing high above whoosh Within a second he had landed in the water Reena gave a shriek of surprise Just then they heard a lot of noise and loud voices from outside the park Everyone ran towards the main gate There was a crowd of people carrying empty buckets and pots A small child carrying an empty bottle was clinging to his mother Rohan’s mother went to one of the women in the crowd What is the matter She asked The woman replied angrily You ask what is the matter Our wells have no water We get our water only when the tanker comes once a week Today even that has not come And here there is so much water everywhere just for you all to play and enjoy Tell me what should we do Can We Drink This Cuffe Parade Mumbai The lift stopped at the th floor Deepak loves going in the lift Today was a holiday in school Deepak had gone with his mother to Raziya Madam’s house His mother worked there The house was quiet and cool and shining clean Raziya was reading a newspaper She smiled when she saw Deepak Is it a holiday today she asked She switched on the TV and Deepak was soon lost in the world of cartoons Raziya called out Pushpa it says in the newspaper that the gutter water has got mixed with the water in the drinking water pipes in this area It says that many people are sick with diarrhoea and vomiting because of this Why don’t you throw away the water that was filled yesterday Put some fresh water to boil for drinking Also take home some boiled water for your family Deepak was happy to hear this He thought At least today I will not have to stand in a queue for hours to get water for our house It is a real holiday for me Children show the Way Too little water or no water this was nothing new for the people in the Holgundi area of Karnataka The wells would have some water only in rainy days In the past three years there was not even enough rain Everything had dried up there There was no water for drinking for growing crops or for animals People had to leave their village and go to nearby towns for some work Children had to leave school to go with the elders The village panchayat was worried All the members discussed what could be done This panchayat had some special members children The children’s panchayat was called Bhima Sangh Has our village always had water shortage the children asked the elders No it was not so before replied village people Some of the elders recalled that up on the hill there used to be a water tank The tank would fill with water when it rained There used to be fish in the tank and greenery around it Those days even the village wells and the pond used to have enough water On hearing this the Bhima Sangh decided that they would first look for that tank The tank was on the hill They found that the tank was full of mud and stones now How could water fill The tank had many cracks How could the water remain in the tank There were no trees and grass how could there be greenery The children said We must clean the tank and make the area green again For this it was important to first understand how things had been before and why they had changed now This would help them to plan for solving the water problem And that too not only for one year but for the years ahead The panchayat took help from some experts Together they made a plan and together they worked for it The tank was first properly cleaned The cracks were repaired Grass and trees were planted all around the tank As the tank was on a hill a lot of rain water used to flow down the slopes With this water soil also would flow away So the children made a small dam on the slope to stop the water and soil Then everybody waited for the rains to come When it rained the tank filled up with the water The children put some fish in the tank They kept guard to make sure that nobody stole the fish or harmed the plants One monsoon went by then another Things got better every year The tank filled a little more the plants grew the fish multiplied After two or three years the tank remained full of water even after the rains had stopped The wells and ponds in the village had water again There was greenery once again The people did not have to leave their village for work The hard work of Bhima Sangh had shown results The children had shown the way Those children are now grown up But the Bhima Sangh continues and every year more children are proud to become its members and work together to always lead the way Abdul in the Garden It was a holiday Abdul was helping his Abbu in the garden Abbu was clearing the dried leaves and grass from the vegetable beds Abdul started to pull out the grass from one of the beds He found that it was not easy to pull out even the small grass His hands became red by the effort In trying to pull out grass Abdul knocked down a stick that was supporting the pea plant climber The delicate stem of the pea plant broke Abbu said Why are you pulling the grass The roots of the grass are strong You will have to dig them out Abdul carefully dug out the plant He then saw that the roots of the grass plant were longer and much more spread out than the part of the plant above the ground Abbu remembered that he had to send some radish mooli home He started to pull the radish out of the soil Abdul wondered whether these were also roots Only a few radish were pulled when there was suddenly a strong wind and rain Both of them picked up the radish and ran They had just reached home when a branch of the neem tree in the courtyard broke and fell In fact Abbu was lucky to have missed by only a few inches Despite the strong wind the tree remained firm on the ground They both sat down to have tea with Ammi Abbu said to Abdul The plants were getting dry Now that it has rained we will not have to water the plants We can now sit and play ludo Unusual Roots Have you swung from a banyan tree What did you hold to swing What looks like the hanging branches are actually the roots of the tree These grow down from the branches until they reach the ground These roots are like pillars that provide strong support to the tree The banyan tree also has roots under the ground just as other trees have There is a law against cutting trees There was a tree growing close to a lamp post The tree was so full of leaves that the light of the bulb was blocked People felt that the branches of the tree needed to be trimmed Before they do this they need to take written permission from the government office Do you know Desert Oak is a tree that is found in Australia It grows almost as tall as your classroom wall It has very few leaves Guess how deep its roots go down Imagine the length of about such trees laid down in a line end to end one after another That is how long the roots of this tree can be These roots go deep into the ground till they reach water This water is stored in the tree trunk Local people knew about this When there was no water in the desert the local people use to put a thin pipe into the trunk of the tree to drink this water What Grows Arif and Roopali did the above activity They saw the seedlings grow When asked what are the things that grow They had very different ideas about things that grow Arif made a list of the following Leaves munna bud puppy nails fish Roopali’s list had Moon tree I hair watermelon mosquito crow Eating Together Class Party The school reopened today after the vacations The children share news about how they spent their holidays When did you put mehendi on your palms Meena asked Aarti At my uncle’s wedding Aarti said You must have had a lot of fun at the wedding David said Oh yes I enjoyed the wedding feasts the most Aarti said At the wedding we had fun with all my cousins and other relatives eating and doing everything together Aarti said Why don’t we do something like this in school Let us also have some fun together Rehana asked I have an idea David said Why don’t we have a class party Then we can also eat and have fun together We have parties in our colony whenever there is a festival We collect money from everyone for the party We cook some dishes and buy other things from the market Rehana said Reena said We don’t need a festival to have a party Saturday is half day Why don’t we plan to have our party then Everyone in the class decided what each would bring for the party On Saturday the children really enjoyed their party There was so much variety in food They played so many games Everybody was so relaxed There was singing and dancing too They decided that they would have such a party again Celebrating Bihu Sonmoni woke up early and ran to meet her friends Tanvir Fatima and Mazani Today was a special day in Assam The new rice crop had been harvested The village was celebrating the festival of Bihu The four friends sang and chatted happily as they made the Bhela Ghar from bamboo Let us read how they celebrated Bihu Sonmoni Hurry up We must finish making the Bhela Ghar of grass and bamboo before the feast tonight Tanvir Yes today is Uruka The whole village will eat together Fatima Have they started preparing the feast Sonmoni Yes everyone has contributed money to buy the bora rice fish and vegetables They also arranged wood for mezi Hariya and Bhadiya have not given money but they are helping with all the work Fatima What about the meat fish and vegetables Sonmoni Some people have gone to market to buy all these things The bora rice has been soaked The whole village is busy making pitha Some people are cooking and some are roasting the sweet potatoes Some will help to serve the food at night In the evening everyone will be served tea and pitha Tanvir I am waiting to eat the cheva rice that we will get at the feast I really love it Fatima How will the cheva rice be prepared Sonmoni They will light a fire and boil the water in the big tao a big vessel On this vessel they will put the Kadhahi containing soaked rice and cover it with banana leaves After some time the cheva rice will be cooked and ready to eat The Bhela Ghar was ready The four friends ran off to change their clothes Soon all the people in the village got together at one place The women were dressed in pat and Muga mekhala chador Sonmoni and her friends ran to the Bhela Ghar The drums started to play and everyone started to sing and dance Everyone danced till they were tired Then they all sat down on the ground in rows and ready to eat The food was served on banana leaves Everyone enjoyed the feast That night they stayed in Bhela Ghar Mazani Sonmoni We should go and sleep now We have to get up early tomorrow to light the Mezi and Bhela Ghar also Magh Bihu is celebrated on and of January st and nd Magh the tenth month of Assamese calendar The first day is called Uruka and that day people build a temporary shed called Bhela Ghar and have a community feast Bora is a common variety of rice used in Assam These are ‘sticky’ rice Encourage children to locate Assam on the map Mid day Meal It is almost one o’clock in the afternoon The smell of food cooking is coming from the verandah and our stomachs are rumbling We are so hungry we are not able to pay attention to the lesson in the class Ding Ding Ding at last now the bell rang All the children ran out and went to wash their hands Master Moshai sent all the children to the handpump at the corner of the courtyard Anondo see that everyone washes their hands properly he called After washing our hands we all stood in queue to take our food Some had their own boxes and others had plates Then we all sat down in a circle with our food Before we started to eat we sang together We play together we eat together For the good of everyone we will always be together Today there is bhat shukto rice with vegetable and gravy in our meal Yesterday we had luchi and chhola dal Outside Didi Moni’s room a list of food items has been displayed It tells what we will get on different days of the week Would it not be wonderful if on some days we got an extra treat maybe something sweet There is another interesting thing about lunch time at school Everyday we change our places in the circle and sit next to a different child I really like this because I can meet new children and make new friends The food was not always very nice Sometimes rice was of poor quality sometimes it was not properly cooked Some parents did not like their children to eat such food Didi Moni explained to them it was everyone’s duty to make sure that the children got fresh hot and properly cooked food Also make sure that every child gets afternoon meal regularly The parents also decided to help Now things are better We eat fresh hot and properly cooked food together The younger children sometimes cannot finish all the food but my friends and I are sometimes still a little hungry even after we eat Nowadays many schools give food in school during the day It was not always like this When my didi was in the primary school children did not get afternoon meal in school Some children come to school in the morning without eating anything Imagine Having to study on an empty stomach Food and Fun Trring The doorbell rang When Manpreet opened the door she saw Divya and Swastik there She called out excitedly Gurnoor Look who has come Gurnoor came running When she saw her friends she hugged them happily When did you come from the hostel Boarding School Just Yesterday Where are your parents We want to meet them Swastik said They are at the Gurudwara We were about to go there too Gurnoor replied Oh good we will also come with you said Divya You come home only in the vacations Do you like staying in your hostel You must be missing your parents Gurnoor asked Divya said We do miss them but hostel life is fun Even if we don’t always like the food we enjoy eating together with all the children You know when someone in our hostel gets homemade food we all rush to their rooms That food finishes within minutes Swastik said laughingly At the Gurudwara The children chatted all the way to the Gurudwara There they covered their heads They went into kitchen of the Gurudwara It was very huge A lot of activity was going on there Food was being cooked in huge vessels On one side the channa and urad dal was boiling In another vessel the cauliflower and potato vegetable was being made There is your Papa Gurnoor let us go and meet him Swastik said What are you doing here Manjit Singh was happy to see the children Uncle can we also help in the kitchen What are you preparing Swastik asked Manjit Singh said I am preparing kadhah prasad It takes a lot of effort to roast the flour in ghee in this big kadhai This is a kind of halwa Isn’t it When will you add sugar in it Divya asked They saw Manpreet’s mother and rushed to meet her Divya asked What are you doing Aunty Beta we are rolling chapaties to bake them in this tandoor So many chapaties at one go Divya was surprised Can I help Sure come and try here everyone can help but wash your hands first replied Aunty Divya washed her hands and joined the group near the tava The tava was very hot She started applying ghee on the chapaties as they were being taken out of the tava Swastik wondered aloud Who brings all the material to cook so much food One of the ladies answered Everyone here contributes in some way or the other Some arrange for the material some give money and others help in the work So Swastik how do you like it Have you ever cooked before teased Manpreet No but I am enjoying working with everyone said Swastik We hardly realised how all this food chapaties rice halwa dal and vegetable got prepared so fast After ardaas kadhah prasad was distributed Some of the boys quickly laid out durries in the verandah and all the people sat down in rows to have langar Some people served food and others served water Everyone ate together After finishing food everyone picked up one’s own plate and put it in a big drum People who were serving ate in the end They cleaned the place and washed the utensils The World in my Home Tug of War Once again everybody in Marietta’s family is quarrelling over watching the TV just like they do every day Marietta’s brother wants to watch a cricket match while little Susan is eager to watch her favourite programme of song’s Mummy and Aunty are good friends but their favourite TV programmes are different Mummy likes to watch the news while Aunty enjoys a TV serial Marietta wants to watch cartoons and Daddy enjoys the football match He says that he can watch TV only in the evening Finally everyone had to watch the football match Why the Difference It is o’clock in the evening Pratibha is hurrying home from her friend’s house Her brothers Sandeep and Sanjay are busy playing round the corner with their friends They are in no hurry to go home Even if they are late nobody will scold them Pratibha thinks that this is not fair Why should there be one rule for her and another for her brothers But what can she do Pilloo Aunty One day Pilloo Aunty took Phali and Nazu and their friends to the beach What a good time they had They played in sand and water and then went for a ride on the Giant wheel After that they ate bhelpuri and bought balloons Then everybody enjoyed some icy cold kulfi When the kulfi seller asked for money he made a mistake He charged for five kulfis instead of seven The children thought Hurrah We have saved money But Pilloo Aunty paid the money for seven kulfis to the kulfi seller What Should I Do Akshay loves his grandmother very much She loves him dearly too She talks to him about many interesting things Anil is Akshay’s friend His grandmother likes Anil too but one thing that she tells Akshay again and again is that he should never eat or drink anything at Anil’s house not even a glass of water They are very different from our family she says One day there was a volleyball match in the big ground near Anil’s house It was a hot day and everybody was tired and thirsty after the match Anil invited everybody home Anil’s mother gave water to all of them and they drank it When Anil handed Akshay a glass of water he suddenly remembered his grandmother’s warning Akshay stared at Anil not knowing what to do Who will Decide Dhondu comes from a very large family His elder uncle looks after the family their fields money matters etc He decides about all the small and big things for the family Dhondu has always worked in the fields But now he wants to do something different He would like to borrow some money from a bank and buy a chakki machine to grind grain There is no such machine in their village Dhondu is confident that this new work will help him earn more money for his family Father has agreed to let him try the new work But his elder uncle is not agreeing to this I Don’t Like It Meena and Ritu were going home after playing hopscotch Come on come to my house pleaded Meena pulling Ritu by the hand Is your Uncle at home If he is I will not come Ritu answered But why do you say that Uncle likes you He was saying bring your friend Ritu home and I will give both of you lots of chocolate Ritu pulled her hand away from Meena saying I am scared of your Uncle I do not like it when he even touches my hand Saying this Ritu went home Pochampalli Vani and Prasad live in a village called Mukhtapur Their home is always filled with bundles of bright coloured threads Their mother and father and everyone else in the family are weavers The weaving that they do is very beautiful and special Mukhtapur village is in the Pochampalli town mandal of Telangana Most of the families in this town are weavers That is why the special cloth that they weave is called Pochampalli The villagers have been doing this work for a long time Vani and Prasad’s parents learnt weaving from their elders Now Vani and Prasad also help their parents after coming back from school This weaving requires hard work and many different things have to be done before actually weaving From thread to Cloth Father brings bundles of thread from Pochampalli town Mother then puts these threads in boiling water to wash away the dirt and stains Then everybody works to dye the thread with bright colours These threads are then dried and rolled into bundles These bundles are put onto looms and the cloth is woven Silk cloth and silk sarees are woven from the silk thread Cotton thread is used to weave cotton sarees cloth sheets etc The loom has many needles The size and number of the needles changes according to the design The weavers weave the beautiful Pochampalli sarees in bright colours Through their traditional craft they have made their region world famous A Craft in Danger Great skill is needed to weave such special sarees It also takes many days of hard labour After all this it is difficult to get a good price for these sarees Silk is becoming expensive day by day Big shopkeepers give very little money for the sarees though they themselves sell them at very high price That is why many weavers are giving up their family craft Many are leaving their villages to work as labourers in big cities We need to solve this problem by helping them get a better price Otherwise this precious craft will be lost forever There are many places like Pochampalli in India that are famous for making special things These things have become famous by the name of the place where they are made like Kullu shawls Madhubani paintings Assam silk Kashmiri embroidery etc Home and Abroad Today there was a lot of activity at Maalu’s house Chittappan and his family were coming home after five years Five years ago Chittappan had got a job in the capital city of United Arab Emirates UAE called Abu Dhabi Since then he had lived there Maalu and her Appa went to the airport to receive them After the plane landed the passengers had to wait for some time to collect their luggage At last Chittappan Kunjamma and their two children could be seen coming out How big Shanta and Sashi have grown Appa said Soon the many suitcases and bags were fitted into the taxi and everyone was on the way to Maalu’s house Shanta you must be very tired after your long journey Appa told me that Abu Dhabi is far from India said Maalu For the teacher Chittappan Father’s younger brother in Malayalam Kunjamma Father’s younger brother’s wife in Malayalam We are not tired Even though it is far our flight took only two hours said Shanta The plane flies very fast Maalu was surprised She remembered that when she had gone on a school trip to Chennai they had spent almost hours in the train And on the map Kochi and Chennai seemed quite near Maalu Shanta and Sashi chatted all the way home from the airport Maalu remembered how much fun she had on her school trips She wanted Shanta to tell them all about her trip from Abu Dhabi Dust All Around Did you see many interesting things from the plane asked Maalu Most of the time we saw only clouds because the plane was flying so high even higher than the clouds said Shanta But before it went so high we could see that we were flying over sandy areas It was sand but the colour of the sand kept changing white brown yellow red black We saw mountains made only of sand They are called sand dunes added Sashi I have seen sand only at the seashore said Maalu Then you should come to visit us said Chittappan The countries around Abu Dhabi are located in a desert area Even if one drives a little away from the city one can see miles and miles of sand no trees no greenery just sand I used to dream of the thick greenery and cool water around our home in Kerala said Kunjamma I am so happy to see all this after such a long time The children have almost forgotten how it feels when it rains You know it almost never rains in desert areas said Chittappan Water is really very precious over there No rain no rivers no lakes no ponds Even below the ground there is no water But added Sashi there is a lot of oil under the sandy soil So petrol is easily available in these countries In fact petrol is cheaper than water said Chittappan By this time the taxi had reached Maalu’s house Shanta and Sashi were surprised to see so many fruit trees coconuts bananas jackfruit papaya betelnut so many kind of trees Sashi said We used to see only one kind of tree there the date palms because it is the only one that can grow in the desert The date is the most common fruit Nice Gifts and Photographs After they had met everyone Kunjamma unpacked their bags They had brought gifts for everyone They gave dates for everyone to eat The dates were very sweet and tasty Sashi showed Maalu some notes and coins Shanta explained that the money they used in Abu Dhabi was different and was called Dirham It had some writings in their local language Arabic They also showed many photographs of the place where they lived Chitappan gave Maalu a globe He said Maalu why don’t you locate Abu Dhabi on this Locate Kerala also The children enjoyed playing with the globe and looking for different places on the globe Maalu found Chennai and Kochi also In the evening everyone sat in the verandah enjoying the breeze and looking at the photographs They saw that in Abu Dhabi the buildings were tall with many storeys and big glass windows Maalu said You must be getting nice cool breeze through the big windows Chittappan said We cannot open the windows because of the heat It is air conditioned inside where everyone stays As the weather is very hot people wear loose cotton clothes and keep themselves fully covered even the head is covered This protects them from the strong sun Maalu enjoyed looking at the pictures and finding out about the other country from her cousins She constantly kept comparing her city with the things that they described about Abu Dhabi She decided that she would make a project report about Abu Dhabi for her class Spicy Riddles I can be powdered fine To make food hot and spicy If too much of me is added I make you gasp shheee shheee Your eyes and nose begin to water And you cry Think and tell me who am I Tell me quickly who am I Grind me and powder me To make your food look yellow I am mixed in oil by granny And applied to wounds quickly I heal all wounds big and small That is why I am loved by all Think and tell me who am I Tell me quickly who am I Small and round like a pearl I am black when I am whole I can be powdered coarse or fine A sharp and spicy taste is mine Whether it is salty or sweet I am added as a special treat Think and tell me who am I Tell me quickly who am I I am a small and skinny chap Sometimes I am brown and sometime black Added to hot oil and ghee I spread my fragrance all around me When I am roasted Curd and jaljeera are favourite to me Think and tell me who am I Tell me quickly who am I I look like Zeera though green am I To make your stomach healthy I always try Eat me always after your meal I refresh your mouth you surely feel Think and tell me who am I Tell me quickly who am I I look like a nail but a bud am I Chocolate brown colour and a strong smell have I When your toothache makes you shout I soothe the pain in your mouth Think and tell me who am I Tell me quickly who am I Defence Officer Wahida Have you ever seen her photograph anywhere She is Lieutenant Commander Wahida Prism doctor in the Indian Navy She is one of the few women who has worked on a naval ship She is the first woman to lead a parade This is considered to be a very big honour in the armed forces We specially spoke to Wahida for this book Let us read what we spoke Question Wahida tell us something about your childhood and school Wahida I come from a very small village called Thannamandi This is in Rajouri district of Jammu and Kashmir I did my schooling from a government school Most of the girls from the village studied in my school However few of them ever thought of what they would do after finishing school I always wanted to become someone special and move forward in life I was very interested in higher studies and wanted to complete the tenth class In my area it was a new thing at that time My mother and father had to face many problems because of this We even had to move out of our village We then went to live with my grandmother in Rajouri I did my twelfth class from there Question So you always thought differently right from the beginning Wahida Even when I was very young I wanted to do something different I was very fond of riding a motor cycle We are three sisters My father wanted one of us to become a doctor and one a teacher He wanted the third daughter to become a lawyer or join the police force I have become a doctor in the Indian Navy and my sister is in the Jammu Police Force Question How did you become a doctor Wahida I worked very hard My friends and family members helped me a lot I got admission in Jammu Medical College I studied for five years and did my M B B S Question How did you get into the Defence Forces Didn’t your family stop you Wahida Oh no They felt that a job in the Forces would be the best thing for me When I was very small I would see army officers in our village I wanted to be like them This was really a very big dream for me While in school I attended camps climbed mountains and was a ‘Girl Guide’ After I became a doctor I appeared for an interview to join the Armed Forces I got selected there and received a training for six months Question Why did you join the Indian Navy Do you not have to live on the naval ship Wahida Well I am very fond of travelling I like to see different places I wanted to go to far-off places I was born in the hills and now I am working in sea I really enjoy it Very few lady officers have worked on a ship I am one of them Earlier women were not allowed to go on Naval ships When an opportunity was given I myself went forward and gave my name I even want to go in a submarine I want to do everything which people think women cannot do At present women are not allowed to go in submarines but whenever it is allowed I will certainly go Question So what happened to your degree of MBBS Wahida I am a doctor but in Indian Navy a naval doctor does not just give medicine to patients She is in fact a medical officer The ship goes to sea for three four months at a time There it is my responsibility to make sure that everybody on the ship stays fit and healthy I carry out medical check ups of all the officers and sailors I also have to make sure that no garbage collects and there are no rats on the ship Rats and garbage can spread diseases I must keep everybody ready for any medical emergency on the ship In case there is an accident on the ship such as fire everybody must be ready to deal with it Question Is there a hospital on the ship Wahida First aid is given on every naval ship Each ship has one doctor and two or three assistants Necessary medicines and some equipment are also available All these things are kept in a small room Question You are the first woman to lead a passing out parade You must have worked very hard for this Wahida My seniors gave this opportunity to me after seeing my performance for three years I felt happy that they had chosen me and showed faith in me So I practiced very sincerely Question Tell us something about that parade Wahida In a parade four platoons march behind the leader Thirty-six commands have to be given during the entire parade These must be given in a very loud voice so that it is heard till the rear The voice should also reach the spectators sitting on the other side of the ground Question Didn’t you feel nervous leading four platoons Wahida I was not nervous but one has to shout thirty-six commands If you forget even one the entire parade can get spoiled I practised every morning and evening for a month But I have been participating in parades since school Question What is the meaning of the word ‘Prism’ in your name Wahida My father gave this name to me A prism is a kind of glass which reflects seven colours My father wanted me to be like a prism and that is why he started calling me by this name from my childhood itself Chuskit Goes to School Chuskit’s Dream Today is a special day for Chuskit It is so special that last night Chuskit could not even sleep Do you know why Chuskit is ten years old but today she is going to school for the first time She has been waiting for this day since long Chuskit’s school is not very far from her house You have to take the big road and then walk along the lake Cross the river near the poplar trees and then after a small climb you reach the school This is how all the children of Skitpo Pul village reach their school All the children but not Chuskit At first Chuskit did not know that she was different from other children But slowly she found that she could not do the things that other children could It was because of her legs Since birth Chuskit could not use her legs Chuskit’s Chair All day Chuskit used to sit near the window and draw pictures Her mother Aama-le said that Chuskit made the best drawings This made Chuskit happy But Chuskit was happier when one day her father Aaba-le got a chair which had wheels She quickly learnt how to sit in the chair and how to move it back and forth Chuskit was so happy because now she did not need her father to carry her everywhere When she wanted to go out she would tell her mother to put her in the wheel chair Now she could come outside on her own Chuskit would see the other children every morning They would be laughing and playing on their way to school She wished that she could also go with them One day Abdul came to her house with a letter When he saw Chuskit he asked her why she did not go to school Chuskit told him sadly I can not walk Aaba-le cannot carry me all the way to school everyday I cannot even wheel my chair as the road to school is not level Also how can I cross the river Abdul asked But would you want to go to school if you could Chuskit was excited She said Of course I want to go to school just like all of you I want to study and play Her Meme-le grandfather stopped her and said Chuskit do not dream You know that this is not possible A Good Idea Abdul went back from Chuskit’s house but he had started thinking of how to get Chuskit to school He explained about Chuskit to the Headmaster and talked to the teachers till they agreed with his thoughts Now everyone got together to work so that Chuskit’s problem could be solved They made a plan so that Chuskit could bring her wheel-chair by road to school For this the uneven road had to be made level One group of children started to level the road Another group worked to level the area near the river But there was still a problem How would Chuskit cross the river The older children took help from the teacher to make a small bridge with wood across the river Everyone happily worked hard They wanted Chuskit to come to school Chuskit’s Aama-le and Aaba-le gave hot tea and biscuits to everyone Chuskit’s Meme-le had tears in his eyes not because he was sad but because he was very happy By the evening the work was done All the children were happy But the happiest of all was Chuskit Her dream was about to come true And today it was that special day Chuskit was all ready She was eager to go to school

Super Senses Has this ever happened to you You were eating in the playground an eagle flew down and took away your roti You dropped something sweet on the ground and within minutes many ants collected around it As you walked softly past a sleeping dog its ears shot up at once Why does it happen Think and tell Animals also have different senses They can see hear taste smell and feel Some animals can see their prey from far away Some can hear even the faintest sound Some animals can find their friends by their smell The animal world is full of examples of amazing senses How did the ant recognise a friend An ant was going along on the ground It saw a group of ants coming from the other side The first ant quickly came back to its hole The ant guarding the hole recognised it and let it in Today Rajni had to go out for some important work She had to leave her six- month old son Deepak with her sister Sushila Sushila also has a baby of the same age It was funny that both the babies did potty at the same time She happily cleaned her daughter but when she was cleaning her sister’s son Deepak she covered her nose with her dupatta scarf Most of the birds have their eyes on either side of the head Their eyes can focus on two different things at a time When they look straight ahead both their eyes focus on the same object Some birds like kites eagles vultures can see four times as far as we can These birds can see things from a distance of eight metres what we can see from a distance of two metres Animals cannot see as many colours as we can It is believed that animals that are awake in the daytime can see some colours Those animals that are awake at night can see things only in black and white colours Sounds send messages High up on a tree a langur warns others of dangers like a tiger or leopard The langur does this by making a special warning call Birds also give alarm calls to warn about the danger Some birds even have different sounds for different kinds of dangers For example there is a different warning call if the enemy is coming from the sky or if the enemy is on the ground Fishes give alarm call by electric signals Some animals start behaving in a different way when an earthquake or storm is about to come People who live in forests and can observe such behaviour of animals come to know of the danger A tiger can see six times better at night than most of Us The tiger’s whiskers are very sensitive and can sense the movements or vibrations in air They help the tiger move in the dark and find its prey A tiger’s sense of hearing is so sharp that it can make out the difference between the rustling of leaves and the sound of an animal moving on the grass The ears of the tiger can move in different directions and this helps to catch the sounds from all around Tigers make different sounds for different purposes like when it is angry or to call out to a tigress It can also roar or snarl It’s roar can be heard upto kilometres Away Each tiger has its own area which may cover several kilometres Tigers mark their area with their urine A tiger can at once come to know if there is another tiger in its area by the smell of the urine A tiger will avoid going into another tiger’s area A Snake Charmer’s Story I am Aryanath I can do something special which I am sure none of you can do Do you know what I can play the been You must be surprised Yes I can make snakes dance by playing the been I have learnt this art from my family members We people are known as Kalbeliyas My grandfather Roshan Nathji was famous amongst our people He could easily catch many poisonous snakes He tells me many stories about his past Come listen to his story in his own words Dadaji remembers From the time of my grandfather and great grandfather we have always been saperas snake-charmers Snakes have been an important part of our life We used to move from village to village carrying our snakes in bamboo baskets Whenever we stopped in a village a crowd would gather around us We would then take out our snakes from our baskets Even after the show people would stay on They knew that in our tinbox there were many types of medicines for them We made these medicines from plants collected from the forests I had learnt all this from my grandfather I felt nice that I could help people with my medicines even if doctors and hospitals were far off In return people would give us some money or foodgrains In this way we could manage our life Sometimes I was called to places where someone had been bitten by a snake From the marks of the bite I tried to find out which snake had bitten the person I would then give a medicine for that But I have not always been on time to help As you know some snake bites can even cause death on the spot But most of the snakes are not poisonous Sometimes when some farmers would come running for help shouting snake snake I would catch that snake After all catching snakes was something I had been doing since my childhood Oh those were the good days We could help a lot of people in many ways We also entertained them It was not like today when everyone watches TV for entertainment When I grew older my father taught me how to remove their poisonous teeth fangs He also taught me how to close the tube of poison in the snake’s mouth What can we do Aryanath your father used to travel with me ever since he was a young child He learnt to play the been without being taught These days it is diffcult Now the government has made a law that no one can catch wild animals and keep them Some people kill the animals and sell their skins at high prices So they made a law against this Now with this law how will we earn our livelihood We people have never killed snakes and sold their skin People say that we keep the snakes in bad conditions If we wanted we too could have earned a lot of money by killing snakes But we would never do that Snakes are our treasure that we pass on from one generation to another We even gift snakes to our daughters when they get married In our Kalbelia dance we also have movements similar to the dance of the snake Aryanath you will have to make a different life for yourself You have got your father’s gift of playing the been You and your cousins can form a been party and entertain people But do not waste this knowledge about snakes you have got from your elders From Tasting to Digesting Different tastes Jhumpa ran into the kitchen and caught hold of her mother saying Ma I am not going to eat this bitter karela bittergourd Give me gur jaggery and roti Ma smiled and said You ate roti and sugar in the morning Jhoolan teased Jhumpa Don’t you get bored of only one kind of taste Jhumpa replied quickly Do you get bored with licking imli tarmarind I bet your mouth is watering just by hearing the word imli Sure I love the sour imli But I eat sweet and salty things too I even eat karela said Jhoolan and looked at her mother They both laughed heartily Jhoolan said to Jhumpa Let’s play a game You close your eyes and open your mouth I will put something to eat in your mouth You have to tell what it is Jhoolan took a few drops of lemon juice in a spoon and put them in Jhumpa’s mouth Sour lemon Jhumpa replied quickly Jhoolan then picked up a small piece of jaggery Her mother suggested Crush it otherwise she will know what it is Jhoolan crushed the jaggery but Jhumpa easily guessed it They played the game with different food items Jhumpa could tell the fried fish even before tasting it Jhoolan said Now close your nose and tell me what this is Jhumpa was confused It is a bit bitter a little salty and somewhat sour Give me one more spoonful Jhoolan took another spoonful of the cooked karela uncovered Jhumpa’s eyes and said Here it is eat Jhumpa laughed Yes give me more Nitu was given a glucose drip Nitu was very sick All day she was vomiting and she also had loose motions Whatever she ate she vomited Her father gave her sugar and salt solution By evening Nitu was feeling weak and dizzy When she got up to go to the doctor she fainted Her father had to carry her to the doctor The doctor said that Nitu should get admitted in the hospital She needs to be given a glucose drip Hearing this Nitu got confused She knew that during the games period in school the teacher sometimes gave them glucose to drink But what was a glucose drip Doctor aunty explained Your stomach is upset Your body is not keeping any food and water and it has become very weak The glucose drip will give you some strength quickly even without eating Mangoes Round the Year Wow Aman’s lunch box has sweet puries Hey today Nitu has brought potato sabzi I have got bhindi Oh Nitu I think your potato sabzi is spoilt Don’t eat that You may fall sick Here you take some bhindi Summer treat Mamidi tandra Chittibabu and Chinnababu live in Atreyapuram town in Andhra Pradesh The brothers spend the summer holidays playing in the mango garden when the trees are full of fruits They also like to eat unripe mangoes with salt and chilly powder At home their mother cooks unripe mangoes in different ways She also makes many kinds of mango pickles The pickles last through the year until the next mango season One evening while having food Chinnababu asked Amma we have so many mangoes Make some mamidi tandra aam papad from them Their father said Making mamidi tandra needs four weeks of hardwork If you both promise to help us everyday for the next four weeks we can together make the mamidi tandra Both the brothers quickly agreed to help The next day both the children went to the market with their father They bought a mat woven from the leaves of a palm tree poles of casuarina tree string made of coconut husk some jaggery and sugar Amma found a sunny place in the backyard Both the brothers made a high platform by using poles They spread out and tied the mat on that platform The next day Appa chose the most ripe mangoes They took out the mango pulp into a large pot Then they strained the pulp through a fine muslin cloth to remove the fibres from the pulp Then Chittibabu crushed the gur jaggery till there were no lumps They added the jaggery and sugar in equal amounts to the pulp Chinnababu mixed the jaggery and sugar well with a big spoon Amma then spread this pulp into a thin layer over the mat The thin layer was left to dry in the sun In the evening they covered the mat with a clean saree to avoid any dust The next day they again took out some mango pulp They added jaggery and sugar into the pulp Then they spread the pulp over the previous day’s layer This work was given to both the brothers Both of them together spread many layers over it For the next four weeks they hoped that it would not rain For four weeks they added layer after layer until the jelly grew four centimetres thick and looked like a golden cake After some days Amma said The mamidi tandra is ready we can take it out and cut it into pieces tomorrow The next day the mat was brought down from the platform Mamidi tandra was cut into smaller pieces The brothers tasted it It was tasty Chhinnababu said Wow how tasty After all we have also helped in making it Seeds and Seeds Gopal was waiting for his mausi’s family to visit them They will be coming the next day for their holidays He was thinking about all the fun and nice food that he would have with his cousins Just then his mother called out Gopal before you sleep remember to soak two small bowls katoris of chana gram She was going to his Bua’s house and would return only in the morning As he was soaking the chana Gopal thought How will two small bowls of this be enough for eight persons So he soaked another two bowls of chana When his mother returned the next morning she saw that the chana were overflowing from the vessel How much did you soak asked his mother How did that happen wondered Gopal You soaked too much Anyway it is good now I will cook half of them and leave the other half to sprout I can send these to your aunt The doctor has told her to eat sprouts mother said She tied half of the soaked chana in a wet cloth and hung them up to sprout Every Drop Counts Long Long Ago This is a picture of Ghadsisar Sar means a lake King Ghadsi of Jaisalmer got it made years ago with the help of the people All around the lake there are ghats with steps leading to the water decorated verandahs large halls rooms and much more People came here to celebrate festivals and for programmes of music and dance Children came to study in the school on the ghat The talab belonged to everyone and everyone took care to keep it clean Rainwater collected in this lake spread over many miles It was made in such a way that when the lake was full the extra water flowed into another lake at a lower level When that too filled up the extra water flowed into the next lake This way all nine lakes filled up This rain water could be used throughout the year Today Ghadsisar is no more in use Many new buildings and colonies have come up in between those nine lakes Now the water does not get collected in these lakes Rain water just flows away and is wasted Drop-by-drop Besides Jaisalmer many places in Rajasthan get very little rainfall Here it rains for only a few days in the entire year sometimes not even that much The rivers here do not have water all round the year And yet most of the villages in these areas did not have a shortage of water People knew that every drop of water was precious Lakes and johads were made to collect water Water was everyone’s need One and all came together in this work be it a businessman or a labourer Some water from the lakes soaked into the ground and reached the wells and bavdis stepwell The soil of the area also became wet and fertile Experiments with Water What floats what sinks Ayesha was waiting for dinner Today Ammi was making her favourite food puri and spicy potatoes Ayesha watched as her mother rolled out the puri and put it in the hot oil She saw that at first the puri sank to the bottom of the pan As it puffed up the puri came up and started floating on the oil One puri did not puff up and did not float like the others On seeing this Ayesha took some dough and rolled it into a ball She flattened it and put it in a bowl of water Alas it sank to the bottom and stayed there A wooden boat in water will float But a needle will sink Why does this happen Let me think An iron ship will also float though its’ much heavier than my boat But a needle light as a leaf thin as a pin will sink right in Why does this happen Let me think A Treat for Mosquitoes Blood test Rajat is back at school today He had been absent for many days How are you now asked Aarti I’m alright Rajat replied softy Jaskirat You must have played a lot while you were at home Rajat Who wants to play when you have fever On top of it I had to take a bitter medicine I even had a blood test Jaskirat A blood test Why It must have been very painful Rajat Actually when the needle pricked my finger it felt like an ant bite They took drops of blood and sent it for testing That’s how we came to know that I had malaria Nancy But you get malaria when a mosquito bites you Rajat Yes but we find out by the blood test Jaskirat There are a lot of mosquitoes in my house these days but I did not get malaria Nancy Who says that every mosquito bite causes malaria Malaria spreads only by the disease carrying mosquitoes Aarti All mosquitoes look the same to me Rajat There must be some difference Nancy Did they take the blood from the place where the mosquito had bitten you Rajat Of course not How do I know when and where the mosquito bit me Nancy But how could they find out that you had malaria by your blood test Do you think they could see something in the blood Anaemia–What’s that Aarti You know I also had to get a blood test done But they took a syringe full of blood The blood test showed that I had anaemia Rajat What is that Aarti The doctor said that there is less ‘haemoglobin’ or iron in the blood The doctor gave some medicines to give me strength He also said that I should eat jaggery amla and more green leafy vegetables because these have iron Nancy How can there be iron in our blood Jaskirat There was something about this in the newspaper yesterday Rajat laughing So then you ate iron or what Aarti Silly This is not the iron used to make these keys I don’t know exactly what it was After I ate a lot of vegetables and whatever the doctor had said my haemoglobin went up Up You Go Mountaineering Camp Nehru Institute of Mountaineering Uttarkashi We were at the mountaineering camp and were very excited Twenty of us were teachers from Kendriya Vidyalayas There were other women from banks and other institutions Today was the second day of the camp In the morning as I got out of bed and put my foot down I screamed in pain I remembered yesterday’s kilometre walk with the heavy rucksack on my back I was afraid to go back to that steep climb and the rough narrow path With tears in my eyes I started walking slowly towards the room of Brigadier Gyan Singh the Director of our adventure course I was thinking of what I would say to excuse myself from that day’s trek Suddenly I heard his deep voice from behind Madam what are you doing here at breakfast time Hurry up Otherwise you will have to trek on an empty stomach Sir Sir I could not say any more You have came to tell me that you have blisters on your feet that you cannot walk isn’t it Yes sir That is nothing new Now get ready quickly I hung my head and rushed back to get ready I had just turned when I heard his voice again Listen madam You will lead group number You will have to help any member who has difficulty climbing the mountain You have already been told about the responsibilities of a group leader in the mountains Crossing the river February We got vitamin C iron tablets and hot chocolate milk with our breakfast These were given for strength and to keep us warm in the cold Every morning there would be a medical check up We tied our bandages and counted the days left After an eight kilometre trek we reached a river There was a thick rope tied across the river from one bank to the other The rope was tightly fixed to pegs or ‘pitons’ on both the sides I was feeling nervous I started thinking what would happen if the rope came out I was trying to estimate how wide the river was Our instructor tied a rope around his waist and put a sling type of hook in it He then put the sling on the thick rope tied across the river Walking through the icy water he went to the other side No one was ready to step into the fast flowing river Everyone was pushing each other to go first I stood last in the line hoping that no one would see me Just then our instructor came near me with the sling and rope in his hands I knew there was no escape now I was ready but did not have the courage Sir could guess my fears He called out loudly Three cheers for Sangeeta madam And before I knew it someone had gently pushed me into the water I felt as if my feet were frozen I started shivering my teeth were chattering I caught hold of the rope and started putting my feet firmly on the river bed As I walked further in the river got deeper and slowly the water reached upto my neck In the middle of the river I lost my balance and started slipping I was so scared and felt so cold that the rope slipped from my hands I started shouting for help I was sure I would be carried away by the river But no I found that I was tied with the rope to the sling Hold the rope Hold the rope I could hear the shouts I somehow managed to get hold of the rope and pull myself forward Slowly with some courage I reached the river bank I felt a special kind of happiness as I came out of the water Happiness on finishing a challenging task Now standing on the bank I was calling out to the others to hold the rope tightly I knew that this confidence was a result of facing a challenge with courage Rock climbing February We had to climb km to reach Tekla village It was at a height of metres Our rucksacks had all that we may need food packets water bottle rope hook plastic sheet diary torch towel soap windcheater whistle glucose jaggery chana and some other snacks We could see fruits and vegetables growing in the step fields We saw Colonel Ram Singh standing on a metres high flat rock with pegs and ropes We had been told to first observe the rock carefully and identify holds places where we can put our hands and feet Today I was not going to back out I stood first in the line Our instructor tied a rope around his waist He put the sling and held the thick rope which was hanging He started climbing as if he was running up I also put my sling But as I took my first step I slipped And there I was swinging from the rope Keep your body at an angle of ° while climbing I heard Keep your back straight Do not bend Keeping this in mind I imagined the rock as flat ground and started to climb up Again while coming down we had to use the rope in a special way called rapling I did this with the same fearlessness A funny incident February It was evening Khondonbi was feeling hungry We did not have anything to eat She jumped over the fence and got into a field She quickly plucked two big cucumbers and came back Just then a woman came from behind and caught hold of her bag She started saying something to Khondonbi in her own language We could not understand what she was saying Khondonbi was trying to explain in her Mizo language which we could not understand I tried to explain in Hindi but neither of them could understand it Finally I folded my hands to say that we were sorry By then our group had gone far ahead It was already dark I thought we had lost our way Now we were really scared We could not see anything even with our torches I started sweating even though it was cold I tightly held Khondonbi’s hand I called out loudly Where are you all Can you hear me My voice echoed in the mountains We both started to whistle loudly and flashed our torches Probably the group had noticed that we were missing We heard some whistles at a distance I understood the signal We held each other's hand tightly and waited Khondonbi felt that we should keep talking She started singing a Mizo song loudly After some time we saw them coming towards us At last We were with the group again A special guest February After dinner we met a special guest Bachhendri Pal She had just been selected as a part of the team to climb Mount Everest She had come to seek the blessings of Brigadier Gyan Singh It was a happy evening we were all singing Bachhendri also joined us in singing and dancing on the famous Pahadi song Bedu Pako bara masa kafal pako chaita meri chhaila At that time we had no idea that Bachhendri would become the first Indian woman to reach Mount Everest and create history Camp in the snow February We were standing at a height of meters We were to spend the night here Everyone was busy trying to put up the tent We used double layered plastic sheets for the tent and for the ground The air between the layers would help to keep us warm We put in the pegs and began to put up the tent As we tied it from one side the wind flew the tent from the other side After quite a lot of pulling and tugging we managed to get the tent up Then we dug a drain around the tent We were feeling very hungry We collected some firewood and stones to make a chulha and cooked some food After the meal we collected all the waste in a bag to clean the camp site Soon we got into our sleeping bags I was not sure if I would be able to sleep in it Would it be comfortable Would I not feel cold But the bags were filled with soft feathers which help in keeping us warm We were all very tired So very soon we fell asleep The next morning we woke up and found that it was snowing White soft fluffy snowflakes were gently falling Wow It was so beautiful The plants the trees the grass and the mountains everything looked white Today we were to climb higher to metres We walked carefully on the snow with the help of sticks It was difficult because we kept slipping By afternoon we had reached snow covered mountains We enjoyed throwing snowballs at each other and making a big snowman Last day at camp February We were getting ready for the camp fire Each group presented a programme We were enjoying telling jokes and laughing singing and dancing around the camp fire Soon it was midnight Brigadier Gyan Singh got up and called me I thought Oh no what have I done this time But when Sir announced my name for the ‘Best Performance Award’ I stood still He blessed me and tears of joy rolled down my face Walls Tell Stories Reached Golconda At last we reached Golconda We were glad that didi was with us Didi studies history and we enjoy visiting different places with her Shailja My goodness This fort is so huge Shreedhar And see at what a height it is built Kalyani Just look Have you ever seen such a huge gate Shailja It must be very heavy I wonder how many people would be needed to open and close this gate Kalyani Look at these sharp iron spokes I wonder why they were made Shailja Look at these thick walls too Shreedhar I have never seen such thick walls Kalyani At some places a part of the wall comes out in a round shape I wonder why Didi These are called bastions burj See these are even higher than the wall The outer wall of this fort has bastions Thick walls a huge gate and so many bastions So many ways to ensure security What did we find inside the fort Shailja I wonder how old this fort would be Do you think the king built the fort so that he could live here Kalyani It was written outside that Qutubshahi Sultans ruled here one after another from Didi Much before that in this fort was made of mud and different rulers lived here Shailja Oh look This board has a map of the fort Shreedhar This map shows so many gardens fields and factories See there are many palaces also inside the fort Shailja That means that not only the Sultan but many other people like farmers and workers must also have been living here Kalyani It must have been a complete town The Sultan’s Palace Shreedhar These steps seem to go on and on Shailja Even in those days they used to have buildings with two floors Kalyani Now the building is in ruins But one can imagine that earlier there were many big halls and rooms here Shreedhar Look at this beautiful carving on the walls It is so fine Kalyani We also saw something like a fountain on one of the roofs Didi Yes there were many big tanks and fountains here They used to be full of water Why these attacks While we were all talking Shreedhar called us to see a big gun cannon We ran up the steps Shailja This must have been the Sultan's big gun Didi This was used by Aurangzeb His full army came with their guns and cannons to attack but they could not even enter the fort For eight months they camped outside the fort Shailja Why would the army come here all the way from Delhi Didi In those days emperors and kings played such tricks They tried to make smaller kingdoms a part of their own kingdom This was done sometimes by friendship sometimes by flattery or even by marriage between families And when nothing else worked they also attacked them Kalyani Why is it that Aurangzeb’s army could not get into the fort He had so many soldiers and big guns Shailja Didn’t you see these strong thick walls In the map there is a long deep ditch pit along the wall How could the army enter Shreedhar If the army tried to come from a different side then the soldiers in the bastions would have seen it from a distance No wonder it was difficult to attack the fort Kalyani Imagine The army is coming on horses and elephants with all their guns Here the Sultan's army stands fully prepared Shailja Oh no How many people and soldiers on both the sides must have been killed in all this fighting Why do people attack and have wars Shreedhar Guns and cannons are things of the past now These days many countries have nuclear bombs A single bomb can cause so much destruction What a sad sight Talking whistling and listening to our own echo we were walking through this mehrab arch Shreedhar Oh The breeze feels so cool in this tunnel Shailja It was written that soldiers stayed here Shreedhar See this board but look what the wall is like Shailja Oh Think how this wall has seen thousands of years go by It has seen kings and queens horses and elephants war and peace But we have spoilt it in just a few years Kalyani I don’t understand what kind of fun do people get in writing their names all over the place like this Going to the museum After seeing Golconda the children also went to a museum in Hyderabad Many old items are kept there Many things were found when the place around Golconda was dug like pots jewellery swords Shailja Oh Why are these broken pieces of pots kept in the almirah See that small plate made of bronze That blue piece seems to be made of ceramic clay Didi It is through all these things that we come to know how people of those times lived what they used and what things they made If all these would not have been kept here how would you know so much about those times Sunita in Space What is our earth really like Uzaira and Shahmir are playing with the globe While they play they are talking to each other Uzaira Do you know that Sunita Williams is visiting our school tomorrow I have heard that she has spent more than six months in space Shahmir looking at the globe Hmm look here is America Africa Hey where is space Uzaira The sky stars sun and moon they are all in space Shahmir Yes I know Sunita Williams went in a spaceship I saw on TV that she could see the earth from there Uzaira Yes from there the earth looked like this globe Shahmir If our earth looks like this globe then where are we Uzaira takes a pen and places it on the globe Uzaira Here we are This is India Shahmir If we were here like this we would all fall off I think we must be inside the globe Uzaira If we are inside then where is the sky the sun the moon and the stars We must be on the globe And all the seas and oceans must also be on the globe Shahmir pointing towards the lower part of the globe You mean to say that no one stays here Uzaira People live here too Brazil and Argentina are here Shahmir Are the people there standing upside down Why don't these people fall off Uzaira Yes it looks strange isn’t it And this blue part must be the sea Why doesn’t the sea water fall off Uzaira and Shahmir are looking at different countries on the globe Uzaira See there are lines between the different countries on this globe Are such lines also there on the earth Shahmir There must be They are there on the map of India in this book See there are lines between the different states too Uzaira If we go from Delhi to Rajasthan would we find such lines made on the ground Shahmir He closes one eye and moves the coin back and forth while looking at the moon Look I can hide the moon behind this coin Uzaira Wow Imagine hiding such a big moon behind such a small coin What if it Finishes A bus journey Today we were going on a school trip to the Adalaj stepwell baoli about eighteen kilometres from Ahmedabad We began counting the vehicles on the road Some of us counted the bicycles others counted the buses cars and motorcycles Abraham who was counting bicycles soon got bored There were hardly any bicycles on this highway Screeeech The driver suddenly braked at the red light It was a big crossing and we could see the traffic lined up on all sides Honk honk the sound of loud horns and smoke coming out of the vehicles May be that is why a little boy in a rickshaw was coughing so much I smelt something familiar I remembered this smell it came from Baba’s tractor in the village On the petrol pump After sometime our bus stopped at a petrol pump There was a long queue It seemed as if we would have a long wait We all got down from the bus and started looking around the petrol pump We saw many large boards and posters We could not understand why it was written that petrol and diesel will not last forever We thought of asking an uncle who works at the petrol pump Abraham Uncle from where do we get petrol and diesel Uncle who works at the petrol pump From deep deep down under the ground Manju But how does it get made there Uncle It is formed naturally but very slowly It is not made by a human being or a machine Abraham Then we don't need to buy it We can take it out ourselves using a borewell like we pump out water Uncle It is not found everywhere but only at a few places in our country We need big machines to pump it out and clean it Divya Is petrol going to finish The poster said that petrol is not going to last forever Uncle It does not get made as fast as we take it out It takes lakhs of years for it to be formed under the earth Abraham How will vehicles run if the oil finishes Manju On CNG I had seen on TV that vehicles which run on CNG give less smoke Uncle laughing That too comes from below the earth It is also limited Divya Electricity can be used to run vehicles I have seen an electric bicycle Abraham We will have to do something Or else how will we travel when we grow up Divya My dadi grandmother would be happy if fewer vehicles run on the road She says Look vehicles line up like ants What will you do when you grow up Manju See only one or two people are sitting in these cars Why doesn’t everyone use a bus Abraham That will save petrol One bus can carry many people Manju When I grow up I will invent a car that runs on sunlight Then we won't have to worry about it getting finished We can use it as much as we want Wood for chulha Durga lives in a village in Haryana Everyday she spends many hours collecting wood for the chulha stove Her daughter also has to help her in this For the past three months she has a cough There is a lot of smoke when damp wood is burnt But Durga does not have any other option When there is not enough money to buy food where will there be money to buy wood Today about two-third people in our country use uple wood and dry twigs etc These are used not only for cooking food but also for keeping warm for heating water and for lighting Many other things are used for all activities at home kerosene LPG coal electricity etc Kancha had seen a bar chart in a book The chart shows the number of houses out of that use each type of fuel It also shows the use of which fuel has increased and which fuel has decreased over the past twenty years A Shelter so High A traveller’s tale I am Gaurav Jani and this is ‘Loner ’ my partner my motorcycle But Loner is never lonely We are together all the time I and my motorcycle wait for a chance to get away from the busy crowded and noisy city of Mumbai We like to travel to different parts of this wonderful country Let me tell you about our amazing journey on the highest roads in India Getting ready This journey took about two months I had to carry everything on my motorcycle I had to plan and collect all the things I needed I packed a small tent sleeping bag plastic sheet warm clothes and food that would remain fresh for some days I also took my camera and extra cans for petrol Loner and I left Mumbai passing through small villages and towns of Maharashtra Gujarat and Rajasthan to reach Delhi It took me three days to cover kilometers from Mumbai to Delhi I was hoping to see something new and different in Delhi But Delhi looked just like Mumbai I am tired of looking at the same kinds of houses made of cement bricks glass and steel I was looking forward to my journey ahead I was excited that I would be able to see wooden houses houses with sloping roofs and those covered with snow I had seen pictures of such houses in many books I packed more things in Delhi and continued In two days we were in Manali It was so refreshing to be in the mountains and breathe the clean air Now the real journey was to begin We had to travel through difficult roads of the state of Jammu and Kashmir to reach Leh in Ladakh New home Loner and I were covering long distances each day All I needed was food and a tent to protect myself from the cold night air My nylon tent was so small that I could just about fit in it to sleep Loner stood guard outside the tent The breeze and the sound of the birds woke me up to see the sunrise Cold desert At last Loner and I reached Leh For the first time I saw such an area high dry and flat called a cold desert Ladakh gets very little rainfall Here there are high snowcapped mountains and a cold flat ground In Leh I found myself in a quiet street with beautiful white houses As I rode slowly I found that I was being followed by a group of children They called out jule jule meaning welcome welcome They were all amazed to see my Loner Everyone wanted me to come to their home At home with Tashi Tashi dragged me to his home It was a building with two floors The house was made of stones which were kept one over the other The walls were coated with a thick layer of mud and lime The house looked like a shed from inside with a lot of hay stored there We took the wooden steps and reached the first floor This is where we stay explained Tashi The ground floor is for our animals and for storing necessary things Sometimes when it gets too cold we also move downstairs I noticed that the ground floor had no windows Thick tree trunks were used to make the roof strong Tashi then took me to the roof of his house What a view I could see the same flat roofs all around On some red chillies were laid out to dry and on some there were orange pumpkins and golden yellow corn Some had stacks of paddy and on some cow dung cakes were laid out to dry This is the most important part of our house said Tashi During summer season we dry many fruits and vegetables We store them for winters when we do not get fresh fruits and vegetables As I stood there with Tashi I could see how every part of the house was built specially to suit the needs of his people I could understand how the thick walls a wooden floor and a wooden ceiling protected them from the cold People living on top of the world Now was the time to climb higher Loner had a tough time zigzagging along narrow rocky mountain roads At many places there were no roads at all I was moving towards the rocky plains of ‘Changthang’ This place is at a height of almost metres It is so high that it is difficult to breathe normally I had a headache and felt weak Then I slowly got used to breathing in such air For many days we kept wandering in this area with not a single human being in sight No petrol pumps no mechanics Only clear blue sky and many beautiful lakes around Many days and nights passed Loner and I kept moving ahead Suddenly one morning I saw before me flat grassy land Many sheep and goats were grazing there Far in the distance I saw some tents I wondered who lived there and what they were doing in this far out place The Changpa There I met Namgyal and came to know about the Changpa a tribe living on the mountains The Changpa tribe has only about people The Changpas are always on the move with their goats and sheep It is from these that they get all that they need milk meat skin for tents and wool for coats and sweaters Their goats are their only treasure If a family has more animals it is considered more rich and important From these special goats they get wool for making the world famous pashmina wool The Changpa graze their goats at higher and colder places so that the goats have more and softer hair fur They stay high up on these mountains in very difficult conditions because that is where these goats can live This is their life and their livelihood I was carrying very little of my belongings on my motorcycle But the Changpas carry everything that they own on their horses and yaks It takes them only two and a half hours to pack everything and move ahead Within no time they put up their tents at the chosen place the luggage is unpacked and their homes are ready You are most welcome into our home said Namgyal as he led me to the big cone-shaped tent They call their tent Rebo Yak hair is woven to make strips which are stitched together These are strong and warm and protect them from the icy strong winds I saw that the strips were tightly tied with nine sticks The ground is dug about feet deep The tent is then put up around this on the higher part of the ground As we stepped into the tent I realised that I could stand up straight It was not like my tent I also saw that the Rebo was as big as a room of my flat in Mumbai It was held up by two wooden poles in the middle There was an opening to let out the smoke from the chulah Namgyal told that the design of this tent is more than a thousand years old The tent protected the Changpas from extreme cold How cold must it be In winters the temperature drops many degrees below zero The wind blows at kilometres per hour Imagine–if you were on a bus which was going at this speed how far from your house would you reach in one hour Near the Rebo there was a place to keep sheep and goats Changpas call this lekha The walls of a lekha are made with stones Each family puts a special mark on their own animals The women and young girls count and take the animals out of the lekha Towards Srinagar I spent a few days with the Changpas but sadly it was time to move on My return journey would take me away from this special part of the world towards towns which looked like a totally different world This time I took a different route from Leh I was going towards Srinagar via Kargil I saw many more amazing buildings and different houses I stayed in Srinagar for a few days I was amazed by the houses there They took my heart away Some houses are on the mountains while some are on water I took many pictures of these When I started my journey I had not imagined that in one state I would see so many different kinds of houses and lifestyles I had a wonderful experience of living on the mountains in Leh and another of living on water in Srinagar I saw how both the houses in these areas were made to suit the climate Return journey Again it was time to move on In Jammu I saw houses like I have been seeing in Mumbai The same–cement brick steel and glass These houses are very strong But they are not as special as the houses I was lucky to see in Leh and Srinagar After a long journey Loner and I were about to reach Mumbai My heart felt heavy I also felt that my motorcycle did not want to come back I was happy that I had learnt and experienced so many new things I had also brought back some memories in my camera And of course this was not the end Next time when Loner and I get bored of the city we will again set out for a new journey When the Earth Shook A bad dream Help Help Save me Aaahhh Ooooww There was screaming and shouting everywhere The ground was shaking and people were running all around Screaming loudly I got up On hearing me my mother also woke up She came running and held me tight It was the same bad dream It has been more than six years now since the earthquake But in my sleep I still feel the earth shaking and trembling I am Jasma I live in the Kutch area of Gujarat I was eleven years old when there was an earthquake It was January Everyone from the village children and old people had gathered in the ground of the school to watch the parade on TV Suddenly the ground was shaking People were scared and started running here and there No one knew what was happening and what to do There was total panic In a few minutes our village was flat on the ground All our things clothes pots grains and food were trapped under the stones mud and wood from the fallen houses At that time everyone thought of two things to save the people who were trapped and to treat the injured The village hospital was also damaged Many people were seriously injured My leg also got fractured The doctor treated people with the help of the villagers Six people of our village died My grandfather Nana was also buried under the houses My mother wept all the time Seeing my mother I also cried The entire village was sad and disturbed House of Motabapu who is the sarpanch of our village was not much damaged He gave rice and wheat to everyone from his godown For many days the village women cooked food together at Motabapu’s house and fed everyone Imagine being without a house in the cold winter Fear and the cold kept us awake in the nights All the time we were worried that there may be another earthquake Help arrives For some days after that people from the cities kept coming to see what had happened They came with food medicines and clothes Everyone used to rush to take these things The clothes that we got were very different We had never worn such clothes before People from different groups from the city helped us to put up the tents Staying in these plastic tents in the cold winter months was very difficult Some of these people were scientists They tried to find out which areas have more chances of having an earthquake People from our village talked to them many times They had suggestions about building our houses again Engineers and architects showed us some special designs for houses They said that with this design houses would not get damaged much in an earthquake But our people were a little afraid They thought if these people build our houses our village will not look like our old village So the villagers thought they would build their own houses with their help The groups would build the village school We all worked together to rebuild our village Some people dug and brought the clay from the pond We mixed the clay with cow dung and made large cakes We put these on one another to make the walls We whitewashed the walls and decorated them with beautiful designs and small pieces of mirrors We put up the thatched roof Now our house shines like a diamond in the dark night Blow Hot Blow Cold There was a woodcutter Everyday in the morning he used to go to the forest to cut wood In the evening he would sell the wood in the city One day he went deep into the forest It was a very cold winter His fingers were becoming numb Every now and then the woodcutter would put down his axe and bring his hands close to his mouth Then he would blow hard on them to warm them While he was cutting wood Mian Balishtiye was watching him from a corner Mian Balishtiye saw that the woodcutter kept blowing on his hands He began to wonder what all that was about But he could not understand it He got up thinking that he would go and ask the woodcutter After walking a little he came back thinking that the woodcutter may not like being asked Finally Mian Balishtiye could not help himself He went hopping to the woodcutter and said Hello brother if you don’t mind can I ask you something Seeing this tiny person the woodcutter was amazed and amused But he hid his smile and said Of course of course ask what you want to All I want to ask is why do you blow from your mouth on to your hands said Mian Balishtiye The woodcutter replied It is too cold My hands are frozen so I blow on them to warm them up a little Then when they get cold again I warm them again by blowing Mian Balishtiye nodded Oh ho so that’s it And with that he moved off But he stayed nearby and kept a close watch on him Soon it was afternoon The woodcutter began to think of lunch He picked up two stones and made a chulha He lit a fire and put a small handi pot filled with potatoes to boil The wood was damp so the woodcutter bent down and blew on the fire to help it burn Balishtiye was watching him from a distance Arre he said to himself There he goes again blowing from his mouth Does fire come out of his mouth The woodcutter was feeling very hungry He took out a potato from the handi He tried to eat it but the potato was too hot He again began to blow on it ‘foo foo’ Arre said Balishtiye to himself He’s blowing again Now what Is he going to burn the potato After blowing a few more foo foos on it the woodcutter put it in his mouth and began to eat it Now Mian was very surprised He just could not stop himself and off he went hopping to the woodcutter Hello brother he said If you don’t mind can I ask you a question again The woodcutter replied Not at all Ask whatever you want Mian Balishtiye said This morning you told me that you blew on your hands to warm them up Now you are blowing on this potato which is already so hot Why do you want to make it hotter No no my little friend This potato is too hot I am blowing on it to cool it down When he heard this Mian Balishtiye’s face became white He began to tremble with fear and started to back away The woodcutter was a good man He said What’s wrong Mian Are you trembling because of the cold But Mian Balishtiye kept going backwards When he was a safe distance away he said to himself What kind of a creature is this Surely he must be a ghost or a djinn Blow hot blow cold with the same breath It is just not possible That’s right there are some things which just cannot be but they are Who will do this Work Have you ever thought of people who do this work What is our responsibility to keep the place clean Why do you think people need to do this kind of work A childhood story This story is almost a hundred years old Seven-year old Bhim went to Goregaon in Maharashtra with his father to spend his holidays He saw a barber cutting the long hair of a rich farmer’s buffallo He thought of his own long hair He went to the barber and asked for a hair cut The barber replied If I cut your hair both my razor and I will get dirty Oh so to cut human hair can be dirtier than cutting an animal’s hair wondered little Bhim Later this little Bhim was known as Bhim Rao Baba Saheb Ambedkar He became very famous across the world Baba Saheb fought for justice for people like him After India’s freedom the Constitution was prepared under the leadership of Baba Saheb Across the Wall Stars in her eyes Indian Express Just years old Afsana Mansuri has already jumped over the wall The wall between her jhuggi and the local basketball court The wall made by society for a girl who washes utensils for a living The gender wall her mother had put up for her Today Afsana herself has become a strong wall of NBA the Nagpada Basketball Association of Mumbai Today she is the source of strength for five other girls who have come to the basketball court leaving behind the problems of their everyday lives Today she is the star of a young team This team has managed to surprise some of Mumbai’s club teams With a lot of guts and courage the team has reached the semi-finals of a district-level tournament Meeting the team We read in the newspaper about Afsana and the Nagpada basketball team We thought of meeting these girls and introducing them to you We took the train and got off at Mumbai’s Chhatrapati Shivaji Terminus Station railway station From there we walked towards Nagpada It took us just twenty minutes to reach there There we met Afsana and the other girls of the Nagpada Basketball Association Read the interview with the team members Meet this special team Meet Afsana Zarin Khushnoor and Afreen At first the girls were quiet but once they started they just did not stop Zarin began My house is just in front of this ground My brother used to play here I would stand in my balcony and watch the boys play I was in Class VII at that time Whenever the boys played a match many people came to watch The winning team got a lot of praise Everyone cheered the players On seeing all this I wished I could also play Would I too get a chance to show my talent I asked the coach but was afraid He is a good friend of my father The coach said Why not If you bring some more girls you can make a team Then I will teach you We asked Was it easy to make a beginning Khushnoor At first my parents refused But when I insisted they agreed Afsana My mother works in the flats and sends us to school I also help her When I told her about my plans to play basketball Ammi got angry She said Girls do not play basketball Do your work go to school and study hard No need to go to the ground to play But when my friends and Coach Sir talked to her Ammi agreed Afreen We were not allowed because we are girls My grandmother gets very angry with all of us But still we three sisters come here to play Grandmother scolds us and even scolds our Coach Sir She tells us You need proper equipment to play You need to have a lot of milk for strength Where will the money for all this come from But daddy understands our feelings He even teaches us some special moves used in the game My daddy also used to play on this ground when he was young He did not have proper shoes or clothes He used to practice with a plastic ball Daddy tells us that Bacchu Khan was the coach when he used to play He saw my daddy playing once He realised that the boy played very well and that he should be trained properly He gave proper shoes and clothes to my daddy My daddy could have become a very good player But because of his responsibilities at home he left the game and took up a job So he wants us to play and become good players We asked Tell us about your team One girl We felt a bit strange in the beginning We were the first girls’ team here People used to come and watch us practicing They were curious to see how girls would play basketball Now people are no longer surprised They have begun to accept that we girls can also play well Afsana I was eleven years old when we first started playing At that time we were not allowed to go anywhere else to play a match It has been two years since then Now we go to other places also for matches But all this could happen only because of our hard work and Sir’s coaching Another girl Yes we really work hard Sir is also very strict We first jog together and then do our exercises Sir teaches us how to play the game well We practice how to keep the ball with us to dodge the players of the other team how to throw the ball in the basket to score a goal to pass the ball well and to run fast on court Afreen Sir says While playing don’t think you are girls Play like a player Keep playing even if you get a little injured We support each other and say Come on get up you will be fine Now our game has improved a lot Everyone says that we play as well as the boys’ team One girl We also play with boys’ teams We want them to play with us as equals They should not be lenient because we are girls Sometimes we get angry when the boys imitate us But we take it as a challenge and correct our mistakes If the boys try to cheat we scold them We said Tell us more about your team One girl Our team is very special Our team is united Even if we quarrel we quickly make up and forget about it Here we have learnt how to stay and play together Some of the girls from our team got a chance to play as part of the Mumbai team The match was at Sholapur Zarin When we went to Sholapur we found that the team had girls from different parts of the state They did not talk to us nicely and treated us like juniors They would not even give us a chance to play properly We felt very bad There was no cooperation at all in that team During the match I threw the ball to one of the team members But she could not catch it In turn she started scolding me blaming me for the mistake In all this misunderstanding we lost the match But this never happens in our own team If we do miss a basket because of someone’s mistake we do not get angry We say Never mind next time we will do better It is most important to support each other because we are all part of a team Afreen After playing in Sholapur we realised what was special about our team Cooperation between us is our strength We understand and support each other well Even if every player is excellent the team can lose a match if all do not play together as a team To play as a team it is important to understand each other’s strengths and weaknesses We said You have done so much What next We asked Did you face some other difficulties Khushnoor To tell the truth we have not got all this very easily As girls even to be able to start playing was difficult We had to convince our families Sometimes we even had to fight Even today not many girls can play like this Forget games earlier some people did not even allow girls to study My mother wanted to do many things but she never got a chance So my mother encourages me to take part in all activities like games swimming and drama Afsana Even now we are supposed to go home as soon as we finish playing The boys go here and there and can chitchat till late No one says anything After coming from school I help my mother with the cleaning work in two or three houses do my studies and then come here to play I also help at home If my brother wants tea and he makes it for himself then mother says He has three sisters Yet he has to work One girl Now just look at Zarin’s younger brother He is only five years old but he says Mummy why do you send didi to play She does not look nice playing like that on the ground Ask him if he will play and he says I am a boy of course I will play Afsana But it is good for everyone to play We have now realised how much we benefit from playing I want to be such a good player that other girls and boys would wish to be like me Afsana We have been playing well So we have got a chance to go to many places We have played for our city and our state We hope to work hard and play for our country some day Yes then we will also be popular like the cricketers We all want to play well We should bring glory to our area and our country We want to show that the Indian girls team can win a gold medal We will make this happen What next Afreen I just want to say that if you have some dreams for yourself give your best to fulfil them Khushnoor If you have a wish or a dream have courage to speak about it If you don’t do this now you may regret later We said The newspaper wrote about all of you Now students will read about you in this book How do you feel Afreen We are so happy about it that we have no words to explain our happiness We now feel we must play even better to make our area and our country famous All Girls Yes this is our wish too No Place for Us Jatryabhai Jatryabhai was sitting at the door with his daughter Jhimli They were waiting for Sidya It was almost night but Sidya had not come home Two years back Jatrya’s family came to Mumbai from Sinduri village Here they only knew the family of a distant relative With their help Jatryabhai began to repair torn fishing nets But the money he got was not enough They had to pay for the medicines food school fees and rent for the house Here they even had to buy water Young Sidya also had to work in the nearby fish factory to earn some money From four o’clock till seven o’clock in the morning he cleaned and sorted the big and small fish Then he would come home take a nap and go to school in the afternoon In the evening he would wander around the vegetable market He would help some memsahib lady to carry her bags or go to the railway station to pick up empty bottles and newspapers to sell to the kabadiwalla junk seller Somehow they were managing their life in the city It was night but Sidya had not come home Jhimli was watching a dance on TV through the neighbour’s window But Jatrya did not like watching TV Here everything was so different The day would pass running around for work but the evening brought back old memories Remembering old days Jatrya was born in Khedi village in the middle of thick green jungles and hills His people had been living here for many years even before his grandfather was born There was peace in Jatrya’s village but not silence There were so many soothing sounds the gurgle of the flowing river the murmur of trees and the chirping of birds People did farming They would go to the nearby forest chatting and singing together to collect wild fruits roots and dried wood While working with elders children also learnt many things to dance together to play flute and dhol to make pots of clay and bamboo to recognise birds and imitate their sounds etc People collected things from the forest for their use Some of those they would sell in the town across the river With that money they would buy salt oil rice and some clothes It was a village but people here lived together like a big family Jatrya’s sister was married in the same village People helped each other in good and bad times The elders would arrange weddings and settle quarrels Jatrya was now a strong young man He worked hard in the fields and caught fish from the big river He and his friends would go to the forest to collect fruits roots and plants for medicines and fish from the river to sell these in the town During festival time Jatrya would dance and play the drum with boys and girls of his age Across the river One day the people of Khedi heard that a big dam was to be built on the river For this a big wall would be built to stop the flow of the river Khedi and many nearby villages in that area would be drowned under water The people would have to leave their villages and their lands on which their forefathers had lived for centuries After a few days government officials along with the police started visiting these villages Small children of the village saw the police for the first time Some children would run after them and some would get scared and start crying The officials measured the width and length of the river the fields forests and houses They called meetings with the elders of the village They said Villages on the bank of the river would have to be removed People having land at Khedi will be given land far away on the other side of the river They will have everything there a school electricity hospitals buses trains etc They will have all that they could not even dream of here in Khedi Jatrya’s parents and most elders were not happy about leaving their village Listening to all this Jatrya would get a little scared but also feel excited He would think that after getting married he would take his bride to the new house in the new village A house where he could just press a button for the light and turn on the tap for water He could go by bus to see the city When he would have children he could send them to school They will not be like him who had never been to school A new place It was a summer afternoon Jatrya was feeling faint in the hot sun and wind His feet were burning on the coal tar of the pucca road There wasn’t a single tree to offer some shade Just a few houses and shops Jatrya was on his way home after buying medicines He had an old tyre on his back These days he had to light his stove with just these rubber pieces of old tyres These caught fire fast and also saved some firewood But the smoke and smell of burning tyres were terrible In this new Sinduri village they had to pay money for everything medicines food vegetables firewood and fodder for the animals They could just not afford to buy kerosene But from where to get the money for all this Thinking of all this Jatrya reached home The roof made of a tin sheet made the house hot like an oven Jatrya’s wife had high fever His daughter Jhimli was rocking her little brother Sidya to sleep in her lap After all there was no other older person with them Jatrya’s parents had been so sad about leaving Khedi that they had died before he moved here In Sinduri there were only eight-ten families he could call his own those from his old village The whole village had got scattered and people had gone wherever they had been given land This was not like the new village Jatrya had dreamt about There was electricity but only for sometime in a day And then the electricity bill had also to be paid There were taps but no water In this village Jatrya got just one room in a tin shed It had no place to keep the animals He also got a small piece of land But that was not good for farming It was full of rocks and stones Still Jatrya and his family worked very hard But they could not grow much on the field and could not make enough money even to buy seeds and fertilisers In Khedi people did not fall sick often If someone fell ill there were many people who knew how to treat them with medicines made from plants People felt better after taking those medicines Here in Sinduri there was a hospital but it was difficult to find doctors and there were no medicines There was a school here but the teacher did not care much about the children from Khedi village These children found it difficult to study in a new language The people of Sinduri did not welcome the newcomers from Khedi They found their language and way of living strange They made fun of the Khedi people by calling them ‘unwanted guests’ Not much of what he had dreamt had come true Some years later Jatrya stayed for a few years in Sinduri The children were also getting older But Jatrya’s heart was not here in Sinduri He still missed his old Khedi But there was no Khedi now There was a big dam and a big lake of collected water in and around Khedi Jatrya thought If we are to be called ‘unwanted guests’ then at least let us go to some place where our dreams can come true Jatrya sold his land and his animals and came to Mumbai Here he started a new life with his family His only dream was to send his children to school to give them a better future a better life Here too things were not easy But he hoped that things would get better Jatrya started saving money to repair his one-room shack His relatives would tell him Don’t waste money on this Who knows we may have to move from here too In Mumbai there is no place to stay for outsiders like us Jatrya was scared and worried He thought We left Khedi for Sinduri we then left Sinduri for Mumbai If we have to move from here too then where can we go In this big city is there not even a small place for my family to stay A Seed Tells a Farmer’s Story I am a small seed I am a small bajra seed I have stayed in this beautiful wooden box since I want to tell you my story This is a long story but not mine alone It is also the story of my farmer Damjibhai and his family If I do not tell my story now it might be too late I was born in Vangaam in Gujarat That year there was a good bajra millet crop There was a festive mood in the village Our area was famous for its grain and vegetables Each year Damjibhai kept aside some seeds from a good crop This way our bajra family went on from one generation to another Good seeds were stored in dried gourd lauki which was coated with mud But that year Damjibhai himself made a strong wooden box to store us He put in neem leaves to protect us from insects He put different seeds in different compartments of the box That was our beautiful home In those days Damjibhai and his cousins lived together It was a large family Everyone in the village helped each other even in farming When the crop was ready and harvested everyone celebrated together Oh Those wonderful days With big feasts and lots to eat In the winter it would be time to enjoy the undhiya a kind of stew All the vegetables were put into a clay pot along with fresh spices The pot was sealed and kept between hot coals The vegetables cooked slowly in this special cooker on the fields Oh I forgot the pot was placed upside down That is why the dish was called undhiya or upside down in Gujarati Undhiya would be eaten with bajra rotis freshly cooked on the chulha Oh what an earthy delicious flavour Along with that home-made butter curd and buttermilk was served Farmers would grow many different kinds of crops grains and vegetables according to the season The farmers kept enough for their needs and sold the rest to shopkeepers from the city Some farmers also grew cotton At home family members spun cotton on a charkha spinning wheel to make cloth When times changed Over the years many changes took place in the village Some places could get water from the canal They said the canal brought water from far away where a dam had been built on a big river Then electricity came Switch on the button and there was light People found that only one or two crops like wheat and cotton got better prices in the market So most farmers began to grow only these Soon we old friends bajra and jowar and also vegetables were forgotten and dismissed even from Damjibhai’s fields Farmers even began to buy seeds from the market People said they were new kinds of seeds So farmers did not need to store seeds from the old crop Now people in the village cooked and ate together only on very special days As they ate they would remember how tasty the food used to be in the past fresh from the fields When the seeds have changed how could food ever taste the same Damjibhai was getting old His son Hasmukh looked after the fields and the family Hasmukh was making a lot of money from farming He rebuilt the old house He brought new machines for farming He used an electric motor to pump water He bought a motorcycle to go to the city easily and also a tractor to plough the field The tractor could do in a day what the bullocks would take many days to do Hasmukh would say Now we are farming wisely We grow only what we can sell in the market at a good price With profits from our fields we can improve our life We can make progress Lying forgotten in the wooden box I and the other seeds had our doubts Is all this really progress There is no longer any need for seeds like us and animals like the bullocks After the tractor has come even people who worked on the fields are no longer needed How will they earn money What will they live on More and more expenses The next twenty years saw even more changes Without cows and buffaloes there was no cow dung to be used in the fields as fertilizer Hasmukh had to buy expensive fertilizer The new kinds of seeds were such that the crops were easily affected by harmful insects Medicines had to be sprayed on the crops to keep away the insects Oh what a bad smell these had and how expensive they were The canal water was not enough for the new crops All the farmers used pumps to lift water from deep under the ground To meet all these expenses loans had to be taken from the bank Whatever little profit was made was used to repay the loan But there was little profit Everyone was growing cotton so the cotton prices were not as high as before The soil itself was no longer the same Growing the same crop over and over and using so many chemicals had affected the soil so much that now nothing could grow well there It was becoming difficult to earn a living by farming alone Hasmukh too changed with the times He is often tense and angry most of the time His educated son Paresh did not want to do farming He now started work as a truck driver After all the bank loans still had to be repaid Often Paresh doesn’t come home for days At times he is away for a week Two days back when he came home Paresh started looking for something Ba he asked his mother Where is Dadaji’s wooden seed box It will be useful to keep the screws and tools for the truck Now do you understand why I told you my story Whose Forests Daughter of the jungle Look at the picture Where do you think these children are off to with little bundles on their sticks When you find out you too would want to go with them The children are going to the forest There they jump run climb trees and sing songs in their language called Kuduk They pick the fallen flowers and leaves to weave them into necklaces They enjoy the wild fruits They look for birds whose calls they imitate Joining them in all this fun is their favourite didi Suryamani Every Sunday Suryamani takes the children to the forest As they move around she shows them how to recognise the trees the plants and animals Children enjoy this special class in a forest Suryamani always says To learn to read The forest is as important as reading books She says We are forest people adivasis Our lives are linked to the forests If the forests Are not there we too will not return Growing Up Suryamani loves the forest since she was a child She would not take the direct road to school but would choose the path through the forest Suryamani’s father had a small field Her family used to collect leaves and herbs from the forest and sell these in the bazaar Her mother would weave baskets from bamboo or make leaf plates out of the fallen leaves But now no one can pick up a single leaf from the forest That is since Shambhu the contractor came there The people of Suryamani’s village were afraid of the contractor Everyone except Budhiyamai She would say We the people of this forest have a right over it We look after our forests we don't cut trees like these contractors do The forest is like our ‘collective bank’ not yours or mine alone We take from it only as much as we need We don’t use up all our wealth Suryanani’s father could no longer support the family on the small land He moved to the town in search of work But things did not improve Sometimes there would be no food in the house At times Maniya Chacha uncle would send some grain from his small shop to Suryamani’s house Chacha tried hard and got admission for Suryamani in the school in Bishanpur Here they would not have to pay for the fees uniforms and books Suryamani would have to stay there and study Suryamani didn't want to leave her village and forest But Maniya Chacha was firm If you do not study what will you do Go hungry Suryamani would argue Why should I go hungry The jungle is there to help Chacha tried to explain But we are being moved away from our forests Even the forests are disappearing in their place mines are being dug dams are being built Believe me it is important for you to study to understand about the laws Maybe then you can help to save our forests Young Suryamani listened and tried to understand some of what he said Suryamani’s journey Suryamani was filled with joy on seeing the school at Bishanpur The school was near a thick forest Suryamani studied hard and passed her B A after getting a scholarship She was the first girl in the village to do this While she was in college she met Vasavi didi a journalist Suryamani soon joined her to work for the Jharkhand Jungle Bachao Andolan Movement to Save the Forests of Jharkhand This work took Suryamani to far off towns and cities Her father did not like this But Suryamani continued her work Not only that she also started to fight for the rights of the village people Her childhood friend Bijoy helped her in this work Suryamani had another friend ‘Mirchi’ who stayed with her day and night Suryamani would share all her thoughts and dreams with Mirchi Mirchi would listen and say Keee Keee Suryamani had a dream for her Kuduk community She wanted all her people to feel proud of being adivasis Suryamani’s Torang Suryamani was when she opened a centre with the help of Vasavi didi and others She called it Torang which means jungle in the Kuduk language Suryamani wanted that on festivals people should sing their own songs They should not forget their music and should enjoy wearing their traditional clothes Children should also learn about herbs medicines and the art of making things from bamboo Children should learn the language of school but must link it with their own language All this happens in the Torang centre Many special books about the Kuduk community and other adivasis have been collected Flutes and different types of drums are also kept there Whenever something is unfair or if someone is afraid that his land and livelihood would be taken away they turn to Suryamani Suryamani fights for everyone’s rights Suryamani and Bijoy have got married and work together Today their work is praised by many people She is invited even to other countries to share her experiences People of her area are also raising their voice for a new forest law Lottery for farming in Mizoram You read about the forests of Jharkhand in Suryamani’s story Now read about forests on the hills of Mizoram See how people live there and how farming is done Ding Ding Ding As soon as the school bell rang Lawmte-aa Dingi Dingima picked their bags and hurried home On the way they stopped to drink water from a stream in a cup made of bamboo which was kept there Today not only the children even ‘Saima Sir’ was in a hurry to get back Today there would be a special meeting of the Village Council Panchayat At the meeting there would be a lottery to decide which family will get how much land for farming The land belongs to the whole village not to separate people So they take turns to do farming on different parts of the land A beautiful pot made of bamboo was shaken well One chit was taken out Saima Sir’s family got the first chance He said I am happy that my family gets to choose first But this year we cannot take more land Last year I had taken more and was not able to farm it well After my sister Jhiri got married and went away it is difficult to manage farming alone Saima Sir asked for three tin of land Little Mathini asked What is three tin of land Chamui explained The land on which we grow one tin of seeds is called one tin of land One by one the village families got their piece of land for farming Jhoom farming Jhoom farming is very interesting After cutting one crop the land is left as it is for some years Nothing is grown there The bamboo or weeds which grow on that land are not pulled out They are cut and burnt The ash makes the land fertile While burning care is taken so that the fire does not spread to the other parts of the forest When the land is ready for farming it is lightly dug up not ploughed Seeds are dropped on it In one farm different types of crops like maize vegetables chillies rice can be grown Weeds and other unwanted plants are also not pulled out they are just cut So that they get mixed with the soil This also helps in making the soil fertile If some family is not able to do farming on time others help them and are given food The main crop here is rice After it is cut it is difficult to take it home There are no roads only hilly paths People have to carry the crop on their backs This takes many weeks When the work is over the entire village celebrates People get together to cook and eat sing and dance They do their special ‘cheraw’ dance In this dance people sit in pairs in front of each other holding bamboo sticks on the ground As the drum beats the bamboos are beaten to the ground Dancers step in and out of the bamboo sticks and dance to the beat About three-fourth people in Mizoram are linked to the forests Life is difficult but almost all children go to school You can see some of them here playfully blowing their leaf whistles You too have made many such whistles haven’t you Like Father Like Daughter Aaa chhee Ashima was sitting near the window and reading It was windy and there was a lot of dust in the air Suddenly Ashima sneezed loudlyaaa chhee Ashima’s parents were sorting out vegetables in the kitchen Her mother said She sneezes just like you do If you were not here I would have thought it was your sneeze Nilima had gone to the house of her nani mother’s mother in the school holidays She saw someone coming and went to tell her mother Amma a mausi mother's sister has come to meet you Her mother came out to see who had come She told Nilima No this is not your mausi She is your sister Kiran You know your eldest nani Kiran is the daughter of her elder son Kiran is your cousin sister In fact you are her cute son Samir’s mausi Nilima started playing with Samir Her mother called Kiran and said See my Nilima’s hair is a lot like yours thick curly and black It’s good she does not have hair like mine straight limp and brown Nilima’s nani laughed and said Yes isn’t it strange We sisters had thick curly hair and now our second generation has similar hair Nilima was listening to all this She thought We are called ‘distant’ relatives but how closely related we are in many ways Is this a mirror Look at the next page Is Saroja standing in front of a mirror No this is her twin Did you get confused Their mother's brother mama also gets confused when he sees them together At times Saroja gets scolded for mischief done by Suvasini Sometimes Suvasini tricks her mama and says Suvasini has gone out But now mama has learnt a trick He says –Sing a song in Marathi Why this funny trick Read about them and you will understand The sisters were just two weeks old when Saroja's father's brother's wife chachi adopted her and took her to Pune Everyone in chachi's house is very fond of music Mornings begin with music in the house Saroja knows many songs in both the languages Tamil and Marathi At home everyone speaks Tamil and at school most of the children speak in Marathi Suvasini stays with her father in Chennai Her father is a karate coach Since she was three Suvasini started doing karate with the other children On holidays both father and daughter start practicing in the morning Saroja and Suvasini look alike but are also quite different Satti was only a few months old when one of her legs was affected by polio But she never let this come in the way of her work and her life Walking long distances and climbing many stairs has been a part of her work Now Satti is married Some people tell her not to have any children She is also worried that her children may also get polio She spoke to a doctor about this On the Move Again Dhanu’s village Today all the relatives have come to Dhanu’s house to celebrate Dussehra They have come with their luggage in their bullock-carts Dhanu’s father is the eldest in the family So all the festivals are celebrated at their house Dhanu’s mother Aai the wife of mother’s brother mami and the wife of father’s brother kaki are busy making puranpoli sweet rotis made from jaggery and gram Alongwith this a spicy kadi dish is also made The day passes in laughing and chatting But by evening everyone’s mood changes The women and children begin to pack their luggage The men sit down with the mukadam agent who lends money for the meeting The mukadam gives the details of the loan taken by each family Then the talks for the next few months begin The mukadam explains to the villagers in which areas they would go for the next six months He also gives them some money as loan for their expenses Ever since Dhanu remembers this has been the routine Families like Dhanu’s work on the lands of big farmers till Dussehra before the rainy season Many other families also work on such lands They earn just enough money to keep them going through these months But how to manage the remaining six months when there is no rain and no work in the fields So everyone borrows money from the mukadam To pay back this money they have to work for the mukadam Mukadam is an agent for sugarcane factories He helps them to find work in sugarcane fields In the next few months Dhanu his parents his kaka father’s brother and his two elder children his mama mami and their two daughters and forty-fifty other families from the village will stay away from home In these six months Dhanu and many children like him will not be able to go to school Dhanu’s old grandmother aunt who cannot see and two-month old cousin sister would stay back in the village In other homes too the old and the ill people stay behind Dhanu misses his grandmother a lot Dhanu always keeps wondering who will take care of his grandmother But what can Dhanu do After Dussehra The caravan of these families would now settle near the sugarcane fields and sugar factories For six months they would stay in their huts made of dry sugarcane and its leaves The men will get up early in the morning and go to cut sugarcanes in the fields The women and children tie the bundles of sugarcane Then the bundles are taken to the sugar factory Dhanu often goes with his father Sometimes they spend nights outside the factory on bullock-carts There Dhanu plays with the bullocks and wanders around At the factory Dhanu’s father gets the sugarcane weighed and takes a receipt a note to say how much sugarcane they have given They show this receipt to the agent who then keeps an account of their loan The agent also gives them some money for the next week’s expenses Then Dhanu’s aai and mami take the children to the nearby village market to buy atta flour and oil for the next week Sometimes mami buys laddoos or some sweets for the children She also buys pencils an eraser and a notebook for Dhanu After all he is mami’s favourite But Dhanu won’t be using these for six months because he won’t be going to school Mami wants Dhanu to study and become somebody in life She does not want Dhanu to move around with his family like this mama and mami tell Dhanu’s parents Next time when we leave our village after Dussehra we will leave Dhanu with his dadi and chachi He will go to school like other children in the village He should continue his studies He should study further and become somebody Ice cream Man What is cold sweet and creamy and wonderful to eat Everyone's favourite treat especially on a hot summer day is an ice cream And everyone's favourite person might just be the Ice-cream Man When summer’s in the city And brick’s a blaze of heat The Ice-cream Man with his little cart Goes trundling down the street Beneath his round umbrella Oh what a joyful sight To see him fill the cones with mounds Of cooling brown and white Vanilla chocolate strawberry Or chilly things to drink From bottles full of frosty-fizz Green orange white or pink His cart might be a flower bed Of roses and sweet peas The way the children cluster round As thick as honeybees Wonderful Waste Once the Maharaja of Travancore ordered a grand dinner in his palace In the afternoon before the dinner the Maharaja entered the kitchen to survey the dishes that had been prepared for the feast What are you going to do with those vegetable scraps he asked the cook pointing to the basket of scraps near the cook The cook replied They are waste We will throw them away You cannot waste all these bits and pieces of vegetables Find a way to use them the Maharaja commanded sternly and walked away The cook was in a fix and kept staring at the vegetable scraps for some time Suddenly an idea flashed across his mind H e t o o k a l l t h e vegetable bits washed them and cleaned them well Then he cut them into long strips He put them in a huge pot and placed it on the fire to cook Next he g r o u n d s o m e f r e s h coconut green chillies and garlic together He added this paste and some salt to the cooking vegetables A tempting smell started coming from the pot Now he whipped some curd and added it to the curry He also poured a few spoonfuls of coconut oil and decorated the dish with curry leaves Lo and behold The new dish was ready The cook served this new dish to the guests that evening Everyone was eager to know the name of the new dish The cook thought and thought Then a name came to his mind He named it uh-vi-ul became famous all over Kerala and is now one of the dishes in a traditional Kerala feast And imagine it all came from a basket of waste Bamboo Curry One day the mother-in-law of a Santhal bridegroom cooked a special dish for him when he visited her This curry is delicious What is it The mother-in-law pointed at the bamboo door Next morning just as he was about to leave he remembered that there was no bamboo in his village So he removed the bamboo door and carrying it with him left for his home On reaching his village he told his wife Make curry with this bamboo door She was shocked How can I make curry out of a bamboo door Come I'll help you by chopping up the bamboo he said His wife boiled it and boiled it Later when her husband tasted it he said It’s too hard to eat You don’t know how to cook His wife added more water and boiled it and boiled it It’s still too hard I can’t eat it The in-laws came to visit the young couple that evening They all laughed at his foolishness The mother-in- law said Didn’t you know the curry was made from bamboo shoot and not from a bamboo door Teamwork Teamwork teamwork Together we can make our dream work Then we'll share the joy of what we've done Teamwork everyone It's fun to shoot the basketball through the hoop But if nobody passes then nobody shoots And the relay race just can't go on If nobody wants to pass the baton We're the parts that make up the whole And we've got our eyes on a common goal Sometimes it can be a big plus When a you or a me becomes an us Flying Together What happened when you didn't do as they asked youto do Deep in a forest stood a very tall tree Its leafy branches spread out like strong arms This tree was the home of a flock of wild geese They felt safe there One of the geese was a wise old bird He noticed a small creeper at the foot of the tree He spoke to the other birds about it Do you see that creeper he said to them Let us destroy it Why must we destroy it asked the geese in surprise It is so small What harm can it do My friends replied the wise old bird that little creeper will soon grow As it creeps up this tree it will become thick and strong What of that asked the geese What harm can a creeper do us Don't you see replied the wise bird with the help of that creeper it will be possible for someone to climb this tree A hunter can come up and kill us all Well there’s no hurry they replied the creeper is very small It would be a pity to destroy it now Destroy the creeper while it is still young the old bird advised Now it is tender and you can cut it easily Later it will become hard and you will not be able to cut it We’ll see we’ll see answered the birds But they did not destroy the creeper They forgot the wise old bird’s advice As the creeper grew it began winding its way up the tree Stronger and stronger it became until it was as strong as a thick rope One morning when the geese had gone out in search of food a hunter came to the forest So this is where the wild geese live he said to himself When they come back in the evening I shall catch them The hunter climbed up the tree with the help of the creeper He got to the top and spread his net there Then he climbed down and went away In the evening the geese returned home They did not notice the net As they flew into the tree they were trapped They struggled hard to get out but could not Help Help cried the geese We are caught in the hunter’s net Oh What shall we do Don’t make a fuss now said the wise old bird Long ago I told you to destroy the creeper but you did not Now see what has happened Tomorrow morning the hunter will come back and kill us all We were foolish wept the birds We are very sorry we did not listen to you Please tell us what to do Then listen carefully replied the wise bird When the hunter comes you must all pretend to be dead Just lie still The hunter will not want dead birds He will throw us to the ground It will then be easy for him to climb down collect the dead birds and take them home When the last of us has been thrown down we must quickly get up and fly away In the morning the hunter came to the tree and climbed up He looked at the geese in the net They are all dead he muttered to himself He threw them out of the net one by one The birds lay still until the last one had been thrown down Then all at once they got up flapped their wings and flew away The hunter was taken by surprise From the top of the tree he watched all the geese fly away The Ant and the Dove On his way home an ant saw a sparkling fountain He crawled on to its wall to take a closer look Suddenly he slipped and fell into the water He gurgled and panicked and waved his legs in the air Help I can't swim he cried Luckily just at that moment a friendly dove flew by She saw that the tiny ant was drowning and quickly flew to a nearby tree She pulled off a leaf and let it glide down to the ant Here you are she cooed and flew away My Shadow I have a little shadow that goes in and out with me And what can be the use of him is more than I can see He is very very like me from the heels up to the head And I see him jump before me When I jump into my bed The funniest thing about him is the way he likes to grow Not at all like proper children which is always very slow For he sometimes shoots up taller like an India-rubber ball And he sometimes gets so little that There's none of him at all One morning very early before the sun I was up I rose and found the shining dew on every buttercup But my lazy little shadow like an arrant sleepyhead Had stayed at home behind me and was Fast asleep in bed Robinson Crusoe Discovers a Footprint One day when I was going towards my boat I was surprised to see the footprint of a man on the sand I stood amazed I listened I looked around me I could neither hear nor see anything I went up higher to look down I went up the shore and down the shore but it was no good I could find no other footprint but that one I went to it again to see if there were any more footprints and to tell if it had been my imagination But I was not mistaken for there was exactly the print of a foot toes heel every part of a foot I could not imagine how it came there I stayed a long time thinking but became more and more confused Read and enjoy the poem At last I returned home very frightened looking behind me after every two or three steps mistaking every bush and tree to be a man When I came to my cave which I called my castle I ran inside it as if I was being chased I do not remember whether I used the ladder or went in by the hole in the rock which I called the door I ran for cover faster than any animal could run I did not sleep that night The more I thought about what I had seen the more afraid I became I thought it could be one of the savages of the mainland who had wandered out to the sea in a small boat Luckily I was not on shore at that time but what if he had seen my boat If he had seen the boat he would have realised that someone lived on the island and would soon return with others to kill and eat me And so I lay fearful for many days and prayed for protection In doing so I was much comforted and began going out to investigate But even now as I went forward I looked behind me frequently because I was still very frightened However as I went about for two or three days and saw nothing I became a little bolder I decided to go down to the shore again and examine the footprint once more I decided to measure it with my own footmark As I came closer to the footprint I realised that it could not be my footprint because I had not come to this part of the beach since a long time Secondly as I placed my foot alongside that footprint it seemed larger than my own My fear returned I went home again believing that there was someone there The island was inhabited Crying Crying only a little bit is no use You must cry until your pillow is soaked Then you can jump in the shower and splash-splash-splash Then you can throw open your window and Ha ha ha ha And if people say Hey what's going on up there Ha ha sing back Happiness was hiding in the last tear I wept it Ha ha Food for Thought When you have something serious to think about then you have Here's some FOOD FOR YOUR THOUGHT Tomatoes are beans are A has a crown just like a queen Potatoes are onions are Carrots have juice which I can drink Vegetables make me healthy and wise So eat some daily with and rice My Elder Brother SCENE A hostel room Two brothers aged and years sitting at a study table The elder brother Bhaiya is reading a book and the younger one Munna is drawing pictures of birds and animals BHAIYA What are you doing Munna MUNNA I am drawing BHAIYA When will you study Where were you in the morning MUNNA turning pale I was playing Bhaiya how can you sit with a book for hours together BHAIYA That's because I want my foundation in education to be very strong If the base is strong then the building will stand firmly Sometimes it takes me two years to do one year's work MUNNA Bhaiya you are five years older than I am and three classes ahead of me I wonder why you keep writing the same word twenty times one sentence more than twenty times and copy poems several times in beautiful letters BHAIYA You know studying English is no child's play one has to work very hard in order to learn the subject To speak or write English properly tremendous effort is required But the moment you get a chance you run to the field play marbles and fly paper kites or sit idling away with friends for fun Can’t you sit down and study MUNNA Oh Bhaiya there is a big in the village today Should we go BHAIYA Have you ever seen me going to a fair or going to watch a cricket or hockey match I don't go near them I prefer to study a book I don't mind repeating a class for more than two years But you might stay in the same class all your life Do you expect to pass if you waste your time playing all the time You are simply wasting father's hard earned money Munna starts crying on being scolded and sobbing sounds wah wah bah bah hu hu are heard MUNNA Bhaiya I feel like running away and going back home BHAIYA Now now Stop crying Put on a nice smile Look I will make a timetable for you to follow Get up at dawn MUNNA But when is the time to play BHAIYA Play What is the need Munna MUNNA Oh I love the green fields the gentle breeze I want to jump up like a football I like the touch and go and sounds of the and the hurry and flurry of volleyball pulls me like a magnet As soon as I am on the field I forget Everything SCENE The final exams are over and the results are out BHAIYA Alas I have failed once again MUNNA Oh But Bhaiya I have passed and topped my class Now there is only two years difference between us BHAIYA But my dear brother don't be so proud You have passed only one class and you think that I'm stupid and you are smart Once in a while in a game you might get lucky and hit a goal but that does not mean you have mastered the game You have to work hard to be successful in life When you have to study a subject like Algebra or Geometry in higher classes then you will understand the importance of hard work In Geometry if one writes acb instead of abc the answer is marked wrong The examiners will not spare you They want you to learn word by word from the textbooks MUNNA Oh Bhaisaheb This is scary I don t think I want to go to the th class now but I will still complete my day s homework so that I get no punishment in class BHAIYA Just today we were asked to write a short essay on the topic of in four pages And imagine can something be written on four pages and still be short It s all so mixed up MUNNA thinking aloud Thank God it was time for school or else the scolding would have gone on and on SCENE The results were out once again and it so happened that Munna passed and Bhaiya failed again Bhaiya was really upset Munna was also sad seeing his brother so unhappy Bhaiya now becomes gentler with Munna Munna became naughtier because of this and studied even less than before MUNNA talking aloud Ah I am lucky I can pass easily I need not study so hard Now I can play games with my friends and fly kites But I should still be careful that Bhaiya does not see me flying kites One day a kite is flying slowly downwards Munna starts running in order to grab it Suddenly he comes face to face with Bhaiya BHAIYA catching hold of Munna s hand ’ Aren't you ashamed to be playing kites all day long Don't you realise that now you are in the eighth class and are not studying in a lower class If you think that I am just one class ahead of you and I can't say anything you are wrong I am five years older than you are and will always be Understanding doesn’t come only from reading books Look at Ma and Baba Ma has never gone to school and Baba has only passed fifth class MUNNA Really haiya Is that true BHAIYA Yes There are a thousand things that they know more than you or me And even if we have studied the wisdom of the whole world Ma and Baba will always have the right to explain to us and correct us Now what would you do if I were to fall sick today MUNNA I don't know Bhaiya I would tell Baba and he would rush to the hostel BHAIYA Aha I had expected this answer Now Baba would not get upset He would first try to find out what was wrong and then he would call a doctor Baba would know exactly what to do They have more experience than us MUNNA with tears in his eyes Bhaiya I am sorry what you say is true Bhaiya hugs Munna lovingly BHAIYA I also like to play and fly kites But if I also play then how can I watch out for you You are my responsibility MUNNA I love you Bhaiya Rip Van Winkle Many years ago at the foothills of the Kaatskill Kat-skill mountains was a little village In the village lived a simple good-natured fellow named Rip Van Winkle He was a kind neighbour ready to help anyone Everyone in the village liked him The children of the village shouted with joy whenever they saw him because he played with them he taught them to fly kites and shoot marbles and told them long stories The only problem with Rip was that he was very lazy He did no work on his own farm and just idled away his time His fences were falling to pieces His cow was going astray Weeds grew on his farm Rip's constant companion was his dog named Wolf To avoid work he would walk away into the forest with his dog One day Rip just walked on and on and reached the highest part of the mountains It was late in the afternoon when he reached there Tired after his long climb he lay down and began daydreaming It was soon evening and he realised it would be night by the time he reached his village Suddenly he heard a voice calling out Rip Van Winkle Rip Van Winkle He looked around and saw a short old man with thick hair and a grizzled beard walking towards him with a barrel He made signs to help him carry the barrel Rip hurried to help the stranger who caught his hand tightly Together they reached a place where there were some more odd looking men playing ninepins They were all dressed the same way and all of them had beards of various shapes and colours Even though they were playing a game their faces were serious and there was silence The only sound was the noise of the balls which echoed in the mountains like thunder As Rip and his companion reached them they stopped playing and stared at Rip with a fixed gaze Rip was really frightened His companion emptied the contents of the barrel into glasses and made Rip drink it Rip obeyed as he was trembling with fear Since he was thirsty he drank a few more glasses and slowly fell into a deep sleep On waking up he found that he was at the place where he had first met the old man He rubbed his eyes it was a bright sunny morning Surely I have not slept here all night thought Rip He looked around for Wolf but he was nowhere Rip whistled for him Wolf Wolf he then shouted No dog was to be seen Where has this dog gone he muttered to himself He began to descend the mountain to go back to his village As he neared the village he met a number of people but he didn't know any of them The villagers also stared at him equally surprised Who is this man said one I've never seen him before said another look at his long white beard and his wrinkled face On hearing this Rip stroked his chin and to his astonishment he found his beard had grown a foot long and it was all white An old woman walked up to him and looked at his face for a moment Then she exclaimed It is Rip Van Winkle Welcome home again old neighbour Where have you been these twenty long years Class Discussion In the class discussion Jane you hardly said a word We all aired our opinions but from you we barely heard You sat and stared in silence surrounded by the chatter Now tell me Jane and please be plain is there anything the matter Jane looked up and then she spoke Her voice was clear and low There are many people in this world Who are rather quiet you know In the Indian Council of Child Welfare started these National Bravery Awards Brave children are awarded cash prizes free school education and a certificate from the Prime Minister of India They ride on an elephant in the Republic Day parade Harsh Srivastava a year old boy and his year old sister rescued a child from the attack of a raging bull Yumnan Jayadeo Singh years old jumped into the flooded river and saved a three year-old from drowning The act of bravery was recognised because he saved the life of an infant The Talkative Barber Long long ago a Sultan whose name was Shahriar ruled over a large kingdom His queen was a good storyteller Each night she would tell a story to the king She narrated ancient Persian and Arabic folk stories In the city of Cashgar lived a barber who was a great talker Once the Sultan called the barber to shave his head The barber started talking non-stop instead of shaving him The Sultan got angry When are you going to stop talking and begin to do your work The Barber replied You do me an injury by calling me a chatterer For everyone says I am very quiet I have six brothers whom you might call chatterers Their names are Bacbone buk-bon Bakbarea buk-buria Bakbac buk-buk Alcouz ul-kooz Alnaschee ul-nashi and Schacabac sha- ka-bak One is humpbacked one is toothless one is half blind one is quite blind one is deaf and the other has a defect in his speech and they are all great talkers but I am the youngest of my family and I am very quiet and sparing with words Give him three pieces of gold the Sultan cried losing all patience and send him away I will not be shaved today My Master cried the Barber it was not I who came to seek you it was you who ordered me to come So I will not quit your house till I have shaved you He then began narrating another story which lasted half an hour Stop making your fine speeches and let me go quickly I have an affair of the greatest importance I have to go out at noon said the Sultan When he saw that the Sultan was really angry with him the Barber said O Master do not be angry I will begin to shave you Saying this he washed the Sultan’s head and began to shave But he had not touched him even four times with the razor when he stopped and said My Master you are acting hastily in this matter Go on shaving me speak no more ordered the Sultan Be patient said the barber perhaps you have not considered well what you were going to do I wish you would tell me what this matter of great importance is all about and then I will give you my opinion on it Finish shaving at once the Sultan exclaimed But instead of doing this the Barber left the Sultan half- shaved to go and see what time it was My patience is exhausted the Sultan cried Be calm my Master and you shall be shaved in a moment said the Barber and saying this he continued shaving the Sultan But while he was doing this he could not help talking If you could inform me what this important affair is I would give more advice which you might find useful he said The Sultan was completely fed up by now and decided to satisfy the barber He told him that he was giving a feast to some friends at noon which was why he was in a hurry to leave When the barber heard the Sultan mention a feast he exclaimed That reminds me Yesterday I invited four or five friends to come to my house today But I had quite forgotten it and have not made any preparations for them The Sultan who was at the mercy of the Barber was ready to do anything to be rid of him Be quick and finish your work the Sultan replied and you shall have all the food that has been prepared for me today Please show me the food so that I may judge if it is enough for my five friends I have enough food for you the Sultan exclaimed But he ordered that all the food prepared for his feast be brought in The Barber looked over the food and said This is very good but I shall want some fruit for the dessert also The Sultan in desperation since his head was half shaved ordered that the fruits should also be brought in The Barber left off shaving the Sultan to examine each dish separately This took up half an hour The Sultan stamped his feet impatiently but the Barber did not hurry At length however he again took up the razor but after a few minutes of work stopped suddenly and cried I never knew that you were so generous Topsy-turvy Land The people walk upon their heads The sea is made of sand The children go to school by night In Topsy-turvy Land The front-door step is at the back You're walking when you stand You wear your hat upon your feet In Topsy-turvy Land And buses on the sea you'll meet While pleasure boats are planned To travel up and down the streets Of Topsy-turvy Land You pay for what you never get I think it must be grand For when you go you're coming back In Topsy-turvy Land Gulliver's Travels On the th of June we discovered land Our captain sent a dozen men with vessels for water if any could be found When we came to land we saw no river or spring nor any inhabitants I went on to explore The country was barren and rocky I turned back to join the crew only to see them getting into the boat and rowing for life to get to the ship Before I could reach them I observed a huge creature walking after them in the sea as fast as he could The water of the ocean reached only till his knees However the monster was unable to overtake the speeding boat I turned back quickly and climbed up a steep hill with fields of barley on either side and the corn rising upto forty feet There was a fence to pass from one field to the other It was impossible for me to climb because every step was six feet high I was trying to find a gap in the hedge when I discovered one of the inhabitants in the next field walking towards the fence He was of the same size as the creature chasing the boat I was struck with utmost fear and astonishment and ran to hide myself He called in a voice much louder than a trumpet It sounded like thunder Seven monsters like him came towards the field ready to reap the corn They carried a reaping hook which was very big When one of the reapers approached where I lay hidden I screamed as loud as I could The creature stopped reaping Picked me up between his thumb and forefinger and brought me close to his eyes sixty feet above the ground He looked at me with curiosity and blew my hair aside to get a better view of my face He called his friends and gently placed me on the ground They all sat on the ground to take a good look at me I walked slowly backward and forward pulled off my hat and made a low bow towards the farmers I tried to speak to them loudly in several languages Each time I did so the farmer who picked me up held his ear very close to me but in vain The farmer took me to his house and placed me at some distance on the dining table which was thirty feet high from the floor Dinner was brought for the farmer in a dish which was ten feet in diameter The farmer's wife crumbled some bread and placed it before me In the middle of the dinner I heard a noise behind me It was the purring of a cat that was ten times larger than an ox The farmer's wife was stroking him Then entered the farmer's one year-old son in the arms of a lady On seeing me the child grabbed me from the table and put my head into his mouth I shouted so loudly that the baby dropped me I would have broken my neck if the mother had not held her apron under me Later she put me on her own bed and covered me with a clean white handkerchief I slept dreaming of my home my wife and my children Nobody's Friend She had some sweets that she wouldn’t share She had a book that she wouldn’t lend She wouldn’t let anyone play with her doll She’s nobody’s friend He had some toffee and ate every bit He had a tricycle he wouldn’t lend He never let anyone play with his train He’s nobody’s friend But I’ll share all of my sweets with you My ball and my books and my games I will lend Here’s half my apple and half my cake I’m your friend Once a lion lay fast asleep in a forest Some mice were playing hide and seek near him One mouse got trapped under the lion’s paw The lion woke up laughed loudly and let the mouse go After some days the mouse heard the lion’s roar He saw that the lion lay in great pain as he was tied with many ropes The mouse used his sharp teeth and cut the rope ‘‘You are a true friend ’’ said the lion The Little Bully Once upon a time not so very long ago there was a small boy called Hari Although he wasn’t very big he was strong and he loved to tease all the boys and girls who went to school with him What he loved to do most was to pinch He could make a big bruise appear in half a second Another trick he played was pricking people with a pin So you can guess how all the children hated him They tried pinching him back but that was no good because he could always pinch harder They didn't like telling their teacher because that was telling tales It so happened that the class went for a picnic to the seaside for a whole day All the children were most excited On that day the sun shone bright and all the children were wild with excitement They crowded into the train and sat down but nobody wanted to sit next to Hari because he always pinched When they arrived at the seaside out jumped all the children with a shout of joy Down to the sands they raced hand in hand but nobody took Hari’s hand Nobody went near him Hari was angry He went to a sandy corner near a rocky pool and sat down by himself He took out his lunch and looked at it It was a good lunch There were two hard-boiled eggs six jam sandwiches three pieces of bread and butter a ginger cake and a bar of chocolate He would eat it all by himself He wouldn't offer anything to anyone Just as he was beginning on the eggs he heard a hoarse voice near him Good morning I am so pleased to meet a boy like you Hari turned around and stared in fright Whatever do you think he saw Hari saw a monster crab walking sideways out of the pool His eyes were on the ends of short stalks and he looked most queer He held out his front claw to Hari Hari put out his hand to shake the crab’s claw but to his surprise and anger the crab opened his pincers and nipped his hand so hard that the little boy yelled Ah here is my good cousin said the crab pleasantly and to Hari’s horror he saw a large sandy lobster crawling heavily out of the pool Before the little boy could stop him the lobster took his hand in his great pincer-like claws and pinched it so hard that Hari yelled in pain Then he stared at the pool in surprise for out came sandy-coloured shrimps and prawns more crabs and another large lobster and they pricked Hari till he was soon black and blue with their pinching Don’t you like it said all the creatures in surprise Why we were told you would love to see us because you were a champion pincher and pricker yourself Come come join in the fun Hari leapt to his feet crying loudly His lunch rolled into the pool and when the crabs and lobsters saw it they ran to it and began to feast eagerly Hari saw that they had forgotten him for a time and he turned and ran for his life tears streaming down his cheeks They only did to me what I keep doing to the other children he thought But how it hurt And how I hated those crabs and lobsters I suppose the other children hate me too Well I jolly well shan’t pinch or prick any more Sing a Song of People Sing a song of people Walking fast or slow People in the city Up and down they go People on the side walk People on the bus People passing passing In back and front of us People on the subway Underneath the ground People riding taxis Round and round and round People with their hats on Going in the doors People with umbrellas When it rains and pours People in tall buildings And in stores below Riding elevators Up and down they go People walking singly People in a crowd People saying nothing People talking loud People laughing smiling Grumpy people too People who just hurry And never look at you Sing a song of people Who like to come and go Sing of city people You see but never know Day by Day I Float My Paper Boats Day by day I float my paper boats one by one down the running stream In big black letters I write my name on them and the name of the village where I live I hope that someone in some strange land will find them and know who I am I load my little boats with shiuli flowers from our garden And hope that these blooms of the dawn will be carried safely to land in the night Malu Bhalu High up in an icy lair Lived a little polar bear Snow white snow bright was her mane Malu Bhalu was her name Very soon our Malu Bhalu Learnt the things her parents knew Fish to catch big and small Malu was a clever girl Malu said to her mother one day Ma I’m going far out to play I want to see the things that lie There beyond the big blue sky A little patience child said Mum In the summer when next it comes Summer Patience What a test Malu simply could not rest First things first Malu’s mum Clasped Malu tight within her arms Then she said her voice was firm Now my dear you’ll have to swim But Ma said Malu what do I know How will I I’ve never swum before Don’t worry dear said Malu’s mother Do as I do that’s all she advised her She had no choice no other way Malu had to swim that day Tight she gripped her mother’s hand Into the water splash to land Brave mother’s brave young daughter Doubt and fear she left behind her Malu swam with all her might It didn't matter wrong or right But swimming came so naturally Her mother knew this and all could see Fearless was Malu this she knew Not just brave but special too Who will be Ningthou Long long ago in the land of Kangleipak in Manipur there lived a Ningthou and a Leima They were loved dearly by the people The Ningthou and Leima on their part never stopped thinking about their meeyam their people Our meeyam should be happy they said The people were not the only ones who loved their Ningthou and Leima The birds and animals too loved them The Ningthou and Leima always said Everybody in Kangleipak should live in peace Not only the people but the birds animals and trees Their beloved king and queen had three sons Sanajaoba Sanayaima and Sanatomba Twelve years later a daughter was born She was named Sanatombi She was a lovely child soft and beautiful inside She was loved by one and all The years went by and the children grew up well And then one day the Ningthou called all his ministers and said It is now time to decide the Tunggi Ningthou the future king The ministers were shocked But O Ningthou what is there to decide Sanajaoba your eldest son will be our future king Well the Ningthou replied That’s how it happened in the old days The eldest son always became the king But times have changed So let us select a king who is most worthy of becoming a king We will have a contest to select the future king the Leima said And so in the land of Kangleipak there was a contest a horse race Whoever reached the khongnang the banyan tree first would be declared Tunggi Ningthou But then a strange thing happened Sanajaoba Sanayaima and Sanatomba all three of them finished the race together They were expert riders and all three reached the finish line at the same time There was great excitement Look at them the people shouted Shagol thauba nupa such fine horsemen But one question remained Who would be the Tunggi Ningthou The Ningthou and Leima turned to their sons The Ningthou said Sanajaoba Sanayaima and Sanatomba you have proved that you are fine horsemen Do something different each one of you so that we can decide who will be Tunggi Ningthou Suddenly Sanajaoba mounted his horse and held his spear straight in front of him He looked around There was a hush among people What is Sanajaoba the eldest going to do They thought to themselves Sanajaoba then looked at the huge khongnang standing majestically in the distance He pierced the tree and jumped his horse right through it Bravo Bravo The people shouted Thouro Thouro And then they fell silent Now it was the turn of the second son Sanayaima What would he do Sanayaima too looked at the khongnang as he mounted his horse Then he too rode towards the tree harder and harder The people watched in silence afraid even to breathe When he was really close he urged his horse to jump Higher and higher the horse rose until horse and rider jumped clear over the huge tree and landed on the other side in a wonderful motion The people breathed in relief and said in unison Phajei Phajei Wonderful Wonderful And now it was the turn of the youngest son Sanatomba He too rode his horse towards the khongnang and before anybody knew what was happening uprooted it Triumphantly he carried the tree to the Ningthou and Leima and laid it at their feet Shouts of Thouro Thouro Phajei Phajei filled the mountains The people grew restless Why were the Ningthou and the Leima taking so long to make the announcement They craned their necks to see what was happening The Ningthou and Leima were watching Sanatombi their five year-old daughter She looked sad and lonely She stared at the khongnang which lay dead by the throne Birds flapped worriedly around searching for their homes in the tree Sanatombi walked up to the khongnang and whispered The khongnang is dead It was hurt by the spear and now it is dead The people were all attention The Ningthou stood up He looked at the three boys He looked at the little girl He turned to the people If anybody is worthy of becoming the ruler he said it is little Sanatombi It was she who told us to look at the soul of the khongnang Sanatombi feels the pain of others She feels the pain of the people the animals the birds the trees I declare Sanatombi the future Leima of Kangleipak the Ningthou said A silence fell Everyone turned to look at the little girl their future queen There she stood all of five like a small khongnang with birds flying all around her They sat on her shoulders and on her head She held out her hands full of grain and the birds flapped about her pecking at the food A Leima is one who doesn’t hurt anybody in the kingdom HOW THE DOG FOUND HIMSELF A NEW MASTER Before you read You may know that the dog and the wolf are closely related You may also know something about how over the centuries human beings have domesticated and tamed wild animals Here is a story about how the dog became a tame animal How the Dog Found Himself a New Master DOGS were once their own masters and lived the way wolves do in freedom until a dog was born who was ill pleased with this way of life He was sick and tired of wandering about by himself looking for food and being frightened of those who were stronger than he He thought it over and decided that the best thing for him to do was to become the servant of one who was stronger than anyone on earth and he set out to find such a master He walked and he walked and he met a kinsman of his a big wolf who was as strong as he was fierce Where are you going Dog the Wolf asked I am looking for someone to take up service with Would you like to be my master Wolf I don’t see why not the Wolf said and this agreed upon the two of them went on together They walked and they walked and all of a sudden the Wolf lifted his nose sniffed darted quickly off the path and into the bushes and crept deeper into the forest The Dog was much surprised What’s come over you master he asked What has frightened you so Can’t you see There’s a Bear out there and he might eat up both of us you and me Seeing that the Bear was stronger than the Wolf the Dog decided to take up service with him and he left the Wolf and asked the Bear to be his master The Bear agreed to this readily and said Let us go and find a herd of cows I’ll kill a cow and then we can both eat our fill They walked on and soon saw a herd of cows but just as they were about to come up to it they were stopped by a terrible noise The cows were mooing loudly and running in a panic in all directions The Bear looked out from behind a tree and then he too ran hastily deeper into the forest kinsman old fashioned word for a relative fierce violent frightening take up service with become the servant of darted moved quickly suddenly HOW THE DOG FOUND HIMSELF A NEW MASTER Now why did I have to come here said he to the Dog It is the Lion who rules the forest in these parts The Lion Who’s he Don’t you know He is the strongest beast on earth Well then I’ll say goodbye to you Bear I want a master who is stronger than anyone on earth And off the Dog went to ask the Lion to be his master The Lion agreed to it and the Dog stayed with him and served him for a long long time It was a good life and he had nothing to complain of for there was no stronger beast in the forest than the Lion and no one dared touch the Dog or offend him in any way But one day the two of them were walking side by side along a path that ran amid bare cliffs when all of a sudden the Lion stopped He gave a great roar and struck the ground angrily with his paw with such force that a hole formed there Then he began to back away very quietly What is it Master is anything wrong asked the Dog surprised I smell a man coming this way the Lion said We’d better run for it or we’ll be in trouble Oh well then I’ll say goodbye to you Lion I want a master who is stronger than anyone on earth dared to be brave enough to do something cliff a steep high rock often at the edge of the sea HOW THE DOG FOUND HIMSELF A NEW MASTER And off the Dog went to join the man and he stayed with him and served him faithfully This happened long long ago but to this day the dog is man’s most loyal servant and knows no other master Taro’s Reward A YOUNG woodcutter named Taro lived with his mother and father on a lonely hillside All day long he chopped wood in the forest Though he worked very hard he earned very little money This made him sad for he was a thoughtful son and wanted to give his old parents everything they needed One evening when Taro and his parents were sitting in a corner of their hut a strong wind began to blow It whistled through the cracks of the hut and everyone felt very cold Suddenly Taro’s father said I wish I had a cup of saké it would warm me and do my old heart good This made Taro sadder than ever for the heart-warming drink called saké was very expensive How do I earn more money he asked himself How do I get a little saké for my poor old father He decided to work harder than before Next morning Taro jumped out of bed earlier than usual and made his way to the forest He chopped and cut chopped and cut as the sun climbed and soon he was so warm that he had to take off his jacket His mouth was dry and his face was wet with sweat My poor old father he thought If only he was as warm as I And with that he began to chop even faster thinking of the extra money he must earn to buy the saké to warm the old man’s bones Then suddenly Taro stopped chopping What was that sound he heard Could it be could it possibly be rushing water Taro could not remember ever seeing or hearing a rushing stream in that part of the forest He was thirsty The axe dropped out of his hands and he ran in the direction of the sound Taro saw a beautiful little waterfall hidden behind a rock Kneeling at a place where the water flowed quietly he cupped a little in his hands and put it to his lips Was it water Or was it saké He tasted it again and again and always it was the delicious saké instead of cold water Taro quickly filled the pitcher he had with him and hurried home The old man was delighted with the saké After only one swallow of the liquid he stopped shivering and did a little dance in the middle of the floor That afternoon a neighbour stopped by for a visit Taro’s father politely offered her a cup of the saké The lady drank it greedily and thanked the old man Then Taro told her the story of the magic water fall Thanking them for the delicious drink she left in a hurry By nightfall she had spread the story throughout the whole village That evening there was a long procession of visitors to the woodcutter’s house Each man heard the story of the waterfall and took a sip of the saké In less than an hour the pitcher was empty Next morning Taro started for work even earlier than the morning before He carried with him the largest pitcher he owned for he intended first of all to go to the waterfall When he reached it he found to his great surprise all his neighbours there They were carrying pitchers jars buckets anything they could find to hold the magic saké Then one villager knelt and held his mouth under the waterfall to drink He drank again and again and then shouted angrily Water Nothing but water Others also tried but there was no saké only cold water greedily as if desiring more and more intended planned We have been tricked shouted the villagers Where is Taro Let us drown him in this waterfall But Taro had been wise enough to slip behind a rock when he saw how things were going He was nowhere to be found Muttering their anger and disappointment the villagers left the place one by one Taro came out from his hiding place Was it true he wondered Was the saké a dream Once more he caught a little liquid in his hand and put it to his lips It was the same fine saké To the thoughtful son the magic waterfall gave the delicious saké To everyone else it gave only cold water The story of Taro and his magic waterfall reached the Emperor of Japan He sent for the young woodcutter and rewarded him with twenty pieces of gold for having been so good and kind Then he named the most beautiful fountain in the city after Taro This said the Emperor was to encourage all children to honour and obey their parents a Japanese story retold Do you know these words If you don’t find out their meanings bandage crutch cripple honour misfortune system Look at the pictures in this unit and guess in what way this school may be different from other schools A Different Kind of School I HAD heard a great deal about Miss Beam’s school but not till last week did the chance come to visit it When I arrived there was no one in sight but a girl of about twelve Her eyes were covered with a bandage and she was being led carefully between the flower-beds by a little boy who was about four years younger She stopped and it looked like she asked him who had come He seemed to be describing me to her Then they passed on Miss Beam was all that I had expected middle-aged full of authority yet kindly and understanding Her hair was beginning to turn grey and she had the kind of plump figure that is likely to be comforting to a homesick child I asked her some questions about her teaching methods which I had heard were simple No more than is needed to help them to learn how to do things simple spelling adding subtracting multiplying and writing The rest is done by reading to them and by interesting talks during which they have to sit still and keep their hands quiet There are practically no other lessons The real aim of this school is not so much to teach thought as to teach thoughtfulness kindness to others and being responsible citizens Look out of the window a minute will you I went to the window which overlooked a large garden and a playground at the back What do you see Miss Beam asked kindly friendly plump stout pleasantly fat responsible aware of their duties I see some very beautiful grounds I said and a lot of jolly children It pains me though to see that they are not all so healthy and active-looking When I came in I saw one poor little girl being led about She has some trouble with her eyes Now I can see two more with the same difficulty And there’s a girl with a crutch watching the others at play She seems to be a hopeless cripple Miss Beam laughed Oh no she said She’s not really lame This is only her lame day The others are not blind either It is only their blind day I must have looked very surprised for she laughed again This is a very important part of our system To make our children appreciate and understand misfortune we make them share in misfortune too Each term every child has one blind day one lame day one deaf day one injured day and one dumb day During the blind day their eyes are bandaged absolutely and they are on their honour not to peep The bandage is put on overnight so they wake blind This means that they need help with everything Other children are given the duty of helping them and leading them about They all learn so much this way both the blind and the helpers at play playing hopeless unfortunate without hope lame day day on which she acts as if she was lame misfortune unfortunate condition bad luck their eyes are bandaged they are blindfolded are on their honour have promised There is no misery about it Miss Beam continued Everyone is very kind and it is really something of a game Before the day is over though even the most thoughtless child realises what misfortune is The blind day is of course really the worst but some of the children tell me that the dumb day is the most dif ficult We cannot bandage the children’s mouths so they really have to exercise their will-power Come into the garden and see for yourself how the children feel about it Miss Beam led me to one of the bandaged girls Here’s a gentleman come to talk to you said Miss Beam and left us Don’t you ever peep I asked the girl Oh no she exclaimed That would be cheating But I had no idea it was so awful to be blind You can’t see a thing You feel you are going to be hit by something every moment It’s such a relief just to sit down Are your helpers kind to you I asked Fairly But they are not as careful as I shall be when it is my turn Those that have been blind already are the best helpers It’s perfectly ghastly not to see I wish you’d try Shall I lead you anywhere I asked misery difficulty unpleasantness thoughtless careless come to talk who has come to talk awful bad Oh yes she said Let’s go for a little walk Only you must tell me about things I shall be so glad when today is over The other bad days can’t be half as bad as this Having a leg tied up and hopping about on a crutch is almost fun I guess Having an arm tied up is a bit more troublesome because you can’t eat without help and things like that I don’t think I’ll mind being deaf for a day at least not much But being blind is so frightening My head aches all the time just from worrying that I’ll get hurt Where are we now In the playground I said We’re walking towards the house Miss Beam is walking up and down the garden with a tall girl What is the girl wearing my little friend asked A blue cotton skirt and a pink blouse I think it’s Millie she said What colour is her hair Very light I said Yes that’s Millie She’s the Head Girl There’s an old man tying up roses I said Yes that’s Peter He’s the gardener He’s hundreds of years old And here comes a girl with curly red hair She’s on crutches That’s Anita she said And so we walked on Gradually I discovered that I was ten times more thoughtful than I ever thought I could be I also realised that if I had to describe people and things to someone else it made them more interesting to me When I finally had to leave I told Miss Beam that I was very sorry to go Ah she replied then there is something in my system after all WHO I AM Before you read In this lesson we look at what we are like and how each of us is different We are all interesting people in different ways and we are all good at different things As you read this think about what you are like and what you enjoy doing Who I Am Part I MANY VOICES RADHA My favourite activity is climbing trees Just outside our house there is a mango tree which I love to go up Its branches spread out so it is simple to climb up the tree and I can sit comfortably in the fork of two branches My mother tells me it is not sensible for girls to climb trees but one afternoon she climbed up too and both of us sat there talking and eating raw mangoes When I am high up in the tree I feel like I can rule the whole world NASIR When I grow up I want to become a seed collector We have cotton fields in our village and every year my father spends a lot of money on buying new seeds to grow our cotton plants My grandfather told me that many years ago he could collect the seeds from his own plants which could be sown to grow new plants during the next year But today that doesn't work so we have to spend money to buy new seeds every single year I want to find out why that is so I want to learn how to preserve seeds so that we can use them again and not spend money every year ROHIT If I had a huge amount of money I would travel and travel I want to see the mountains of New Zealand because they looked beautiful in a magazine picture I wish I could sail down the Amazon river in South America on a raft I want to live on the beaches of Lakshadweep and dive down to see coral I suppose I should go to the Konark temple in Orissa or the old city in Beijing in China and the Pyramids in Egypt too but what I actually enjoy is seeing nature more than old buildings SERBJIT What makes me very angry is when people don’t believe me when I am telling the truth For example if I tell my teacher that I couldn’t do my homework because Ravi borrowed my book and forgot to return it Or I tell my parents that it wasn’t me but my little brother who started the fight Or if I tell my teacher that I really did study for the test even if I have got bad marks They all look at me as if they think I am telling lies The look on their faces really angers me Sometimes I have to look down at my shoes and count to ten so that I do not show that I am angry DOLMA When I grow up I am going to be the Prime Minister of India People always laugh when I say that but I am sure that I will do it Everyone in my class asks me what to do when they have a problem and my teacher always trusts me when something needs to be done in school I want to make things better for everyone I want us to have good hospitals and roads and schools I want to make sure that there are many good scientists in India who will invent cures for diseases and send a spaceship to Mars PETER My favourite day is the second Sunday of every month On this day our whole family always goes to the cinema hall to see a film My father gets the tickets in advance and all of us my grandmother my parents my two brothers and I take the bus there In the interval my father buys us peanuts and I love to sit in the darkness of the hall eating and watching the film Afterwards we always stop to eat ice cream Everyone is in a good mood and we all feel very lucky that we are such a happy family Part MULTIPLE INTELLIGENCES Each one of us is skilled or good at something But do you know that dif fer ent people are intelligent in different ways VISUAL INTELLIGENCE VERBAL INTELLIGENCE MATHEMATICAL INTELLIGENCE You like to think in pictures create mental images to remember things You enjoy looking at maps charts pictures videos and movies You like to use words and language You speak well and think in words rather than pictures You like to use reason logic and numbers Always curious about the world around you ask lots of questions and like to do experiments You are good at puzzle building reading writing understanding maps charts and graphs a sense of direction sketching painting fixing or making objects understanding pictures You can become a navigator sculptor artist inventor architect interior designer mechanic engineer You are good at speaking writing story telling listening explaining teaching using humour understanding the meaning of words remembering information convincing someone of your point of view You can become a poet journalist writer teacher lawyer politician translator You are good at problem solving solving puzzles experimenting questioning and wondering about natural events doing mathematics calculations working with geometric shapes You can become a scientist engineer computer programmer researcher accountant mathematician Being good at your studies is one kind of intelligence but there are many others too Read the descriptions to find out which of the following types of intelligence best describes you Remember that there will probably be more than one type of intelligence which fits you BODILY INTELLIGENCE MUSICAL INTELLIGENCE INTERPERSONAL INTELLIGENCE You like to control your body movements and handle objects skillfully You have a good sense of balance and can catch or hit a ball well and like to dance You like to move around while learning You like to play and enjoy music You think about sounds rhythms and patterns You immediately respond to music either appreciating or criticising what you hear You are good at dancing physical coordination sports crafts acting miming using your hands to create or build You express emotions through your body You are good at singing whistling playing musical instruments recognising tunes composing music remembering melodies understanding the structure and rhythm of music You like to understand others You try to see things from other people’s point of view in order to understand how they think or feel You are a good organiser and manage to get other people to cooperate and work as a team You can become a You can become a dancer athlete musician disc jockey physical education singer composer teacher actor firefighter craftsperson You are good at seeing things from others’ view listening understanding other people’s moods and feelings solving problems cooperating with groups noticing people’s moods communicating building trust You can become a counsellor salesperson politician business person teacher Before you read Has your best friend ever done something you thought was wrong What did you do then Did you keep quiet or did you tell your friend what you thought Read this story about two friends who had to decide what was more important friendship and enmity or a sense of what is right and what is wrong Fair Play Part I JUMMAN Shaikh and Algu Chowdhry were good friends So strong was their bond of friendship that when either of them went away from the village the other looked after his family Both were greatly respected in the village Jumman had an old aunt who had some property This she transferred to him on the understanding that she would stay with him and he would look after her The arrangement worked well for a couple of years Then the situation changed Jumman and his family were tired of the old relative Jumman became as indifferent to her as his wife who grudged even the little food that the old lady wanted every day She swallowed these insults along with her food for a few months But patience has its limits became indifferent lost interest in or did not care for grudged gave unwillingly felt angry unhappy about giving swallowed these insults tolerated them One day she spoke to Jumman My son it is now obvious that I am not wanted in your house Kindly give me a monthly allowance so that I can set up a separate kitchen My wife knows best how to run the house Be patient said Jumman shamelessly This made his aunt very angry and she decided to take her case to the village panchayat For many days the old lady was seen talking to the villagers explaining her case and seeking their support Some sympathised with her others laughed at her and a few others advised her to make it up with her nephew and his wife At last she came to Algu Chowdhry and spoke to him You know Chachi Jumman is my best friend How can I go against him Algu said But is it right my son to keep mum and not say what you consider just and fair pleaded the old lady Come to the panchayat and speak the truth she said Algu didn’t reply but her words kept ringing in his ears Part The panchayat was held the same evening under an old banyan tree Jumman stood up and said The voice of the Panch is the voice of God Let my aunt nominate the head Panch I will abide by her decision The Panch knows neither friend nor enemy What do you say to Algu Chowdhry the old lady announced Fine replied Jumman hiding his joy over this unexpected piece of luck Chachi you are aware of my friendship with Jumman said Algu I know that replied the aunt but I also know that you will not kill your conscience for the sake of friendship God lives in the heart of the Panch and his voice is the voice of God And the old lady explained her case Jumman said Algu you and I are old friends Your aunt is as dear to me as you Now I am a Panch You and your aunt are equal before me What have you to say in your defence Three years ago began Jumman my aunt transferred her property to me I promised to support her as long as she lived I have done all I could There have been a couple of quarrels between my wife and her but I can’t stop it Now my aunt is claiming a monthly allowance from me This is not possible That’s all I have to say Jumman was cross-examined by Algu and others Then Algu announced We have gone into the matter carefully In our opinion Jumman must pay his aunt a monthly allowance or else the property goes back to her Now the two friends were seldom seen together The bond of friendship between them was broken In fact Jumman was Algu's enemy and wanted his revenge seldom rarely Part Days passed and as ill luck would have it Algu Chowdhry found himself in a tight spot One of his fine pair of bullocks died and he sold the other to Samjhu Sahu a cart driver of the village The understanding was that Sahu would pay the price of the bullock in a month’s time It so happened that the bullock died within a month Several months after the bullock’s death Algu reminded Sahu of the money he hadn’t yet paid Sahu got very annoyed I can’t pay you a penny for the wretched beast you sold me He brought us nothing but ruin I have a bullock Use it for a month and then return it to me No money for the dead bullock he said angrily Algu decided to refer the case to the panchayat For a second time in a few months preparations for holding the panchayat were made and both the parties started meeting people seeking their support tight spot difficult situation The panchayat was held under the old banyan tree Algu stood up and said The voice of the Panch is the voice of God Let Sahu nominate the head Panch I will abide by his decision Sahu saw his chance and proposed the name of Jumman Algu’s heart sank and he turned pale But what could he do The moment Jumman became head Panch he realised his responsibility as judge and the dignity of his office Could he seated in that high place have his revenge now He thought and thought No he must not allow his personal feelings to come in the way of speaking the truth and doing justice Both Algu and Sahu stated their cases They were cross-examined and the case was considered deeply Then Jumman stood up and announced It is our opinion that Sahu should pay Algu the price of the bullock When Sahu bought the bullock it suffered from no disability or disease The death of the bullock was unfortunate but Algu cannot be blamed for it Algu could not contain his feelings He stood up and said loudly over and over again Victory to the panchayat This is justice God lives in the voice of the Panch Soon after Jumman came to Algu embraced him and said Since the last panchayat I had become your enemy Today I realised what it meant to be a Panch A Panch has no friend nor enemy He knows only justice Let no one deviate from the path of justice and truth for friendship or enmity Algu embraced his friend and wept And his tears washed away all the dirt of misunderstanding between them deviate move away from leave HONEYSUCKLE Before you read Can you name some desert areas in India and the world Who do you think lives in such areas Desert Animals DESERTS are the driest places on earth and sometimes go for months or even years without rain But even the desert animals cannot survive without water or for long periods in the scorching sun so they have had to find different ways of coping with the harsh conditions For example gerbils spend the hottest part of the day in cool underground burrows And strange insects called darkling beetles are experts at catching drops of moisture on their legs then lifting them into the air until the drops trickle down into their mouths Not all deserts are endless seas of rolling sand dunes Some are rocky or pebbly and dotted with small bushes while others are sprinkled with colourful flowers during the spring There are more than different kinds of snakes around the world ranging from just fifteen centimetres long to more than eleven metres Most snakes are quite harmless but there are a few that are so poisonous they can kill a human being with just one bite Most snakes lay eggs but there are many which give birth to their young In the dry rocky deserts of America lives a rather evil looking snake with a very bad reputation Its frightening rattle can be heard as far as thirty metres away and it can strike with lightning speed But the rattlesnake or rattler as it is sometimes called prefers to avoid people if it possibly can It holds its tail upright and rattles the end whenever it is disturbed in the hope that the intruder will go away However if its warnings are ignored and it feels threatened it will coil ready to bite But the rattler itself cannot hear the noise its own tail makes Like most snakes it hears things through vibrations in the ground If a person walks nearby the snake can feel the movement But if the same person were to shout it would not hear a thing Rattlesnakes are very common and widespread animals living right across the American continent from Canada to Argentina They feed on a variety of prey including mice voles rats chipmunks and many other small animals Rattlesnakes kill their prey with venom Like all snakes they swallow the unfortunate animals whole Few snakes have to eat more than once a week and some such as the larger pythons can survive for a year or more without eating voles small plant-eating rodents chipmunks small ground squirrels having light and dark stripes Mongooses like to hunt together but they always keep a lookout for dangerous predators nearby Poking their noses into holes overturning rocks with their paws and scratching the ground with their sharp claws banded mongooses are very amusing animals to watch A common sight in many parts of Africa they travel in groups of about twenty to forage for beetles millipedes and other small creatures They like to hunt together keeping in touch whenever they go out of sight behind rocks or bushes by twittering and calling Always on the lookout for danger hawks eagles and large snakes they warn one another with a special alarm call if they spot anything suspicious predator an animal naturally preying on others amusing interesting enjoyable forage search for food Mongooses are famous for being able to kill snakes without getting hurt themselves Their reactions are so fast that they can dodge each time the snake strikes They continually make a nuisance of themselves until after a while when the snake gets tired they quickly dive in for the kill All the female mongooses have their kitten at about the same time They are raised by the whole group in a den made inside an old termite mount or hollow log When most of the adults are out looking for food one or two males stay behind to stand guard until the others return for the night Another animal which lives in the desert is the camel Camels were first domesticated by people many thousands of years ago In the wild camels usually live in small groups of up to thirty animals Camels have long shaggy winter coats to keep warm and shorter tidier coats in the summer to keep cool A thirsty camel can drink as much as thirty gallons of water that’s about five hundred full glasses in just ten minutes Normally however it gets all the moisture it needs from desert plants and can survive for up to ten months without drinking any water at all dodge move quickly to avoid its enemy There are two different kinds of camel One known as the Dromedary has only a single hump the other is called a Bactrian camel and has two humps The humps help the animal to survive in the desert by acting as storage containers But they don’t store water as many people wrongly believe they are full of fat This fat nourishes the camels when food is scarce If they have nothing to eat for several days their humps shrink as the fat is used up There are many other ways in which camels are adapted to desert life Their mouths are so tough that even the sharp thorn cannot pierce through Have you seen a mongoose You have read in Lesson that a mongoose can fight with and kill a snake Look at the pictures and read the lines given along with them The Banyan Tree The fight of the cobra and the mongoose is a classic drama often seen in India and the outcome is largely the same The mongoose is not immune to the venomous bite but is faster and quicker in motion than the snake The cobra assumes a posture of defence and attempts to reach the animal by a sweeping strike but the quick-moving mongoose jumps out of reach and comes at the snake from another direction before the snake can get into striking position again This constant movement tires and discourages the snake and the mongoose is finally able to leap in close and bury its teeth in the snake’s neck usually severing the joints of its vertebrae You must have seen a banyan tree This is a story about what the author saw as a young boy when he was sitting in an old banyan tree in his grandfather’s house Part I THOUGH the house and grounds belonged to my grandparents the magnificent old banyan tree was mine chiefly because Grandfather at sixty-five could no longer climb it Its spreading branches which hung to the ground and took root again forming a number of twisting passages gave me endless pleasure Among them were squirrels and snails and butterflies The tree was older than the house older than Grandfather as old as Dehra Dun itself I could hide myself in its branches behind thick green leaves and spy on the world below My first friend was a small grey squirrel Arching his back and sniffing into the air he seemed at first to resent my invasion of his privacy But when he found that I did not arm myself with catapult or air gun he became friendly and when I started bringing him pieces of cake and biscuit he grew quite bold and was soon taking morsels from hand Before long he was delving into my pockets and helping himself to whatever he could find He was a very young squirrel and his friends and relatives probably thought him foolish and headstrong for trusting a human In the spring when the banyan tree was full of small red figs birds of all kinds would flock into its branches the red-bottomed bulbul cheerful and greedy parrots myna and crows squabbling with one another During the season the banyan tree was the noisiest place in the garden Halfway up the tree I had built a crude platform where I would spend the afternoons when it was not too hot I could read there propping myself up against the tree with a cushion from the living room Treasure Island Huckleberry Finn and The Story of Dr Dolittle were some of the books that made up my banyan tree library When I did not feel like reading I could look down through the leaves at the world below And on one particular afternoon I had a grandstand view of that classic of the Indian wilds a fight between a mongoose and a cobra Part The warm breezes of approaching summer had sent everyone including the gardener into the house I was feeling drowsy myself wondering if I should go to the pond and have a swim with Ramu and the buffaloes when I saw a huge black cobra gliding out of a clump of cactus At the same time a mongoose emerged from the bushes and went straight for the cobra In a clearing beneath the banyan tree in bright sunshine they came face to face The cobra knew only too well that the grey mongoose three feet long was a superb fighter clever and aggressive But the cobra too was a skilful and experienced fighter He could move swiftly and strike with the speed of light and the sacs behind his long sharp fangs were full of deadly poison It was to be a battle of champions grandstand view a clear view from the best position a grandstand is a large covered space with rows of seats for people to watch sports gliding moving smoothly clump group of bushes or trees emerged came out clearing an open space in a forest where there are no trees sacs a part of an animal or plant shaped like a bag fangs long sharp teeth of a snake or dog Hissing defiance his forked tongue darting in and out the cobra raised three of his six feet off the ground and spread his broad spectacled hood The mongoose bushed his tail The long hair on his spine stood up Though the combatants were unaware of my presence in the tree they were soon made aware of the arrival of two other spectators One was a myna the other a jungle crow They had seen these preparations for battle and had settled on the cactus to watch the outcome Had they been content only to watch all would have been well with both of them defiance rebellion resistance dart move quickly suddenly combatants participants in a fight spectators those who watch a show a game outcome result THE BANYAN TREE The cobra stood on the defensive swaying slowly from side to side trying to mesmerise the mongoose into making a false move But the mongoose knew the power of his opponent’s glassy unwinking eyes and refused to meet them Instead he fixed his gaze at a point just below the cobra’s hood and opened the attack Moving forward quickly until he was just within the cobra’s reach the mongoose made a pretended move to one side Immediately the cobra struck His great hood came down so swiftly that I thought nothing could save the mongoose But the little fellow jumped neatly to one side and darted in as swiftly as the cobra biting the snake on the back and darting away again out of reach At the same moment that the cobra struck the crow and the myna hurled themselves at him only to collide heavily in mid-air Shrieking insults at each other they returned to the cactus plant A few drops of blood glistened on the cobra’s back The cobra struck and missed Again the mongoose sprang aside jumped in and bit Again the birds dived at the snake bumped into each other instead and returned shrieking to the safety of the cactus mesmerise here magically persuade a false move an unwise action glistened shone The third round followed the same course as the first but with one dramatic difference The crow and the myna still determined to take part in the proceedings dived at the cobra but this time they missed each other as well as their mark The myna flew on and reached its perch but the crow tried to pull up in mid-air and turn back In the second that it took the bird to do this the cobra whipped his head back and struck with great force his snout thudding against the crow’s body I saw the bird flung nearly twenty feet across the garden It fluttered about for a while then lay still The myna remained on the cactus plant and when the snake and the mongoose returned to the fight very wisely decided not to inter fere again The cobra was weakening and the mongoose walking fearlessly up to it raised himself on his short legs and with a lightning snap had the big snake by the snout The cobra writhed and lashed about in a frightening manner and even coiled itself about the mongoose but to no avail The little fellow hung grimly on until the snake had ceased to struggle He then smelt along its quivering length gripped it round the hood and dragged it into the bushes The myna dropped cautiously to the ground hopped about peered into the bushes from a safe distance and then with a shrill cry of congratulation flew away The Shepherd’s Treasure IN a village in Iran there once lived a shepherd He was very poor He did not have even a small cottage of his own He had never been to school or learnt to read and write for there were very few schools in those days Though poor and uneducated this shepherd was very wise He understood people’s sorrows and troubles and helped them face their problems with courage and common sense Many people came to him for advice Soon he became famous for his wisdom and friendly nature The king of that country heard about him and thought of meeting him Disguised as a shepherd and riding on a mule one day the king came to the cave where the wise shepherd lived As soon as the shepherd saw the traveller coming towards the cave he rose to welcome him He took the tired traveller inside the cave gave him water to drink and a share of his own meagre meal The king rested for the night in the cave and was greatly impressed by the shepherd’s hospitality and wise conversation The shepherd was able to make out that his visitor was none other than the king The king made the wise shepherd governor of a small district Other governors became jealous of the new governor and called him dishonest Though still tired the king decided to depart the next morning He said Many thanks for your kindness to a poor traveller I have a long way to go Permit me to leave Looking straight into the eyes of his guest the shepherd replied Thank you Your Majesty for paying me the compliment of a visit The king was astonished as well as pleased He is indeed very wise he thought to himself I need people like him to work for me And the king appointed this humble shepherd the governor of a small district Although he rose to power and dignity the shepherd remained as humble as ever People loved and honoured him for his wisdom sympathy and goodness He was kind and just to one and all His fame as a fair and wise governor soon spread throughout the country Now the governors of other provinces grew terribly jealous of him and began to talk to the king against him They said He is very dishonest and keeps for himself part of the money that he collects as tax from the people Why did he always carry with him they added an iron chest Perhaps he carried in it the treasure that he had secretly collected After all they said mockingly he was an ordinary shepherd and could behave no better The new governor was called to the palace He was ordered to explain why he always carried an iron chest The chest contained no gold or silver At first the king did not pay attention to these reports but how long could he ignore these governors and their endless stories about the shepherd One thing was certain the king discovered The new governor did carry an iron chest with him all the time So one day the new governor was summoned to the palace He came riding on his camel and to everyone’s delight the famous iron chest was there fastened securely behind him on the camel’s back Now the king was angry He thundered Why do you always carry that iron chest with you What does it contain The governor smiled He asked his servant to bring in the chest How eagerly the people standing around waited for the shepherd to be found out But how great was their astonishment and even of the king himself when the chest was opened No gold or silver or jewels but an old blanket was all that came out Holding it up proudly the shepherd said This my dear master is my only treasure I always carry it with me But why do you carry such an ordinary blanket with you Surely you are the governor of a district the king asked To which the shepherd replied with quiet dignity This blanket is my oldest friend It will still protect me if at any time Your Majesty should wish to take away my new cloaks How pleased the king was and how embarrassed the jealous governors became to hear the wise man’s reply Now they knew that the shepherd was indeed the humblest and the wisest man in the land The king made him the governor of a much bigger district that very day an Iranian folktale Tansen was the only child of his parents Naughty but talented he imitated the calls of birds and animals perfectly Once he tried to frighten a group of travellers by roaring like a tiger YOU may have heard the name of Tansen the greatest musician our country has produced A singer called Mukandan Misra and his wife lived in Behat near Gwalior Tansen was their only child It is said that he was a naughty child Often he ran away to play in the forest and soon learnt to imitate perfectly the calls of birds and animals A famous singer named Swami Haridas was once travelling through the forest with his disciples T ired the group settled down to rest in a shady grove Tansen saw them Strangers in the forest he said to himself It will be fun to frighten them He hid behind a tree and roared like a tiger The little group of travellers scattered in fear but Swami Haridas called them together Don’t be afraid he said Tigers are not always dangerous Let us look for this one Suddenly one of his men saw a small boy hiding behind a tree There are no tigers here master he said Only this naughty boy Tansen learnt music from Swami Haridas for eleven years He stayed with a holy man called Mohammad Ghaus He married Hussaini one of the ladies in the court of Rani Mrignaini Swami Haridas did not punish him He went to Tansen’s father and said Your son is very naughty He is also very talented I think I can make him a good singer Tansen was ten years old when he went away with Swami Haridas He lived with him for eleven years learning music and became a great singer At about this time his parents died Mukandan Misra’s dying wish was that Tansen should visit Mohammad Ghaus of Gwalior Mohammad Ghaus was a holy man Mukandan Misra had long been devoted to him and often visited him While living in Gwalior with Mohammed Ghaus Tansen was often taken to the court of Rani Mrignaini who was a great musician herself There he met and married one of the ladies of the court Her name was Hussaini Hussaini also became Swami Haridas’s disciple Tansen and Hussaini had five children who were all very musical Tansen had by this time become very famous Sometimes he sang before Emperor Akbar who was so impressed by him that he insisted Tansen should join his court Tansen became a favourite in Akbar’s court Once he was asked to sing Raga Deepak Tansen asked his daughter and her friend to sing Raga Megh after Raga Deepak to counteract the effect of the latter Tansen went to Akbar’s court in and soon became a great favourite of the Emperor Akbar would call upon Tansen to sing at any time during the day or night Quite often he would just walk into Tansen’s house to hear him practise He also gave him many presents Some of the courtiers became jealous of Tansen We shall never be able to rest till Tansen is ruined they declared One of the courtiers Shaukat Mian had a bright idea Let us make him sing Raga Deepak he said How will that help us asked another man If Raga Deepak is properly sung it makes the air so hot that the singer is burnt to ashes Tansen is a very good singer If he sings Raga Deepak he will die and we will be rid of him Shaukat Mian went to Akbar and said We don’t think Tansen is a great singer Let us test him Tell him to sing Raga Deepak Only the greatest singers can sing it properly Of course he can sing it Tansen can sing anything Akbar said Tansen was afraid but could not disobey the king Very well my lord he said but give me time to prepare myself Tansen went home He had never been more downcast and unhappy I can sing the Raga he told his wife but the heat it gives off will not only set the lamps alight it will also burn me to ashes Then he had an idea If someone sings Raga Megh at the same time and sings it properly it will bring rain Perhaps our daughter Saraswati and her friend Rupvati could do it he said He taught the two girls to sing Raga Megh They practised night and day for two weeks Tansen told them You must wait till the lamps start burning and then you start singing Both Ragas were sung according to plan Akbar punished Tansen’s enemies Tansen died in The legend goes that on the appointed day the whole town assembled to hear Tansen sing Raga Deepak When he began to sing the air became warm Soon people in the audience were bathed in perspiration The leaves on the trees dried up and fell to the ground As the music continued birds fell dead because of the heat and the water in the rivers began to boil People cried out in terror as flames shot up out of nowhere and lighted the lamps At once Saraswati and Rupvati began to sing Raga Megh The sky clouded over and the rain came down Tansen was saved The story goes that he was very ill after this and Akbar was sorry that he had caused him so much suffering He punished Tansen’s enemies When Tansen got well the entire city rejoiced Tansen remained Akbar’s court singer till when he died He composed several new ragas Tansen’s tomb is in Gwalior It is a place of pilgrimage for musicians The Friendly Mongoose A farmer his wife and their small child lived in a village There was also a baby mongoose in the house who they believed would be their son’s companion and friend in future One day the farmer and his wife went out leaving the child alone with the mongoose ONCE a farmer and his wife lived in a village with their small son They loved him very much We must have a pet the farmer said to his wife one day When our son grows up he will need a companion This pet will be our son’s companion His wife liked the idea One evening the farmer brought with him a tiny mongoose It’s a baby mongoose said his wife but will soon be fully grown He will be a friend to our son Both the baby and the mongoose grew In five or six months the mongoose had grown to its full size a lovely animal with two shining black eyes and a bushy tail The farmer’s son was still a baby in the cradle sleeping and crying alternately One day the farmer’s wife wanted to go to the market She fed the baby and rocked him to sleep in his little cradle Picking up the basket she said to her husband I’m off to the bazar The baby is sleeping Keep an eye on him Frankly I don’t like to leave the child alone with the mongoose You needn’t be afraid said the farmer The mongoose is a friendly animal It’s as sweet as our baby and they are the best of friends you know The wife went away and the farmer having nothing to do in the house decided to go out and take a look at his fields not far away He ran into some friends on the way back and didn’t return for quite some time The farmer’s wife returned home from the market carrying a heavy basket She found the mongoose at the entrance of the house with blood on his face and paws She jumped to the conclusion that it was her son’s blood and the mongoose was the guilty one The farmer’s wife finished her shopping and came back home with a basketful of groceries She saw the mongoose sitting outside as if waiting for her On seeing her he ran to welcome her as was customary The farmer’s wife took one look at the mongoose and screamed Blood she cried The face and paws of the mongoose were smeared with blood You wicked animal You have killed my baby she screamed hysterically She was blind with rage and with all her strength brought down the heavy basket full of groceries on the blood-smeared mongoose and ran inside to the child’s cradle The baby was fast asleep But on the floor lay a black snake torn and bleeding In a flash she realised what had happened She ran out looking for the mongoose Oh You saved my child You killed the snake What have I done she cried touching the mongoose who lay dead and still unaware of her sobbing The farmer’s wife who had acted hastily and rashly stared long at the dead mongoose Then she heard the baby crying Wiping her tears she went in to feed him a story from The Panchatantra THERE once lived a bird and her two new-born babies in a forest They had a nest in a tall shady tree and there the mother bird took care of her little ones day and night One day there was a big storm There was thunder lightning and rain and the wind blew down many trees The tall tree in which the birds lived also came down A big heavy branch hit the nest and killed the bird Fortunately for the baby birds the strong wind blew them away to the other side of the forest One of them came down near a cave where a gang of robbers lived The other landed outside a rishi’s ashram a little distance away Days passed and the baby birds became big birds One day the king of the country came to the forest to hunt He saw a deer and rode after it It ran deep into the forest followed by the king Soon the king lost his way and didn’t know where he was He rode on for a long time till he came to the other side of the forest Very tired by now he got off his horse and sat down under a tree that stood near a cave Suddenly he heard a voice cry out Quick Hurry up There’s someone under the tree Come and take his jewels and his horse Hurry or else he’ll slip away The king was amazed He looked up and saw a big brown bird on the tree under which he was sitting He also heard faint noises issuing from the cave He quickly got on to his horse and rode away as fast as he could The king was amazed to hear a similar voice again He came to know the birds’ true story He met the rishi who explained the behaviour of each bird Soon he came to a clearing which looked like an ashram It was the rishi’s ashram The king tied his horse to a tree and sat down in its shade Suddenly he heard a gentle voice announce Welcome to the ashram Sir Please go inside and rest The rishi will be back soon There’s some cold water in the pot Please make yourself comfortable The king looked up and saw a big brown bird in the tree He was amazed This one looks like the other bird outside the cave he said to himself loudly You are right Sir answered the bird He is my brother but he has made friends with robbers He now talks as they do He doesn’t talk to me any more Just then the rishi entered the ashram Welcome Sir he said to the king Please come inside and make yourself at home You look tired Rest for a while Then you can share my food The king told the rishi the story of the two birds and how each had behaved so differently though they looked so alike The forest is full of surprises he said The holy man smiled and said After all one is known by the company one keeps That bird has always heard the talk of robbers He imitates them and talks about robbing people This one has repeated what he has always heard He welcomes people to the ashram Now come inside and rest I’ll tell you more about this place and these birds It’s Christmas Eve and closing time for shops Ray’s old-clock shop is still open Two shoppers call at this late hour CHRISTMAS Eve had arrived As last-minute shoppers were going home a thick white sheet of snow lay over Salt Lake City USA Yet the lights were still burning in the old-clock shop as Ray its old deaf owner worked on a clock he had sold that day Having finished his work Ray stood up and was on his way to the back room when a cold rush of air from the front door hit the back of his neck He turned to meet a last-minute shopper but his old wise eyes told him that this was not a shopper He saw two men one in his twenties the other closer to fifty The younger man remained at the door The older man approached the counter with no sign of friendliness in his eyes Ray was able to hide his growing fear as he slowly pushed a notepad and a pencil across the counter He smiled at the unfriendly face then pointed to his ears and shook his head from side to side A quick look of surprise changed the man’s face as he studied the notepad then turned and said something to his friend Ray used the chance to look closely at the man paying attention to the shape of a gun and a restless hand in the man’s right coat-pocket Anger boiled within him but it was kept down by an inner voice that said Be still He wrote on the notepad May I help you For the first time the older man looked directly at Ray and smiled A cruel mocking smile They both understood why he was there why his friend remained at the door They looked like men who were down on their luck and were now ready to try something they would later be sorry about Ray knows that his visitors are in need He accepts an old watch in exchange for a good sum of money The message of peace and goodwill spreads everywhere as the old clocks chime Merry Christmas The clocks ticked on Ray calmly wrote another message Have you come to pick up a clock or watch Then he pointed to the loan board filled with hanging clocks and pocket watches He was not a pawnbroker but at the same time couldn’t say No to the needy people who placed their old watches or clocks before him for anything they could get He loaned more than he should They would be there when the owners wanted them back at the same price he had paid with no interest Then the older man seemed to feel a little easier took out his hand from his pocket and quickly looked at the watch on his wrist How much will you give me for this the man wrote Ray noticed a little shame in the grey eyes looking at him The watch was nothing special and yet had great powers It was something to exchange a way out of a bad situation Knowing that great need had brought the man to his shop in the first place Ray asked How much do you need for it The reply came back on the notepad Whatever it’s worth Ray reached into his cash-box pulled out a fifty-dollar note and passed it into the man’s hand As they shook hands Ray looked into the man’s eyes they seemed to say Thank you They both knew the watch wasn’t worth that much Before turning to leave the man wrote I will be back to pick it up as soon as I can Merry Christmas The little story ended on the half hour with the clocks striking all together The timepieces which had been looking on silently all the while rang out the time with such feeling that even Ray thought he could hear them Their sweet musical message was filled with hope The timeless message of Peace on earth goodwill towards all was felt by the three men who stood in the old-clock shop Food Where Does it Come From What did you eat at home today Find out what your friend ate today Did you eat the same kind of food yesterday and today We all eat different kinds of food at different times isn’t it FOOD VARIETY Activity Ask your friends in the school about the items they would be eating during a day See if you can also get this information from friends staying in different states of India List all the items in your notebook as given in Table for as many friends as possible Table What do we eat Name of the student friend Food items eaten in a day There seems to be so much variety in the food that we eat What are these food items made of Think about rice cooked at home We take raw rice and boil it in water Just two materials or ingredients are needed to prepare a dish of boiled rice On the other hand some food items are made with many ingredients To prepare vegetable curry we need different kinds of vegetables salt spices oil and so on Activity Choose some of the items you listed in Table and try to find out what ingredients are used to prepare these by discussing with your friends and elders at home List them in Table Some examples are given here Add some more items to this list Table Food items and their ingredients Food Item Ingredients Roti chapati Atta water Dal Pulses water salt oil ghee spices What do we find Do we find some ingredients common for different food items Discuss in class So where do these ingredients come from FOOD MATERIALS AND SOURCES It may be easy for us to guess the sources of some of the ingredients that we listed in Table Fruits and vegetables for instance a Where do they come from Plants of course What are the sources of rice or wheat You may have seen paddy or wheat fields with rows and rows of plants which give us these grains And then there are food items like milk eggs and meat which come from animals b Activity a Plant sources Sources of food ingredients Let us take the food items listed earlier and try to find out where they come from the ingredients and their sources Some examples are shown in Table Fill in the blanks in Table and add more examples to this list b Animal sources Table Ingredients used to prepare food items and their sources Food Item Ingredients Idli Rice Sources Plant Urad dal Salt Water Chicken curry a Chicken Animal Spices Oil ghee Plants Animals Water Kheer b Source of food grains a Paddy field b Wheat grains transported Milk Animal Rice Plant Sugar What do we conclude from Activity Plants are the sources of food ingredients like grains cereals vegetables and fruits Animals provide us with milk meat products and eggs Cows goats and buffaloes are some common animals which give us milk Milk and milk products like butter cream cheese and curd are used all over the world Can you name some other animals which give us milk Flower Fruit Stem Leaf Node Internode { Bud PLANT PARTS AND ANIMAL PRODUCTS AS FOOD Plants are one source of our food Which parts of a plant We eat many leafy vegetables We eat fruits of some plants Sometimes roots sometimes stems and even flowers Have you ever eaten pumpkin flowers dipped in rice paste and fried Try it Some plants have two or more edible eatable parts Seeds of mustard plants give us oil and the leaves are used as a vegetable Can you think of the different parts of a banana plant that are used as food Think of more examples where two or more parts of a single plant are used as food Paheli wants to know if any of our food comes from sources other than plants and animals Shoot system Primary root Root Secondary system root Different edible parts of plants Table Plant parts as food Food item with plant as the major source Brinjal curry Ingredients source Plant part which gives us the ingredient Brinjal Fruit Chilli as spice any other Fruit Oil from groundnut mustard soybean any other plant Seed FOOD WHERE DOES IT COME FROM Do not try to taste unknown plants around you to see if they are edible Some plants could be poisonous Activity From all the food items you have listed in Table choose those items whose ingredients are obtained from plants Which part of a plant Identify these and list the food items and plant parts as shown in Table Chana gram and its sprouts Activity Take some dry seeds of moong or chana Put a small quantity of seeds in a container filled with water and leave this aside for a day Next day drain the water completely and leave the seeds in the vessel Wrap them with a piece of wet cloth and set aside The following day do you observe any changes in the seeds Beehive Whole moong and its sprouts A small white structure may have grown out of the seeds If so the seeds have sprouted and If not wash the seeds in water drain the water and leave them aside for another day covered with a wet cloth The next day see if the seeds have sprouted After washing these sprouted seeds you can eat them They can also be boiled Add some spices and get a tasty snack to eat Do you know where honey comes from or how it is produced Have you seen a beehive where so many bees keep buzzing about Bees collect nectar sweet juices from flowers convert it into honey and store it in their hive Flowers and their nectar may be available only for a part of the year So bees store this nectar for their use all through the year When we find such a beehive we collect the food stored by the bees as honey WHAT DO ANIMALS EAT Do you have cattle or a pet that you take care of A dog cat buffalo or a goat You will then surely be aware of the food the animal eats What about other animals Have you ever observed what a squirrel pigeon lizard or a small insect may be eating as their food Activity Several animals are listed in Table For some of them the type of food they eat is also given Fill in the blanks in the table Table Animals and their Food Name of the animal Have a look again at Table and group the animals entered here as follows Place animals which eat only plants or plant products in Group These are called herbivores There are some animals which eat other animals Place these in Group These animals are called carnivores Do you find some animals which eat both plants and animals Place them in Group These are called omnivores Prepare a table as in Table and enter these separately in the three columns as shown Table Herbivores Carnivores Omnivores Food the animal eats Buf falo Grass oilcake hay grains Cat Small animals birds milk Cow Lion D og Rat Lion Tiger Spider Paheli wants to know where you would place human beings while filling Table House lizard Cow Human beings Butter fly Crow Others FOOD WHERE DOES IT COME FROM We know that there are many amongst us who do not get sufficient food We need to find ways by which more food can be produced in the country That will not be enough we will need to find ways to ensure that this food is made easily available to each one of us Ingredients Edible Nectar Sprouted seeds Herbivore Carnivore Omnivore Components of Food In Chapter we made lists of the food items that we eat We also identified food items eaten in different parts of India and marked these on its map A meal could consist of chapati dal and brinjal curry Another may be rice sambar and a vegetable preparation of lady’s finger bhindi Yet another meal could be appam fish curry and vegetables Our meals usually have at least one item made of some kind of grain Other items could be a dal or a dish of meat and vegetables It may also include items like curd butter milk and pickles Some examples of meals from different regions are given in Table Select food items you depicted on the map in Chapter Add some more meals to this list and enter these in Table Sometimes we may not really have all this variety in our meals If we are travelling we may eat whatever is available on the way It may not be possible for some of us to eat such a variety of items most of the time There must be some reason though why meals usually consist of such a distribution Do you think that our body needs different kinds of food for some special purpose Activity WHAT DO DIFFERENT FOOD ITEMS CONTAIN We know that each dish is usually made up of one or more ingredients which we get from plants or animals These ingredients contain some components that are needed by our body These components are called nutrients The major nutrients in our food are named carbohydrates proteins fats vitamins and minerals In addition food contains dietary fibres and water which are also needed by our body Table Some common meals of different regions states Item of dal meat Region State Item of grain Punjab Rajma Sarson saag Makki corn roti Kidney beans Mustard leaf curry Andhra Pradesh Rice Tuar dal and rasam charu Vegetables Kunduru dondakai Others Curd ghee Butter milk ghee pickle aavakai Do all foods contain all these nutrients With some simple methods we can test whether cooked food or a raw ingredient contains one or more of these nutrients The tests for presence of carbohydrates proteins and fats are simpler to do as compared to the tests for other nutrients Let us do these tests and record all our observations in Table For carrying out these tests you will need solutions of iodine copper sulphate and caustic soda You will also need a few test tubes and a dropper Try these tests on cooked food items as well as raw materials Table shows you a way to record the observations from these tests Some food items are given in this table You can conduct the tests either with these or any other available food items Do these tests carefully and do not try to eat or taste any chemicals If the required solutions are not available in ready made form your teacher can prepare them as given in the box Let us begin by testing different food items to see if they contain carbohydrates There are many types of carbohydrates The main carbohydrates found in our food are in the form of starch and sugars We can easily test if a food item contains starch A dilute solution of iodine can be prepared by adding a few drops of tincture iodine to a test tube half filled with water Copper sulphate solution can be prepared by dissolving gram g of copper sulphate in millilitre mL of water g of caustic soda dissolved in mL of water makes the required solution of caustic soda Activity Test for Starch Take a small quantity of a food item or a raw ingredient Put drops of dilute iodine solution on it Observe if there is any change in the colour of the food item Did it turn blue-black COMPONENTS OF FOOD A blue-black colour indicates that it contains starch Repeat this test with other food items to find out which of these contain starch Enter all your observations in Table Test for Protein test tube Shake well and let the test tube stand for a few minutes What do you see Did the contents of the test tube turn violet A violet colour indicates presence of proteins in the food item Now you can repeat this test on other food items Take a small quantity of a food item for testing If the food you want to Table Nutrients present in some test is a solid you first need to food items make a paste of it or powder it Grind or mash a small quantity Starch Protein Fat Food item of the food item Put some of this present present present in a clean test tube add drops Raw potato Yes of water to it and shake the Milk Yes test tube Now using a dropper add Groundnut Yes two drops of solution of copper ncooked sulphate and ten drops of U powdered solution of caustic soda to the rice Cooked rice Dry coconut Uncooked tuar dal powdered Cooked dal A slice of any vegetable A slice of any fruit Boiled egg white portion Testing for protein Test for Fats Take a small quantity of a food item Wrap it in a piece of paper and crush it Take care that the paper does not tear Now straighten the paper and observe it carefully Does it have an oily patch Hold the paper against light Are you able to see the light faintly through this patch An oily patch on paper shows that the food item contains fat The food items may sometimes contain a little water Therefore after you have rubbed an item on paper let the paper dry for a while If there were any water that may have come from food it would dry up after some time If no oily patch shows up after this the food item does not contain any fat What do these tests show Are fats proteins and starch present in all the food items that you tested Does a food item contain more than one nutrient Do you find any food item that does not contain any of these nutrients We tested food items for three nutrients carbohydrates proteins and fats There are also other nutrients like vitamins and minerals that are present in different food items Why do we need all these nutrients Sugarcane Papaya Wheat Melon Mango Rice Maize Bajra Some sources of carbohydrates Nuts Groundnuts Til a Meat WHAT DO VARIOUS NUTRIENTS DO FOR OUR BODY Carbohydrates mainly provide energy to our body Fats also give us energy In fact fats give much more energy as compared to the same amount of carbohydrates Foods containing fats and carbohydrates are also called ‘energy giving foods’ and Proteins are needed for the growth and repair of our body Potato Eggs Fish b Some sources of fats a plant sources and b animal sources COMPONENTS OF FOOD Gram Moong Tuar dal Beans Peas Minerals are needed by our body in small amounts Each one is essential for proper growth of body and to maintain good health Some sources of different minerals are shown in Most food items usually have more than one nutrient You may have noticed this while recording your observations in Table However in a given raw material one particular nutrient may be present in much larger quantity than in others For example rice has more carbohydrates than other nutrients Thus we say that rice is a carbohydrate rich source of food Besides these nutrients our body needs dietary fibres and water Dietary fibres are also known as roughage Roughage is mainly provided by plant products in our foods Whole grains and pulses potatoes fresh fruits and vegetables are main sources of roughage Roughage does not provide any nutrient to our body but is an essential component of our food and adds to its bulk This helps our body get rid of undigested food Papaya Soyabeans a Carrot Meat Mango Some sources of Vitamin A Wheat Rice Fish Liver Some sources of Vitamin B Eggs Paneer Guava Orange b Tomato Some sources of proteins a plant sources and b animal sources Vitamins help in protecting our body against diseases Vitamins also help in keeping our eyes bones teeth and gums healthy Vitamins are of different kinds known by different names Some of these are Vitamin A Vitamin C Vitamin D Vitamin E and K There is also a group of vitamins called Vitamin B-complex Our body needs all types of vitamins in small quantities Vitamin A keeps our skin and eyes healthy Vitamin C helps body to fight against many diseases Vitamin D helps our body to use calcium for bones and teeth Foods that are rich in different vitamins are shown in to Green Chilli Lemon Amla Some sources of Vitamin C Fish Egg Liver Some sources of Vitamin D SCIENCE Some sources of iodine Our body also prepares Vitamin D in the presence of sunlight Nowadays insufficient exposure to sunlight is causing Vitamin D deficiency in many people Ginger Some sources of phosphorous Some sources of iron COMPONENTS OF FOOD Some sources of calcium Sources of some minerals Water helps our body to absorb nutrients from food It also helps in throwing out some wastes from body as urine and sweat Normally we get most of the water that our body needs from the liquids we drink such as water milk and tea In addition we add water to most cooked foods Let’s see if there is any other source which provides water to our body Activity Take a tomato or a fruit like lemon Cut it into small pieces Do your hands get wet while doing so Carefully observe whenever vegetables and fruits are being cut peeled grated or mashed at your home Do you find any fresh vegetables or fruits that do not contain some amount of water We see that many food materials themselves contain water To some extent our body needs are met by this water Apart from this we also add water while cooking many food items think that what we need for a balanced diet would depend on the amount of physical work that we do Prepare a chart of whatever you eat over a period of a week Check whether all the nutrients mentioned are present in one or the other food items being eaten within a day or so Pulses groundnut soyabean sprouted seeds moong and Bengal gram fermented foods South Indian foods such as idlis a combination of flours missi roti thepla made from cereals and pulses banana spinach sattu jaggery available vegetables and other such foods provide many nutrients Therefore one can eat a balanced diet without expensive food materials Eating the right kind of food is not enough It should also be cooked properly so that its nutrients are not lost Are you aware that some nutrients get lost in the process of cooking and preparations Paheli wonders whether animal food also consists of these different components and do they also need a balanced diet BALANCED DIET The food we normally eat in a day is our diet For growth and maintenance of good health our diet should have all the nutrients that our body needs in right quantities Not too much of one and not too little of the other The diet should also contain a good amount of roughage and water Such a diet is called a balanced diet Do you think that people of all ages need the same type of diet Do you also If the vegetables and fruits are washed after cutting or peeling them it may result in the loss of some vitamins The skins of many vegetables and fruits contain vitamins and minerals Similarly repeated washing of rice and pulses may remove some vitamins and minerals present in them We all know that cooking improves the taste of food and makes it easier to digest At the same time cooking also results in the loss of certain nutrients Many useful proteins and considerable amounts of minerals are lost if excess water is used during cooking and is then thrown away Vitamin C gets easily destroyed by heat during cooking Would it not be sensible to include some fruits and raw vegetables in our diet Boojho thought that fats would be the best foods to eat all the time A katori bowl of fat will give much more energy than a katori of carbohydrate rich food isn’t it So he ate nothing but food rich in fats fried food like samosa and poori snacks malai rabdi and peda sweets Do you think he was right No of course not It can be very harmful for us to eat too much of fat rich foods and we may end up suffering from a condition called obesity DEFICIENCY DISEASES A person may be getting enough food to eat but sometimes the food may not contain a particular nutrient If this continues over a long period of time the person may suffer from its deficiency Deficiency of one or more nutrients can cause diseases or disorders in our body Diseases that occur due to lack of nutrients over a long period are called deficiency diseases If a person does not get enough proteins in his her food for a long time he she is likely to have stunted growth swelling of face discolouration of hair skin diseases and diarrhoea If the diet is deficient in both carbohydrates and proteins for a long period of time the growth may stop completely Such a person becomes very lean and thin and so weak that he she may not even be able to move Deficiency of different vitamins and minerals may also result in certain diseases or disorders Some of these are mentioned in Table All deficiency diseases can be prevented by taking a balanced diet In this chapter we asked ourselves the reason why widely varying food from different regions had a common distribution This distribution we find ensures that our meals have a balance of the different nutrients needed by the body COMPONENTS OF FOOD Fibre to Fabric Paheli and Boojho won the first prize in a Science Quiz competition held at their school They were very excited and decided to use the prize money to buy clothes for their parents When they saw a large variety of cloth material they got confused The shopkeeper explained that some clothes or fabrics were cotton and some were synthetic He also had woollen mufflers and shawls There were many silk sarees as well Paheli and Boojho felt very excited They touched and felt these different fabrics Finally they bought a woollen muffler and a cotton saree After their visit to the cloth shop Paheli and Boojho began to notice various fabrics in their surroundings They found that bed sheets blankets curtains tablecloths towels and dusters were made from different kinds of fabrics Even their school bags and the gunny bags were made from some kind of fabric They tried to identify these fabrics as cotton wool silk or synthetic Can you also identify some fabrics VARIETY IN FABRICS Activity Visit a nearby tailoring shop Collect cuttings of fabrics leftover after stitching Feel and touch each piece of fabric Now try to label some of the fabrics as Enlarged view cotton silk wool of a piece of fabric or synthetic after asking for help from the tailor Do you wonder what these different fabrics are made of When you look at any fabric it seems a continuous piece Now look at it closely What do you notice Select a piece of cotton fabric you labelled in Activity Now try to find a loose thread or yarn at one of the edges and pull it out If no loose yarns are visible you can gently pull one out with a pin or a needle We find that a fabric is made up of yarns arranged together What are these yarns made of FIBRE Activity Take out a yarn from a piece of cotton fabric Place this piece of yarn on the table Now press one end of the yarn with your thumb Scratch the other end of the yarn along its length with your nail as shown in Do you find that at this end the yarn splits up into thin strands You might have observed something similar when you try to thread a needle Many a time the end of the thread is separated into a few thin strands This makes it difficult to pass the thread through the eye of the needle The thin strands of thread that we see are made up of still thinner strands called fibres Fabrics are made up of yarns and yarns are further made up of fibres Where do these fibres come from The fibres of some fabrics such as cotton jute silk and wool are obtained from plants and animals These are called natural fibres Cotton and jute are examples of fibres obtained from plants Wool and silk fibres are obtained from animals Wool is obtained from the fleece of sheep or goat It is also obtained from the hair of rabbits yak and camels Silk fibre is drawn from the cocoon of silkworm For thousands of years natural fibres were the only ones available for making fabrics Boojho has seen in the museums items like the one shown here These were worn by warriors He wants to know if these are made of some kinds of fibre Splitting the yarn into thin strands Yarn split up into thin strands FIBRE TO FABRIC In the last hundred years or so fibres are also made from chemical substances which are not obtained from plant or animal sources These are called synthetic fibres Some examples of synthetic fibres are polyester nylon and acrylic SOME PLANT FIBRES Cotton Have you ever made wicks for oil lamps What do you use for making these wicks This cotton wool is also used for filling mattresses quilts or pillows Take some cotton wool pull it apart and look at its edges What do you observe The small thin strands that you see are made up of cotton fibres Where does this cotton wool come from It is grown in the fields Cotton plants are usually grown at places having black soil and warm climate Can you name some states of our country where cotton is grown The fruits of the cotton plant cotton bolls are about the size of a lemon After maturing the bolls burst open and the seeds covered with cotton fibres can be seen Have you ever seen a cotton field that is ready for picking It looks like a field covered with snow From these bolls cotton is usually picked by hand Fibres are then separated from the seeds by combing This process is called ginning of cotton Ginning was traditionally done by hand These days machines are also used for ginning Ginning of cotton Jute Jute fibre is obtained from the stem of the jute plant It is cultivated during the rainy season In India jute is mainly grown in West Bengal Bihar and Assam The jute plant is normally harvested when it is at flowering stage The stems of the harvested plants are immersed in water for a few days The stems rot and fibres are separated by hand To make fabrics all these fibres are first converted into yarns How is it done SPINNING COTTON YARN You can try making cotton yarn yourself Activity Hold some cotton wool in one hand Pinch some cotton between the thumb and forefinger of the other hand Now gently start pulling out the cotton while continuously twisting the fibres Are you able to make a yarn The process of making yarn from fibres is called spinning In this process fibres from a mass of cotton wool are drawn out and twisted This brings the fibres together to form a yarn A simple device used for spinning is a hand spindle also called takli Another hand operated device used for spinning is charkha Use of charkha was popularised by Mahatma Gandhi as part of the Independence movement encouraged people to wear A Takli clothes made of homespun yarn termed as khadi and shun imported cloth made in the mills of Britain To popularise and promote khadi the Government of India constituted a body called Khadi and Village Industries Commission in Spinning of yarn on a large scale is done with the help of spinning machines After spinning yarns are used for making fabrics YARN TO FABRIC There are many ways by which fabrics are made from yarns The two main processes are weaving and knitting Weaving In Activity you might have noticed that a fabric is made up of two sets of yarns arranged together The process of arranging two sets of yarns together to make a fabric is called weaving Let us try to weave some paper strips a and on the other as shown in b Cut both the sheets along the dotted lines and then unfold Weave the strips one by one through the cuts in the sheet of paper as shown in c d shows the pattern after weaving all the strips Knitting knitting Have you noticed how sweaters are knitted In knitting a single yarn is used to make a piece of fabric Have you ever pulled the yarn from a torn pair of socks What happens A single yarn gets pulled out continuously as the fabric gets unravelled Socks and many other clothing items are made of knitted fabrics Knitting is done by hand and also on machines Handloom In a similar manner two sets of yarn are woven to make a fabric The yarns are much thinner than our paper strips of course Weaving of fabric is done on looms The looms are either hand operated or power operated Paheli wants to know if you have seen any fabrics that are made of the fibres on the outer covering of coconut What are these fibres normally used for Weaving and knitting are used for making different kinds of fabric These fabrics are used for a variety of clothing items HISTORY OF CLOTHING MATERIAL Have you ever wondered what materials people used in ancient times for clothes It appears that in those times people used the bark and big leaves of trees or animal skins and furs to cover themselves After people began to settle in agricultural communities they learnt to weave twigs and grass into mats and baskets Vines animal fleece or hair were twisted together into long strands These were woven into fabrics The early Indians wore fabrics made out of cotton that grew in the regions near the river Ganga Flax is also a plant that gives natural fibres In ancient Egypt cotton as well as flax were cultivated near the river Nile and were used for making fabrics In those days stitching was not known People simply draped the fabrics around different parts of their body Many different ways of draping fabrics were used With the invention of the sewing needle people started stitching fabrics to make clothes Stitched clothes have gone through many variations since this invention But is it not amazing that even today saree dhoti lungi or turban is used as an un-stitched piece of fabric Just as there is a large variety in the food eaten all over our country a large variety exists also in fabrics and clothing items Fibre Spinning Yarn Knitting Weaving Fabric Cotton wool Fabric Fibre Knitting Spinning Weaving Yarn Sorting Materials into Groups OBJECTS AROUND US We have seen that our food and clothes have so much variety in them Not just food and clothes there is such a vast variety of objects everywhere We see around us a chair a bullock cart a cycle cooking utensils books clothes toys water stones and many other objects All these objects have different shapes colours and uses Look around and identify objects that are round in shape Our list may include a rubber ball a football and a glass marble If we include objects that are nearly round our list could also include objects like apples oranges and an earthen pitcher gharha Suppose we were looking for objects that are edible We might include all the items that we have listed in Tables and in Chapter We might also find that some of those round shaped objects we just listed out are also in this group Let us say we wish to make a group of objects that are made of plastics Buckets lunch boxes toys water containers pipes and many such objects may find a place in this group There are so many ways to group objects In the above examples we have grouped objects on the basis of their shape or the materials they are made from All objects around us are made of one or more materials These materials may be glass metal plastics wood cotton paper mud or soil Can you think of more examples of materials Let us collect as many objects as possible from around us Each of us could get some everyday objects from home and we could also collect some objects from the classroom or from outside the school What will we have in our collection Chalk pencil notebook rubber duster a hammer nail soap spoke of a wheel bat matchbox salt potato We can also list objects that we can think of but cannot bring to the classroom For example wall trees doors tractor road Separate all objects from this collection that are made from paper or wood This way we have divided all objects into two groups One group has the objects that are made from paper or wood while the other group has the objects that are not made of these materials Similarly we could separate the things that are used for preparing food Let us be a little more systematic List all objects collected in Table Try to identify the materials that each one is made of It would be fun to make this a large table collecting information about as many objects as possible It may seem difficult to find out the materials out of which some of these objects are made In such cases discuss with your friends teacher and parents to identify the materials Boojho wants to know whether we found some materials that were used for making more than one type of an object Column that are known to you Now try and think of everyday objects you know that are made mainly of these materials and list them in Column Table Different types of objects that are made from the same material What do we find from these tables First we grouped objects in many different ways We then found that objects around us are made of different materials At times an object is made of a single material An object could also be made of many materials And then again one material could be used for making many different objects What decides which material should be used for making any given object It seems that we need to know more about different materials PROPERTIES OF MATERIALS Have you ever wondered why a tumbler is not made with a piece of cloth Recall our experiments with pieces of cloth in Chapter and also keep in mind that we generally use a tumbler to keep a liquid Therefore would it not be silly if we were to make a tumbler out of cloth What we need for a tumbler is glass plastics metal or other such material that will hold water Similarly it would not be wise to use paper-like materials for cooking vessels Using a cloth tumbler We see then that we choose a material to make an object depending on its properties and the purpose for which the object is to be used So what are all the properties of materials that would be important for their usage Some properties are discussed here Appearance Materials usually look different from each other Wood looks very different from iron Iron appears different from copper or aluminium At the same time there may be some similarities between iron copper and aluminium that are not there in wood Activity Collect small pieces of different materials paper cardboard wood copper wire aluminium sheet chalk Do any of these appear shiny Separate the shiny materials into a group Now observe as the teacher cuts each material into two pieces and look at the freshly cut surface What do you notice Does the freshly cut surface of some of these materials appear shiny Include these objects also in the group of shiny materials Do you notice such a shine or lustre in the other materials cut them anyway as you can Repeat this in the class with as many materials as possible and make a list of those with and without lustre Instead of cutting you can rub the surface of material with sand paper to see if it has lustre Materials that have such lustre are usually metals Iron copper aluminium and gold are examples of metals Some metals often lose their shine and appear dull because of the action of air and moisture on them We therefore notice the lustre only on their freshly cut surface When you visit an ironsmith or a workshop look out for freshly cut surfaces of metal rods to see if they have lustre beakers Fill each one of them about two-thirds with water Add a small amount spoonful of sugar to the first glass salt to the second and similarly add small amounts of the other substances into the other glasses Stir the contents of each of them with a spoon Wait for a few minutes Observe what happens to the substances added to water Note your observations as shown in Table Hardness When you press different materials with your hands some of them may be hard to compress while others can be easily compressed Take a metal key and try to scratch with it the surface of a piece of wood aluminium a piece of stone a nail candle chalk any other material or object You can easily scratch some materials while some cannot be scratched so easily Materials which can be compressed or scratched easily are called soft while some other materials which are difficult to compress are called hard For example cotton or sponge is soft while iron is hard In appearance materials can have different properties like lustre hardness be rough or smooth Can you think of other properties that describe the appearance of a material Soluble or Insoluble Activity Collect samples of some solid substances such as sugar salt chalk powder sand and sawdust Take five glasses You will notice that some substances have completely disappeared or dissolved in water We say that these substances are soluble in water Other substances do not mix with water and do not disappear even after we stir for a long time These substances are insoluble in water Water plays an important role in the functioning of our body because it can dissolve a large number of substances Do liquids also dissolve in water We notice that some liquids get completely mixed with water Some others do not mix with water and form a separate layer when kept aside for some time Activity Collect samples of vinegar lemon juice mustard oil or coconut oil kerosene or any other liquid Take a glass tumbler Fill it up to half with water Add a few spoonfuls of one liquid to this and stir it well Let it stand for five minutes Observe whether the liquid mixes with water Repeat the same with other liquids as many different liquids as are available to you Write your observations in Table Table Solubility of some common liquids in water Mixes well Does not mix Liquid Vinegar Mixes well Lemon juice Mustard oil Coconut oil Kerosene Boojho suggests that we also check if the liquids that we used in Activity mix well with some liquid other than water Paheli is curious to know whether gases also dissolve in water Some gases are soluble in water whereas others are not Water usually has small quantities of some gases dissolved in it For example oxygen gas dissolved in water is very important for the survival of animals and plants that live in water Objects may float or sink in water While doing Activity you might have noticed that the insoluble solids separated out from water You may have also noticed this with some liquids in Activity Some of these materials that did not mix with water floated to the surface of water Others may have sunk to the bottom of the tumbler right We notice many examples of objects that float in water or sink Dried leaves fallen on the surface of a pond a stone that you throw into this pond few drops of honey that you let fall into a glass of water What happens to all of these Boojho would like you to give him five examples each of objects that float and those that sink in water What about testing these same materials to see if they float or sink in other liquids like oil Transparency You might have played the game of hide and seek Think of some places where you would like to hide so that you are not seen by others Why did you choose those places Would you have tried to hide behind a glass window Obviously not as your friends can see through that and spot you Can you see through all the materials Those substances or materials through which things can be seen are called transparent Glass water air and some plastics are examples of transparent materials Shopkeepers usually prefer to keep biscuits sweets and other eatables in transparent containers of glass or plastic so that buyers can easily see these items On the other hand there are some materials through which you are not able to see These materials are called opaque You cannot tell what is kept in a closed wooden box a cardboard carton or a metal container Wood cardboard and metals are examples of opaque materials Do we find that we can group all materials and objects without any confusion as either opaque or transparent Activity Looking through opaque transparent or translucent material Take a sheet of paper and look through it towards a lighted bulb Make a note of your observation Now put drops of some oil and spread it on the sheet of paper Look again towards the lighted bulb through that portion of the paper on which the oil has been spread Do you find that the bulb is more clearly visible than before But can you see clearly through the oiled paper Is everything on the other side of it visible Perhaps not The materials through which objects can be seen but not clearly are known as translucent Remember the oily patch on paper when we tested food items for presence of fats That was translucent too Can you think of some more examples of translucent materials We can therefore group materials as opaque transparent and translucent Paheli suggests covering the glass of a torch with your palm at a dark place Switch on the torch and observe the other Does torch side of the palm light pass through your palm She wants to know whether palm of your hand is opaque transparent or translucent We learnt that materials differ in their appearance and the way they mix in water or other liquids They may float or sink in water or may be transparent opaque or translucent Materials can be grouped on the basis of similarities or differences in their properties Why do we need to group materials In everyday life we often group materials for our convenience At home we usually store things in such a manner that similar objects are placed together Such an arrangement helps us to locate them easily Similarly a grocer usually keeps all type of biscuits at one corner of his shop all soaps at another while grains and pulses are stored at some other place There is another reason why we find such grouping useful Dividing materials in groups makes it convenient to study their properties and also observe any patterns in these properties We will study more about this in higher classes Hard Opaque Insoluble Rough Lustre Soluble Material Translucent Metals Transparent Separation of Substances In our daily life there are many instances when we notice a substance being separated from a mixture of materials Tea leaves are separated from the liquid with a strainer while preparing tea Butter is taken out by churning milk or curd Separating tea leaves with a strainer Grain is separated from stalks while harvesting Milk or curd is churned to separate the butter As we learned in Chapter we gin cotton to separate its seeds from the fibre Perhaps you might have eaten salted daliya or poha If you found that it had chillies in it you may have carefully taken them out before eating Suppose you are given a basket containing mangoes and guavas and asked to separate them What would you do Pick out one kind and place them in a separate container right Seems easy but what if the materials we want to separate are much smaller than mango or guava Imagine you are given a glass of sand with salt mixed in it Impossible even to think of separating salt from this mixture by picking out grains of sand by hand But why would we need to separate substances like this at all is what Paheli wants to know Activity In Column of Table are given a few processes of separation The purpose of separation and the way separated components are used is mentioned in Column and respectively However the information given in Columns and is jumbled up Can you match each process with its purpose and the way separated components are used We see that before we use a substance we need to separate harmful or non-useful substances that may be mixed with it Sometimes we separate even useful components if we need to use them separately The substances to be separated may be particles of different sizes or materials These may be in any three states of matter i e solid liquid or gas So how do we separate substances mixed together if they have so many different properties METHODS OF SEPARATION We will discuss some simple methods of separating substances that are mixed together You may come across some of these methods being used in day to day activities Handpicking Activity Handpicking stones from grain Bring a packet of food grain purchased from a shop to the classroom Now spread the grains on a sheet of paper Do you find only one kind of grain on the sheet of paper Are there pieces of stone husks broken grain and particles of any other grain in it Now remove with your hand the pieces of stone husks and other grains from it This method of handpicking can be used for separating slightly larger sized impurities like the pieces of dirt stone and husk from wheat rice or pulses The quantity of such impurities is usually not very large In such situations we find that handpicking is a convenient method of separating substances Threshing You must have seen bundles of wheat or paddy stalks lying in fields after harvesting the crop Stalks are dried in the sun before the grain is separated from them Each stalk has many grain seeds attached to it Imagine the number of grain seeds in hundreds of bundles of stalk lying in the field How does the farmer separate grain seeds from those bundles of stalks One may pluck mangoes or guavas from the trees But grain seeds are much smaller than mangoes or guavas So plucking them from their stalks would be impossible How does one separate grain seeds from their stalks The process that is used to separate grain from stalks is threshing In this process the stalks are beaten to free the grain seeds Sometimes this mixture on a plate or a newspaper Look at this mixture carefully Can the two different components be made out easily Are the sizes of particles of the two components similar Would it be possible to separate the components by handpicking Now take your mixture to an open ground and stand on a raised platform Put the mixture in a plate or sheet of paper Hold the plate or the sheet of paper containing the mixture at your shoulder height Tilt it slightly so that the mixture slides out slowly What happens Do both the components sand and sawdust or powdered leaves fall at the same place Is there a component that blows away Did the wind manage to separate the two components This method of separating components of a mixture is called winnowing Winnowing is used to separate heavier and lighter components of a mixture by wind or by blowing air Threshing husk threshing is done with the help of bullocks Machines are also used to thresh large quantities of grain Winnowing grain Activity Make a mixture of dry sand with sawdust or powdered dry leaves Keep SEPARATION OF SUBSTANCES Winnowing This method is commonly used by farmers to separate lighter husk particles from heavier seeds of grain The husk particles are carried away by the wind The seeds of grain get separated and form a heap near the platform for winnowing The separated husk is used for many purposes such as fodder for cattles Sieving Sometimes we may wish to prepare a dish with flour We need to remove impurities and bran that may be present in it What do we do We use a sieve and pour the flour into it Sieving allows the fine flour particles to pass through the holes of the sieve while the bigger impurities remain on the sieve In a flour mill impurities like husk and stones are removed from wheat before grinding it Usually a bagful of wheat is poured on a slanting sieve The sieving removes pieces of stones stalk and husk that may still remain with wheat after threshing and winnowing Sieving You may have also noticed similar sieves being used at construction sites Pebbles and stones are removed from sand by sieving to separate pebbles and stones from sand Activity Bring a sieve and a small quantity of flour from home to the class Sieve the flour to separate any impurities in it Now make a fine powder of chalk pieces and mix it with the flour Can we separate the flour and the powdered chalk by sieving Sieving is used when components of a mixture have different sizes Sedimentation Decantation and Filtration Sometimes it may not be possible to separate components of a mixture by winnowing and handpicking For example there may be lighter impurities like dust or soil particles in rice or pulses How are such impurities separated from rice or pulses before cooking Rice or pulses are usually washed before cooking When you add water to these the impurities like dust particles get separated These impurities go into water Now what will sink to the bottom of the vessel rice or dust Why Have you seen that the vessel is tilted to pour out the dirty water When the heavier component in a mixture settles after water is added to it the process is called sedimentation When the water along with the dust is removed the process is called decantation Let us find a few other mixtures that can be separated through sedimentation and decantation The same principle is used for separating a mixture of two liquids that do not mix with each other For example oil and water from their mixture can be separated by this process If a mixture of such liquids is allowed to stand for some time they form two separate layers The component that forms the top layer can then be separated by decantation Let us again consider a mixure of a solid and liquid After preparing tea what do you do to remove the tea leaves Usually we use stainer to remove tea leaves Try decantation It helps a little But do you still get a few leaves in your tea Now pour the tea through a strainer Did all the tea leaves remain in the strainer This process is called filtration Which method of separating tea leaves from prepared tea is better decantation or filtration Let us now consider the example of water that we use Do all of us at all times get safe water to drink Sometimes water supplied through taps may be muddy The water collected from ponds or rivers may also be muddy especially after rains Let us see if we can use some method of separation to remove insoluble impurities like soil from the water Activity Collect some muddy water from a pond or a river If it is not available mix some soil to water in a glass Let it stand for half an hour Observe the water carefully and note your observations Does some soil settle at the bottom of water Why What will you call this process Now slightly tilt the glass without disturbing the water Let the water from the top flow into another glass What will you call this process Is the water in the second glass still muddy or brown in colour Now filter it Did the tea strainer work Let us try filtering the water through a piece of cloth In a piece of cloth small holes or pores remain in between the woven threads These pores in a cloth can be used as a filter If the water is still muddy impurities can be separated by a filter that has even smaller pores A filter paper is one such filter that has very fine pores in it shows the steps involved in using a filter paper A filter paper folded in the form of a cone is fixed onto a funnel The mixture is then poured on the filter paper Solid particles in the mixture do not pass through it and remain on the filter Heating a beaker containing salt water Folding a filter paper to make a cone Filtration using a filter paper Fruit and vegetable juices are usually filtered before drinking to separate the seeds and solid particles of pulp The method of filtration is also used in the process of preparing cottage cheese paneer in our homes You might have seen that for making paneer a few drops of lemon juice are added to milk as it boils This gives a mixture of particles of solid paneer and a liquid The paneer is then separated by filtering the mixture through a fine cloth or a strainer Evaporation Activity Add two spoons of salt to water in another beaker and stir it well Do you see any change in the colour of water Can you see any salt in the beaker after stirring Heat the beaker containing the salt water Let the water boil away What is left in the beaker In this activity we used the process of evaporation to separate a mixture of water and salt The process of conversion of water into its vapour is called evaporation The process of evaporation takes place continuously wherever water is present Where do you think salt comes from Seawater contains many salts mixed in it One of these salts is the common salt When seawater is allowed to stand in shallow pits water gets heated by sunlight and slowly turns into water vapour through evaporation In a few days the water evaporates completely leaving behind the solid salts Common salt is then obtained from this mixture of salts by further purification Obtaining salt from seawater Use of more than one method of separation We have studied some methods for separation of substances from their mixtures Often one method is not sufficient to separate the different substances present in a mixture In such a situation we need to use more than one of these methods Activity Take a mixture of sand and salt How will we separate these We already saw that handpicking would not be a practical method for separating these Keep this mixture in a beaker and add some water to it Leave the beaker aside for some time Do you see the sand settling down at the bottom The sand can be separated by decantation or filtration What does the decanted liquid contain Do you think this water contains the salt which was there in the mixture at the beginning Now we need to separate salt and water from the decanted liquid Transfer this liquid to a kettle and close its lid Heat the kettle for some time Do you notice steam coming out from the spout of the kettle Take a metal plate with some ice on it Hold the plate just above the spout of the kettle as shown in What do you observe Let all the water in the kettle boil off When the steam comes in contact with the metal plate cooled with ice it condenses and forms liquid water The water drops that you observed falling from the plate were due to condensation of steam The process of conversion of water vapour into its liquid form is called condensation Did you ever see water drops condensed under a plate that has been used to cover a vessel containing milk that has just been boiled After all the water has evaporated what is left behind in the kettle We have thus separated salt sand and water using processes of decantation filtration evaporation and condensation Paheli faced a problem while recovering salt mixed with sand She has mixed a packet of salt in a small amount of sand She then tried the method suggested in Activity to recover the salt She found however that she could recover only a small part of the salt that she had taken What could have gone wrong Can water dissolve any amount of a substance In chapter we found that many substances dissolve in water and form a solution We say that these substances are soluble in water What will happen if we go on adding more and more of these substances to a fixed quantity of water Activity You will need a beaker or a small pan a spoon salt and water Pour half a cup of water in the beaker Add one teaspoonful of salt and stir it well until the salt dissolves completely Again add a teaspoonful of salt and stir well Go on adding salt one teaspoonful at a time and stir After adding a few spoons of salt do you find that some salt remains undissolved and settles at the bottom of the beaker If yes this means that no more salt can be dissolved in the amount of water we have taken The solution is now said to be saturated Here is a hint as to what might have gone wrong when Paheli tried to recover large quantity of salt mixed with sand Perhaps the quantity of salt was much more than that required to form a saturated solution The undissolved salt would have remained mixed with the sand and could not be recovered She could solve her problem by using a larger quantity of water Suppose she did not have sufficient quantity of water to dissolve all the salt in the mixture Is there some way that water could be made to dissolve more salt before the solution gets saturated Let us try and help Paheli out Activity Take some water in a beaker and mix salt in it until it cannot dissolve any more salt This will give you a saturated solution of salt in water Now add a small quantity of salt to this saturated solution and heat it What do you find What happens to the undissolved salt in the bottom of the beaker Does it dissolve now If yes can some more salt be dissolved in this solution by heating it Let this hot solution cool Does the salt appear to settle at the bottom of the beaker again The activity suggests that larger quantity of salt can be dissolved in water on heating SCIENCE Table Does water dissolve equal amounts of different soluble substances Let us find out Substance Activity Take two glasses and pour half a cup of water in each of them Add a teaspoon of salt to one glass and stir till the salt dissolves Go on adding salt one teaspoon at a time till the solution saturates Record the number of spoons of salt that dissolved in the water in Table Now repeat the same activity with sugar Repeat this with some other substances that are soluble in water What do you notice from Table Do you find that water dissolves different substances in different amounts Number of spoons of substance that dissolved in water Salt Sugar We have discussed a few methods of separating substances Some of the methods of separation presented in this chapter are also used in a science laboratory We also learnt that a solution is prepared by dissolving a substance in a liquid A solution is said to be saturated if it cannot dissolve more of the substance in it Changes around us What a fun would it be if you suddenly get some magical powers to change things around you What are the things you would want to change Can some of the changes be grouped together How can we group various changes It might help if we find some similarities between them CAN ALL CHANGES ALWAYS BE REVERSED Activity Take a balloon and blow it Take care that it does not burst The shape and size of the balloon have changed Now let the air escape the balloon We do not have magical powers of course But we can still change a few things around us perhaps many things Can you list a few things you can change around you with no magic involved Many changes are taking place around us on their own In the fields the crops change from time to time Sometimes leaves fall from trees change colour and dry out The flowers bloom and then wither away Are any changes happening in your body Your nails grow your hair grows you grow taller and your weight increases as you grow Did you realise earlier that so many changes are taking place around you all the time A balloon changes its size and shape on blowing air into it Activity Take a piece of paper and fold it as shown in You have changed the sheet of paper into a toy aeroplane You may have lots of fun in flying this plane Once you are tired of it unfold the paper again Activity Take the same balloon which you used in Activity Blow it to its full size and tie its mouth with a string tightly Prick it with the pointed tip of your pencil Oops It burst A toy aeroplane made by folding paper Activity Activity Take some dough and make a ball Try to roll out a roti May be you are not happy with its shape and wish to change it back into a ball of dough again Take the same piece of paper which you used in Activity Draw an aeroplane on it and cut along its outline An aeroplane cut out of paper Activity A ball of dough and a rolled out roti Now think about the three changes you observed in Activity and What do they have in common Was it possible to get the balloon back to its original shape and size Was the size of the paper same as before and after making an aeroplane Was it possible to get back the ball of dough again What do you conclude In each of the three activities is it possible to get back to the material with which we started our activity If the answer is yes it means that the changes occurring in these activities can be reversed Now let us repeat the same activities with a difference Roll out a roti from the ball of dough again and bake it on a tawa A roti Suppose you are asked the same three questions which you answered after Activity What would your answers be now We see that the changes which have occurred in the Activity and can not be reversed You use a pencil and an eraser With repeated use their shape and size change Can we reverse this change CHANGES AROUND US You must have seen a potter working on his wheel He shapes a lump of clay into a pot Can this change be reversed He then bakes the pot in an oven Now can this change be reversed Some common changes are given in Table Which of these changes do you think can be reversed We find that one way we can group changes is to see if they can be reversed Table Some common changes COULD THERE BE OTHER WAYS TO BRING A CHANGE We all have seen the tools which are used to dig the soil Have you ever seen how the iron blade in these tools is fixed to the wooden handle The iron blade of these tools has a ring in which the wooden handle is fixed Normally the ring is slightly smaller in size than the wooden handle To fix the handle the ring is heated and it becomes slightly larger in size expands Now the handle easily fits into the ring When the ring cools down it contracts and fits tightly on to the handle Tools are often heated before fixing wooden handles Such a change is also used for fixing the metal rim on a wooden wheel of a cart as shown in Again the metal rim is made slightly smaller than the wooden wheel On heating the rim expands and fits onto the wheel Cold water is then poured over the rim which contracts and fits tightly onto the wheel Paheli wants to know if you have ever seen a blacksmith making some tools How does a blacksmith change a piece of iron into different tools A piece of iron is heated till it becomes red-hot It then becomes soft and is beaten into a desired shape What change has taken place in iron on being heated Cart wheel with metal rim fixed to it When we heat water in a pan it begins to boil after some time If we continue to heat further the quantity of water in the pan begins to decrease The water changes into its vapour In Activity Chapter you have observed that water vapour gets changed into liquid water when it is cooled We all have noticed melting of ice Ice melts when it is heated What does it change into Is it possible to change this water back into ice Let us observe some more changes Activity Take a small candle and measure its length with a scale Now fix it at a suitable place and light it Let it burn for some time Now blow out the candle and measure its length again Can the change in the length of the candle be reversed If we were to take some wax in a pan and heat it can this change be reversed Burning of a candle Boojho has often noticed that road construction workers heat a black material tar for repairing a road He wants to know whether the change caused in tar by heating can be reversed Heating wax CHANGES AROUND US Repeat Activity with an incense stick Wait till it burns away completely What are the changes that occur in the incense stick The stick burns to produce some new material These are ash and some gases We cannot see these gases but can sense them due to their pleasant smell Can this change be reversed And what about the change which occurred in the matchstick you used for lighting the candle or incense stick So far we have discussed the changes occurring in a given object or its material What about the changes that occur when two substances are mixed together In Chapter we dissolved salt in water Do you think a change occured in salt or in water Is it possible to reverse this change Wait in Chapter we learnt how to separate salt from its solution in water So can we say that the change due to dissolving salt in water be reversed Paheli asks if you have ever seen curd being set A small quantity of curd is added to warm milk The milk is stirred and is set aside for a few hours at a warm place In a few hours the milk changes into curd Can this change be reversed We find that a few ways to bring about a change in a substance could be by heating it or by mixing it with some other substance We also find that some changes can be reversed while some others cannot be reversed There must be many other ways of changing things around us It is possible that some of them could be reversed Thus changes around us could be grouped as those that can be reversed or cannot be reversed In higher classes you will learn more about the ways in which changes can be made and the way these can be grouped Changes Contraction Evaporation Expansion Melting To walk through a waterlogged area you usually shorten the length of your dress by folding it Can this change be reversed You accidentally dropped your favourite toy and broke it This is a change you did not want Can this change be reversed Some changes are listed in the following table For each change write in the blank column whether the change can be reversed or not S No Change Can be reversed Yes No The sawing of a piece of wood The melting of ice candy Dissolving sugar in water The cooking of food The ripening of a mango Souring of milk A drawing sheet changes when you draw a picture on it Can you reverse this change Give examples to explain the difference between changes that can or cannot be reversed A thick coating of a paste of Plaster of Paris POP is applied over the bandage on a fractured bone It becomes hard on drying to keep the fractured bone immobilised Can the change in POP be reversed A bag of cement lying in the open gets wet due to rain during the night The next day the sun shines brightly Do you think the changes which have occurred in the cement could be reversed SUGGESTED PROJECTS AND ACTIVITIES Take a lemon a paintbrush and a piece of paper Cut the lemon and squeeze out its juice in a cup Dip the brush in the lemon juice and write a message on the paper Let the paper dry and you find that the letters of your message become invisible Now press the paper with hot iron or warm it by holding it above the flame of a candle Take care that it does not catch fire As the paper gets warm invisible letters change into dark brown colour Identify the changes that can be reversed in this process Observe preparation of dishes at your home Identify two changes that can be reversed Maintain a record for one year of the seasonal changes in vegetables clothing nature and events around you Identify the changes that can or cannot be reversed CHANGES AROUND US Getting to Know Plants Go outside and observe all the plants around you Do you see that some plants are small some very big while some are just patches of green on the soil Some have green leaves while some others have reddish ones Some have huge red flowers some have tiny blue ones while some have none We do see a variety of plants existing all around us near our homes in the school ground on the way to the school in the parks and gardens isn’t it Let us get to know the different parts of any plant This will help us understand the differences between plants of different kinds Can you label the stem branch root leaf flower and fruit of the plant shown in Colour the parts of the plant HERBS SHRUBS AND TREES Activity Parts of a plant Look closely at the stem and branches of Plants much smaller than you Plants that are about your size and Plants which are much taller than you Feel their stem and try to bend them gently to see if they are tender or hard Table Categories of plants Take care that the stem does not break Hug the tall plants to see how thick their stems are We also need to notice from where the branches grow in some plants close to the ground or higher up on the stem We will now group all the plants we observed in Table Some examples are shown You can fill the Columns and for many more plants Fill Column later after studying the section Based on these characters most plants can be classified into three categories herbs shrubs and trees An example of each is shown in Suggestion Student can work in groups of so that a minimum number of plants are harmed damaged You may also use weeds with soft stems for the activities Do you know what weeds are In crop fields lawns or in pots often some unwanted plants or weeds start growing Have you seen farmers removing these weeds from their fields Plants with green and tender stems are called herbs They are usually short and may not have many branches a Some plants develop branches near the base of stem The stem is hard but not very thick Such plants are called shrubs b Some plants are very tall and have hard and thick stem The stems have branches in the upper part much above the ground Such plants are called trees c Based on the above characteristics can you now classify the plants listed by you and complete column in Table Observe closely the stems of different plants around you Note down different structures parts borne by Paheli wonders what kind of stem the the stem Compare you money plant beanstalk gourd plants and observations with the that of grape vines have Do observe some of these your friends What do you plants How are these different from a herb find Stems bear leaves a shrub or a tree Why do you branches buds flowers think some of them need support and fruits to climb upwards Activity Plants with weak stems that cannot stand upright but spread on the ground are called creepers while those that take support and climb up are called climbers These are different from the herbs shrubs and trees Perhaps there are some plants in your school or at home that you take care of Write down the names of any two trees shrubs herbs or creepers growing in your house or school We would require a glass water red blue ink and a soft stem Pour water to fill one-third of the glass Add a few drops of red blue ink to the water Cut the base of the stem and put it in the glass as shown in Observe the set-up Does the colour appear in the stem You will find that the colour rises in the stem If this is kept for a longer period the colour appears in the veins of leaves also How do you think the colour reached there From this activity we see that the stem helps in upward movement of water The water and minerals go to leaves and other plant parts attached to the stem LEAF Observe the leaves of some plants around you and draw them in your notebook Are all the leaves of same size shape and colour How are leaves attached to the stem The part of leaf by which it is attached to the stem is called petiole The broad green part of the leaf is called lamina Can you identify these parts of the leaves in plants around you Do all the leaves have petioles Let us get to know the leaf better by taking its impression If you thought that leaves cannot sign here is an activity which will make you think again Activity Put a leaf under a white sheet of paper or a sheet in your notebook Hold it in place as shown in Hold your pencil tip sideways and rub it on the portion of the paper having the leaf below it Did you get an impression with some lines in it Are they similar to those on the leaf These lines on the leaf are called veins Do you see a prominent line in the middle of the leaf This is called the midrib The Taking an design made by impression of a leaf veins in a leaf is called the leaf venation If this design is net-like on both sides of midrib the venation is reticulate a In the leaves of grass you might have seen that the veins are parallel to one another This is parallel venation b Observe the venation in as many leaves as you can without removing them from the plant Draw the pattern and write names of some plants having reticulate and parallel venation Shall we now find out some of the functions of a leaf Activity We will require a herb two transparent polythene bags and thread Do this activity during day time on a sunny day Use a healthy well watered plant that has been growing in the sun Enclose a leafy branch of the plant in a polythene cover and tie up its mouth as shown in Tie up the mouth of another empty polythene cover and keep it also in the sun After a few hours observe the inner surface of the covers What do you see Are there any droplets of water How do you think they got there Don’t forget to remove the polythene bag after the activity Water comes out of leaves in the form of vapour by a process called transpiration Plants release a lot of water into the air through this process We will learn more about this in Chapter Why did we tie a cover around the leaves Would we have seen the water evaporate if we had not tied a polythene cover What makes the water appear on the polythene bag In Chapter we noticed water changing into different forms in some of our activities Can you think of these and name the process that makes water drops appear on the polythene cover Leaves also have another function Let us study this Activity We would require a leaf spirit a beaker test tube burner water a watch glass and iodine solution for this activity Take a leaf in a test tube and pour spirit to completely immerse the leaf Note Since the activity involves the use of spirit and heating it is advised that it is demonstrated by the teacher in the class Now place the test tube in a beaker half filled with water Heat the beaker till all the green colour from the leaf comes out into the spirit in the test tube Take out the leaf carefully and wash it in water Place it on a watch glass and pour some iodine solution over it What do you observe Compare your observations with those done in Chapter when you tested food for presence of different nutrients Does this mean that the leaf has starch in it In Chapter we saw that a slice of raw potato also shows the presence of starch Potatoes get this starch from their leaves and store it Leaves prepare their food in the presence of sunlight and a green coloured substance present in them For this they also use water and carbon dioxide This process is called photosynthesis Oxygen is given out in this process The food prepared by leaves ultimately gets stored in different parts of plant We have seen that the stem supplies leaf with water The leaf uses the water to make food The leaves also lose water through transpiration How do the stem and leaves get water That is where the roots come in Watering the plants Which part of the plant is in the soil Let us learn more about this part from the following activities Activity You would require two pots some soil khurpi for digging blade or a pair of scissors and water This activity is to be done in groups of students Select two plants of the same kind from an open ground and dig them out with roots Take care that their roots do not break Plant one of them in pot A a Cut off the roots from the other plant and plant it in pot B b Water them regularly Observe the plants after a week Are both plants healthy Both the plants are watered regularly but one is without roots isn’t it Does this activity help you understand an important function of the root Let us do an activity to study another function of root Activity We would require seeds of gram and maize cotton wool katori bowl and some water Take two katoris bowl Place some wet cotton in them Put or seeds of gram in one and maize in the other Keep the cotton wet by sprinkling water every day until the sprouts have grown into young plants After a week try to separate the young plants from the cotton holding the plant firmly to the soil They anchor the plant to the soil You have seen that there are different kinds of stems and leaves Do the roots also show a variety Let us find out Activity Study a and b carefully Now look at the roots of the gram plants you have pulled out from the cotton in the previous activity Do they look like the roots shown in a or those in b How about the roots of maize plant Write gram or maize’ in the blank spaces in the figure after matching the roots with the figures In what way are the roots of gram and maize similar In what way are they different There seem to be two different types of roots isn’t it Are there also other types of roots Let us find out Activity Young plants grown on cotton Was it easy to separate the cotton from the roots Why In Activity we could not pull out the plants from the soil right We dug them out This is because roots help in a very interesting way In Table can you match the type of leaf venation and the type of roots for some plants you have studied in all the activities so far Table Types of roots and types of leaf venation Name of plant Go to an open ground where many wild plants are growing Dig out a few wash the soil off the roots and observe them Do you find that all of them have either the kind of roots shown in a or as in b For roots of the kind shown in a the main root is called tap root and the smaller roots are called lateral roots Plants with roots as shown in b do not have a main root All roots seem similar and these are called fibrous roots Separate the plants you have collected into two groups In group a put those that have tap roots and in group b those that have fibrous roots Look at the leaves of the plants in Group a What kind of venation do they have What kind of venation do you see for plants of Group b Do you notice that leaf venation and the type of roots in a plant are related in We have learnt that roots absorb water and minerals from the soil and the stem conducts these to leaves and other parts of the plant The leaves prepare food This food travels through the stem and is stored in different parts of plant We eat some of these as roots like carrot radish sweet potato turnip and tapioca We also eat many other parts of a plant where food is stored Do you agree that stem is like a street with two way traffic Write the name of material that goes up in the stem and that which comes down Boojho has a brilliant idea If he wants to know what kind of roots a plant has he need not pull it out He just has to look at its leaves Stem as two-way traffic street In the next section we will study about the structure of a flower GETTING TO KNOW PLANTS FLOWER You are shown three branches of a rose in a b and c Which one will help you best to recognise the plant These are the petals Different flowers have petals of different colours Where do you think the petals are in a closed bud Which is the most prominent part in a bud Did you see that this part is made of small leaf-like structures They are called sepals Petals Which colour did you use for the flower in c Are all flowers colourful Have you ever seen flowers on grass wheat maize mango or guava Are those brightly coloured Let us study a few flowers When choosing flowers to study avoid using marigold chrysanthemum or sunflower You will learn in higher classes that they are not single flowers but groups of flowers Activity We would require one bud and two fresh flowers each of any of the following datura china rose mustard brinjal lady’s finger gulmohur Also a blade a glass slide or a sheet of paper a magnifying glass and water Observe carefully Look at the prominent parts of the open flower Take a flower and observe its petals and sepals Now answer the following questions How many sepals does it have Are they joined together What are the colours of the petals and the sepals How many petals does the flower have Are they joined to one another or are they separate Do the flowers with joint sepals have petals that are separate or are they also joined together Fill the table based on the observations of the whole class Table Add observations to this table from a field trip to a locality where there are plants with flowers Fill the last two columns later To see the inner parts of the flower clearly you have to cut it open if its petals are joined For example in datura and other bell-shaped flowers the petals have to be cut lengthwise and spread out so that the inner parts can be seen clearly Remove the sepals and petals to see the other parts Study the carefully compare your flower with the illustration and identify the stamens and pistil in your flower Look at carefully It shows different kinds of stamens present in different flowers Can you recognise the two parts of the stamens in your flower How many stamens are there in your flower Draw one stamen and label its parts The innermost part of flower is called the pistil If you cannot see it completely remove the remaining stamens Identify the parts of the pistil with the help of Draw a neat labelled diagram of the pistil of your flower Stigma Style Ovary Parts of a pistil Activity Let us now study the structure of ovary It is the lowermost and swollen part of the pistil We will cut this part to study what is inside Look at a and b carefully to understand how to cut the ovary of a flower G ETTING TO KNOW PLANTS a b Cutting an ovary a longitudinal cut and b transverse cut Cut the ovary in two different ways as shown in To prevent them from drying put a drop of water on each of the two pieces of the ovary you have cut Ovules Inner structure of an ovary a longitudinal cut b transverse cut Observe the inner parts of the ovary using a lens Do you see some small bead like structures inside the ovary They are called ovules Draw and label the inner parts of the ovary in your notebook Try to find out the names of as many flowers as you can by asking the gardener or any other person Remember not to pluck more flowers than you need Based on what you have filled in Table answer the following questions Do all flowers have sepals petals stamens and pistils Are there flowers that do not have one or more of these Are there flowers which have parts other than these Did you find any flower which has no difference between sepals and petals Did you find any flower in which the number of stamens is different from the number of petals Do you now agree that the structure of the flower is not always the same The number of sepals petals stamens and pistils may also be different in different flowers Some of these parts may even be absent at times We have studied some features and functions of leaves stems and roots We studied the structure of different flowers We will learn about the function of flowers in higher classes We will also learn about fruits in higher classes Body Movements Sit absolutely still Observe the movements taking place in your body You must be blinking your eyes time to time Observe the movements in your body as you breathe There are so many movements that happen in our bodies When you are writing in your notebook which part of the body are you moving Or when you turn and look at your friend Different parts of your body move while you remain at the same place in these examples You also move from one place to another you get up and go to your teacher or to the school compound or go home after school You walk run skip jump and move from place to place Let us see how animals move from place to place by filling up Table after discussing with our friends teachers and parents Boojho wonders about movements in plants He knows they do not move from place to place but do they show any other kind of movements Table How do animals move from place to place Walk run fly jump creep crawl slither and swim these are only a few of the ways in which animals move from one place to another Why are there so many differences in the way that animals move from place to place Why is it that many animals walk while a snake slithers or crawls and a fish swims HUMAN BODY AND ITS MOVEMENTS Let us look closely at some of our own movements to begin with before looking at all these varieties of movements in animals Do you enjoy doing physical exercise at school How do you move your hands and legs while doing different exercises Let us try some of the many movements our body is capable of Bowl an imaginary ball at an imaginary wicket How did you move your arm Did you rotate it at the shoulder in a circular movement Did your shoulder also move Lie down and rotate your leg at the hip Bend your arm at the elbow and the leg at the knee Stretch your arm sideways Bend your arm to touch your shoulder with your fingers Which part of your arm did you bend Straighten your arm and try to bend it downwards Are you able to do it Try to move the various parts of your body and record their movements in Table Why is it that we are able to move a few parts of our body easily in various directions and some only in one direction Why are we unable to move some parts at all Activity Place a scale length-wise on your arm so that your elbow is in the centre Ask your friend to tie the scale and your arm together Now try to bend your elbow Are you able to do it Can you bend your arm now Table Movements in our body Movement Body Part Rotates completely Neck Rotates partly turns Bends Lifts Does not move at all Yes Wrist Finger Knee Ankle T oe Back Head Elbow Ar m Yes Did you notice that we are able to bend or rotate our body in places where two parts of our body seem to be joined together like elbow shoulder or neck These places are called joints Can you name more such joints If our body has no joints do you think it would be possible for us to move in any way at all What exactly is joined together at these joints Press your fingers against the top of your head face neck nose ear back of the shoulder hands and legs including the fingers and toes Do you get a feel of something hard pressing against your fingers The hard structures are the bones Repeat this activity on other parts of your body So many bones Bones cannot be bent So how do we bend our elbow It is not one long bone from the upper arm to our wrist It is different bones joined together at the elbow Similarly there are many bones present in each part of the body We can bend or move our body only at those points where bones meet There are different types of joints in our body to help us carry out different movements and activities Let us learn about some of them Does the ball rotate freely inside the bowl Does the paper cylinder also rotate Now imagine that the paper cylinder is your arm and the ball is its end The bowl is like the part of the shoulder to which your arm is joined The rounded end of one bone fits into the cavity hollow space of the other bone Such a joint allows movements in all directions Can you name another such joint you can think of recollecting the body movements we tried at the beginning of this section Ball and Socket Joint Pivotal Joint Activity Roll a strip of paper into a cylinder Make a small hole in an old rubber or plastic ball under supervision and push the paper cylinder into it as shown in You can also stick the cylinder on the ball Put the ball in a small bowl The joint where our neck joins the head is a pivotal joint It allows us to bend our head forward and backward and turn the head to our right or left Try these movements How are these movements different from those of our arm that can rotate a complete circle in its ball and socket joint In a pivotal joint a cylindrical bone rotates in a ring Hinge joints Open and close a door a few times Observe the hinges of the door carefully They allow the door to move back and forth Activity Let us look at the kind of movement allowed by a hinge Make a cylinder with cardboard or thick chart paper as shown in Attach a small pencil to the cylinder by piercing the cylinder at the centre as shown Make a hollow half cylinder from cardboard such that the rolled up cylinder can fit inside it easily The hollow half cylinder with the rolled up cylinder sitting inside it allows movement like a hinge Try to move the rolled up cylinder How does it move How is this movement different from what we saw with our constructed ball and socket joint We saw this kind of movement at the elbow in Activity What we have constructed in is different from a hinge of course But it illustrates the direction in which a hinge allows movement The elbow has a hinge joint that allows only a back and forth movement Can you think of more examples of such joints Fixed joints Some joints between bones in our head are different from those we have discussed so far The bones cannot move at these joints Such joints are called fixed joints When you open your mouth wide you can move your lower jaw away from your head isn’t it Try to move your upper jaw now Are you able to move it There is a joint between the upper jaw and the rest of the head which is a fixed joint We discussed only some of the joints that connect parts of our body What gives the different parts of the body their different shapes If you wanted to make a doll what will you make first Perhaps a framework to give the doll shape before making its outer structure isn’t it All the bones in our body also form a framework to give a shape to our body The human skeleton is composed of around bones at birth The number of bones in the skeleton changes with age It decreases to bones by adulthood after some bones have fused together This framework is called the skeleton How do we know that this is the shape of a human skeleton How do we know the shapes of the different bones in our body We can have some idea about the shape and number of bones in some parts of our body by feeling them One way we could know this shape better would be to look at Xray images of the The Human skeleton human body Did you or anyone in your family ever have an X-ray of any part of your body taken Sometimes when we are hurt or have an accident doctors use these X-ray images to find out about any possible injuries that might have happened to the bones The Xrays show the shapes of the bones in our bodies Feel the bones in your forearm upper arm lower leg and upper leg Try to find the number of bones in each part Similarly feel the bones of your ankle and knee joints and compare these with the X-ray images X-ray images of ankle and knee joints Bend your fingers Are you able to bend them at every joint How many bones does your middle finger have Feel the back of your palm It seems to have many bones isn’t it Is your wrist flexible It is made up of several small bones called carples What will happen if it has only one bone Bones of the hand Activity Take a deep breath and hold it for a little while Feel your chest bones and the back bone by gently pressing the middle of the chest and back at the same time Count as many ribs bones of the chest as possible Observe carefully and compare with what you feel of the chest bones We see that the ribs are curiously bent They join the chest bone and the backbone together to form a box This is called the rib cage There are ribs on each side of chest Some important internal parts of our body lie protected inside this cage Ask some friends to touch their toes without bending their knees Starting from the neck move your fingers downwards on the back of your friend What you feel is the backbone It is made up of many small bones called vertebrae The backbone consists of vertebrae The rib cage is joined to these bones If backbone was made up of only one long bone will your friend be able to bend Make your friend stand with both hands pressed to the wall and ask her to push The backbone the wall Do you notice two bones on the back are prominent where the shoulders are They are called shoulder bones Observe carefully This structure is made of pelvic bones They enclose the portion of your body below the stomach This is the part you sit on Pelvic bones The skull is made up of many bones joined together It encloses and protects a very important part of the body the brain We discussed many bones and the joints of our skeleton There are some additional parts of the skeleton that are not as hard as the bones and which can be bent These are called cartilage Feel your ear Do you find any hard bony parts that can be bent There do not seem to be any bones here isn’t it Do you notice anything different between the ear lobe and the portions above it as you press them between your fingers Upper part of ear has cartilage The ear lobe You do feel something in the upper parts of the ear that is not as soft as the ear lobe but not as hard as a bone isn’t it This is cartilage Cartilage is also found in the joints of the body We have seen that our skeleton is made up of many bones joints and cartilage You could feel bend and move many of them Draw a neat figure of the skeleton in your notebook We have learnt about the bones in our body and about joints that help us move in different ways What makes the bones move the way they do Let us find out Make a fist with one hand bend your arm at the elbow and touch your shoulder with the thumb Do you see any change in your upper arm Touch it with the other hand Do you observe a swollen region is the upper arm This is a muscle The muscle bulged due to contraction it became smaller in length Now bring your arm back to its normal position What happened to the muscle Is it still contracted You can observe similar contraction of muscles in your leg when you walk or run When contracted the muscle becomes shorter stiffer and thicker It pulls the bone Muscles work in pairs When one of them contracts the bone is pulled in that direction The other muscle of the pair relaxes To move the bone in the opposite direction the relaxed musle contracts to pull the bone towards its original position while the first relaxes A muscle can only pull It cannot push Thus two muscles have to work together to move a bone Are muscles and bones always required for movement How do other animals move Do all animals have bones What about an earthworm or a snail Let us study the manner of movement that is the gait of some animals GAIT OF ANIMALS Earthworm Activity Observe an earthworm moving on soil in a garden Gently lift it and place it on a piece of blotting or filter paper Observe its movement Then place it on a smooth glass plate or any slippery surface Observe its movement now Is it different from that on paper In which of the above two surfaces do you find that the earthworm is able to move easily The body of an earthworm is made up of many rings joined end to end An earthworm does not have bones It has muscles which help to extend and shorten the body During movement the earthworm first extends the front part of the body keeping the rear portion fixed to the ground Then it fixes the front end and releases the rear end It then shortens the body and pulls the rear end forward This makes it move forward by a small distance Repeating such muscle expansions and contractions the earthworm can move through soil Its body secretes a slimy substance to help the movement How does it fix parts of its body to the ground Under its body it has a large number of tiny bristles hair like structures projecting out The bristles are connected with muscles The bristles help to get a good grip on the ground The earthworm actually eats its way through the soil Its body then throws away the undigested part of the material that it eats This activity of an earthworm makes the soil more useful for plants This is called the shell and it is the outer skeleton of the snail but is not made of bones The shell is a single unit and does not help in moving from place to place It has to be dragged along Place the snail on a glass plate and watch it When it starts moving carefully lift the glass plate along with the snail over your head Observe its movements from beneath A thick structure and the head of the snail may come out of an opening in the shell The thick structure is its foot made of strong muscles Now carefully tilt the glass plate The wavy motion of the foot can be seen Is the movement of a snail slow or fast as compared to an earthworm Cockroach Activity Observe a cockroach Cockroaches walk and climb as well as fly in the air They have three pairs of legs These help in walking The body is covered with a hard outer skeleton This outer skeleton is made of a number of plates joined together and that permits movement There are two pairs of wings attached to the body behind head The cockroaches have distinct muscles those near the legs move the legs for walking The body muscles move the wings when the cockroach flies Make a paper boat Put it in water and push it with one narrow end pointing forward a Did it go into the water easily Now hold the boat sideways and push it into the water from the broad side b Are you able to make the boat move in water when you push it from this side Birds Birds fly in the air and walk on the ground Some birds like ducks and swans also swim in water The birds can fly because their bodies are well suited for flying Their bones are hollow and light The bones of the hind limbs are typical for walking and perching The bony parts of the forelimbs are modified as wings The shoulder bones are strong The breastbones are modified to hold muscles of flight which are used to move the wings up and down Fish also have other fins on their body which mainly help to keep the balance of the body and to keep direction while swimming Did you ever notice that under water divers wear fin like flippers on their feet to help them move easily in water How do snakes move Have you noticed that the shape of a boat is somewhat like a fish The head and tail of the fish are smaller than the middle portion of the body the body tapers at both ends This body shape is called streamlined The shape is such that water can flow around it easily and allow the fish to move in water The skeleton of the fish is covered with strong muscles During swimming muscles make the front part of the body curve to one side and the tail part swings towards the opposite side The fish forms a curve as shown in Then quickly the body and tail curve to the other side This makes a jerk and pushes the body forward A series of such jerks make the fish swim ahead This is helped by the fins of the tail Have you seen a snake slither Does it move straight Snakes have a long backbone They have many thin muscles They are connected to each other even though they are far from one another Muscles also interconnect the backbone ribs and skin The snake’s body curves into many loops Each loop of the snake gives it a forward push by pressing against the ground Since its long body makes many loops and each loop gives it this push the snake moves forward very fast and not in a straightline We have learned about the use of bones and muscles for the movements of different animals Paheli and Boojho have many questions in their sacks about the different movements in animals So must you be having many unanswered questions buzzing in your minds The ancient Greek philosopher Aristotle in his book Gait of Animals asked himself these questions Why do different animals have the body parts that they do have and how do these body parts help animals to move the way they do What are the similarities and differences in these body parts between different animals How many body parts are needed by different animals for moving from place to place Why two legs for humans and four for cows and buffaloes Many animals seem to be having an even number of legs why Why is the bending of our legs different from that of our arms So many questions and perhaps we have looked for some answers through our activities in this chapter and we need to look for many more answers Yoga For Better Health Yoga is an invaluable gift of the ancient Indian tradition The United Nations declared June as International Day of Yoga Yoga keeps a person healthy It helps in keeping the backbone erect enabling you to sit straight and not slouch Many postures in yoga require you to lift your own weight which help in making the bones strong and help ward off osteoporosis It also helps in relieving joint pain which is mostly observed in elderly people It tunes all muscles in the body and keeps them active It keeps the heart healthy and makes it work more efficiently Certain yoga postures should be performed under the supervision of a trained person The Living Organisms Characteristics and Habitats Paheli and Boojho went on vacation to many places of interest One such trip took them to the river Ganga in Rishikesh They climbed the mountains of the Himalayas where it was very cold They saw many kinds of trees on these mountains oaks pines and deodars very different from the ones near their home on the plains In yet another trip they travelled to Rajasthan and moved on camels through the hot desert They collected different kinds of cactus plants from this trip Finally they went on a trip to Puri and visited the sea beach dotted with casuarina trees While recollecting all the fun that they had on these trips a thought struck them All these places were so different from one another some were cold some very hot and dry and some places so humid And yet all of them had many organisms living creatures of various kinds They tried to think of a place on Earth where there may not be any living creatures Boojho thought of places near his home Inside the house he tried the cupboards He had thought that there may not be any living organisms here but he found one tiny spider in the cupboard Outside the home too there did not seem to be any place he could think of that did not have living creatures of some kind or the other Paheli started thinking and reading about far away places She read that people have even found tiny living organisms in the openings of volcanoes Search for living organisms ORGANISMS AND THE SURROUNDINGS WHERE THEY LIVE Another thought that occurred to Paheli and Boojho was about the kinds of living organisms that were present in different locations that they had visited The deserts had camels the mountains had goats and yak Puri had some other creatures crabs on the beach and such a variety of fish being caught by the fishermen at the sea And then there did seem to be some creatures like ants that were present in all these different locations The kinds of plants found in each of these regions were so different from the plants of the other regions What about the surroundings in these different regions Were they the same Let us start with a forest Think of all the plants animals and objects that can be found there List them in Column of Table List things animals and plants found in the other regions that are also shown in the table You can collect the examples scattered through this chapter to fill Table Discuss also with your friends parents and teachers to find more examples to fill the tables You can also consult many interesting books in libraries that talk of animals plants and minerals of different regions T ry and include many plants animals and objects big and small in each of the columns in this table What kind of objects will we find that may not be animals or plants Perhaps parts of plants like dried leaves or parts of animals like bones We may also find different kinds of soils and pebbles Water in the oceans may have salts dissolved in it as discussed in Chapter There could be many more objects As we go through the chapter keep adding more examples to Table We will discuss the table as we travel through many more interesting places What do you find from the plants and animals listed in Activity Did you find a large variety in them Look at what you have entered in the column for the desert and the column for the sea in Table Did you list very different kind of organisms in these two columns What are the surroundings like in these two regions In the sea plants and animals are surrounded by saline salty water Most of them use the air dissolved in water There is very little water available in the desert It is very hot in the day time and very cold at night in the desert The animals and plants of the desert live on the desert soil and breathe air from the surroundings The sea and the desert are very different surroundings and we find very different kind of plants and animals in these two regions isn’t it Let us look at two very different kind of organisms from the desert and the sea a camel and a fish The body structure of a camel helps it to survive in desert conditions Camels have long legs which help to keep their bodies away from the heat of the sand They excrete small amount of urine their dung is dry and they do not sweat Since camels lose very little water from their bodies they can live for many days without water Let us look at different kinds of fish Some of these are shown in There are so many kinds of fish but do you see that they all have something common about their shape All the ones shown here have the streamlined shape that was discussed in Chapter This shape helps them move inside water Fish have slippery scales on their bodies These scales protect the fish and also help in easy movement through water We discussed in Chapter that fish have flat fins and tails that help them to change directions and keep their body balance in water Gills present in the fish help them to use oxygen dissolved in water We see that the features of a fish help it to live inside water and the features of a camel help it to survive in a desert We have taken only two examples from a very wide variety of animals and plants that live on the Earth In all this variety of organisms we will find that they have certain features that help them live in the surroundings in which they are normally found The presence of specific features or certain habits which enable an organism to live naturally in a place is called adaptation Adaptation of organisms differ depending on their place of dwelling That is why a fish cannot live out of water and a camel cannot live in sea The place where organisms live is called habitat Habitat means a dwelling place a home The habitat provides food water air shelter and other needs to organisms Several kinds of plants and animals live in the same habitat The plants and animals that live on land are said to live in terrestrial habitats Some examples of terrestrial habitats are forests grasslands deserts coastal and mountain regions On the other hand the habitats of plants and animals that live in water are called aquatic habitats Lakes rivers and oceans are some examples of aquatic habitats There are large variations among terrestrial habitats like forests grasslands deserts coastal and mountain regions located in different parts of the world There are some changes that can happen in an organism over a short period of time to help them adjust to some changes in their surroundings For instance if we live in the plains and suddenly go to high mountain regions we may experience difficulty in breathing and doing physical exercise for some days We need to breathe faster when we are on high mountains After some days our body adjusts to the changed conditions on the high mountain Such small changes that take place in the body of a single organism over short periods to overcome small problems due to changes in the surroundings are called acclimatisation These changes are different from the adaptations that take place over thousands of years The organisms both plants and animals living in a habitat are its biotic components The non-living things such as rocks soil air and water in the habitat constitute its abiotic components Are sunlight and heat biotic or abiotic components We know that some plants grow from seeds Let us look at some abiotic factors and their effect on seeds as they grow into young plants Activity Recall Activity in Chapter we made sprouts from moong and chana seeds When the seed turned into a sprout it is said to have germinated This is the beginning of life of a new plant Collect some dry moong seeds Keep seeds aside and soak the rest in water for a day Divide the soaked seeds into four parts Keep one part completely submerged in water for days Do not disturb the dry seeds and those submerged in water Keep one part of soaked seeds in a sunny room and another in a completely dark region like a cupboard that does not allow any light to come in Keep the last part in very cold surroundings say in a refrigerator or with ice around them Rinse them and replace the water every day What do you notice after a few days Do the seeds in all the five conditions germinate uniformly Do you find slower or no germination in any of these Do you realise that abiotic factors like air water light and heat are important for the growth of plants In fact abiotic factors are important for all living organisms We find that organisms exist in very cold as well as very hot climates isn’t it How do they manage to survive Adaptation is the method by which organisms get well adjusted to the climate Adaptation does not take place in a short time because the abiotic factors of a region also change very slowly Those organisms which cannot adapt to these changes die and only the adapted ones survive Organisms adapt to different abiotic factors in different ways This results in a wide variety of organisms in different habitats Let us look at some habitats understood the abiotic factors and the adaptations of animals in these habitats Desert animals in burrows A JOURNEY THROUGH DIFFERENT HABITATS Some Terrestrial Habitats Deserts We discussed the abiotic factors of a desert and the adaptations in camels What about other animals and plants that are found in deserts Do they have the same kind of adaptations There are desert animals like rats and snakes which do not have long legs that a camel has To stay away from the intense heat during the day they stay in burrows deep in the sand These animals come out only during the night when it is cooler shows some typical plants that grow in a desert How are these adapted to the desert Activity Bring a potted cactus and a leafy plant to the classroom Tie polythene bags to some parts of the two plants as was done for Activity in Chapter where we studied transpiration in plants Leave the potted plants in the sun and observe after a few hours What do you see Do you notice any difference in the amount of water collected in the two polythene bags Desert plants lose very little water through transpiration The leaves in desert plants are either absent very small or they are in the form of spines This helps in reducing loss of water from the leaves through transpiration The leaf-like structure you see in a cactus is in fact its stem Photosynthesis in these plants is usually carried out by the stems The stem is also covered with a thick waxy layer which helps to retain water in the tissues of cacti Most desert plants have roots that go very deep into the soil for absorbing water Mountain regions These habitats are normally very cold and windy In some areas snowfall may take place in winters There is a large variety of plants and animals living in the mountain regions Have you seen the kind of trees shown in also present on mountains They may have different kind of adaptations to survive on the mountains Animals living in the mountain regions are also adapted to the conditions there They have thick skin or fur to protect them from cold For example yaks have long hair to keep them warm Snow leopard has thick fur on its body including feet and toes This protects its feet from the cold when it walks on the snow The mountain goat has strong hooves for running up the rocky slopes of the mountains As we go up in the mountainous regions the surroundings change and we see different kinds of adaptations at different heights Grasslands A lion lives in a forest or a grassland and is a strong animal that can hunt and kill animals like deer It is light brown in colour Look at the picture of a lion and that of a deer How are the eyes placed in the face for these two animals Are they in the front or on the side of the face Lions have long claws in their front legs that can be withdrawn inside the toes Do the features of a lion help it in any way to survive It’s light brown colour helps it to hide in dry grasslands when it hunts for prey animals to eat The eyes in front of the face allow it to have a correct idea about the location of its prey A deer is another animal that lives in forests and grasslands It has strong teeth for chewing hard plant stems of the forest A deer needs to know about the presence of predators animals like lion that make it their prey in order to run away from them and not become their prey It has long ears to hear movements of predators The eyes on the side of its head allow it to look in all directions for danger The speed of the deer helps them to run away from the predators There are many other features of a lion a deer or other animals and plants that help them to survive in their habitat Some Aquatic Habitats Oceans We already discussed how fish are adapted to live in the sea Many other sea animals have streamlined bodies to help them move easily in water There are some sea animals like squids and octopus which do not have this streamlined shape They stay deeper in the ocean near the seabed and catch any prey that moves towards them However when they move in water they make their body shapes streamlined These animals have gills to help them use oxygen dissolved in water There are some sea animals like dolphins and whales that do not have gills They breathe in air through nostrils or blowholes that are located on the upper parts of their heads This allows them to breathe in air when they swim near the surface of water They can stay inside the water for a long time without breathing They come out to the surface from time to time to breathe in air Did you ever see this interesting activity of dolphins in television programme or films on ocean life Ponds and lakes Have you seen plants growing in ponds lakes rivers and even some drains Go on a field trip to a nearby pond if possible and try to observe the kinds of plants that are seen there Observe the leaves stems and roots of these plants Some of these plants have their roots fixed in the soil below the water Some aquatic plants float on water Some have their roots fixed in the soil at the bottom Some aquatic plants are submerged in water In terrestrial plants roots normally play a very important role in the absorption of nutrients and water from the soil However in aquatic plants roots are much reduced in size and their main function is to hold the plant in place The stems of these plants are long hollow and light The stems grow up to the surface of water while the leaves and flowers float on the surface of water Some aquatic plants are submerged in water All parts of such plants are under water Some of these plants have narrow and thin ribbon-like leaves These can bend in the flowing water In some submerged plants leaves are often highly divided through which the water can easily flow without damaging them Frogs usually live in ponds Frogs can stay both inside the water as well as move on land They have strong back legs that help them in leaping and catching their prey They have webbed feet which help them swim in water We have discussed only a few common animals and plants compared to the wide variety that live in different habitats You may have also noticed the very wide variety in plants around you when you prepared a herbarium as part of the suggested activities in Chapter Imagine the kind of variety that you could see in a herbarium of leaves of plants from all regions of the Earth CHARACTERISTICS OF ORGANISMS We went on a journey through different habitats and discussed many plants and animals In Activity we listed objects plants and animals found in different surroundings Suppose we stop a while and think which examples in our list are living Let us think of examples from a forest Trees creepers small and big animals birds snakes insects rocks soil water air dry leaves dead animals mushrooms and moss may be only some of the objects that are present in the forest Which of these are living Think of objects that you can see around you at this moment and group them as living and non-living In some cases it is easy for us to know For example we know that objects like chair or table are not alive Paheli was reading this rhyme from Complete Nonsense written by Edward Lear Paheli and Boojho found the poem very funny because they knew that a chair or a table is not alive and it cannot talk or walk Chair table stone or a coin are not alive Similarly we do know that we are alive and so are all the people of the world We also see animals around us that are so full of life dogs cats monkeys squirrels insects and many others How do we know that something is living Often it is not so easy to decide We are told that plants are living but they do not move like a dog or a pigeon On the other hand a car or a bus can move still we consider them as nonliving Plants and animals appear to grow in size with time But then at times clouds in the sky also seem to grow in size Does it mean that clouds are living No So how does one distinguish between living and nonliving things Do living things have some common characteristics that make them very different from the non-living You are a wonderful example of a living being What characteristics do you have which make you different from a nonliving thing List a few of these characteristics in your notebook Look at your list and mark those characteristics that you have listed which may also be found in animals or plants Some of these characteristics are perhaps common to all living things Do all organisms need food In Chapters and we learnt that all living things need food and how essential it is to animals and to us We have also learnt that plants make their own food by the process of photosynthesis Animals depend on plants or other animals for their food Food gives organisms the energy needed for them to grow Organisms also need energy for other life processes that go on inside them Do all organisms show growth Does the kurta you had four years back still fit you You cannot wear it any more isn’t it You must have grown taller during these years You may not realise it but you are growing all the time and in few more years you will become an adult Young ones of animals also grow into adults You would surely have noticed pups grow into adults A chick hatched from an egg grows into a hen or a cock Plants also grow Look around you and see a few plants of a particular type Some are very small A chicken and young some grows into an adult are bigger They may all be in different stages of growth Look at the plants after a few days and weeks You may find that some of them have grown in size Growth seems to be common to all living things Do you think non-living things show growth Do all organisms respire Can we live without breathing When we inhale the air moves from outside to the inside of our body When we breathe out the air moves from inside our body to outside Breathing is part of a process called respiration In respiration some of the oxygen of the air we breathe in is used by the body We breathe out carbon dioxide produced in this process The process of breathing in animals like cows buffaloes dogs or cats is similar to humans Observe any one of these animals while they are taking rest and notice the movement of their abdomen This slow movement indicates that they are breathing Respiration is necessary for all living organisms It is through respiration that the body finally obtains energy from the food it takes Some animals may have different mechanisms for the exchange of gases which is a part of the respiration process For example earthworms breathe through their skin Fish we have learnt have gills for using oxygen dissolved in water The gills absorb oxygen from the air dissolved in water Do plants also respire Exchange of gases in plants mainly takes place through leaves The leaves take in air through tiny pores in them and use the oxygen They give out carbon dioxide to the air We learnt that in sunlight plants use carbon dioxide to produce food and give out oxygen The amount of oxygen released in the process of food preparation by plants is much more than the oxygen they use in respiration Respiration in plants takes place day and night Do all organisms respond to stimuli How do you respond if you suddenly step on a sharp object like a thorn while walking barefoot How do you feel when you see or think about your favourite food You suddenly move from a dark place into bright sunlight What happens Your eyes shut themselves automatically for a moment till they adjust to the changed bright surroundings Your favourite food bright light and a thorn in the above situations are some examples of changes in your surroundings All of us respond immediately to such changes Changes in our surroundings that makes us respond to them are called stimuli Do other animals also respond to stimuli Observe the behaviour of animals when food is served to them Do you find them suddenly becoming active on seeing the food When you move towards a bird what does it do Wild animals run away when bright light is flashed towards them Similarly cockroaches begin to move to their hiding places if the light in the kitchen is switched on at night Can you give some more examples of responses of animals to stimuli Do plants also respond to stimuli Flowers of some plants bloom only at night In some plants flowers close after sunset In some plants like Mimosa commonly known as ‘touch-me-not leaves close or fold when someone touches them These are some examples of responses of plants towards changes in their surroundings Activity Place a potted plant in a room a little away from a window through which sunlight enters some time during the day Continue watering the plant for a few days Does the plant grow upright like plants out in the open Note the direction in which it bends if it is not growing upright Do you think this may be in response to some stimulus All living things respond to changes around them Living organisms and excretion All organisms need food Not all the food that is eaten is completely used only a part of it is utilised by the body What happens to the rest This has to be removed from the body as wastes Our body produces some wastes in other life processes also The process of getting rid of wastes by organisms is known as excretion Do plants also excrete They do but not as seen in animals The mechanisms in plants are a little different Some plants find it possible to store the waste products within their parts in a way that they do not harm the plant as a whole Some plants remove waste products as secretions Excretion is another characteristic common to all organisms Animals reproduce their own kind The mode of reproduction may be different in different animals Some animals produce their young ones through eggs Some animals give birth to the young ones Plants also reproduce Like animals plants also differ in their mode of reproduction Many plants reproduce through seeds Plants produce seeds Living things produce more of their own kind through reproduction It takes place in many different ways for different organisms Do all organisms move A seed from a plant germinates into a new plant which can germinate and grow into new plants Some plants also reproduce through parts other than seeds For example a part of a potato with a bud grows into a new plant A new plant grows from a bud of potato Plants also reproduce through cuttings Would you like to grow a plant in this way yourself Activity Take a cutting from a rose or a menhdi plant Fix it in the soil and water it regularly What do you observe after a few days It may not be easy to grow plants from cuttings Do not be disappointed if your cutting does not grow Talk to a gardener if possible on the care to be given to cuttings to make them grow into plants In Chapter we discussed the various ways in which animals move They move from one place to another and also show other body movements What about plants Do they also move Plants are generally anchored in soil so they do not move from one place to another However various substances like water minerals and the food synthesised by them move from one part of the plant to other Have you noticed any other kind of movement in plants Opening or closing of flowers Do you recall how some plants show movement in response to certain stimuli We also have some non-living things moving of course A bus car a small piece of paper clouds and so on Is there something different in these movements from the movements of living beings There is such a variety of living organisms but all of them show some common characteristics as we have discussed Yet another common characteristic is that living beings die Because organisms die particular types of organisms can survive over thousands of years only if they reproduce their own kind One single organism may die without ever reproducing but the type of organism can exist only if there is reproduction We see that all living things seem to have some common characteristics They all need food respire respond to stimuli reproduce show movement grow and die Do we find some non-living things that also show some of these characteristics Cars bicycle clocks and the water in the river move The moon moves in the sky A cloud grows in size right in front of our eyes Can such things be called living We ask ourselves do these objects also show all the other characteristics of living things In general something that is living may have all the characteristics that we have discussed while non-living things may not show all these characteristics at the same time Is this always true Do we always find that living things definitely show all the characteristics of the living that we have discussed Do we always find that nonliving things may show only some of these characteristics and never all of them To understand this a little better let us look at a specific example Consider any seed say moong Is it living It can stay in a shop for months and not show any growth or some of the other characteristics of life However we bring the same seed and plant it in soil water it and it turns into a whole plant Did the seed need food did it excrete grow or reproduce when it was in the shop for many months We see that there can be cases when we cannot easily say that a thing has all the characteristics that we have discussed for it to be called living What then is life Push your hand deep inside a sack of wheat Do you find it is warm inside There is some heat being produced inside the sack of wheat The seeds respire and in that process give out some heat We see that respiration is a process that takes place in seeds even when some of the other life processes may not be very active It may not be very easy to answer our question what then is life However looking at all the diversity of living beings around us we can conclude that life is beautiful Motion and Measurement of Distances There was a general discussion among the children in Paheli and Boojho's class about the places they had visited during the summer vacations Someone had gone to their native village by a train then a bus and finally a bullock cart One student had travelled by an aeroplane Another spent many days of his holidays going on fishing trips in his uncle's boat The teacher then asked them to read newspaper articles that mentioned about small wheeled vehicles that moved on the soil of Mars and conducted experiments These vehicles were taken by spacecraft all the way to Mars Meanwhile Paheli had been reading stories about ancient India and wanted to know how people travelled from one place to another in earlier times STORY OF TRANSPORT Long ago people did not have any means of transport They used to move only on foot and carry goods on their back Later on they began to use animals for transportation For transport through water routes boats were used from ancient times To begin with boats were simple logs of wood in which a hollow cavity could be made Later people learnt to put together different pieces of wood and give shapes to the boats These shapes imitated the shapes of the animals living in water Recall our discussions of this streamlined shape of fish in Chapters and Invention of the wheel made a great change in modes of transport The design of the wheel was improved over thousands of years Animals were used to pull carts that moved on wheels Until the beginning of the th century people still depended on animals boats and ships to transport them from place to place The invention of steam engine led to the development of new means of transport Railroads were made for steam engine driven carriages and wagons Later came automobiles such as motor cars trucks and buses Motorised boats and ships were used as means of transport on water The early years of saw the development of aeroplanes These were later improved to carry passengers and goods Electric trains monorail supersonic aeroplanes and spacecraft are some of the contributions of the th century shows some of the different modes of transport Place them in the correct order from the earliest modes of transport to the most recent Are there any of the early modes of transport that are not in use today HOW WIDE IS THIS DESK How did people know how far they have travelled How will you know whether you can walk all the way to your school or whether you will need to take a bus or a rickshaw to reach your school When you need to purchase something is it possible for you to walk to the market How will you know the answers to these questions It is often important to know how far a place is so that we can have an idea how we are going to reach that place walk take a bus or a train a ship an aeroplane or even a spacecraft Sometimes there are objects whose length or width we need to know In Paheli and Boojho's classroom there are large desks which are to be shared by two students Paheli and Boojho share one desk but frequently end up objecting that the other is using a larger share of the desk On the teacher's suggestion they decided to measure the length of the desk make a mark exactly in the middle of it and draw a line to separate the two halves of the desk Both Paheli and Boojho are very fond of playing gilli danda with their friends Boojho brought a set of gilli and danda with him Here is how they tried to measure the length of the desk using the danda and the gilli The desk seems to be having a length equal to two danda lengths and two lengths of the gilli Drawing a line in the middle of the desk leaves each of them happy with a half of the desk equal to a danda and a gilli in length After a few days the marked line gets wiped out Boojho now has a new set of gilli and danda as he lost his old one Here is how the length of the desk seems to measure using the gilli and danda Measuring the length of a desk with gilli and danda Measuring the length of the desk with a different set of gilli and danda SCIENCE Hello Now when measured with the new set of gilli and danda the desk length seems to be about two danda lengths one gilli length with a small length still left out This is less than one gilli length Now what What would you suggest Paheli and Boojho do to measure the length of the whole desk Can they use a cricket wicket and bails to measure the length or do you think that this might create the similar problem One thing they could do is to take a small length of string and mark two points on it This will be a string length They can measure the width of the desk in string lengths How can they use the string to measure distances less than the length of a string They can fold the string and mark it into 'string lengths Now perhaps Paheli and Boojho can measure the exact length of the desk using the string You would say that they should use the scale in their geometry box and solve their problem Yes Of course Boojho has been reading about the way people used to measure distances before such standard scales were made and he has been trying to follow different methods of measuring distances There are so many occasions when we come across a need to measure lengths and distances The tailor needs to measure the length of the cloth to know if it is enough to stitch a kurta A carpenter needs to measure the height and width of a cupboard to know how much wood he would need to make its door The farmer needs to know the length and breadth or the area of his land to know how much seed he can sow and how much water would be needed for his crops Suppose you are asked how tall you are You want to tell the length of a straight line from the top of your head to the heel of your feet How long is this room How wide is this desk How far is it from Delhi to Lucknow How far away is the Moon from the Earth All these questions have one thing in common They all concern distance between two places The two places may be close enough like the two ends of a table or they may be far apart like Jammu and Kanyakumari Let us do a few measurements to see what exactly we need to do when we measure distances or lengths SOME MEASUREMENTS Activity Measuring the length of the desk with string lengths Work in groups and each of you do this activity one by one Using your foot as a unit of length measure the length and breadth of the classroom It is possible that while measuring these you may find some part remains to be measured as it is smaller than your foot Use a string to measure the length of a part of your foot as you did before Record your observations in Table Table Measuring length and breadth of classroom Name of student Length of the classroom Width of the classroom Activity Work in a group and each of you use your handspan as a unit to measure the width of a table or a desk in the classroom Measuring the width of a table with a handspan Here too you may find that you need string lengths equal to your handspan and then fractions of this string length to make the measurement Record all observations in Table We see that measurement means the comparison of an unknown quantity with some known quantity This known fixed quantity is called a unit The result of a measurement is expressed in two parts One part is a number The other part is the unit of the measurement For example if in Activity the length of the room is found to be lengths of your foot then is the number and foot length is the unit selected for the measurement Now study all the measurements recorded in Table and Are all the measurements for the room using everybody's foot equal Are everybody's measurement by handspan of the width of the table equal Perhaps the results could be different as the length of your handspan and that of your friends may not be the same Similarly the length of the foot may be slightly different for all the students Therefore when you tell your measurement using your handspan or length of foot as a unit to others they will not be able to understand how big the actual length is unless they know the length of your handspan or foot We see therefore that some standard units of measurement are needed that do not change from person to person STANDARD UNITS OF MEASUREMENTS In ancient times the length of a foot the width of a finger and the distance of a step were commonly used as different units of measurements The people of the Indus valley civilisation must have used very good measurements of length because we see evidence in excavations of perfectly geometrical constructions A cubit as the length from the elbow to the finger tips was used in ancient Egypt and was also accepted as a unit of length in other parts of the world People also used the foot as a unit of length in different parts of the world The length of the foot used varied slightly from region to region People measured a yard of cloth by the distance between the end of the outstretched arm and their chin The Romans measured with their pace or steps In ancient India small length measurements used were an angul finger or a mutthi fist Even today we can see flower sellers using their forearm as a unit of length for garlands in many towns of India Many such body parts continue to be in use as unit of length when convenient However everyone's body parts could be of slightly different sizes This must have caused confusion in measurement In the French created a standard unit of measurement called the metric system For the sake of uniformity scientists all over the world have accepted a set of standard units of measurement The system of units now used is known as the International System of Units SI units The SI unit of length is a metre A metre scale is shown in Also shown is the cm scale in your geometry box Each metre m is divided into equal divisions called centimetre cm Each centimetre has ten equal divisions called millimetre mm Thus m cm cm mm For measuring large distances metre is not a convenient unit We define a larger unit of length It is called kilometre km km m Now we can repeat all our measurement activities using a standard scale and measure in SI units Before we do that we do need to know the correct way of measuring lengths and distances CORRECT MEASUREMENT OF LENGTH In our daily life we use various types of measuring devices We use a metre scale for measuring length A tailor uses a tape whereas a cloth merchant uses a metre rod For measuring the length of an object you must choose a suitable device You cannot measure the girth of a tree or the size of your chest using a metre scale for instance Measuring tape is more suitable for this For small measurements such as the length of your pencil you can use a cm scale from your geometry box In taking measurement of a length we need to take care of the following Place the scale in contact with the object along its length as shown in In some scales the ends may be broken You may not be able to see the zero mark clearly a In such cases you should avoid taking measurements from the zero mark of the scale You can use any other full mark of the scale say cm b Then you must subtract the reading of this mark from the reading at the other end For example in b the reading at one end is cm and at the other end it is cm Therefore the length of the object is cm cm Correct position of the eye is also important for taking measurement Your eye must be exactly in front of the point where the measurement is to be taken as shown in Position B is the correct position of the eye Note that from position B the reading is cm From positions A and C the readings may be different B is the proper position of the eye for taking reading of the scale Activity Measure the height of your classmate using hand span and then by using a metre scale For this ask your classmate to stand with his back against a wall Make a mark on the wall exactly above his head Now measure the distance from the floor to this mark on the wall with your handspan and then with a metre scale Let all other students measure this length in a similar way Record all observations in Table Table Measurement of height Who measured Height in the height handspans Study carefully results obtained by different students The results in column may be different from each other as the length of the handspan may be different for different students Look MEASURING THE LENGTH OF A CURVED LINE We cannot measure the length of a curved line directly by using a metre scale We can use a thread to measure the length of a curved line Activity Use a thread to measure the length of the curved line AB Put a knot on the thread near one of its ends Place this knot on the point A Now place a small portion of the thread along the line keeping it taut using your fingers and thumb Hold the thread at this end point with one hand Using the other hand stretch a little more portion of the thread along the curved line Go on repeating this process till the other end B of the curved line is reached Make a mark on the thread where it touches the end B Now stretch the thread along a metre scale Measure the length between the knot in the beginning and the final mark on the thread This gives the length of the curved line AB We see that we need a lot of care to ensure that we are measuring distances and lengths correctly And we need some standard units and devices with which we measure these distances and can convey our results to others Think of some objects you have seen recently List them in Table These may include a school bag a mosquito a table people sitting on chairs or people moving about The list may also have a butterfly a dog a cow your hands a small baby a fish in water a house a factory a piece of stone a horse a ball a bat a moving train a sewing machine a wall clock or the hands of a clock Make your list as large as you can Which of these are moving Which are at rest How did you decide whether an object is in motion or at rest You might have noticed that the bird is not at the same place after some time while the table is at the same place On this basis you may have decided whether an object is at rest or in motion Let us look at the motion of an ant closely Select a place where you find ants Spread a large sheet of white paper on the ground and keep a little sugar on it Ants are likely to be attracted to the sugar and you will find many ants crawling on the sheet of paper soon For any one ant try and make a small mark with a pencil near its position when it has just crawled on to the sheet of paper Keep marking its position after a few seconds as it moves along on the sheet of paper After some time shake the paper free of the sugar and the ants Connect the different points you have marked with arrows to show the direction in which the ant was moving Each point you have marked shows where the ant moved to in intervals of a few seconds Motion seems to be some kind of a change in the position of an object with time isn't it In Activity where did you place objects like a clock a sewing machine or an electric fan in your grouping of objects Are these objects moving from one place to other No Do you notice movement in any of their parts The blades of the fan or the hands of a clock how are they moving Is their movement similar to that of an ant or a train Let us now look at some types of motion to help us understand these differences In all these examples we see that the objects move along a straight line This type of motion is called rectilinear motion Take a stone tie a thread to it and whirl it with your hand Observe the motion of the stone We see that the stone moves along a circular path In this motion the distance of the stone from your hand remains the same This type of motion is called circular motion You may have observed the motion of a vehicle on a straight road march-past of soldiers in a parade or the falling of a stone What kind of motion is this Sprinters in a metre race also move along a straight track Can you think of more such examples from your surroundings The motion of a point marked on the blade of an electric fan or the hands of a clock are examples of circular motion The electric fan or the clock by themselves are not moving from one place to another But the blades of the fan rotate and so do the hands of a clock If we mark a point anywhere on the blades of a fan or on the hands of a clock the distance of this point from the centre of the fan or the clock will remain the same as they rotate In some cases an object repeats its motion after some time This type of motion is called periodic motion Take the stone tied with a string that you used in Activity Now hold the string in your hand and let the stone hang from it This is a pendulum Pull the stone to one side with the other hand and let it go Now the pendulum is in motion It is an example of periodic motion A branch of a tree moving to and fro motion of a child on a swing strings of a guitar or the membrane of drums tabla being played are all examples of periodic motion where an object or a part of it repeats its motion after a fixed interval of time Did you observe a sewing machine as a part of Activity You must have observed that it remains at the same location while any point on its wheel moves with a circular motion It also has a needle that moves up and down continuously as long as the wheel rotates isn't it This needle is undergoing a periodic motion Have you observed closely the motion of a ball along the ground Here the ball is rolling on the ground rotating as well as moving forward along the ground Thus the ball undergoes a rectilinear motion as well as rotational motion Can you think of other examples where objects undergo combinations of different types of motion We did many measurement activities and discussed some kinds of motion We saw that motion is a change in the position of an object with time The change in this position can be determined through distance measurements This allows us to know how fast or slow a motion is The movement of a snail on the ground a butterfly flitting from flower to flower a river flowing an aeroplane flying moon going around the Earth and blood flowing inside our bodies show that there is motion everywhere around us Boojho is not sure why we say that the distance of the stone from your hand is the same when we whirl it around Can you help him understand this Remember that the stone is held with a string Light Shadows and Reflections We see so many objects around us On the way to school we see things like buses cars cycles trees animals and sometimes flowers How do you think we see objects Think of the same places at night time if it were completely dark What will you see Suppose you go inside a completely dark room Are you able to see any objects in the room But when you light a candle or a torch you can see the objects present in the room isn’t it Without light things cannot be seen Light helps us see objects The torch bulb is an object that gives out light of its own The Sun is another familiar object that gives its own light During the day its light allows us to see objects Objects like the sun that give out or emit light of their own are called luminous objects What about objects like a chair a painting or a shoe We see these when light from a luminous object like the Sun a torch or an electric light falls on these and then travels towards our eye Look around yourself and collect as many objects as you can an eraser plastic scale pen pencil notebook single sheet of paper tracing paper or a piece of cloth Try to look at something far away through each of these objects Is light from a far away object able to travel to your eye through any of the objects Record your observations in a table as shown in Table We see that a given object or material could be transparent translucent or opaque depending on whether it allows light to pass through it completely partially or not at all Recall our grouping objects as opaque transparent or translucent in Chapter If we cannot see through an object at all it is an opaque object If you are able to see clearly through an object it is allowing light to pass through it and is transparent There are some objects through which we can see but not very clearly Such objects are known as translucent WHAT EXACTLY ARE SHADOWS Activity Now one by one hold each of the opaque objects in the sunlight slightly above the ground What do you see on the ground You know that the dark patch formed by each on the ground is due to its shadow Sometimes you can identify the object by looking at its shadow Spread a sheet of paper on the ground Hold a familiar opaque object at some height so that its shadow is formed on the sheet of paper on the ground Ask one of your friends to draw the outline of the shadow while you are holding the object Draw outlines of the shadows of other objects in a similar way Now ask some other friends to identify the objects from these outlines of shadows How many objects are they able to identify correctly Do you observe your shadow in a dark room or at night when there is no light Do you observe a shadow when there is just a source of light and nothing else in a room It seems we need a source of light and an opaque object to see a shadow Is there anything else required Activity This is an activity that you will have to do in the dark In the evening go out in an open ground with a few friends Take a torch and a large sheet of cardboard with you Hold the torch close to the ground and shine it upwards so that its light falls on your friend's face You now have a source of light that is falling on an opaque object If there were no trees building or any other object behind your friend would you see the shadow of your friend's head This does not mean that there is no shadow After all the light from the torch is not able to pass through his body to the other side Now ask another friend to hold the cardboard sheet behind your friend Is the shadow now seen on the cardboard sheet Thus the shadow can be seen only on a screen The ground walls of a room a building or other such surfaces act as a screen for the shadows you observe in everyday life Shadows give us some information about shapes of objects Sometimes shadows can also mislead us about the shape of the object In are a few shadows that we can create with our hands and make-believe that they are shadows of different animals Have fun Activity Place a chair in the school ground on a sunny day What do you observe from the shadow of the chair Does the shadow give an accurate picture of the shape of the chair If the chair is turned around a little how does the shape of the shadow change Take a thin notebook and look at its shadow Then take a rectangular box and look at its shadow Do the two shadows seem to have a similar shape Take flowers or other objects of different colours and look at their shadows A red rose and a yellow rose for instance Do the shadows look different in colour when the colours of the objects are different Take a long box and look at its shadow on the ground When you move the box around you may see that the size of the shadow changes When is the shadow of the box the shortest when the long side of the box is pointed towards the Sun or when the short side is pointing towards the Sun Let us use this long box to prepare a simple camera A PINHOLE CAMERA You might think that we need a lot of stuff to make a camera Not really If we just wish to make a simple pin hole camera Activity Take two boxes of cardboard such that one can slide into another with no gap in between them Cut open one side of each box On the opposite face of the larger box make a small hole in the middle a In the smaller box cut out from the middle a square with a side of about to cm Cover this open square in the box with tracing paper translucent screen b Slide the smaller box inside the larger one with the hole in such a way that the side with the tracing paper is inside c Your pinhole camera is ready for use Holding the pinhole camera look through the open face of the smaller box You should use a piece of black cloth to cover your head and the pinhole camera Now try to look at some distant objects like a tree or a building through the pinhole camera Make sure that the objects you wish to look at through your pinhole camera are in bright sun shine Move the smaller box forward or backward till you get a picture on the tracing paper pasted at the other end Are these pinhole images different from their shadows Look through your pinhole camera at the vehicles and people moving on the road in bright sunlight Do the pictures seen in the camera show the colours of the objects on the other side Are the images erect or upside down Surprise surprise Let us now image the Sun with our pinhole camera We need a slightly different set up for this We just need a large sheet of cardboard with a small pinhole in the middle Hold the sheet up in the Sun and let its shadow fall on a clear area Do you see a small circular image of the Sun in the middle of the shadow of the cardboard sheet Look at these pinhole images of the Sun when an eclipse is visible from your location Adjust your pinhole and screen to get a clear image before the eclipse is to occur Look at the image as the eclipse begins You will notice a part of the image of the Sun gradually becoming darker as the eclipse starts Never ever look directly at the Sun That could be extremely harmful for the eyes There is an interesting pinhole camera in nature Sometimes when we pass under a tree covered with large number of leaves we notice small patches of sunlight under it These circular images are in fact pinhole images of the Sun The gaps between the leaves act as the pinholes These gaps are all kinds of irregular shapes but we can see circular images of the Sun Try to locate images of the Sun when an eclipse occurs next That could be so much fun Boojho has this thought We saw upside down images of people on the road with our pinhole camera What about the images of the Sun Did we notice them to be upside down or anything like that a Is the candle visible Bend the pipe a little while you are looking at the candle b Is the candle visible now Turn the pipe a little to your right or left Can you see the candle now What do you conclude from this This suggests that light travels along a straight line isn’t it That is why when opaque objects obstruct it a shadow forms We all use mirrors at home You look into the mirror and see your own face inside the mirror What you see is a reflection of your face in the mirror We also see reflections of other objects that are in front of the mirror Sometimes we see reflections of trees buildings and other objects in the water of a pond or a lake adjust the direction of the torch so that the patch of light falls on another friend standing in the room This activity suggests that a mirror changes the direction of light that falls on it Here is an activity that shows light travelling along straight lines and getting reflected from a mirror This activity should be done at night or in a dark room Ask one of your friends to hold a mirror in his her hand at one corner of the room Stand at another corner with a torch in your hand Cover the glass of torch with your fingers and switch it on Adjust your fingers with a small gap between them so that you can get a beam of light Direct the beam of the torch light onto the mirror that your friend is holding Do you see a patch of light on the other side Now Fix a comb on one side of a large thermo Col sheet and fix a mirror on the other side as shown in Spread a dark coloured sheet of paper between the mirror and the comb Keep this in sunlight or send a beam of light from a torch through the comb What do you observe Do you get a pattern similar to that shown in This activity gives us an idea of the manner in which light travels and gets reflected from a mirror Electricity and Circuits We use electricity for many purposes to make our tasks easier For example we use electricity to operate pumps that lift water from wells or from ground level to the roof top tank What are other purposes for which you use electricity List some of them in your notebook Does your list include the use of electricity for lighting Electricity makes it possible to light our homes roads offices markets and factories even after sunset This helps us to continue working at night A power station provides us with electricity However the supply of electricity may fail or it may not be available at some places In such situations a torch is sometimes used for providing light A torch has a bulb that lights up when it is switched on Where does the torch get electricity from Electricity to the bulb in a torch is provided by the electric cell Electric cells are also used in alarm clocks wristwatches transistor radios cameras and many other devices Have you ever carefully looked at an electric cell You might have noticed that it has a small metal cap on one side and a metal disc on the other side Did you notice a positive sign and a negative sign marked on the electric cell The metal cap is the positive terminal of the electric cell The metal disc is the negative terminal All electric cells have two terminals a positive terminal and a negative terminal An electric cell produces electricity from the chemicals stored inside it When the chemicals in the electric cell are used up the electric cell stops producing electricity The electric cell then has to be replaced with a new one A torch bulb has an outer case of glass that is fixed on a metallic base Caution You might have seen the danger sign shown here displayed on poles electric substations and many other places It is to warn people that electricity can be dangerous if not handled properly Carelessness in handling electricity and electric devices can cause severe injuries and sometimes even death Hence you should never attempt to experiment with the electric wires and sockets Also remember that the electricity generated by portable generators is equally dangerous Use only electric cells for all activities related to electricity Caution Never join the two terminals of the electric cell without connecting them through a switch and a device like a bulb If you do so the chemicals in the electric cell get used up very fast and the cell stops working Take a torch and look inside its bulb You can also take out the bulb with the help of your teacher What do you notice Do you find a thin wire fixed in the middle of the glass bulb b Now switch the torch on and observe which part of the bulb is glowing The thin wire that gives off light is called the filament of the bulb The filament is fixed to two thicker wires which also provide support to it as shown in b One of these thick wires is connected to the metal case at the base of the bulb b The other thick wire is connected to the metal tip at the centre of the base The base of the bulb and the metal tip of the base are the two terminals of the bulb These two terminals are fixed in such a way that they do not touch each other The electric bulbs used at home also have a similar design Thus both the electric cell and the bulb have two terminals each Why do they have these two terminals Take four lengths of electric wire with differently coloured plastic coverings Remove a little of the plastic covering from each length of wire at the ends This would expose the metal wires at the ends of each length Fix the exposed parts of two wires to the cell and the other two of the bulb as shown in and You can stick the wires to the bulb with the tape used by electricians Use rubber bands or tape to fix the wires to the cell Now connect the wires fixed to the bulb with those attached to the cell in six different ways as have been shown in a to f For each arrangement find out whether the bulb glows or not Write Yes or No for each arrangement in your notebook Now carefully look at the arrangements in which the bulb glows Compare these with those in which the bulb does not glow Can you find the reason for the difference Keep the tip of your pencil on the wire near one terminal of the electric cell for the arrangment in a Move the pencil along the wire all the way to the bulb Now from the other terminal of the bulb move along the other wire connected to the cell Repeat this exercise for all the other arrangements in Did the bulb glow for the arrangements in which you could not move the pencil from one terminal to the other AN ELECTRIC CIRCUIT In Activity you connected one terminal of the electric cell to the other terminal through wires passing to and from the electric bulb Note that in the arrangements shown in a and f the two terminals of the electric cell were connected to two terminals of the bulb Such an arrangement is an example of an electric circuit The electric circuit provides a complete path for electricity to pass current to flow between the two terminals of the electric cell The bulb glows only when current flows through the circuit In an electric circuit the direction of current is taken to be from the positive to the negative terminal of the electric cell as shown in When the terminals of the bulb are connected with that of the electric cell by wires the current passes through the filament of the bulb This makes the bulb glow Sometimes an electric bulb does not glow even if it is connected to the cell This may happen if the bulb has fused Look at a fused bulb carefully Is the filament inside it intact ELECTRICITY AND CIRCUITS An electric bulb may fuse due to many reasons One reason for a bulb to fuse is a break in its filament A break in the filament of an electric bulb means a break in the path of the current between the terminals of the electric cell Therefore a fused bulb does not light up as no current passes through its filament Can you now explain why the bulb did not glow when you tried to do so with the arrangements shown in b c d and e Now we know how to make a bulb light up using an electric cell Would you like to make a torch for yourself Activity Take a torch bulb and a piece of wire Remove the plastic covering at the two ends of the wire as you did before Wrap one end of a wire around the base of an electric bulb as shown in Fix the other end of the wire to the negative terminal of an electric cell with a rubber band Now bring the tip of the base of the bulb that is its other terminal in contact with the positive terminal of the cell Does the bulb glow Now move the bulb away from the terminal of the electric cell Does the bulb remain lighted Is this not similar to what you do when you switch your torch on or off a drawing pin into the ring at one end of the safety pin and fix it on the thermo Col sheet as shown in Make sure that the safety pin can be rotated freely Now fix the other drawing pin on the thermo Col sheet in a way that the free end of the safety pin can touch it The safety pin fixed in this way would be your switch in this activity We had an arrangement for switching on or off our home made torch by moving the base of the bulb away from the tip of the cell This was a simple switch but not very easy to use We can make another simple and easier switch to use in our circuit Activity You can make a switch using two drawing pins a safety pin or a paper clip two wires and a small sheet of thermo Col or a wooden board Insert Now make a circuit by connecting an electric cell and a bulb with this switch as shown in Rotate the safety pin so that its free end touches the other drawing pin What do you observe Now move the safety pin away Does the bulb continue to glow The safety pin covered the gap between the drawing pins when you made it touch two of them In this position the switch is said to be on Since the material of the safety pin allows the current to pass through it the circuit was complete Hence the bulb glows On the other hand the bulb did not glow when the safety pin was not in touch with the other drawing pin The circuit was not complete as there was a gap between the two drawing pins In Boojho has drawn the inside of the torch as in When we close the switch the circuit is completed and the bulb glows Can you draw a red line on the figure indicating the complete circuit Reflector this position the switch is said to be off as in A switch is a simple device that either breaks the circuit or completes it The switches used in lighting of electric bulbs and other devices in homes work on the same principle although their designs are more complex ELECTRIC CONDUCTORS AND INSULATORS In all our activities we have used metal wires to make a circuit Suppose we use a cotton thread instead of a metal wire to make a circuit Do you think that the bulb will light up in such a circuit What materials can be used in electric circuits so that the current can pass through them Let us find out Activity Disconnect the switch from the electric circuit you used for Activity This would leave you with two free ends of wires as shown in a Bring the free ends of the two wires close to let them touch each other Does the bulb light up You can now use this arrangement to test whether any given material allows current to pass through it or not Collect samples of different types of materials such as coins cork rubber glass keys pins plastic scale wooden block aluminium foil candle sewing needle thermo Col paper and pencil lead One by one bring the free ends of the wires of your tester in contact with two ends of the samples you have collected b Make sure that the two wires do not touch each other while you are doing so Does the bulb glow in each case Make a table in your notebook similar to Table and record your observations Table Conductors and insulators Object used in place of the switch What do you find The bulb does not glow when the free ends of the wires are in contact with some of the materials you have tested This means that these materials do not allow the electric current to pass through them On the other hand some materials allow electric current to pass through them which is indicated by the glowing bulb Materials which allow electric current to pass through them are conductors of electricity Insulators do not allow electric current to pass through them With the help of Table name the materials that are conductors of electricity and also those which are insulators Conductors Insulator What do you conclude Which materials are conductors and which are insulators Recall the objects that we grouped as those having lustre in Chapter Are they the conductors It now seems easy to understand why copper aluminum and other metals are used for making wires Let us recall Activity in which we made an electric circuit with a switch When the switch was in the open position were the two drawing pins not connected with each other through the thermo Col sheet But thermo Col you may have found is an insulator What about the air between the gap Since the bulb does not glow when there is only air in the gap between the drawing pins in your switch it means that air is also an insulator Conductors and insulators are equally important for us Switches electrical plugs and sockets are made of conductors On the other hand rubber and plastics are used for covering electrical wires plug tops switches and other parts of electrical appliances which people might touch Fun with Magnets Paheli and Boojho went to a place where a lot of waste material was piled into huge heaps Something exciting was happening A crane was moving towards the heap of junk The long hand of the crane lowered a block over a heap It then began to move Guess what Many pieces of iron junk were sticking to the block as it moved away They had just read a very interesting book on magnets and knew immediately that there must be a magnet attached to the end of the crane that was picking up iron from the junk yard You might have seen magnets and have even enjoyed playing with them Have you seen stickers that remain attached to iron surfaces like almirahs or the doors of refrigerators In some pin holders the pins seem to be sticking to the holder In some pencil boxes the lid fits tightly when we close it even without a locking arrangement Such stickers pin holders and pencil boxes have magnets fitted inside If you have any one of these items try to locate the magnets hidden in these How Magnets Were Discovered It is said that there was a shepherd named Magnes who lived in ancient Greece He used to take his herd of sheep and goats to the nearby mountains for grazing He would take a stick with him to control his herd The stick had a small piece of iron attached at one end One day he was surprised to find that he had to pull hard to free his stick from a rock on the mountainside It seemed as if the stick was being attracted by the rock The rock was a natural magnet and it attracted the iron tip of the shepherd's stick It is said that this is how natural magnets were discovered Such rocks were given the name magnetite perhaps after the name of that shepherd Magnetite contains iron Some people believe that magnetite was first discovered at a place called Magnesia The substances having the property of attracting iron are now known as magnets This is how the story goes In any case people now have discovered that certain rocks have the property of attracting pieces of iron They also found that small pieces of these rocks have some special properties They named these naturally occurring materials magnets Later on the process of making magnets from pieces of iron was discovered These are known as artificial magnets MAGNETIC AND NON-MAGNETIC MATERIALS Let us walk in the footsteps of Magnes Only this time we will change the positions of the magnet and the iron There will be a magnet at the end of our shepherd's stick We can attach a small magnet to a hockey stick walking stick or a cricket wicket with a tape or some glue Let us now go out on a Magnes walk through the school playground What does our Magnes stick pick up from the school ground What about objects in the classroom Collect various objects of day-to-day use from your surroundings Test these with the Magnes stick You can also take a magnet touch these objects with it and observe which objects stick to the magnet Prepare a table in your notebook as shown in Table and record your observations Look at the last column of Table and note the objects that are attracted by a magnet Now make a list of materials from which these objects are made Is there any material common in all the objects that were attracted by the magnet We understand that magnet attracts certain materials whereas some do not get attracted towards magnet The materials which get attracted towards a magnet are magnetic for example iron nickel or cobalt The materials which are not attracted towards a magnet are non-magnetic What materials did you find to be nonmagnetic from Table Is soil a magnetic or a non-magnetic material Boojho has this question for you A tailor was stitching buttons on his shirt The needle has slipped from his hand on to the floor Can you help the tailor to find the needle Activity Rub a magnet in the sand or soil Pull out the magnet Are there some particles of sand or soil sticking to the magnet Now gently shake the magnet to remove the particles of sand or soil Are some particles still sticking to it These might be small pieces of iron iron filings picked up from the soil Through such an activity we can find out whether the soil or sand from a given place contains particles that have iron Try this activity near your home school or the places you visit on your holidays Does the magnet with iron filings sticking to it look like any one of those shown in Make a table of what you find a If you fill this table and send it to Paheli and Boojho they can compare the amount of iron filings found in soil from different parts of the country They can share this information with you We observed that iron filings if they are present stick to a magnet rubbed in the soil Did you observe anything special about the way they stick to the magnet Spread some iron filings on a sheet of paper Now place a bar magnet on this sheet What do you observe Do the iron filings stick all over the magnet Do you observe that more iron filings get attracted to some parts of the magnet than others Remove the iron filings sticking to the magnet and repeat the activity Do you observe any change in the pattern with which the iron filings get attracted by different parts of the magnet You can do this activity using pins or iron nails in place of iron filings and also with magnets of different shapes Draw a diagram to show the way iron filings stick to the magnet Is your drawing similar to that shown in a We find that the iron filings are attracted more towards the region close to two ends of a bar magnet Poles of a magnet are said to be near these ends Try and bring a few magnets of different shapes to the classroom Check for the location of the poles on these magnets using iron filings Can you now mark the location of poles in the kind of magnets shown in Paheli has this puzzle for you You are given two identical bars which look as if they might be made of iron One of them is a magnet while the other is a simple iron bar How will you find out which one is a magnet FINDING DIRECTIONS Magnets were known to people from ancient times Many properties of magnets were also known to them You might have read many interesting stories about the uses of magnets One such story is about an emperor in China named Hoang Ti It is said that he had a chariot with a statue of a lady that could rotate in any direction It had an extended arm as if it was showing the way The statue had an interesting property It would rest in such a position that its extended arm always pointed towards South By looking at the extended arm of the statue the Emperor was able to locate directions when he went to new places on his chariot Activity Take a bar magnet Put a mark on one of its ends for identification Now tie a thread at the middle of the magnet so that you may suspend it from a wooden stand Make sure that the magnet can rotate freely Let it come to rest Mark two points on the ground to show the position of the ends of the magnet when it comes to rest Draw a line joining the two points This line shows the direction in which the magnet was pointing in its position of rest Now rotate the magnet by gently pushing one end in any direction and let it come to rest Again mark the position of the two ends in its position of rest Does the magnet now point in a different direction Rotate the magnet in other directions and note the final direction in which it comes to rest Do you find that the magnet always comes to rest in the same direction Now can you guess the mystery behind the statue in the Emperor's chariot Repeat this activity with an iron bar and a plastic or a wooden scale instead of a magnet Do not use light objects for this activity and avoid doing it where there are currents of air Do the other materials also always come to rest in the same direction We find that a freely suspended bar magnet always comes to rest in a particular direction which is the NorthSouth direction Use the direction of the rising sun in the morning to find out the rough direction towards east where you are doing this experiment If you stand facing east to your left will be North Using the Sun for finding directions may not be very exact but it will help to make out the direction North from the South on your line Using this you can figure out which end of the magnet is pointing to the North and which points to the South The end of the magnet that points towards North is called its North seeking end or the North pole of the magnet The other end that points towards the South is called South seeking end or the South pole of the magnet All magnets have two poles whatever their shape may be Usually north N and south S poles are marked on the magnets This property of the magnet is very useful for us For centuries travellers have been making use of this property of magnets to find directions It is said that in olden days travellers used to find directions by suspending natural magnets with a thread which they always carried with them Later on a device was developed based on this property of magnets It is known as the compass A compass is usually a small box with a glass cover on it A magnetised needle is pivoted inside the box which can rotate freely The compass also has a dial with directions marked on it The compass is kept at the place where we wish to know the directions Its needle indicates the north-south direction when it comes to rest The compass is then rotated until the north and south marked on the dial are at the two ends of the needle To identify the north-pole of the magnetic needle it is usually painted in a different colour MAKE YOUR OWN MAGNET There are several methods of making magnets Let us learn the simplest one Take a rectangular piece of iron Place it on the table Now take a bar magnet and place one of its poles near one edge of the bar of iron Without lifting the bar magnet move it along the length of the iron bar till you reach the other end Now lift the magnet and bring the pole the same pole you started with to the same point of the iron bar from which you began Move the magnet again along the iron bar in the same direction as you did before Repeat this process about times Bring a pin or some iron filings near the iron bar to check whether it has become a magnet If not continue the process for some more time Remember that the pole of the magnet and the direction of its movement should not change You can also use an iron nail a needle or a blade and convert them into a magnet You now know how to make a magnet Would you like to make your own compass Activity Magnetise an iron needle using a bar magnet Now insert the magnetised needle through a small piece of cork or foam Let the cork float in water in a A bowl or a tub Make compass in a cup sure that the needle does not touch the water Your compass is now ready to work Make a note of the direction in which the needle points when the cork is floating Rotate the cork with the needle fixed in it in different directions Note the direction in which the needle points when the cork begins to float again without rotating Does the needle always point in the same direction when the cork stops rotating Let us play another interesting game with magnets Take two small toy cars and label them A and B Place a bar magnet on top of each car along its length and fix them with rubber bands In car A keep the south pole of the magnet towards its front Place the magnet in opposite direction in car B Now place the two cars close to one another What do you observe Do the cars remain at their places Do the cars run away from each other Do they move towards each other and collide Record your observations in a table as shown in Table Now place the toy cars close to each other such that the rear side of car A faces the front side of car B Do they move as before Note the direction in which the cars move now Next place the car A behind car B and note the direction in which they move in each case Repeat the activity by placing cars with their rear sides facing each other Record your observations in each case What do we find from this activity Do two similar poles attract or repel each other What about opposite poles do they attract or repel each other This property of the magnets can also be observed by suspending a magnet and bringing one by one the poles of another magnet near it Boojho has this question for you What will happen if a magnet is brought near a compass Magnets loose their properties if they are heated hammered or dropped from some height Also magnets become weak if they are not stored properly To keep them safe bar magnets should be kept in pairs with their unlike poles on the same side They must be separated by a piece of wood while two pieces of soft iron should be placed across their ends For horse-shoe magnet one should keep a piece of iron across the poles Keep magnets away from cassettes mobiles television music system compact disks CDs and the computer Magnetite is a natural magnet Magnet attracts materials like iron nickel cobalt These are called magnetic materials Materials that are not attracted towards magnet are called non-magnetic Each magnet has two magnetic poles North and South A freely suspended magnet always aligns in N-S direction Opposite poles of two magnets attract each other whereas similar poles repel one another Water Suppose for some reason your family gets only one bucket of water everyday for a week Imagine what would happen Would you be able to cook clean utensils wash clothes or bathe What are the other activities you would not be able to do What would happen if we do not have easy access to water for a long period of time Apart from drinking there are so many activities for which we use water Do you have an idea about the quantity of water we use in a single day List all the activities for which you use water in a day Some activities are listed in Table Make a similar table in your notebook Throughout the day measure the amount of water used for each activity by you and other family members You may use a mug a glass a bucket or any other container to measure the amount of water used You now have a rough idea as to how much water your family uses in a day Can you estimate the amount of water used by you for personal cleanliness in a day Using this information calculate the amount of water needed by your family in a year Now divide this amount by the number of members of your family This will give an idea of the amount of water needed by one member of your family in a year Find the number of people that live in your village or town You may now get an idea of the amount of water needed by your village or town in a year Boojho wonders whether people living in different regions of our country get the same amount of water Are there regions where people do not get adequate amount of water How do they manage You have listed a number of activities for which you use water Do you think our water requirement is limited to activities like these We use wheat rice pulses vegetables and many other food items everyday We know that some of the fibres that we use for making fabric come from plants Is water not needed to grow these Can you think of some more uses of water Water is used in industries for producing almost all the things that we use So we need water not only for our daily activities but also for producing many things water from a river spring pond well or a hand pump Some others might say We get water from taps Have you ever wondered where water in the taps comes from Water that we get from taps is also drawn from a lake or a river or a well It is then supplied through a network of pipes Each of us may be getting water into our homes in different ways But finally all of us get water from the same sources such as ponds lakes rivers and wells We have discussed some of the sources of water Where does the water come from to fill these ponds lakes rivers and wells Paheli wants to tell you that about two glasses of water are required to produce each page of a book WHERE DO WE GET WATER FROM Where do you get the water that you use Some of you may say We draw WATER Boojho wants you to imagine a day in your life when water supply through taps is not available So you have to fetch it yourself from a far away place Would you use the same amount of water as on any other day Do you know that about two thirds of the Earth is covered with water Most of this water is in oceans and seas The water in the oceans and seas has many salts dissolved in it the water is saline So it is not fit for drinking and other domestic agricultural and industrial needs You might have heard the famous lines of the poem Rime of the Ancient Mariner written by S T Coleridge in How many times have you noticed that water spilled on a floor dries up after some time The water seems to disappear Similarly water disappears from wet clothes as they dry up Water from wet roads rooftops and a few other places also disappears after the rains Where does this water go Here the poet has described the plight of sailors on a ship lost in the ocean Yet oceans play an important role in supplying the water that we use Do you find this surprising After all the water that we use is not salty Many of us live in places far away from the oceans Does the water supply in these places also depend on the oceans How does the ocean water reach ponds lakes rivers and wells which supply us water How come the water from these sources is not saline anymore Do you remember Activity in Chapter in which water with salt dissolved in it was heated What did we find The water evaporated and the salt was left behind This activity gives us an idea that on heating water changes into its vapour We also realise from this activity that water vapour does not carry away the salt with it Water vapours so formed become a part of the air and cannot usually be seen We also found that heating is essential to convert water into its vapour However we have seen that water changes into its vapour also from the fields roads rooftops and other land areas We also discussed in Chapter that to obtain salt water from the sea is left in shallow pits to let the water evaporate From where does this water get the heat it needs to evaporate Let us find out Activity Take two similar plates Place one of the plates in sunlight and keep the other under shade Now pour equal amount of water in each of the plates You can use a cap of a bottle to measure water Make sure that water does not spill over Observe the two plates after every minutes Does the water seem to disappear From which plate does it disappear first What is the source of heat for this evaporation During the daytime sunlight falls on the water in oceans rivers lakes and ponds The fields and other land areas also receive sunlight As a result water from all these places continuously changes into vapour However the salts dissolved in the water are left behind In Activity did you find that water also disappeared from the plate kept in the shade though it could have taken more time Does the heat from the sunlight reach here Yes during the daytime all the air surrounding us gets heated This warm air provides heat for evaporation of water in the shade Thus evaporation takes place from all open surfaces of water As a result water vapour gets continuously added to air However evaporation of water is a slow process That is why we rarely notice its loss from a bucket full of water In sunlight evaporation takes place faster On heating water on a burner its evaporation takes place even faster Is there any other process through which water vapour gets transferred into air Loss of Water by Plants You have learnt in Chapter that plants need water to grow Plants use a part of this water to prepare their food and Boojho has been reading about transpiration He asked himself how much water is lost through transpiration by wheat plants that give us one kilogram of wheat He found out that this is nearly litres that is roughly large sized buckets full of water Can you now imagine the amount of water lost by plants of all the forests crops and grasslands together retain some of it in their different parts Remaining part of this water is released by the plants into air as water vapour through the process of transpiration Do you remember observing transpiration of water by plants in Activity in Chapter Water vapour enters the air through the processes of evaporation and transpiration Is it lost forever No we get it back again as we will see Paheli has noticed dew on leaves of grass on winter mornings Did you notice something similar on leaves or metal surfaces like iron grills and gates on a cold morning Is this also due to condensation Do you see this happening on hot summer mornings How are clouds formed Activity Take a glass half filled with water Wipe the glass from the outside with a clean piece of cloth Add some ice into the water Wait for one or two minutes Observe the changes that take place on the outer surface of the glass From where do water drops appear on the outer side of the glass The cold surface of the glass containing iced water cools the air around it and the water vapour of the air condenses on the surface of the glass We noticed this process of condensation in Activity in Chapter The process of condensation plays an important role in bringing water back to the surface of earth How does it happen As we go higher from the surface of the earth it gets cooler When the air moves up it gets cooler and cooler At sufficient heights the air becomes so cool that the water vapour present in it condenses to form tiny drops of water called droplets It is these tiny droplets that remain floating in air and appear to us as clouds It so happens that many droplets of water come together to form larger sized drops of water Some drops of water become so heavy that they begin to fall These falling water-drops are what we call rain In special conditions it may also fall as hail or snow Thus water in the form of vapour goes into air by evaporation and transpiration forms clouds and then comes back to the ground as rain hail or snow BACK TO THE OCEANS What happens to the water that rain and snow bring to different regions of earth Almost all land surfaces are above the level of oceans Most of the water that falls on the land as rain and snow sooner or later goes back to the oceans This happens in many ways Snow in the mountains melts into water This water flows down the mountains in the form of streams and rivers Some of the water that falls on land as rain also flows in the form of rivers and streams Most of the rivers cover long distances on land and ultimately fall into a sea or an ocean However water of some rivers flows into lakes The rainwater also fills up the lakes and ponds A part of the rainwater gets absorbed by the ground and seems to disappear in the soil Some of this water is brought back to the air by the process of evaporation and transpiration The rest seeps into the ground Most of this water becomes available to us as ground water Open wells are fed by ground water Ground water is the source for many lakes as well It is also this ground water which is drawn by a handpump or a tubewell The more handpumps or tubewells that are used in an area the deeper we need to dig to find this ground water The loss in the level of ground water due to over use is worrisome Paheli wants to share a concern with you In those areas where the land has little or no vegetation the rainwater flows away quickly Flowing rainwater also takes the top layer of the soil away with it There are few areas where most of the land is covered with concrete This reduces the seepage of rainwater into the ground which ultimately affects the availability of ground water We now know that water brought back to the surface of the earth by rain hail or snow goes back to oceans Thus water from the ocean and surface of the earth goes into air as vapour returns as rain hail or snow and finally goes back to the oceans The circulation of water in this manner is known as the water cycle This circulation of water between ocean and land is a continuous process This maintains the supply of water on land The time duration and the amount of rainfall varies from place to place In some parts of the world it rains throughout the year while there are places where it rains only for a few days In our country most of the rainfall occurs during the monsoon season Rains bring relief especially after hot summer days The sowing of many crops depends on the arrival of monsoon However excess of rainfall may lead to many problems Heavy rains may lead to rise in the level of water in rivers lakes and ponds The water may then spread over large areas causing floods The crop fields forests villages and cities may get submerged by water In our country floods cause extensive damage to crops domestic animals property and human life During floods the animals living in the water also get carried away with the waters They often get trapped on land areas and die when floodwater recedes Rains also affect the animals living in the soil WHAT HAPPENS IF IT DOES NOT RAIN FOR A LONG PERIOD Can you imagine what would happen if it does not rain in a region for a year or more The soil continues to lose water by evaporation and transpiration Since it is not being brought back by rain the soil becomes dry The level of water in ponds and wells of the region goes down and some of them may even dry up The ground water may also become scarce This may lead to drought In drought conditions it is difficult to get food and fodder You might have heard about droughts occurring in some parts of our country or the world Are you aware of the difficulties faced by the people living in these areas What happens to the animals and the vegetation in these conditions Try and find out about this by talking to your parents and neighbours and by reading about it from newspapers and magazines Only a small fraction of water available on the Earth is fit for use of plants animals and humans Most of the water is in the oceans and it cannot be used directly When the level of the ground water decreases drastically this can not be used any more The total amount of water on Earth remains the same but the water available for use is very limited and is decreasing with over usage The demand for water is increasing day-by-day The number of people using water is increasing with rising population In many cities long queues for collection of water are a common site Also more and more water is being used for producing food and by the industries These factors are leading to shortage of water in many parts of the world Hence it is very important that water is used carefully We should take care not to waste water One way of increasing the availability of water is to collect rainwater and store it for later use Collecting rainwater in this way is called rainwater harvesting The basic idea behind rainwater harvesting is Catch water where it falls What happens to the rainwater that falls in places that are mostly covered with concrete roads and buildings It flows into the drains isn't it From there water goes to rivers or lakes which could be far away A lot of effort will then be required to get this water back into our homes as the water did not seep into the ground Here two techniques of rainwater harvesting are discussed Rooftop rainwater harvesting In this system the rainwater is collected from the rooftop to a storage tank through pipes This water may contain soil from the roof and need filtering before it is used Instead of collecting rainwater in the tank the pipes can go directly into a pit in the ground This then seeps into the soil to recharge or refill the ground water Another option is to allow water to go into the ground directly from the roadside drains that collect rainwater Air Around us We have learnt in Chapter that all living things require air But have you ever seen air You might not have seen air but surely you must have felt its presence in so many ways You notice it when the leaves of the trees rustle or the clothes hanging on a clothes-line sway Pages of an open book begin fluttering when the fan is switched on The moving air makes it possible for you to fly your kite Do you remember Activity in Chapter in which you separated the sand and sawdust by winnowing Winnowing is more effective in moving air You may have noticed that during storms the wind blows at a very high speed It may even uproot trees and blow off the rooftops Move it a little back and forth Observe what happens Does the firki rotate What makes a firki rotate moving air isn’t it Have you seen a weather cock It shows the direction in which the air is moving at that place Let us make a firki of our own following the instructions shown in Hold the stick of the firki and place it in different directions in an open area Take an empty open bottle Is it really empty or does it have something inside Turn it upside down Is something inside it now Now dip the open mouth of the bottle into the bucket filled with water as shown in Observe the bottle Does water enter the bottle Now tilt the bottle slightly Does the water now enter the bottle Do you see bubbles coming out of the bottle or hear any bubbly sound Can you now guess what was in the bottle Yes You are right It is air that was present in the bottle The bottle was not empty at all In fact it was filled completely with air even when you turned it upside down That is why you notice that water does not enter the bottle when it is pushed in an inverted position as there was no space for air to escape When the bottle was tilted the air was able to come out in the form of bubbles and water filled up the empty space that the air has occupied This activity shows that air occupies space It fills all the space in the bottle It is present everywhere around us Air has no colour and one can see through it It is transparent Our earth is surrounded by a thin layer of air This layer extends up to many kilometres above the surface of the earth and is called atmosphere As we move higher in the atmosphere the air gets rarer Now can you think mountaineers carry oxygen cylinders with them while climbing high mountains WHAT IS AIR MADE UP OF Until the eighteenth century people thought that air was just one substance Experiments have proved that it is really not so Air is a mixture of many gases What kind of a mixture is it Let us find out about some of the major components of this mixture one by one Water vapour We have learnt earlier that air contains water vapour We also saw that when air comes in contact with a cool surface it condenses and drops of water appear on the cooled surfaces The presence of water vapour in air is important for the water cycle in nature table Light both the candles Cover one of the candles with an inverted glass tumbler Observe both the candles carefully Do both the candles continue to burn or go off You must have observed that the candle covered with glass tumbler got extinguished after some time whereas the other candle continued burning What can be the reason for this Think about it It seems that the candle got extinguished because the component inside of the glass tumbler which supports burning is limited Most of the component is used up by the burning candles However the other candle is getting continued supply of air This component of air which supports burning is known as oxygen Nitrogen In Activity did you observe that air is still present in the glass bottle even after the candle blew out This indicates the presence of some component in the air which does not support burning The major part of air which does not support burning candle is nitrogen In a closed room if there is some material that is burning you may have felt suffocation This is due to excess of carbon dioxide that may be accumulating in the room as the burning continues Carbon dioxide makes up a small component of the air around us Plants and animals consume oxygen for respiration and produce carbon dioxide Plant and animal matter also consumes oxygen on burning and produces mainly carbon dioxide and a few other gases It is advisable not to burn dry leaves and discarded remains of the crop which pollute our surroundings Dust and smoke The burning of fuel also produces smoke Smoke contains a few gases and fine dust particles and is often harmful That is why you see long chimneys in factories This takes the harmful smoke and gases away from our noses but brings it closer to the birds flying up in the sky Dust particles are always present in air Find a sunny room in your school home Close all the doors and windows with curtains pulled down to make the room dark Now open the door or a window facing the sun just a little in such a way that it allows sunlight to enter the room only through a slit Look carefully at the incoming beam of sunlight Do you see some tiny shining particles moving in the beam of sunlight What are these particles During winters you might have observed similar beam of sunlight filter through the trees in which dust particles appear to dance merrily around This shows that air also contains dust particles The presence of dust particles in air varies from time to time and from place to place We inhale air when we breathe through our nostrils Fine hair and mucus are present inside the nose to prevent dust particles from getting into the respiratory system Do you recall being scolded by your parents when you breathe through your mouth If you do that harmful dust particles may enter your body We may conclude then that air contains some gases water vapour and dust particles The gases in air are mainly nitrogen oxygen small amount of carbon dioxide and many other gases However there may be some variations in the composition of air from place to place We see that air contains mostly nitrogen and oxygen In fact these two gases together make up of the air The r emaining is constituted by carbon dioxide and a few other gases and water vapour Paheli wants to know why the transparent glass of windows if not wiped off regularly appears hazy Boojho wants to know why during an incident of fire one is advised to wrap a woollen blanket over a burning object H OW DOES O XYGEN B ECOME AVAILABLE TO ANIMALS AND PLANTS LIVING IN WATER AND SOIL Activity Take some water in a glass or metal container Heat it slowly on a tripod stand Well before the water begins to boil look carefully at the inner surface of the container Do you see tiny bubbles on the inside These bubbles come from the air dissolved in water When you heat the water to begin with the air dissolved in it escapes As you continue heating the water itself turns into vapour and finally begins to boil We learnt in Chapters and that the animals living in water use the dissolved oxygen in water The organisms that live in soil also need oxygen to respire isn’t it How do they get the air they need for respiration Here is a question from Paheli Will the tiny air bubbles seen before the water actually boils also appear if we do this activity by reheating boiled water kept in an air tight bottle If you do not know the answer you may try doing it and see for yourself Activity Take a lump of dry soil in a beaker or a glass Add water to it and note what happens Do you see bubbles coming out from soil These bubbles indicate the presence of air in the soil When the water is poured on the lump of soil it displaces the air which is seen in the form of bubbles The organisms that live inside the soil and the plant roots respire in this air A lot of burrows and holes are formed in deep soil by the animals living in the soil These burrows also make spaces available for air to move in and out of the soil However when it rains heavily water fills up all the spaces occupied by the air in the soil In this situation animals living in the soil have to come out for respiration Could this be the reason why earthworms come out of the soil only during heavy rains Have you ever wondered why all the oxygen of atmosphere does not get used up though a large number of organisms are consuming it Who is refilling the oxygen in the atmosphere In Chapter we read about photosynthesis In this process plants make their own food and oxygen is produced along with it Plants also consume oxygen for respiration but they produce more of it than they consume That is why we say plants produce oxygen It is obvious that animals cannot live without plants The balance of oxygen The wind makes the windmill rotate The windmill is used to draw water from tubewells and to run flour mills Windmills are also used to generate electricity Air helps in the movements of sailing yachts gliders parachutes and aeroplanes Birds bats and insects can fly due to the presence of air Air also helps in the dispersal of seeds and pollen of flowers of several plants Air plays an important role in water cycle Garbage in Garbage out We throw out so much rubbish or garbage everyday from our homes schools shops and offices The grains pulses biscuits milk or oil purchased in shops are packed in plastic bags or tins All these wrapping material go out as garbage We sometimes buy things that are rarely used and often thrown into the garbage We generate so much garbage in our day-to-day activities We often throw groundnut shells on public places in buses or trains after eating the nuts We throw away the ticket when we get off a bus A child might go on sharpening pencils just for fun If we make mistakes or spill ink on our notebook we tear off the sheet and throw it away And we also throw away many domestic wastes such as broken toys old clothes shoes and slippers What if the garbage is not removed from our homes and surroundings How do you think this will harm us When safai karamcharis take the garbage from the bins where does the garbage go and what happens to it Is it possible for all of this garbage to be changed into something that will not harm us Can we contribute towards this in any way We will look for answers to these questions in this chapter A Step towards Cleanliness The Prime Minister of India launched the Swachh Bharat Mission SBM The aim of this mission is to create an open defecation-free India by October Children from Paheli and Boojho’s school did a project called Dealing with Garbage We will learn about some of the things they learnt through this project Safai karamcharis collect the garbage in trucks and take it to a low lying open area called a landfill There the part of the garbage that can be reused is separated out from the one that cannot be used as such Thus the garbage has both useful and nonuseful components The non-useful component is separated out It is then spread over the landfill and then covered with a layer of soil Once the landfill is completely full it is usually converted into a park or a play ground For the next years or so no building is constructed on it To deal with some of the useful components of garbage compost making areas are developed near the landfill What is compost Let us learn about it from the following activity Paheli did wonder as to what could be useful garbage Why was it thrown away in the first place Is there some garbage that is not actually garbage Collect the garbage from your house before it is thrown into the dustbin Separate it into two groups so that they have Group Garbage from the kitchen like fruit and vegetable peels egg shells waste food tea leaves Include newspapers dry leaves and paper bags in this group Group Pieces of cloth polythene bags broken glass aluminium wrappers nails old shoes and broken toys Now divide the contents of each group into two separate heaps Label them as A B C and D Put one heap from Group and one heap from Group into two separate plastic bags Tie the mouth of these two bags tightly Put all the four heaps in separate pits and cover them with soil You can also use four pots to bury these garbage heaps Remove the soil after four days and observe the changes in the garbage A black colour and no foul smell indicates that rotting of garbage is complete Put the heaps again in the pits and cover with the soil Observe again after every two days and note your observations as suggested Did the garbage i rot completely and not smell rot only partially rot almost completely but still smells bad not change at all Garbage in which heap was seen to rot and which did not Enter options i or in the columns of Table based on your observations If you make any other observations do not forget to write all these down in your notebook Do not remove and burn the garbage that did not rot If the garbage was found to rot completely and did not smell mix it in the soil where you sow your favourite plants This would provide nutrients to the plants You must have observed from this activity that some things in the garbage rot They form manure which is used for the plants The rotting and conversion of some materials into manure is called composting In some cities and towns municipalities provide separate dustbins for collecting two kinds of garbage Usually one is coloured blue and the other green The blue bin is for materials that can be used again such as plastics metals and glass Did you notice that these are the materials that do not rot in the garbage heaps The green bins are for collecting kitchen and other plant or animal wastes You may have noticed that this type of wastes rot completely when buried in the soil Do you see why it is necessary for us to separate waste into two groups as we did in Activity After before we throw it weeks Have you noticed garbage heaps of dried leaves on the roadside Most of the time these are burnt Farmers too often burn the husk dried leaves and part of crop plants in their fields after harvesting Burning of these produces smoke and gases that are harmful to our health We should try to stop such practices These wastes could be converted into useful compost Here are some of the observations and thoughts noted by Paheli and Boojho from their project Dealing with Garbage GARBAGE IN GARBAGE OUT Boojho noted in his notebook Do not burn leaves You will not be able to tolerate the fumes Paheli made a note in her notebook Why has the government not made burning of leaves a theft Not theft really ☺ She must have meant illegal She wanted that the government should make a law against the burning of leaves and other plant wastes anywhere in India We can be friends of plants by supplying them with compost We will also be very good friends to ourselves by making compost Talking of friends do you know that earthworms are called farmer’s friend Let us find out how a type of earthworm called redworm is used for composting This method of preparing compost with the help of redworms is called vermicomposting We can try to make manure by vermicomposting at school Sprinkle some water to make this layer wet Take care not to use excess of water Do not press the layer of waste Keep this layer loose so that it has sufficient air and moisture Now your pit is ready to welcome the redworms Buy some redworms and put them in your pit Cover them loosely with a gunny bag or an old sheet of cloth or a layer of grass Activity Let us dig a pit about cm deep or keep a wooden box at a place which is neither too hot nor too cold What about a place which does not get direct sunlight Let us now make a comfortable home for our redworms in the pit or the box Spread a net or chicken mesh at the bottom of the pit or the box You can also spread or cm thick layer of sand as an alternative Now spread some vegetable wastes including peels of fruits over this layer of sand One can also use green leaves pieces of dried stalks of plants husk or pieces of newspaper or carboard to spread over the layer of sand However shiny or plastic coated paper should not be used for this purpose Dried animal dung could also be used as a spread over sand or wire mesh Your redworms need food You can give them vegetable and fruit wastes coffee and tea remains and weeds from the fields or garden It might be a good idea to bury this food about cm inside the pit Do not use wastes that may contain salt pickles oil vinegar meat and milk preparations as food for your redworms If you put these things in the pit disease-causing small organisms start growing in the pit Once in a few days gently mix and move the top layers of your pit Redworms do not have teeth They have a structure called gizzard which helps them in grinding their food Powdered egg shells or sea shells could be mixed with the wastes This would help redworms in grinding their food A redworm can eat food equal to its own weight in a day Redworms do not survive in very hot or very cold surroundings They also need moisture around them If you take good care of your worms in a month’s time their number will double Observe the contents of the pit carefully after weeks Do you now see loose soil-like material in the pit Your vermicompost is ready Put some wastes as food in one corner of the pit Most of the worms will shift towards this part of the pit vacating the other part Remove the compost from the vacated part and dry it in the sun for a few hours Your vermicompost is ready for use The part left in the pit has most of the worms in it You can use these for preparing more compost or share them with another user Use this excellent vermicompost in your pots gardens or fields Is this not like getting the best out of waste Those of you who have agricultural fields can try vermicomposting in large pits You can save a lot of money that is spent on buying expensive chemical fertilizers and manure from the market How much of garbage do you think is thrown out by each house everyday You can make an estimate by using a bucket as a measure Use a litre bucket to collect the garbage from your home for a few days In how many days does the bucket become full You know the number of members in your family If you find out the population of your city or town can you now estimate the number of buckets of garbage that may be generated in a day in your city or town We are generating mountains of garbage everyday isn’t it Let us read a story about a village where there is less garbage and more wisdom Nanu studies in Class VI He is very fond of making paper planes His mother is very annoyed when he tears off sheets from new notebooks to make aeroplanes but Nanu does not care Once Nanu went to his aunt’s village along with his mother He was amazed at the variety of things his cousin Shyam had made Files from old charts greeting cards decorated with flowers made from pencil shavings mats from old clothes baskets from used old polythene bags were some of the items Nanu liked Shyam had even made a diary from invitation cards One morning Nanu went looking for his grandmother Nani He saw that she was applying a thick paste on a basket Nanu asked Nani What are you doing What is this paste This is papier-mâchè a paste made of clay and paper in which I have also mixed some rice husk replied Nani But why are you putting it on the basket asked Nanu To make it stronger said Nani and added would you like to learn this from me Nanu was not very keen and ran outside to play He was only interested in tearing up papers to make planes In fact he also started tearing up papers from Shyam’s files Shyam collected all the pieces of paper Nanu had used wondering what to do about him He just did not listen to anyone It was Nanu’s birthday in a few days Shyam planned to invite Nanu’s friends Nanu took out money from his mud pot and went to the market He bought some paper hats for his friends He asked the shopkeeper for a polythene bag to keep the hats who gave him a paper bag instead of polythene Nanu also bought many other items like biscuits and toffees He found it difficult to carry all of these things as no shopkeeper was ready to give a polythene bag Shyam had told him to carry a cloth bag with him and he was sorry he did not listen to him Somehow he managed to reach home with all his purchases Nanu’s friends enjoyed the feast on his birthday and played many games All his friends wore the shiny paper hats Nanu had bought Shyam had made beautiful papiermâchè masks for Nanu’s friends He had a special gift for Nanu as well A photoframe and a greeting card made from the paste of all the pieces of paper Nanu had thrown away It was a new experience for Nanu All his friends went home with their masks Nanu was too excited to finish his meal and look at his gifts Nanu returned home after his holidays were over How different his town was from Shyam’s village There were no rag pickers in the village as it was neat and clean But now he stopped making faces when he saw the rag picking children near his house You might have seen some children sorting the garbage near your house or at other places Observe the children at work and find out how they separate useful material from the garbage They are actually helping us Talk to one such child and find out What do they do with the rubbish they collect Where do they take it Does he she go to school What about his her friends If they do not go to school find out the possible reasons Can you help this child to read and write Have you ever helped at home to sell old newspapers glass and metal things plastic bags and your old notebooks to a garbage dealer Talk to him and find out what he does with all the garbage Would you like to make paper from old and discarded paper like Shyam Let us learn to do this You will require pieces of old newspapers magazines used envelopes notebooks or any other paper Do not use shiny plastic coated paper You will also need a frame fitted with a wire mesh or a net You can also use a large sized sieve in place of a frame Tear the paper into small pieces Put them in a tub or a bucket and pour water in it Let the pieces of paper remain submerged in water for a day Make a thick paste of paper by pounding it Now spread the wet paste on the wire mesh fixed to the frame Pat it gently to make the thickness of layer of the paste as uniform as possible Wait till water drains off If required spread an old cloth or a sheet of newspaper on the paste to let it soak up the extra water Now carefully remove the layer of paste from the frame spread it on a sheet of newspaper in the sun Keep the corners of the newspaper sheet pressed by putting some weights so that these do not curl up You can add food colour pieces of dry leaves or flower petals or pieces of coloured paper in the paste before spreading it It would help you to get a recycled paper with beautiful patterns on it Can we recycle everything just as we recycle paper Some kind of plastics can be recycled but not all of them Did you notice that polythene bags and some plastics did not rot in Activity You might now easily understand why polythene bags create a big problem in garbage disposal It may be a little difficult to imagine our life without plastics Shall we list a few things we use that are made of plastics Toys shoes bags pens combs tooth brushes buckets bottles and water pipes the list is very long Can you name a few parts of a bus car radio television refrigerator and a scooter that are made of plastics The use of plastics in itself might not create so much of a problem Problems arise when we use plastics excessively and are ignorant about ways of disposing their waste This is what is happening all around us We might even be acting irresponsibly knowing well about its harmful effects We often use plastic bags to store cooked food items Sometimes these bags may not be suitable for keeping eatables Consuming food packed in such plastic bags could be harmful to our health Many a time shopkeepers use plastic bags that have been used earlier for some other purpose Sometimes bags collected by rag pickers are also used after washing them Use of such recycled plastic bags to keep food items could be harmful for our health For storing eatables we must insist on use of plastic bags that are approved for such a use All kind of plastics give out harmful gases upon heating or burning These gases may cause many health problems including cancer in humans The government has also laid down guidelines for recycling of plastics Paheli would like to suggest that containers used for storing poisonous substances should be recycled separately and that such recycled plastics are not used to make plastic bags You must have noticed that people often fill garbage in plastic bags and then throw it away When stray animals look for food in these bags they end up swallowing these Sometimes they die due to this The plastic bags thrown away carelessly on roads and other places get into drains and the sewer system As a result drains get choked and the water spills on the roads During heavy rains it might even create a flood like situation There is a lot of harm that too much use of plastics can do What can we do to minimise over use of plastics and deal with garbage We make a minimum use of plastic bags We re-use the bags whenever it is possible to do so without any adverse affects We insist shopkeepers use paper bags We carry a cloth or a jute bag when we go out for shopping We do not use plastic bags to store eatables We do not throw plastic bags here and there after use We never burn plastic bags and other plastic items We do not put garbage in plastic bags and throw it away We use vermicomposting at home and deal with our kitchen waste usefully We recycle paper We use both sides of the paper to write We use a slate for rough work We use blank sheets of paper left in our notebooks for rough work We make our family friends and others to follow proper practices for disposing different kinds of wastes Think about some more ways to minimise overuse of plastics and discuss The most important point to know and think about is that more garbage we generate more difficult it will be to get rid of it CHAPTER WHAT WHERE HOW AND WHEN WHAT HOW Rasheeda’s question Rasheeda sat reading the newspaper Suddenly her eyes fell on a small headline One Hundred Years Ago How she wondered could anyone know what had happened so many years ago Yesterday you could listen to the radio watch television read a newspaper Last year ask somebody who remembers But what about long long ago Let us see how it can be done There are several things we can find out what people ate the kinds of clothes they wore the houses in which they lived We can find out about the lives of hunters herders farmers rulers merchants priests crafts persons artists musicians and scientists We can also find out about the games children played the stories they heard the plays they saw the songs they sang Where did people live Find the river Narmada on Map page People have lived along the banks of this river for several hundred thousand years Some of the earliest people who lived here were skilled gatherers that is people who gathered their food They knew about the vast wealth of plants in the surrounding forests and collected roots fruits and other forest produce for their food They also hunted animals Now find the Sulaiman and Kirthar hills to the northwest Some of the areas where women and men first began to grow crops such as wheat and barley about years ago are located here People also began rearing animals like sheep goat and cattle and lived in villages Locate the Garo hills to the north-east and the Vindhyas in central India These were some of the other areas where agriculture developed The places where rice was first grown are to the north of the Vindhyas Trace the river Indus and its tributaries tributaries are smaller rivers that flow into a larger river About years ago some of the earliest cities flourished on the banks of these rivers Later about years ago cities developed on the banks of the Ganga and its tributaries and along the sea coasts Locate the Ganga and its tributary called the Son In ancient times the area along these rivers to the south of the Ganga was known as Magadha now lying in the state of Bihar Its rulers were very powerful and set up a large kingdom Kingdoms were set up in other parts of the country as well Throughout people travelled from one part of the subcontinent to another The hills and high mountains including the Himalayas deserts rivers and seas made journeys dangerous at times but never impossible So men and women moved in search of livelihood as also to escape from natural disasters like floods or droughts Sometimes men marched in armies conquering others’ lands Besides merchants travelled with caravans or ships carrying valuable goods from place to place And religious teachers walked from village to village town to town stopping to offer instruction and advice on the way Finally some people perhaps travelled driven by a spirit of adventure wanting to discover new and exciting places All these led to the sharing of ideas between people Why do people travel nowadays Look at Map once more Hills mountains and seas form the natural frontiers of the subcontinent While it was difficult to cross these frontiers those who wanted could and did scale the mountains and cross the seas People from across the frontiers also came into the subcontinent and settled here Facing Page This is a map of South Asia including the present countries of India Pakistan Bangladesh Nepal Bhutan and Sri Lanka and the neighbouring countries of Afghanistan Iran China and Myanmar South Asia is often called a subcontinent because although it is smaller than a continent it is very large and is separated from the rest of Asia by seas hills and mountains These movements of people enriched our cultural traditions People have shared new ways of carving stone composing music and even cooking food over several hundreds of years Two of the words we often use for our country are India and Bharat The word India comes from the Indus called Sindhu in Sanskrit Find Iran and Greece in your atlas The Iranians and the Greeks who came through the northwest about years ago and were familiar with the Indus called it the Hindos or the Indos and the land to the east of the river was called India The name Bharata was used for a group of people who lived in the northwest and who are mentioned in the Rigveda the earliest composition in Sanskrit dated to about years ago Later it was used for the country A page from a palm leaf manuscript This manuscript was written about a thousand years ago The palm leaves were cut into pages and tied together to make books To see a birch bark manuscript turn to page There are several ways of finding out about the past One is to search for and read books that were written long ago These are called manuscripts because they were written by hand this comes from the Latin word manu meaning hand These were usually written on palm leaf or on the specially prepared bark of a tree known as the birch which grows in the Himalayas Over the years many manuscripts were eaten away by insects some were destroyed but many have survived often preserved in temples and monasteries These books dealt with all kinds of subjects religious beliefs and practices the lives of kings medicine and science Besides there were epics poems plays Many of these were written in Sanskrit others were in Prakrit languages used by ordinary people and Tamil We can also study inscriptions These are writings on relatively hard surfaces such as stone or metal Sometimes kings got their orders inscribed so that people could see read and obey them There are other kinds of inscriptions as well where men and women including kings and queens recorded what they did For example kings often kept records of victories in battle Can you think of the advantages of writing on a hard surface And what could have been the difficulties There were many other things that were made and used in the past Those who study these objects are called archaeologists They study the remains of buildings made of stone and brick paintings and sculpture They also explore and excavate dig under the surface of the earth to find tools weapons pots pans ornaments and coins Some of these objects may be made of stone others of bone baked clay or metal Objects that are made of hard imperishable substances usually survive for a long time An old inscription This inscription dates to about years ago and was found in Kandahar present-day Afghanistan It was inscribed on the orders of a ruler named Ashoka You will read about him in Chapter When we write anything we use a script Scripts consist of letters or signs When we read what is written or speak we use a language This inscription was inscribed in two different scripts and languages Greek top and Aramaic below which were used in this area Archaeologists also look for bones of animals birds and fish to find out what people ate in the past Plant remains survive far more rarely if seeds of grain or pieces of wood have been burnt they survive in a charred form Do you think cloth is found frequently by archaeologists Historians that is scholars who study the past often use the word source to refer to the information found from manuscripts inscriptions and archaeology Once sources are found learning about the past becomes an adventure as we reconstruct it bit by bit So historians and archaeologists are like detectives who use all these sources like clues to find out about our pasts Did you notice the title of this book Our Pasts We have used the word pasts in plural to draw attention to the fact that the past was different for different groups of people For example the lives of herders or farmers were different from those of kings and queens the lives of merchants were different from those of crafts persons and so on Also as is true even today people followed different practices and customs in different parts of the country For example today most people living in the Andaman Islands get their own food by fishing hunting and collecting forest produce By contrast most people living in cities depend on others for supplies of food Differences such as these existed in the past as well Besides there is another kind of difference We know a great deal about kings and the battles they fought because they kept records of their victories Generally ordinary people such as hunters fishing folk gatherers farmers or herders did not keep records of what they did While archaeology helps us to find out about their lives there is much that remains unknown If somebody asks you the date you will probably mention the day month and year and something These years are counted from the date generally assigned to the birth of Jesus Christ the founder of Christianity So means years after the birth of Christ All dates before the birth of Christ are counted backwards and usually have the letters BC Before Christ added on In this book we will refer to dates going back from the present using as our starting point BC we have seen stands for Before Christ You will sometimes find AD before dates This stands for two Latin words Anno Domini meaning in the year of the Lord i e Christ So can also be written as AD Sometimes CE is used instead of AD and BCE instead of BC The letters CE stand for Common Era and BCE for Before Common Era We use these terms because the Christian Era is now used in most countries of the world In India we began using this form of dating from about two hundred years ago And sometimes the letters BP meaning Before Present are used Find two dates mentioned on page Which set of letters would you use for them We have seen that inscriptions are inscribed on hard surfaces Many of these were inscribed several hundreds of years ago All inscriptions contain both scripts and languages Languages which were used as well as scripts have changed over time So how do scholars understand what was inscribed This can be done through a process known as decipherment One of the most famous stories of decipherment comes from Egypt a country in north Africa where there were kings and queens about years ago Rosetta is a town on the north coast of Egypt and here an inscribed stone was found which contained inscriptions in three different languages and scripts Greek and two forms of Egyptian Scholars who could read Greek figured out that the names of kings and queens were enclosed in a little frame called a cartouche They then placed the Greek and the Egyptian signs side by side and identified the sounds for which the Egyptian letters stood As you can see a lion stood for L and a bird for A Once they knew what the letters stood for they could read other inscriptions as well Tushar was going from Delhi to Chennai for his cousin’s wedding They were travelling by train and he had managed to squeeze into the window seat his nose glued to the glass pane As he watched trees and houses fly past his uncle tapped his shoulder and said Do you know that trains were first used about years ago and that people began using buses a few decades later Tushar wondered when people couldn’t travel quickly from one place to another did they spend their entire lives wherever they were born Not quite We know about people who lived in the subcontinent as early as two million years ago Today we describe them as hunter-gatherers The name comes from the way in which they got their food Generally they hunted wild animals caught fish and birds gathered fruits roots nuts seeds leaves stalks and eggs Hunter-gatherers moved from place to place There are many reasons for this First if they had stayed at one place for a long time they would have eaten up all the available plant and animal resources Therefore they would have had to go elsewhere in search of food Second animals move from place to place either in search of smaller prey or in the case of deer and wild cattle in search of grass and leaves That is why those who hunted them had to follow their movements Third plants and trees bear fruit in different seasons So people may have moved from season to season in search of different kinds of plants Fourth people plants and animals need water to survive Water is found in lakes streams and rivers While many rivers and lakes are perennial with water throughout the year others are seasonal People living on their banks would have had to go in search of water during the dry seasons winter and summer Archaeologists have found some of the things hunter -gatherers made and used It is likely that people made and used tools of stone wood and bone of which stone tools have survived best Some of these stone tools were used to cut meat and bone scrape bark from trees and hides animal skins chop fruit and roots Some may have been attached to handles of bone or wood to make spears and arrows for hunting Other tools were used to chop wood which was used as firewood Wood was also used to make huts and tools Stone tools may also have been used for Left Digging the ground to collect edible roots Right Stitching clothes made out of animal skin Choosing a place to live in Look at Map below All the places marked with red triangles are sites from which archaeologists have found evidence of hunter-gatherers Huntergatherers lived in many more places Only some are shown on the map Many sites were located near sources of water such as rivers and lakes As stone tools were important people tried to find places where good quality stone was easily available Rock paintings and what the theyy tell us A painting from a rock shelter Describe the painting Many of the caves in which these early people lived have paintings on the walls Some of the best examples are from Madhya Pradesh and southern Uttar Pradesh These paintings show wild animals drawn with great accuracy and skill Bhimbetka in presentday Madhya Pradesh This is an old site with caves and rock shelters People chose these natural caves because they provided shelter from the rain heat and wind These rock shelters are close to the Narmada valley Can you think of why people chose to live here Sites are places where the remains of things tools pots buildings etc were found These were made used and left behind by people These may be found on the surface of the earth buried under the earth or sometimes even under water You will learn more about different sites in later chapters Find the Kurnool caves on Map page Traces of ash have been found here This suggests that people were familiar with the use of fire Fire could have been used for many things as a source of light to roast meat and to scare away animals What do we use fire for today Archaeologists have given lengthy names for the time that we are studying They call the earliest period the Palaeolithic This comes from two Greek words palaeo meaning old and lithos meaning stone The name points to the importance of finds of stone tools The Palaeolithic period extends from million years ago to about years ago This long stretch of time is divided into the Lower Middle and Upper Palaeolithic This long span of time covers of human history The period when we find environmental changes beginning about years ago till about years ago is called the Mesolithic middle stone Stone tools found during this period are generally tiny and are called microliths Microliths were probably stuck on to handles of bone or wood to make tools such as saws and sickles At the same time older varieties of tools continued to be in use The next stage from about years ago is known as the Neolithic What do you think the term Neolithic means We have also mentioned the names of some places You will find the names of many more places in later chapters Very often we use presentday names of the places where people lived in the past because we do not know what they called them Around years ago there were major changes in the climate of the world with a shift to relatively warm conditions In many areas this led to the development of grasslands This in turn led to an increase in the number of deer antelope goat sheep and cattle i e animals that survived on grass Those who hunted these animals now followed them learning about their food habits and their breeding seasons It is likely that this helped people to start thinking about herding and rearing these animals themselves Fishing also became important This was also a time when several grain bearing grasses including wheat barley and rice grew naturally in different parts of the subcontinent Men women and children probably collected these grains as food and learnt where they grew and when they ripened This may have led them to think about growing plants on their own In this way people became farmers People could also attract and then tame animals by leaving food for them near their shelters The first animal to be tamed was the wild ancestor of the dog Later people encouraged animals that were relatively gentle to come near the camps where they lived These animals such as sheep goat cattle and also the pig lived in herds and most of them ate grass Often people protected these animals from attacks by other wild animals This is how they became herders Can you think of any reasons why the dog was perhaps the first animal to be tamed Domestication is the name given to the process in which people grow plants and look after animals Very often plants and animals that are tended by people become different from wild plants and animals This is because people select plants and animals for domestication For example they select those plants and animals that are not prone to disease They also select plants that yield large-size grain and have strong stalks capable of bearing the weight of the ripe grain Seeds from selected plants are preserved and sown to ensure that new plants and seeds will have the same qualities Amongst animals those that are relatively gentle are selected for breeding As a result gradually domesticated animals and plants become different from wild animals and plants For example the teeth and horns of wild animals are usually much larger than those of domesticated animals Look at these two sets of teeth Which do you think belongs to a wild pig and which to a domesticated one Domestication was a gradual process that took place in many parts of the world It began about years ago Virtually all the plant and animal produce that we use as food today is a result of domestication Some of the earliest plants to be domesticated were wheat and barley The earliest domesticated animals include sheep and goat If you plant a seed you will notice that it takes some time to grow This may be for several days weeks months and in some cases years When people began growing plants it meant that they had to stay in the same place for a long time looking after the plants watering weeding driving away animals and birds till the grain ripened And then the grain had to be used carefully As grain had to be stored for both food and seed people had to think of ways of storing it In many areas they began making large clay pots or wove baskets or dug pits into the ground Do you think hunter-gatherers would have made and used pots Give reasons for your answer Animals multiply naturally Besides if they are looked after carefully they provide milk which is an important source of food and meat whenever required In other words animals that are reared can be used as a store of food Apart from food what are the other things that could have been obtained from animals What are animals used for today Turn to Map page You will notice a number of blue squares Each marks a site from where archaeologists have found evidence of early farmers and herders These are found all over the subcontinent Some of the most important ones are in the north-west in present-day Kashmir and in east and south India To find out whether these sites were settlements of farmers and herders scientists study evidence of plants and animal bones One of the most exciting finds includes remains of burnt grain These may have been burnt accidentally or on purpose Scientists can identify these grains and so we know that a number of crops were grown in different parts of the subcontinent They can also identify the bones of different animals Archaeologists have found traces of huts or houses at some sites For instance in Burzahom in present-day Kashmir people built pit-houses which were dug into the ground with steps leading into them These may have provided shelter in cold weather Archaeologists have also found cooking hearths both inside and outside the huts which suggests that depending on the weather people could cook food either indoors or outdoors Draw a pit house Stone tools have been found from many sites as well Many of these are different from the earlier Palaeolithic tools and that is why they are called Neolithic These include tools that were polished to give a fine cutting edge and mortars and pestles used for grinding grain and other plant produce Mortars and pestles are used for grinding grain even today several thousand years later At the same time tools of the Palaeolithic types continued to be made and used and remember some tools were also made of bone Many kinds of earthen pots have also been found These were sometimes decorated and were used for storing things People began using pots for cooking food especially grains like rice wheat and lentils that now became an important part of the diet Besides they began weaving cloth using different kinds of materials for example cotton that could now be grown Did things change everywhere and all at once Not quite In many areas men and women still continued to hunt and gather food and elsewhere people adopted farming and herding slowly over several thousand years Besides in some cases people tried to combine these activities doing different things during different seasons Find Mehrgarh on Map page This site is located in a fertile plain near the Bolan Pass which is one of the most important routes into Iran Mehrgarh was probably one of the places where people learnt to grow barley and wheat and rear sheep and goats for the first time in this area It is one of the earliest villages that we know about At this site many animal bones were found Bones of wild animals such as the deer and pig and also bones of sheep and goat were found Other finds at Mehrgarh include remains of square or rectangular houses Each house had four or more compartments some of which may have been used for storage When people die their relatives and friends generally pay respect to them People look after them perhaps in the belief that there is some form of life after death Burial is one such arrangement Several burial sites have been found at Mehrgarh In one instance the dead person was buried with goats which were probably meant to serve as food in the next world A house in Mehrgarh This is what a house in Mehrgarh may have looked like In what ways is this house similar to the one in which you live Find France in your atlas The painting below is from a cave in France This site was discovered by four school children more than a hundred years ago Paintings like this were made between and years ago Many of these were of animals such as wild horses aurochs an older wild form of cattle bison woolly rhinoceros reindeer and bear painted in bright colours These colours were made from minerals like ochre or iron ore and charcoal It is possible that these paintings were done on ceremonial occasions Or perhaps they were made for special rituals performed by hunters before they went in search of prey Can you think of any other reasons Find Turkey in your atlas One of the most famous Neolithic sites Catal Huyuk was found in Turkey Several things were brought from great distances flint from Syria cowries from the Red Sea shells from the Mediterranean Sea and used in the settlement Remember there were no carts most things would have been carried on the backs of pack animals such as cattle or by people What do you think cowries and shells would have been used for CHAPTER IN THE EARLIEST CITIES Jaspal and Harpreet were playing cricket in the lane outside their home when they noticed the people who were admiring the dilapidated old building that the children called the haunted house Look at the architecture said one of the men Have you seen the fine wood carving asked one of the women We must write to the Minister so that she makes arrangements to repair and preserve this beautiful house Why they wondered would anybody be interested in the old run down house Very often old buildings have a story to tell Nearly a hundred and fifty years ago when railway lines were being laid down for the first time in the Punjab engineers stumbled upon the site of Harappa in present-day Pakistan To them it seemed like a mound that was a rich source of ready made high quality bricks So they carried off thousands of bricks from the walls of the old buildings of the city to build railway lines Many buildings were completely destroyed Then about eighty years ago archaeologists found the site and realised that this was one of the oldest cities in the subcontinent As this was the first city to be discovered all other sites from where similar buildings and other things were found were described as Harappan These cities developed about years ago Very often old buildings are pulled down to make way for new construction Do you think it is important to preserve old buildings Many of these cities were divided into two or more parts Usually the part to the west was smaller but higher Archaeologists describe this as the citadel Generally the part to the east was larger but lower This is called the lower town Very often walls of baked brick were built around each part The bricks were so well baked that they have lasted for thousands of years The bricks were laid in an interlocking pattern and that made the walls strong In some cities special buildings were constructed on the citadel For example MAP in Mohenjodaro a very The Earliest Cities special tank which in the Subcontinent archaeologists call the Great Bath was built in this area This was lined with bricks coated with plaster and made water-tight with a layer of natural tar There were steps leading down to it from two sides while there were rooms on all sides Water was probably brought in from a well and drained out after use Perhaps important people took a dip in this tank on special occasions Other cities such as Kalibangan and Lothal had fire altars where sacrifices may have been performed And some cities like Mohenjodaro Harappa and Lothal had elaborate store houses These cities were found in the Punjab and Sind in Pakistan and in Gujarat Rajasthan Haryana and the Punjab in India Archaeologists have found a set of unique objects in almost all these cities red pottery painted with designs in black stone weights seals special beads copper tools and paralleled sided long stone blades How bricks were arranged to build walls in Harappan cities Generally houses were either one or two storeys high with rooms built around a courtyard Most houses had a separate bathing area and some had wells to supply water Many of these cities had covered drains Notice how carefully these were laid out in straight lines Although you cannot see it each drain had a gentle slope so that water could flow through it Very often drains in houses were connected to those on the streets and smaller drains led into bigger ones As the drains were covered inspection holes were provided at intervals to clean them All three houses drains and streets were probably planned and built at the same time List at least two dif ferences between the houses described here and those that you studied about in Chapter A Harappan city was a very busy place There were people who planned the construction of special buildings in the city These were probably the rulers It is likely that the rulers sent people to distant lands to get metal precious stones and other things that they wanted They may have kept the most valuable objects such as ornaments of gold and silver or beautiful beads for themselves And there were scribes people who knew how to write who helped prepare the seals and perhaps wrote on other materials that have not survived Besides there were men and women crafts persons making all kinds of things either in their own homes or in special workshops People were travelling to distant lands or retur ning with raw materials and perhaps stories Many terracotta toys have been found and children must have played with these Make a list of the people who lived in the city Were any of these people listed as living in villages such as Mehrgarh Top A street in Mohenjodaro with a drain Above A well Far Left A Harappan seal The signs on the top of the seal are part of a script This is the earliest form of writing known in the subcontinent Scholars have tried to read these signs but we still do not know exactly what they mean Left Terracotta toys Bottom Right Embroidered cloth A stone statue of an important man found from Mohenjodaro shows him wearing an embroidered garment The Harappans also made seals out of stone These are generally rectangular See illustration on page and usually have an animal carved on them The Harappans also made pots with beautiful black designs such as the one shown on page Was metal used in the villages you learnt about in Chapter Was stone used to make weights Cotton was probably grown at Mehrgarh from about years ago Actual pieces of cloth were found attached to the lid of a silver vase and some copper objects at Mohenjodaro Archaeologists have also found spindle whorls Right Beads Many of these were made out of carnelian a beautiful red stone The stone was cut shaped polished and finally a hole was bored through the centre so that a string could be passed through it Top Stone weights Notice how carefully and precisely these weights are shaped These were made of chert a kind of stone These were probably used to weigh precious stones or metals Let us look at some of the objects that were made and found in Harappan cities Most of the things that have been found by archaeologists are made of stone shell and metal including copper bronze gold and silver Copper and bronze were used to make tools weapons ornaments and vessels Gold and silver were used to make ornaments and vessels Perhaps the most striking finds are those of beads weights and blades Faience Unlike stone or shell that are found naturally faience is a material that is artificially produced A gum was used to shape sand or powdered quartz into an object The objects were then glazed resulting in a shiny glassy surface The colours of the glaze were usually blue or sea green Faience was used to make beads bangles earrings and tiny vessels Many of the things that were produced were probably the work of specialists A specialist is a person who is trained to do only one kind of work for example cutting stone or polishing beads or carving seals Look at the illustration page and see how well the face is carved and how carefully the beard is shown This must have been the work of an expert crafts person Not everybody could have been a specialist We do not know whether only men were specialists or only women were specialists Perhaps some women and men may have been specialists Raw materials are substances that are either found naturally such as wood or ores of metals or produced by farmers or herders These are then processed to produce finished goods For example cotton produced by farmers is a raw material that may be processed to make cloth While some of the raw materials that the Harappans used were available locally many items such as copper tin gold silver and precious stones had to be brought from distant places While many people lived in the cities others living in the countryside grew crops and reared animals These farmers and herders supplied food to crafts persons scribes and rulers in the cities We know from remains of plants that the Harappans grew wheat barley pulses peas rice sesame linseed and mustard A new tool the plough was used to dig the earth for turning the soil and planting seeds While real ploughs which were probably made of wood have not survived toy models have been found As this region does not receive heavy rainfall some form of irrigation may have been used This means that water was stored and supplied to the fields when the plants were growing The Harappans reared cattle sheep goat and buffalo Water and pastures were available around settlements However in the dry summer months large herds of animals were probably taken to greater distances in search of grass and water How were goods carried from one place to another Look at the illustrations One shows a toy and the other is a seal Can you suggest what the modes of transport used by the Harappans were Did you come across illustrations of wheeled vehicles in earlier lessons West Asia Tin which was mixed with copper to produce bronze may have been brought from present-day Afghanistan and Iran Gold could have come all the way from present-day Karnataka and precious stones from present-day Gujarat Iran and Afghanistan The city of Dholavira was located on Khadir Beyt also spelled as Bet in the Rann of Kutch where there was fresh water and fertile soil Unlike some of the other Harappan cities which were divided into two parts Dholavira was divided into three parts and each part was surrounded with massive stone walls with entrances through gateways There was also a large open area in the settlement where public ceremonies could be held Other finds include large letters of the Harappan script that were carved out of white stone and perhaps inlaid in wood This is a unique find as generally Harappan writing has been found on small objects such as seals The city of Lothal stood beside a tributary of the Sabarmati in Gujarat close to the Gulf of Khambat It was situated near areas where raw materials such as semi-precious stones were easily available This was an important centre for making objects out of stone shell and metal There was also a store house in the city Many seals and sealings the impression of seals on clay were found in this storehouse A dockyard at Lothal This huge tank may have been a dockyard where boats and ships came in from the sea and through the river channel Goods were probably loaded and unloaded here A building that was found here was probably a workshop for making beads pieces of stone half made beads tools for bead making and finished beads have all been found here Seals may have been used to stamp bags or packets containing goods that were sent from one place to another After a bag was closed or tied a layer of wet clay was applied on the knot and the seal was pressed on it The impression of the seal is known as a sealing If the sealing was intact one could be sure that the goods had arrived safely Seals are used even today Find out what they are used for Around years ago we find the beginning of a major change People stopped living in many of the cities Writing seals and weights were no longer used Raw materials brought from long distances became rare In Mohenjodaro we find that garbage piled up on the streets the drainage system broke down and new less impressive houses were built even over the streets Why did all this happen We are not sure Some scholars suggest that the rivers dried up Others suggest that there was deforestation This could have happened because fuel was required for baking bricks and for smelting copper ores Besides grazing by large herds of cattle sheep and goat may have destroyed the green cover In some areas there were floods But none of these reasons can explain the end of all the cities Flooding or a river drying up would have had an effect in only some areas It appears as if the rulers lost control In any case the effects of the change are quite clear Sites in Sind and west Punjab present-day Pakistan were abandoned while many people moved into newer smaller settlements to the east and the south New cities emerged about years later You will read about them in Chapters and Find Egypt in your atlas Most of Egypt is a dry desert except for the lands along the river Nile Around years ago kings ruled over Egypt These kings sent armies to distant lands to get gold silver ivory timber and precious stones They also built huge tombs known as pyramids When they died the bodies of kings were preserved and buried in these pyramids These carefully preserved bodies are known as mummies A large number of objects were also buried with them These included food and drink clothes ornaments utensils musical instruments weapons and animals Sometimes even serving men and women were buried with the rulers These are amongst the most elaborate burials known in world history Do you think kings would have needed these things after death There are many prayers in the Rigveda for cattle children especially sons and horses Horses were yoked to chariots that were used in battles which were fought to capture cattle Battles were also fought for land which was important for pasture and for growing hardy crops that ripened quickly such as barley Some battles were fought for water and to capture people Some of the wealth that was obtained was kept by the leaders some was given to the priests and the rest was distributed amongst the people Some wealth was used for the performance of yajnas or sacrifices in which offerings were made into the fire These were meant for gods and goddesses Offerings could include ghee grain and in some cases animals Most men took part in these wars There was no regular army but there were assemblies where people met and discussed matters of war and peace They also chose leaders who were often brave and skilful warriors There are several ways of describing people in terms of the work they do the language they speak the place they belong to their family their communities and cultural practices Let us see some of the words used to describe people found in the Rigveda There are two groups who are described in terms of their work the priests sometimes called brahmins who performed various rituals and the rajas These rajas were not like the ones you will be learning about later They did not have capital cities palaces or armies nor did they collect taxes Generally sons did not automatically succeed fathers as rajas Read the previous section once more and see whether you can find out what the rajas did Two words were used to describe the people or the community as a whole One was the word jana which we still use in Hindi and other languages The other was vish The word vaishya comes from vish You will learn more about this in Chapter Several vish or jana are mentioned by name So we find reference to the Puru jana or vish the Bharata jana or vish the Yadu jana or vish and so on Do any of these names sound familiar Sometimes the people who composed the hymns described themselves as Aryas and called their opponents Dasas or Dasyus These were people who did not perform sacrifices and probably spoke different languages Later the term dasa and the feminine dasi came to mean slave Slaves were women and men who were often captured in war They were treated as the property of their owners who could make them do whatever work they wanted While the Rigveda was being composed in the north-west of the subcontinent there were other developments elsewhere Let us look at some of these Silent sentinels the story of the megaliths Look at the illustration on the next page These stone boulders are known as megaliths literally big stones These were carefully arranged by people and were used to mark burial sites The practice of erecting megaliths began about years ago and was prevalent throughout the Deccan south India in the north-east and Kashmir Top This type of megalith is known as a cist Some cists like the one shown here have port-holes which could be used as an entrance Some important megalithic sites are shown on Map page While some megaliths can be seen on the surface other megalithic burials are often underground Sometimes archaeologists find a circle of stone boulders or a single large stone standing on the ground These are the only indications that there are burials beneath There were several things that people did to make megaliths We have made a list here Try and arrange them in the correct order digging pits in the earth transporting stones breaking boulders placing stones in position finding suitable stone shaping stones burying the dead All these burials have some common features Generally the dead were buried with distinctive pots which are called Black and Red Ware Also found are tools and weapons of iron and sometimes skeletons of horses horse equipment and ornaments of stone and gold Was iron used in the Harappan cities Iron equipment found from megalithic burials Left top Horse equipment Left below Axes Below A dagger Archaeologists think that objects found with a skeleton probably belonged to the dead person Sometimes more objects are found in one grave than in another Find Brahmagiri on Map page Here one skeleton was buried with gold beads stone beads copper bangles and one conch shell Other skeletons have only a few pots These finds suggest that there was some difference in status amongst the people who were buried Some were rich others poor some chiefs others followers Sometimes megaliths contain more than one skeleton These indicate that people perhaps belonging to the same family were buried in the same place though not at the same time The bodies of those who died later were brought into the grave through the portholes Stone circles or boulders placed on the surface probably served as signposts to find the burial site so that people could return to the same place whenever they wanted to A special burial at Inamgaon Find Inamgaon on Map page It is a site on the river Ghod a tributary of the Bhima It was occupied between and years ago Here adults were generally buried in the ground laid out straight with the head towards the north Sometimes burials were within the houses Vessels that probably contained food and water were placed with the dead One man was found buried in a large four legged clay jar in the courtyard of a five-roomed house one of the largest houses at the site in the centre of the settlement This house also had a granary The body was placed in a crosslegged position Do you think this was the body of a chief Give reasons for your answer It is easy to make out the skeleton of a child from its small size However there are no major differences in the bones of a girl and a boy Can we make out whether a skeleton was that of a man or a woman Sometimes people decide on the basis of what is found with the skeleton For instance if a skeleton is found with jewellery it is sometimes thought to be that of a woman However there are problems with this Often men also wore ornaments A better way of figuring out the sex of a skeleton is to look at the bone structure The hip or the pelvic area of women is generally larger to enable child bearing These distinctions are based on modern skeletal studies About years ago there was a famous physician named Charaka who wrote a book on medicine known as the Charaka Samhita There he states that the human body has bones This is a much larger number than the bones that are recognised in modern anatomy Charaka arrived at this figure by counting the teeth joints and cartilage How do you think he found out about the human body in such great detail Archaeologists have found seeds of wheat barley rice pulses millets peas and sesame Bones of a number of animals many bearing cut marks that show they may have been used as food have also been found These include cattle buffalo goat sheep dog horse ass pig sambhar spotted deer blackbuck antelope hare and mongoose besides birds crocodile turtle crab and fish There is evidence that fruits such as ber amla jamun dates and a variety of berries were collected Find China in your atlas Around years ago we find some of the first evidence of writing in China These writings were on animal bones These are called oracle bones because they were used to predict the future Kings got scribes to write questions on the bones would they win battles Would the harvest be good Would they have sons The bones were then put into the fire and they cracked because of the heat Then fortunetellers studied these cracks and tried to predict the future As you may expect they sometimes made mistakes These kings lived in palaces in cities They amassed vast quantities of wealth including large elaborately decorated bronze vessels However they did not know the use of iron List one difference between the raja of the Rigveda and these kings You live in Inamgaon years ago and the chief has died last night Today your parents are preparing for the burial Describe the scene including how food is being prepared for the funeral What do you think would be offered Shankaran woke up to see his grandparents all ready to go and vote They wanted to be the first to reach the polling booth Why Shankaran wanted to know were they so excited Somewhat impatiently his grandfather explained We can choose our own rulers today Choosing leaders or rulers by voting is something that has become common during the last fifty years or so How did men become rulers in the past Some of the rajas we read about in Chapter were probably chosen by the jana the people But around years ago we find some changes taking place in the ways in which rajas were chosen Some men now became recognised as rajas by performing very big sacrifices The ashvamedha or horse sacrifice was one such ritual A horse was let loose to wander freely and it was guarded by the raja’s men If the horse wandered into the kingdoms of other rajas and they stopped it they had to fight If they allowed the horse to pass it meant that they accepted that the raja who wanted to perform the sacrifice was stronger than them These rajas were then invited to the sacrifice which was performed by specially trained priests who were rewarded with gifts The raja who organised the sacrifice was recognised as being very powerful and all those who came brought gifts for him The raja was a central figure in these rituals He often had a special seat a throne or a tiger skin His charioteer who was his companion in the battle field and witnessed his exploits chanted tales of his glory His relatives especially his wives and sons had to perform a variety of minor rituals The other rajas were simply spectators who had to sit and watch the performance of the sacrifice Priests performed the rituals including the sprinkling of sacred water on the king The ordinary people the vish or vaishya also brought gifts However some people such as those who were regarded as shudras by the priests were excluded from many rituals Make a list of all those who would be present at the sacrifice Which are the categories that are described in terms of their occupation We have many books that were composed in north India especially in the areas drained by the Ganga and the Yamuna during this period These books are often called later Vedic because they were composed after the Rigveda about which you learnt in Chapter These include the Samaveda Yajurveda and Atharvaveda as well as other books These were composed by priests and described how rituals were to be performed They also contained rules about society There were several different groups in society at this time priests and warriors farmers herders traders crafts persons labourers fishing folk and forest people Some priests and warriors were rich as were some farmers and traders Others including many herders crafts persons labourers fishing folk and hunters and gatherers were poor The priests divided people into four groups called varnas According to them each varna had a different set of functions The first varna was that of the brahmin Brahmins were expected to study and teach the Vedas perform sacrifices and receive gifts In the second place were the rulers also known as kshatriyas They were expected to fight battles and protect people Third were the vish or the vaishyas They were expected to be farmers herders and traders Both the kshatriyas and the vaishyas could perform sacrifices The rajas who performed these big sacrifices were now recognised as being rajas of janapadas rather than janas The word janapada literally means the land where the jana set its foot and settled down Some important janapadas are shown on Map page Archaeologists have excavated a number of settlements in these janapadas such as Purana Qila in Delhi Hastinapura near Meerut and Atranjikhera near Etah the last two are in Uttar Pradesh They found that people lived in huts and kept cattle as well as other animals They also grew a variety of crops rice wheat barley pulses sugarcane sesame and mustard Is there a crop in this list that was not mentioned in Chapter Painted Grey Ware Plates and bowls are the most common vessels made out of Painted Grey Ware These are extremely fine to touch with a nice smooth surface Perhaps these were used on special occasions for important people and to serve special food Last were the shudras who had to serve the other three groups and could not perform any rituals Often women were also grouped with the shudras Both women and shudras were not allowed to study the Vedas The priests also said that these groups were decided on the basis of birth For example if one’s father and mother were brahmins one would automatically become a brahmin and so on Later they classified some people as untouchable These included some crafts persons hunters and gatherers as well as people who helped perform burials and cremations The priests said that contact with these groups was polluting Many people did not accept the system of varna laid down by the brahmins Some kings thought they were superior to the priests Others felt that birth could not be a basis for deciding which varna people belonged to Besides some people felt that there should be no differences amongst people based on occupation Others felt that everybody should be able to perform rituals And others condemned the practice of untouchability Also there were many areas in the subcontinent such as the north-east where social and economic differences were not very sharp and where the influence of the priests was limited Why did people oppose the system of varnas They made earthen pots Some of these were grey in colour others were red One special type of pottery found at these sites is known as Painted Grey Ware As is obvious from the name these grey pots had painted designs usually simple lines and geometric patterns Mahajanapadas About years ago some janapadas became more important than others and were known as mahajanapadas Some of these are shown on Map Most mahajanapadas had a capital city many of these were fortified This means that huge walls of wood brick or stone were built around them The fortification wall at Kaushambi This is a picture of remains of a wall made of brick found near present-day Allahabad Uttar Pradesh A part of it was probably built about years ago Forts were probably built because people were afraid of attacks from other kings and needed protection It is also likely that some rulers wanted to show how rich and powerful they were by building really large tall and impressive walls around their cities Also in this way the land and the people living inside the fortified area could be controlled more easily by the king Building such huge walls required a great deal of planning Thousands if not lakhs of bricks or stones had to be prepared This in turn meant enormous labour provided possibly by thousands of men women and children And resources had to be found for all of this The new rajas now began maintaining armies Soldiers were paid regular salaries and maintained by the king throughout the year Some payments were probably made using punch marked coins see the illustration on page You will read more about these coins in Chapter List two ways in which the rajas of the mahajanapadas wer e dif ferent from those mentioned in the Rigveda As the rulers of the mahajanapadas were a building huge forts b maintaining big armies they needed more resources And they needed officials to collect these So instead of depending on occasional gifts brought by people as in the case of the raja of the janapadas they started collecting regular taxes Taxes on crops were the most important This was because most people were farmers Usually the tax was fixed at th of what was produced This was known as bhaga or a share There were taxes on crafts persons as well These could have been in the form of labour For example a weaver or a smith may have had to work for a day every month for the king Herders were also expected to pay taxes in the form of animals and animal produce There were also taxes on goods that were bought and sold through trade And hunters and gatherers also had to provide forest produce to the raja There were two major changes in agriculture around this time One was the growing use of iron ploughshares This meant that heavy clayey soil could be turned over better than with a wooden ploughshare so that more grain could be produced Second people began transplanting paddy This meant that instead of scattering seed on the ground from which plants would sprout saplings were grown and then planted in the fields This led to increased production as many more plants survived However it was back breaking work Generally slave men and women dasas and dasis and landless agricultural labourers kammakaras had to do this work Can you think why kings would encourage these changes Find Magadha on Map page Magadha became the most important mahajanapada in about two hundred years Many rivers such as the Ganga and Son flowed through Magadha This was important for a transport b water supplies c making the land fertile Parts of Magadha were forested Elephants which lived in the forest could be captured and trained for the army Forests also provided wood for building houses carts and chariots Besides there were iron ore mines in the region that could be tapped to make strong tools and weapons Magadha had two very power ful rulers Bimbisara and Ajatasattu who used all possible means to conquer other janapadas Mahapadma Nanda was another important ruler He extended his control up to the north-west part of the subcontinent Rajagriha present-day Rajgir in Bihar was the capital of Magadha for several years Later the capital was shifted to Pataliputra present-day Patna More than years ago a ruler named Alexander who lived in Macedonia in Europe wanted to become a world conqueror Of course he didn’t conquer the world but did conquer parts of Egypt and West Asia and came to the Indian subcontinent reaching up to the banks of the Beas When he wanted to march further eastwards his soldiers refused They were scared as they had heard that the rulers of India had vast armies of foot soldiers chariots and elephants In what ways were these armies different from those described in the Rigveda While Magadha became a powerful kingdom Vajji with its capital at Vaishali Bihar was under a different form of government known as gana or sangha In a gana or a sangha there were not one but many rulers Sometimes even when thousands of men ruled together each one was known as a raja These rajas performed rituals together They also met in assemblies and decided what had to be done and how through discussion and debate For example if they were attacked by an enemy they met to discuss what should be done to meet the threat However women dasas and kammakaras could not participate in these assemblies Both the Buddha and Mahavira about whom you will read in Chapter belonged to ganas or sanghas Some of the most vivid descriptions of life in the sanghas can be found in Buddhist books Gana Is used for a group that has many members Sangha Means organisation or association This is an account of the Vajjis from the Digha Nikaya a famous Buddhist book which contains some of the speeches of the Buddha These were written down about years ago Ajatasattu and the Vajjis ajjis Ajatasattu wanted to attack the Vajjis He sent his minister named Vassakara to the Buddha to get his advice on the matter The Buddha asked whether the Vajjis met frequently in full assemblies When he heard that they did he replied that the Vajjis would continue to prosper as long as They held full and frequent public assemblies They met and acted together They followed established rules They respected supported and listened to elders Vajji women were not held by force or captured Chaityas local shrines were maintained in both towns and villages Wise saints who followed different beliefs were respected and allowed to enter and leave the country freely In what ways was the Vajji sangha different from the other mahajanapadas Try and list at least three differences Rajas of powerful kingdoms tried to conquer the sanghas Nevertheless these lasted for a very long time till about years ago when the last of the ganas or sanghas were conquered by the Gupta rulers about whom you will read in Chapter Find Greece and Athens in your atlas Around years ago the people of Athens set up a form of government which was called a democracy which lasted for about years All free men over the age of were recognised as full citizens There was an assembly that met at least times a year to decide on important matters All citizens could attend these meetings Appointments for many positions were made through lottery All those who wanted to be chosen gave in their names and then some were selected through lottery Citizens were expected to serve in the army and the navy However women were not considered citizens Also many foreigners who lived and worked in Athens as merchants and crafts persons did not have rights as citizens Besides there were several thousand slaves in Athens who worked in mines fields households and workshops They too were not treated as citizens Do you think this was a true democracy NEW QUESTIONS AND IDEAS Anagha’s school trip This was the first time Anagha was going on a school trip They boarded the train from Pune in Maharashtra late at night to go all the way to Varanasi in Uttar Pradesh Her mother who came to see her off at the station told the teacher Do tell the children about the Buddha and take them to see Sarnath as well Siddhartha also known as Gautama the founder of Buddhism was born about years ago This was a time of rapid change in the lives of people As you saw in Chapter some kings in the mahajanapadas were growing more powerful New cities were developing and life was changing in the villages as well see Chapter Many thinkers were trying to understand these changes in society They also wanted to try and find out the true meaning of life The Buddha belonged to a small gana known as the Sakya gana and was a kshatriya When he was a young man he left the comforts of his home in search of knowledge He wandered for several years meeting and holding discussions with other thinkers He finally decided to find his own path to realisation and meditated for days on end under a peepal tree at Bodh Gaya in Bihar where he attained enlightenment After that he was known as the Buddha or the Wise One He then went to Sarnath near Varanasi where he taught for the first time He spent the rest of his life travelling on foot going from place to place teaching people till he passed away at Kusinara The stupa at Sarnath This building known as a stupa was built to mark the place where the Buddha first taught his message You will learn more about stupas in Chapter The Buddha taught that life is full of suffering and unhappiness This is caused because we have cravings and desires which often cannot be fulfilled Sometimes even if we get what we want we are not satisfied and want even more or want other things The Buddha described this as thirst or tanha He taught that this constant craving could be removed by following moderation in everything He also taught people to be kind and to respect the lives of others including animals He believed that the results of our actions called karma whether good or bad affect us both in this life and the next The Buddha taught in the language of the ordinary people Prakrit so that everybody could understand his message What was the language used to compose the Vedas He also encouraged people to think for themselves rather than to simply accept what he said Let us see how he did this The story of Kisagotami Here is a famous story about the Buddha Once there was a woman named Kisagotami whose son had died She was so sad that she roamed through the streets of the city carrying the child with her asking for help to bring him back to life A kind man took her to the Buddha The Buddha said Bring me a handful of mustard seeds and I will bring your child back to life Kisagotami was overjoyed and started off at once but the Buddha gently stopped her and added The seeds must come from the house of a family where nobody has died Kisagotami went from door to door but wherever she went she found out that someone or the other father mother sister brother husband wife child uncle aunt grandfather grandmother had died What was the Buddha trying to teach the sorrowing mother Around the time that the Buddha was preaching and perhaps a little earlier other thinkers also tried to find answers to difficult questions Some of them wanted to know about life after death others wanted to know why sacrifices should be performed Many of these thinkers felt that there was something permanent in the universe that would last even after death They described this as the atman or the individual soul and the brahman or the universal soul They believed that ultimately both the atman and the brahman were one Many of their ideas were recorded in the Upanishads These were part of the later Vedic texts Upanishad literally means approaching and Six Schools of Indian Philosophy Over centuries India’s intellectual exploration of truth has come to be represented by six systems of philosophy These are known as Vaishesika Nyaya Samkhya Yoga Purva Mimansa and Vedanta or Uttara Mimansa These six systems of philosophy are said to have been founded by sages Konada Gotama Kapila Patanjali Jaimini and Vyasa respectively These philosophies still guide scholarly discourse in the country Ger man-bor n British indologist Friedrich Max Muller has observed that the six systems of philosophy were developed over many generations with contributions made by individual thinkers However today we find an underlying harmony in their understanding of truth although they seem distinct from each other Here is a dialogue based on a story from one of the most famous Upanishads the Chhandogya Upanishad Shaunaka and Abhipratarin were two sages who worshipped the universal soul Once as they sat down to eat a beggar came and asked for some food We cannot spare anything for you Shaunaka said Learned sirs whom do you worship the beggar asked The universal soul Abhipratarin replied Ah It means that you know that the universal soul fills the entire world Yes yes We know that The sages nodded If the universal soul fills the whole world it fills me too Who am I but a part of the world the beggar asked You speak the truth O young brahmin Then O sages by not giving me food you are actually denying food to the universal soul The sages realised the truth of what the beggar said and shared their food with him How did the beggar convince the sages to share their food with him sitting near and the texts contain conversations between teachers and students Often ideas were presented through simple dialogues Most Upanishadic thinkers were men especially brahmins and rajas Occasionally there is mention of women thinkers such as Gargi who was famous for her learning and participated in debates held in royal courts Poor people rarely took part in these discussions One famous exception was Satyakama Jabala who was named after his mother the slave woman Jabali He had a deep desire to learn about reality was accepted as a student by a brahmin teacher named Gautama and became one of the best-known thinkers of the time Many of the ideas of the Upanishads were later developed by the famous thinker Shankaracharya about whom you will read in Class VII Panini the grammarian This was also the time when other scholars were at work One of the most famous was Panini who prepared a grammar for Sanskrit He arranged the vowels and the consonants in a special order and then used these to create formulae like those found in Algebra He used these to write down the rules of the language in short formulae around of them The last and th tirthankara of the Jainas Vardhamana Mahavira also spread his message around this time i e years ago He was a kshatriya prince of the Lichchhavis a group that was part of the Vajji sangha about which you read in Chapter At the age of thirty he left home and went to live in a forest For twelve years he led a hard and lonely life at the end of which he attained enlightenment He taught a simple doctrine men and women who wished to know the truth must leave their homes They must follow very strictly the rules of ahimsa which means not hurting or killing living beings All beings said Mahavira long to live To all things life is dear Ordinary people could understand the teachings of Mahavira and his followers because they used Prakrit There were several forms of Prakrit used in different parts of the country and named after the regions in which they were used For example the Prakrit spoken in Magadha was known as Magadhi Followers of Mahavira who were known as Jainas had to lead very simple lives begging for food They had to be absolutely honest and were especially asked not to steal Also they had to observe celibacy And men had to give up everything including their clothes It was very difficult for most men and women to follow these strict rules Nevertheless thousands left their homes to learn and teach this new way of life Many more remained behind and supported those who became monks and nuns providing them with food Jainism was supported mainly by traders Farmers who had to kill insects to protect their crops found it more difficult to follow the rules Over hundreds of years Jainism spread to different parts of north India and to Gujarat Tamil Nadu and Karnataka The teachings of Mahavira and his followers were transmitted orally for several centuries They were written down in the form in which they are presently available at a place called Valabhi in Gujarat about years ago see Map page The word Jaina comes from the term Jina meaning conqueror Why do you think the term Jina was used for Mahavira Both the Mahavira and the Buddha felt that only those who left their homes could gain true knowledge They arranged for them to stay together in the sangha an association of those who left their homes The rules made for the Buddhist sangha were written down in a book called the Vinaya Pitaka From this we know that there were separate branches for men and women All men could join the sangha However children had to take the permission of their parents and slaves that of their masters Those who worked for the king had to take his permission and debtors that of creditors Women had to take their husbands’ permission Men and women who joined the sangha led simple lives They meditated for most of the time and went to cities and villages to beg for food during fixed hours That is why they were known as bhikkhus the Prakrit word for renouncer beggar and bhikkhunis They taught others and helped one another They also held meetings to settle any quarrels that took place within the sangha Those who joined the sangha included brahmins kshatriyas merchants labourers barbers courtesans and slaves Many of them wrote down the teachings of the Buddha Some of them also composed beautiful poems describing their life in the sangha List at least two ways in which the sangha described in this lesson was different from the one mentioned in Chapter Were there any similarities A cave hollowed out in the hills This is a cave in Karle present-day Maharashtra Monks and nuns lived and meditated in these shelters To begin with both Jaina and Buddhist monks went from place to place throughout the year teaching people The only time they stayed in one place was during the rainy season when it was very difficult to travel Then their supporters built temporary shelters for them in gardens or they lived in natural caves in hilly areas As time went on many supporters of the monks and nuns and they themselves felt the need for more per manent shelters and so monasteries were built These were known as viharas The earliest viharas were made of wood and then of brick Some were even in caves that were dug out in hills especially in western India A Buddhist text tells us Just as the waters of rivers lose their names and separateness when they flow into the mighty ocean so are varna and ranks and family forgotten when the followers of the Buddha join the order of monks Very often the land on which the vihara was built was donated by a rich merchant or a landowner or the king The local people came with gifts of food clothing and medicines for the monks and nuns In return they taught the people Over the centuries Buddhism spread to many parts of the subcontinent and beyond You will learn more about this in Chapter Around the time when Jainism and Buddhism were becoming popular brahmins developed the system of ashramas Here the word ashrama does not mean a place where people live and meditate It is used instead for a stage of life Four ashramas were recognised brahmacharya grihastha vanaprastha and samnyasa Brahmin kshatriya and vaishya men were expected to lead simple lives and study the Vedas during the early years of their life brahmacharya Then they had to marry and live as householders grihastha Then they had to live in the forest and meditate vanaprastha Finally they had to give up everything and become samnyasins The system of ashramas allowed men to spend some part of their lives in meditation Generally women were not allowed to study the Vedas and they had to follow the ashramas chosen by their husbands In what way was the system of ashramas different from life in the sangha What are the varnas mentioned here Were all four varnas allowed to participate in the system of ashramas Find Iran in your atlas Zoroaster was an Iranian prophet His teachings are contained in a book called the Avesta The language of the Avesta and the practices described in it are very similar to those of the Vedas The basic teachings of Zoroaster are contained in the maxim Good thoughts Good Words and Good Deeds Here is a verse from the Zend Avesta Lord grant strength and the rule of truth and good thinking by means of which one shall create peace and tranquillity For more than a thousand years Zoroastrianism was a major religion in Iran Later some Zoroastrians migrated from Iran and settled down in the coastal towns of Gujarat and Maharashtra They were the ancestors of today’s Parsis Prabhakar sat watching the smiths at the local shop There was a small bench on which iron tools like axes and sickles were laid out ready for sale A bright fire was burning and two men were heating and beating metal rods into shape It was very hot and noisy and yet it was fascinating to watch what was happening We often take the use of iron for granted today Things made of iron and steel are a part of our daily lives The use of iron began in the subcontinent around years ago Some of the largest collections of iron tools and weapons were found in the megalithic burials about which you read in Chapter Around years ago there is evidence for the growing use of iron tools These included axes for clearing forests and the iron ploughshare As we had seen Chapter the ploughshare was useful for increasing agricultural production Other steps to incr ease production irrigation increase production The kings and kingdoms you have been reading about could not have existed without the support of flourishing villages While new tools and the system of transplantation Chapter increased production irrigation was also used Irrigation works that were built during this time included canals wells tanks and artificial lakes Iron tools Here is a set of captions Choose the right one for each of the pictures Sickle tongs axe Prepare a list of at least five objects made of iron or steel that you use almost everyday Who lived in the villages There were at least three different kinds of people living in most villages in the southern and northern parts of the subcontinent In the Tamil region large landowners were known as vellalar ordinary ploughmen were known as uzhavar and landless labourers including slaves were known as kadaisiyar and adimai In the northern part of the country the village headman was known as the grama bhojaka Usually men from the same family held the position for generations In other words the post was hereditary The grama bhojaka was often the largest landowner Generally he had slaves and hired workers to cultivate the land Besides as he was powerful the king often used him to collect taxes from the village He also functioned as a judge and sometimes as a policeman Apart from the gramabhojaka there were other independent farmers known as grihapatis most of whom were smaller landowners And then there were men and women such as the dasa karmakara who did not own land and had to earn a living working on the fields owned by others In most villages there were also some crafts persons such as the blacksmith potter carpenter and weaver Some of the earliest works in Tamil known as Sangam literature were composed around years ago These texts were called Sangam because they were supposed to have been composed and compiled in assemblies known as sangams of poets that were held in the city of Madurai see Map page The Tamil terms mentioned above are found in Sangam literature Finding out about cities sstories traavellers tories tr sculpture and archaeology You may have heard of the Jatakas These were stories that were probably composed by ordinary people and then written down and preserved by Buddhist monks Here is part of a Jataka story which tells us how a poor man gradually became rich Once upon a time there was a clever poor young man who lived in a city His only resource was a dead rat He started off by selling it for a coin to a hotel for their cat Then one day there was a storm The king’s garden was littered with branches and leaves and the gardener was at a loss as to how to clear the mess The young man offered to clean the garden if he could keep the wood and leaves The gardener agreed at once The young man rounded up all the children who were playing with an offer of sweets for every stick and leaf that they could collect In no time every scrap had been neatly piled near the entrance Just then the king’s potter was on the look out for fuel with which to bake his pots So he took the whole lot and paid the young man for it Our young man now thought of another plan He carried a jar full of water to the city gate and offered water to grass cutters They were pleased and said You have done us a good turn Tell us what can we do for you He replied I’ll let you know when I need your help He then made friends with a trader One day the trader told him Tomorrow a horse dealer is coming to town with horses Hearing this our young man went back to the grass cutters He said Please give me a bundle of grass each and don’t sell your grass till mine is sold They agreed and gave him bundles of grass When the horse dealer could not buy grass anywhere else he purchased the young man’s grass for a thousand coins List the occupations of the persons mentioned in the story For each one try and decide whether they would have lived a only in the city b only in villages c in both cities and villages Why do you think the horse dealer was coming to the city Do you think women could have taken up the occupations mentioned in the story Give reasons for your answer Facing Page Ring well found in Delhi In what ways do you think this system of drainage was different from that of the Harappans We can use other kinds of evidence to find out about life in some of these early cities Sculptors carved scenes depicting peoples’ lives in towns and villages as well as in the forest Many of these sculptures were used to decorate railings pillars and gateways of buildings that were visited by people Many of the cities that developed from about years ago were capitals of the mahajanapadas that you learnt about in Chapter As we had seen some of these cities were surrounded by massive fortification walls In many cities archaeologists have found rows of pots or ceramic rings arranged one on top of the other These are known as ring wells These seem to have been used as toilets in some cases and as drains and garbage dumps These ring wells are usually found in individual houses We have hardly any remains of palaces markets or of homes of ordinary people Perhaps some are yet to be discovered by archaeologists Others made of wood mud brick and thatch may not have survived Another way of finding out about early cities is from the accounts of sailors and travellers who visited them One of the most detailed accounts that has been found was by an unknown Greek sailor He described all the ports he visited Find Below A sculpture from Sanchi This is a sculpture from Sanchi a site with stupas in Madhya Pradesh showing the scene in a city You will learn more about Sanchi in Chapter Notice the way walls are shown Are they made of brick wood or stone Now look at the railings Are they made of wood Describe the roofs of the buildings Bharuch on Map page and then read his description of the city The gulf is very narrow at Barygaza and very hard to navigate for those coming from the sea Ships had to be steered in by skilful and experienced local fishermen who were employed by the king The imports into Barygaza were wine copper tin lead coral topaz cloth gold and silver coins Exports from the town included plants from the Himalayas ivory agate carnelian cotton silk and perfumes Special gifts were brought by merchants for the king These included vessels of silver singing boys beautiful women fine wines and fine cloth Make a list of all the things imported and exported from Barygaza Underline at least two things that were not in use during Harappan times Why do you think merchants brought gifts for the king Punch-marked coins were generally rectangular or sometimes square or round in shape either cut out of metal sheets or made out of flattened metal globules a small spherical body The coins were not inscribed but were stamped with symbols using dies or punches Hence they are called punch-marked coins These coins are found over most parts of the subcontinent and remained in circulation till the early centuries CE Coins You may have noticed how wealth is measured in terms of coins in the story on page Archaeologists have found several thousands of coins belonging to this period The earliest coins which were in use for about years were punch marked coins such as the one shown below Read this short poem from the Sangam collection As they carry the white paddy of their land To exchange it for the salt of another Crossing the long roads in carts Through sands white as moonlight Taking whole families Who hate to be left behind The departure of the salt merchants Leaves the city empty Salt was produced plentifully along the sea coast What are the merchants planning to exchange it with How are they travelling Very often a single town was important for a variety of reasons Let us look at the example of Mathura Map page Mathura has been an important settlement for more than years It was important because it was located at the cross roads of two major routes of travel and trade from the northwest to the east and from north to south There were fortifications around the city and several shrines Farmers and herders from adjoining areas provided food for people in the city Mathura was also a centre where some extremely fine sculpture was produced Around years ago Mathura became the second capital of the Kushanas about whom you will be reading in Chapter Mathura was also a religious centre there were Buddhist monasteries Jaina shrines and it was an important centre for the worship of Krishna Several inscriptions on surfaces such as stone slabs and statues have been found in Mathura Generally these are short inscriptions recording gifts made by men and sometimes women to monasteries and shrines These were made by kings and queens officers merchants and crafts persons who lived in the city For instance inscriptions from Mathura mention goldsmiths blacksmiths weavers basket makers garland makers perfumers Make a list of the occupations of people who lived in Mathura List one occupation that was not practised in Harappan cities We also have archaeological evidence for crafts These include extremely fine pottery known as the Northern Black Polished Ware NBPW It gets its name from the fact that it is generally found in the northern part of the subcontinent Remember that the archaeological evidence for many crafts may not have thern Black Polished Northern Nor survived We know from texts that the W War aree NBP NBPW manufacture of cloth was important There were famous centres such as NBPW is a hard wheel made Varanasi in the north and Madurai metallic looking ware with a shiny black sur face The in the south Both men and women potter used to expose the worked in these centres earthenware to very high Many crafts persons and temperature in his kiln which merchants now formed associations resulted in the blackening of known as shrenis These shrenis of its outer surface A fine black crafts persons provided training slip was also applied on this procured raw material and which gave the pottery a distributed the finished product mirror-like shine Then shrenis of merchants organised the trade Shrenis also served as banks where rich men and women deposited money This was invested and part of the interest was returned or used to support religious institutions such as monasteries These rules are from the Arthashastra mentioned in Chapter They describe how spinning and weaving could be done in workshops under the supervision of a special official Widows young women who are differently abled nuns mothers of courtesans retired women servants of the king women who have retired from service in temples may be used for processing wool bark cotton hemp and flax They should be paid according to the quality and quantity of work Women who are not permitted to leave their homes can send maidservants to bring the raw material from the superintendent and take the finished work back to him Women who can visit the workshop should go at dawn to give their work and receive their wages There should be enough light to examine the work In case the superintendent looks at the woman or talks about anything other than the work he should be punished If a woman does not complete her work she will have to pay a fine and her thumbs can be cut off Make a list of all the women who could be employed by the superintendent Do you think women would have faced any problems while working Find Arikamedu in Puducherry on Map page and read the box on Rome on page Between and years ago Arikamedu was a coastal settlement where ships unloaded goods from distant lands A massive brick structure which may have been a warehouse was found at the site Other finds include pottery from the Mediterranean region such as amphorae tall double-handled jars that contained liquids such as wine or oil and stamped red-glazed pottery known as Arretine Ware which was named after a city in Italy This was made by pressing wet clay into a stamped mould There was yet another kind of pottery which was made locally though Roman designs were used Roman lamps glassware and gems have also been found at the site Tamil-Brahmi inscriptions Several pieces of pottery have inscriptions in Brahmi which was used to write Tamil Small tanks have been found that were probably dyeing vats used to dye cloth There is plenty of evidence for the making of beads from semi-precious stones and glass List the evidence that indicates that there was contact with Rome Find Rome on Map page This is one of the oldest cities in Europe and developed around the same time as the cities in the Ganga valley Rome was the capital of one of the largest empires one that spread across Europe North Africa and West Asia Augustus one of the most important emperors who ruled about years ago said that he found Rome a city of brick and made it into a city of marble He and later rulers built temples and palaces They also built huge amphitheatres open arenas surrounded by tiers of seats where citizens could watch all kinds of shows and public baths with separate timings for An aqueduct men and women where people met and relaxed Huge aqueducts channels to supply water were built to bring water to the city for the baths fountains and toilets Why do you think the amphitheatres and aqueducts have survived TRADERS KINGS AND PILGRIMS Jagini looked forward to the fair in the village She loved to see and touch the pots and pans of shiny steel bright plastic buckets cloth printed with brilliant floral designs and clockwork toys all of which came from the city The men who spread out their wares came in buses and trucks and went back at the end of the day Why were they always on the move She wondered Her mother explained that they were traders people who bought things where they were made and sold them elsewhere You read about the Northern Black Polished Ware in Chapter This fine pottery especially bowls and plates were found from several archaeological sites throughout the subcontinent How do you think it reached these places Traders may have carried them from the places where they were made to sell them at other places South India was famous for gold spices especially pepper and precious stones Pepper was particularly valued in the Roman Empire so much so that it was known as black gold So traders carried many of these goods to Rome in ships across the sea and by land in caravans There must have been quite a lot of trade as many Roman gold coins have been found in south India Can you think of how and why these reached India We can find evidence of trade in the Sangam poems Here is one which describes the goods brought into Puhar an important port on the east coast Here are brought Swift prancing horses by sea in ships Bales of black pepper in carts Gems and gold born in the Himalayas Sandalwood born in the western hills The pearls of the southern seas And corals from the eastern oceans The yield of the Ganga and the crops from the Kaveri Foodstuffs from Sri Lanka pottery from Myanmar And other rare and rich imports Make a list of all the things that are mentioned What would they be used for Traders explored several sea routes Some of these followed the coasts There were others across the Arabian Sea and the Bay of Bengal where sailors took advantage of the monsoon winds to cross the seas more quickly So if they wanted to reach the western coast of the subcontinent from East Africa or Arabia they chose to sail with the south-west monsoon And sturdy ships had to be built for these long journeys The southern half of the subcontinent is marked by a long coastline and with hills plateaus and river valleys Amongst the river valleys that of the Kaveri is the most fertile Chiefs and kings who controlled the river valleys and the coasts became rich and power ful Sangam poems mention the muvendar This is a Tamil word meaning three chiefs used for the heads of three ruling families the Cholas Cheras and Pandyas see Map page who became powerful in south India around years ago Each of the three chiefs had two centres of power one inland and one on the coast Of these six cities two were very important Puhar or Kaveripattinam the port of the Cholas and Madurai the capital of the Pandyas The chiefs did not collect regular taxes Instead they demanded and received gifts from the people They also went on military expeditions and collected tribute from neighbouring areas They kept some of the wealth and distributed the rest amongst their supporters including members of their family soldiers and poets Many poets whose compositions are found in the Sangam collection composed poems in praise of chiefs who often rewarded them with precious stones gold horses elephants chariots and fine cloth Around years later a dynasty known as the Satavahanas became powerful in western India see Map page The most important ruler of the Satavahanas was Gautamiputra Shri Satakarni We know about him from an inscription composed on behalf of his mother Gautami Balashri He and other Satavahana rulers were known as lords of the dakshinapatha literally the route leading to the south which was also used as a name for the entire southern region He sent his army to the eastern western and southern coasts Why do you think he wanted to control the coasts The rich glossy colours of silk as well as its smooth texture make it a highly valued fabric in most societies Making silk is a complicated process Raw silk has to be extracted from the cocoons of silk worms spun into thread and then woven into cloth Techniques of making silk were first invented in China around years ago While the methods remained a closely guarded secret for thousands of years some people from China who went to distant lands on foot horseback and on camels carried silk with them The paths they followed came to be known as the Silk Route Sometimes Chinese rulers sent gifts of silk to rulers in Iran and west Asia and from there the knowledge of silk spread further west About years ago wearing silk became the fashion amongst rulers and rich people in Rome It was very expensive as it had to be brought all the way from China along dangerous roads through mountains and deserts People living along the route often demanded payments for allowing traders to pass through Look at Map pages which shows the Silk Route and its branches Some kings tried to control large portions of the route This was because they could benefit from taxes tributes and gifts that were brought by traders travelling along the route In return they often protected the traders who passed through their kingdoms from attacks by robbers The best-known of the rulers who controlled the Silk Route were the Kushanas who ruled over central Asia and north-west India around years ago Their two major centres of power were Peshawar and Mathura Taxila was also included in their kingdom During their rule a branch of the Silk Route extended from Central Asia down to the seaports at the mouth of the river Indus from where silk was shipped westwards to the Roman Empire The Kushanas were amongst the earliest rulers of the subcontinent to issue gold coins These were used by traders along the Silk Route Why do you think it would have been difficult to use carts along the Silk Route Silk was also sent from China by sea Trace the routes on Map pages What do you think would have been the advantages and problems in transporting silk by sea A sculpture from the stupa at Sanchi Look at the tree and the empty seat below it Sculptors carved this to indicate that the Buddha had attained enlightenment while meditating under the tree The most famous Kushana ruler was Kanishka who ruled around years ago He organised a Buddhist council where scholars met and discussed important matters Ashvaghosha a poet who composed a biography of the Buddha the Buddhacharita lived in his court Ashvaghosha and other Buddhist scholars now began writing in Sanskrit A new for m of Buddhism known as Mahayana Buddhism now developed This had two distinct features Earlier the Buddha’s presence was shown in sculpture by using certain signs For instance his attainment of enlightenment was shown by sculptures of the peepal tree Now statues of the Buddha were made Many of these were made in Mathura while others were made in Taxila The second change was a belief in Bodhisattvas These were supposed to be persons who had attained enlightenment Once they attained enlightenment they could live in complete Below left An image of the Buddha from Mathura Right An image of the Buddha from Taxila Look at these and note the similarities and differences that you may find isolation and meditate in peace However instead of doing that they remained in the world to teach and help other people The worship of Bodhisattvas became very popular and spread throughout Central Asia China and later to Korea and Japan Buddhism also spread to western and southern India where dozens of caves were hollowed out of hills for monks to live in Some of these caves were made on the orders of kings and queens others by merchants and farmers These were often located near passes through the Western Ghats Roads connecting prosperous ports on the coast with cities in the Deccan ran through these passes Traders probably halted in these cave monasteries during their travels Buddhism also spread south eastwards to Sri Lanka Myanmar Thailand and other parts of Southeast Asia including Indonesia The older form of Buddhism known as Theravada Buddhism was more popular in these areas Read page once more Can you think of how Buddhism spread to these lands The best-known of these are the Chinese Buddhist pilgrims Fa Xian who came to the subcontinent about years ago Xuan Zang who came around years ago and I-Qing who came about years after Xuan Zang They came to visit places associated with the life of the Buddha Chapter as well as famous monasteries Each of these pilgrims left an account of his jour ney They wrote of the dangers they encountered on their travels which often took years of the countries and the monasteries that they visited and the books they carried back with them Fa Xian began his journey back home from Bengal He boarded a ship belonging to some merchants They had barely travelled for two days when they were caught in a storm The merchants began throwing their merchandise overboard so as to lighten the load and save the ship from sinking Fa Xian threw away his meagre personal belongings but clung to his books and the statues of the Buddha that he had collected Finally the storm subsided after days This is how he describes the sea The sea itself is boundless in extent it is impossible to know east or west except by observing the sun moon or stars in their motions If it is dark rainy weather the only plan is to steer by the wind It took him more than days to reach Java where he halted for five months before boarding another merchant ship that took him to China Try and trace the route Fa Xian took on Map page Why do you think he did not want to throw away his books and statues Xuan Zang who took the land route back to China through the north-west and Central Asia carried back with him statues of the Buddha made of gold silver and sandalwood and over manuscripts loaded on the backs of horses Over manuscripts were lost when the boat on which he was crossing the Indus capsized He spent the rest of his life translating the remaining manuscripts from Sanskrit into Chinese Nalanda A unique centre of Buddhist learning Xuan Zang and other pilgrims spent time studying in Nalanda Bihar the most famous Buddhist monastery of the period This is how he describes it The teachers are men of the highest ability and talent They follow the teachings of the Buddha in all sincerity The rules of the monastery are strict and everyone has to follow them Discussions are held throughout the day and the old and the young mutually help one another Learned men from different cities come here to settle their doubts The gatekeeper asks new entrants difficult questions They are allowed to enter only after they have been able to answer these Seven or eight out of every ten are not able to answer This was also the time when the worship of certain deities which became a central feature of later Hinduism gained in importance These deities included Shiva Vishnu and goddesses such as Durga These deities were worshipped through Bhakti an idea that became very popular at this time Bhakti is generally understood as a person’s devotion to his or her chosen deity Anybody whether rich or poor belonging to the so-called high or low castes man or woman could follow the path of Bhakti The idea of Bhakti is present in the Bhagavad Gita a sacred book of the Hindus which is included in the Mahabharata see Chapter In this Krishna the God asks Arjuna his devotee and friend to abandon all dharmas and take refuge in him as only he can set Arjuna free from every evil This form of worship gradually spread to different parts of the country Those who followed the system of Bhakti emphasised devotion and individual worship of a god or goddess rather than the per for mance of elaborate sacrifices According to this system of belief if a devotee worships the chosen deity with a pure heart the deity will appear in the form in which he or she may desire So the deity could be thought of as a human being lion tree or any other form Once this idea gained acceptance artists made beautiful images of these deities Vishnu as Varaha an image from Eran Madhya Pradesh This magnificent statue is of a special form of Vishnu the Varaha or boar According to the Puranas see Chapter Vishnu took the shape of a boar in order to rescue the earth which had sunk into water Here the earth is shown as a woman Bhakti Comes from the Sanskrit term bhaj meaning to divide or share This suggests an intimate two-way relationship between the deity and the devotee Bhakti is directed towards Bhagavat which is often translated as god but also means one who possesses and shares bhaga literally good fortune or bliss The devotee known as the bhakta or the bhagavata shares his or her chosen deity’s bhaga Most Bhakti literature tells us that riches learning and high status do not automatically ensure a close relationship with the deity This is part of a poem composed in Tamil by Appar a devotee of Shiva who lived about years ago Appar was a vellala Chapter The leper with rotting limbs The man who is regarded as low by the brahmin even the scavenger Even these men if they are servants i e devotees Of him who shelters the Ganga in his long hair i e Shiva I worship them They are gods to me What does the poet regard as more valuable social status or devotion Because the deities were special these images of the deity were often placed within special homes places that we describe as temples You will learn more about these temples in Chapter Bhakti inspired some of the best expressions in art sculpture poetry and architecture Hindu The word Hindu like the term India is derived from the river Indus It was used by Arabs and Iranians to refer to people who lived to the east of the river and to their cultural practices including religious beliefs About years ago Christianity emerged in West Asia Jesus Christ was born in Bethlehem which was then part of the Roman empire Christ’s teachings were that He was the Saviour of the world He also taught people to treat others with love and trust others just as they themselves wanted to be treated Here are a few verses from the Bible the holy book that contains the teachings of Christ Blessed are those who hunger and thirst for righteousness For they shall be filled Blessed are the merciful for they shall obtain mercy Blessed are the pure in heart for they shall see God Blessed are the peacemakers for they shall be called sons of God Christ’s teachings appealed to ordinary people and spread through West Asia Africa and Europe The first Christian preachers came from West Asia to the west coast of the subcontinent within a hundred years of Christ’s death Look at Map pages and trace out the route that they may have used The Christians of Kerala known as Syrian Christians because they probably came from West Asia are amongst the oldest Christian communities in the world THE EARTH IN THE SOLAR SYSTEM How wonderful it is to watch the sky after sunset One would first notice one or two bright dots shining in the sky Soon you would see the number increasing You cannot count them any more The whole sky is filled with tiny shining objects some are bright others dim It seems as if the sky is studded with diamonds They all appear to be twinkling But if you look at them carefully you will notice that some of them do not twinkle as others do They simply glow without any flicker just as the moon shines Along with these bright objects you may also see the moon on most of the days It may however appear at different times in different shapes and at different positions You can see the full moon only once in about a month’s time It is Full moon night or Poornima A fortnight later you cannot see it at all It is a New moon night or Amavasya On this day you can watch the night sky best provided it is a clear night Do you wonder why can’t we see the moon and all those bright tiny objects during day time It is because the very bright light of the sun does not allow us to see all these bright objects of the night sky The sun the moon and all those objects shining in the night sky are called celestial bodies Some celestial bodies are very big and hot They are made up of gases They have their own heat and light which they emit in large amounts These celestial bodies are called stars The sun is a star Countless twinkling stars in the night sky are similar to the sun But we do not feel their heat or light and they look so tiny because they are very very far from us Step Place the torch in the centre of the paper with its glass front touching the paper Now draw a circle around the torch Perforate the paper with the needle within the circled area Now place the perforated circle part of the paper on the glass front and wrap the paper around the torch with a rubber band Take care that the switch of the torch is not covered In a dark room stand at some distance facing a plain wall Switch off all other lights Now flash the torch light on the wall You will see numerous dots of light on the wall like stars shine in the night Switch on all the lights in the room All dots of light will be almost invisible You may now compare the situation with what happens to the bright objects of the night sky after the sun rises in the morning You must have noticed that all objects look smaller when seen from a distance How small an aeroplane looks when it is flying at a great height While watching the night sky you may notice various patterns formed by different groups of stars These are called constellations Ursa Major or Big Bear is one such constellation One of the most easily recognisable constellation is the Saptarishi Saptaseven rishi-sages It is a group of seven stars Figure that forms a part of Ursa Major Constellation Ask someone elder in your family or neighbourhood to show you more stars planets and constellations in the sky In ancient times people used to determine directions during the night with the help of stars The North star indicates the north direction It is also called the Pole Star It always remains in the same position in the sky We can locate the position of the Pole Star with the help of the Saptarishi Look at Figure You will notice that if an imaginary line is drawn joining the pointer stars and extended further it will point to the Pole Star Some celestial bodies do not have their own heat and light They are lit by the light of the stars Such bodies are called planets The word planet comes from the Greek word Planetai which means wanderers The earth on which we live is a planet It gets all its heat and light from the sun which is our nearest star If we look at the earth from a great distance say the moon it will appear to be shining just as the moon The moon that we see in the sky is a satellite It is a companion of our earth and moves round it Like our earth there are seven other planets that get heat and light from the sun Some of them have their moons too Interesting Fact Jupiter Saturn and Uranus have rings around them These are belts of small debris These rings may be seen from the earth with the help of powerful telescopes THE SOLAR SYSTEM The sun eight planets satellites and some other celestial bodies known as asteroids and meteoroids JUPITER One orbit around sun years months about years One spin on axis hours minutes number of moons about SATURN One orbit around sun years months One spin on axis hours minutes number of moons about URANUS One orbit around sun years One spin around axis hours minutes number of moons about NEPTUNE One orbit around sun years One spin on axis- hours minutes number of moons Inner planets very close to the sun They are made up Outer Planets Very-very far from the sun and are huge planets made up of gases and liquids of rocks MERCURY One orbit around sun days One spin on axis days VENUS One orbit around sun days One spin on axis days EARTH One orbit around sun days One spin on axis day Number of moons MARS One orbit around sun days One spin on axis day number of moons The Sun The sun is in the centre of the solar system It is huge and made up of extremely hot gases It provides the pulling force that binds the solar system The sun is the ultimate source of heat and light for the solar system But that tremendous heat is not felt so much by us because despite being our nearest star it is far away from us The sun is about million km away from the earth Planets There are eight planets in our solar system In order of their distance from the sun they are Mercury Venus Earth Mars Jupiter Saturn Uranus and Neptune An easy way to memorise the name of the planets in order of their distance from the sun is MY VERY EFFICIENT MOTHER JUST SERVED US NUTS All the eight planets of the solar system move around the sun in fixed paths These paths are elongated They are called orbits Mercury is nearest to the sun It takes only about days to complete one round along its orbit Venus is considered as Earth’s-twin because its size and shape are very much similar to that of the earth T ill recently August Pluto was also considered a planet However in a meeting of the International Astronomical Union a decision was taken that Pluto like other celestial objects Ceres UB discovered in recent past may be called ‘dwarf planets Do you know Humans have always been fascinated gazing at the night sky Those who study the celestial bodies and their movements are called astronomers Aryabhatta was a famous astronomer of ancient India He said that the moon and the planets shine due to reflected sunlight Today astronomers all over the world are busy exploring the universe o © Many words used in a language may have been taken from some other language Geography for example is an English word It has its origin in Greek which relates to the description of the earth It is made of two Greek words ge meaning earth and graphia meaning writing Find out more about the earth form the solar system We often call it a solar family with the sun as its Head be NC re ER pu T bl is he d Do you know Sol in Roman mythology is the Sungod Solar means related to the sun The family of the sun is therefore called the solar system Write down as many words using the word solar on your own as you can The Earth The earth is the third nearest planet to the sun In size it is the fifth largest planet It is slightly flattened at the poles That is why its shape is described as a Geoid Geoid means an earth-like shape Conditions favourable to support life are probably found only on the earth The earth is neither too hot nor too cold It has water and air which are very essential for our survival The air has life-supporting gases like oxygen Because of these reasons the earth is a unique planet in the solar system From the outer space the earth appears blue because its two-thirds surface is covered by water It is therefore called a blue planet Do you know Light travels at the speed of about km per second Yet even with this speed the light of the sun takes about eight minutes to reach the earth The Moon Interesting Fact Neil Armstrong was the first man to step on the surface of the moon on July Find out whether any Indian has landed on the moon Our earth has only one satellite that is the moon Its diametre is only one-quarter that of the earth It appears so big because it is nearer to our planet than other celestial bodies It is about km away from us Now you can compare the distance of Figure The moon as seen from the space the earth from the sun and that from the moon The moon moves around the earth in about days It takes exactly the same time to complete one spin As a result only one side of the moon is visible to us on the earth The moon does not have conditions favourable for life It has mountains plains and depressions on its surface These cast shadows on the moon’s surface Look at the full moon and observe these shadows Asteroids Rocket launch Rocket falls back to the Earth A Satellite is a celestial body that moves around the planets in the same way as the planets move around the sun A Human-made Satellite is an artificial body It is designed by scientists to gather information about the universe or for communication It is carried by a rocket and placed in the orbit around the earth Some of the Indian satellites in space are INSAT IRS EDUSAT etc Figure Asteroid Apart from the stars planets and satellites there are numerous tiny bodies which also move around the sun These bodies are called asteroids They are found between the orbits of Mars and Jupiter Figure Scientists are of the view that asteroids are parts of a planet which exploded many years back The small pieces of rocks which move around the sun are called meteoroids Sometimes these meteoroids come near the earth and tend to drop upon it During this process due to friction with the air they get heated up and burn It causes a flash of light Sometimes a meteor without being completely burnt falls on the earth and creates a hollow Do you see a whitish broad band like a white glowing path across the sky on a clear starry night It is a cluster of millions of stars This band is the Milky Way galaxy Figure Our solar system is a part of this galaxy In ancient India it was imagined to be a river of light flowing in the sky Thus it was named Akash Ganga A galaxy is a huge system of billions of stars and clouds of dust and gases There are millions of such galaxies that make the Universe It is difficult to imagine how big the universe is Scientists are still trying to find out more and more about it We are not certain about its size but we know that all of us you and I belong to this universe Can you relate yourself with the universe now You are on the earth and the earth is a part of the solar system Our solar system is a part of the Milky Way galaxy which is part of the universe Think about the universe and the fact that it contains millions of such galaxies How do you fit in the picture GLOBE LATITUDES AND LONGITUDES In the previous chapter you have read that our planet earth is not a sphere It is slightly flattened at the North and the South Poles and bulge in the middle Can you imagine how it looks You may look at a globe carefully in your classroom to get an idea Globe is a true model miniature form of the earth Figure Globes may be of varying size and type big ones which cannot be carried easily small pocket globes and globe-like balloons which can be inflated and are handy and carried with ease The globe is not fixed It can be rotated the same way as a top spin or a potter’s wheel is rotated On the globe countries continents and oceans are shown in their correct size It is difficult to describe the location of a point on a sphere like the earth Now the question arises as to how to locate a place on it We need certain points of reference and lines to find out the location of places You will notice that a needle is fixed through the globe in a tilted manner which is called its axis Two points on the globe through which the needle passes are two poles North Pole and South Pole The globe can be moved around this needle from west to east just as the earth moves But remember there is a major difference The real earth has no such needle It moves around its axis which is an imaginary line Another imaginary line running on the globe divides it into two equal parts This line is known as the equator The northern half of the earth is known as the Northern Hemisphere and the southern half is known as the Southern Hemisphere They are both equal halves Therefore the equator is an imaginary circular line and is a very important reference point to locate places on the earth All parallel circles from the equator up to the poles are called parallels of latitudes Latitudes are measured in degrees The equator represents the zero degree latitude Since the distance from the equator to either of the poles is one-fourth of a circle round the earth it will measure ¼th of degrees i e Thus degrees north latitude marks the North Pole and degrees south latitude marks the South Pole As such all parallels north of the Figure Latitude equator are called north latitudes Similarly all parallels south of the equator are called Do you know south latitudes The value of each latitude is therefore followed by By measuring either the word north or south Generally this is the angle of the indicated by the letter N or S For example both Pole Star from Chandrapur in Maharashtra India and Belo your place you can know Horizonte in Brazil South America are located on the latitude of your place parallels of about latitude But the former is north of the equator and the latter is south of it We therefore say that Chandrapur is situated at N latitude and Belo Horizonte is situated at S latitude We see in Figure that as we move away from the equator the size of the parallels of latitude decreases IMPORTANT PARALLELS OF LATITUDES Besides the equator the North Pole N and the South Pole S there are four important parallels of latitudes i Tropic of Cancer N in the Northern Hemisphere Tropic of Capricorn S in the Southern Hemisphere Arctic Circle at north of the equator Antarctic Circle at south of the equator Torch-light falling on a straight surface is bright and covers a smaller area The mid-day sun is exactly overhead at least once a year on all latitudes in between the Tropic of Cancer and the Tropic of Capricorn This area therefore receives the maximum heat and is called the Torrid Zone The mid-day sun never shines overhead on any latitude beyond the T ropic of Cancer and the Tropic of Capricorn The angle of the sun’s rays goes on decreasing towards the poles As such the areas bounded by the Tropic of Cancer and the Arctic Circle in the Northern Hemisphere and the Tropic of Capricorn and the Antarctic Circle in the Southern Hemisphere have moderate temperatures These are therefore called Temperate Zones Areas lying between the Arctic Circle and the North Pole in the Northern Hemisphere and the Antarctic Circle and the South Pole in the Southern Hemisphere are very cold It is because here the sun does not rise much above the horizon Therefore its rays are always slanting and provide less heat These are therefore called Frigid Zones very cold Torch-light falling on a slanted surface is less bright but covers a bigger area To fix the position of a place it is necessary to know something more than the latitude of that place You can see for example that Tonga Islands in the Pacific Ocean and Mauritius Islands in the Indian Ocean are situated on the same latitude i e S Now in order to locate them precisely we must find out how far east or west these places are from a given line of reference running from the North Pole to the South Pole These lines of references are called the meridians of longitude and the distances between them are measured in degrees of longitude Each degree is further divided Draw a circle into minutes and minutes into seconds They are semiLet the Prime circles and the distance between them decreases meridian divide steadily polewards until it becomes zero at the poles it into two equal halves where all the meridians meet Colour and label the Unlike parallels of latitude all meridians are of equal eastern hemisphere and length Thus it was difficult to number the meridians the western hemisphere Hence all countries decided that the count should Similarly draw another begin from the meridian which passed through circle and let the equator Greenwich where the British Royal Observatory is divide it into two halves located This meridian is called the Prime Meridian Now colour the Northern Its value is longitude and from it we count hemisphere and Southern hemisphere eastward as well as westward The Prime Meridian and meridian divide the earth into two equal halves the Eastern Hemisphere and the Western Hemisphere Therefore the longitude of a place is followed by the letter E for the east and W for the west It is however interesting to note that East and West meridians are on the same line Now look at the grid of the parallels of latitude and meridians of longitude on the globe Figure You can locate any point on the globe very easily if you know its latitude and longitude For example Dhubri in Assam is situated at N latitude and E longitude Find out the Figure Grid point where these two lines cut each other That point will be the location of Dhubri To understand this clearly draw equidistant vertical and horizontal lines on a paper Figure Label the vertical rows with numbers and horizontal rows with letters draw some small circles randomly on points where these horizontal and vertical lines intersect each other Name these small circles as a b c d and e Let vertical lines represent East Longitudes and horizontal lines as North Latitudes Now you will see that circle a is located on B N latitude and E longitude Find out the location of other circles The best means of measuring time is by the movement of the earth the moon and the planets The sun regularly rises and sets every day and naturally it is the best time-keeper throughout the world Local time can be reckoned by the shadow cast by the sun which is the shortest at noon and longest at sunrise and sunset When the Prime Meridian of Greenwich has the sun at the highest point in the sky all the places along this meridian will have mid-day or noon As the earth rotates from west to east those places east of Greenwich will be ahead of Greenwich time and those to the west will be behind it Figure The rate of difference can be calculated as follows The earth rotates in about hours which means an hour or in four minutes Thus when it is noon at Greenwich the time at east of Greenwich will be × minutes i e hour ahead of Greenwich time which means p m But at west of Greenwich the time will be behind Greenwich time by one hour i e it will be a m Similarly at it will be midnight when it is noon at Greenwich At any place a watch can be adjusted to read o’clock when the sun is at the highest point in the sky i e when it is mid-day The time shown by such a watch will give the local time for that place You can see that all the places on a given meridian of longitude have the same local time The local time of places which are on different meridians are bound to differ For example it will be difficult to prepare a time-table for trains which cross several longitudes In India for instance there will be a difference of about hour and minutes in the local times of Dwarka in Gujarat and Dibrugarh in Assam It is therefore necessary to adopt the local time of some central meridian of a country as the standard time for the country In India the longitude of E ' E is treated as the standard meridian The local time at this meridian is taken as the standard time for the whole country It is known as the Indian Standard Time IST Kabeer lives in a small town near Bhopal He tells his friend Alok that they will not be able to sleep tonight A day and night cricket match between India and England had started at p m in London This means that the match would begin at p m in India and finish well into the night Do you know what is the time difference between India and England India located east of Greenwich at 'E is hours and minutes ahead of GMT So it will be p m in India when it is p m noon in London Some countries have a great longitudinal extent and so they have adopted more than one standard time For example in Russia there are as many as eleven standard times The earth has been divided into twenty-four time zones of one hour each Each zone thus covers of longitude MOTIONS OF THE EARTH Take a ball to represent the earth and a lighted candle to represent the sun Mark a point on the ball to represent a town X Place the ball in such a way that the town X is in darkness Now rotate the ball from left to right As you move the ball slightly the town will have its sunrise As the ball continues to move the point X gradually gets away from the sun This is sunset As you know that the earth has two types of motions namely rotation and revolution Rotation is the movement of the earth on its axis The movement of the earth around the sun in a fixed path or orbit is called Revolution The axis of the earth which is an imaginary line makes an angle of with its orbital plane The plane formed by the orbit is known as the orbital plane The earth receives light from the sun Due to the spherical shape of the earth only half of it gets light from the sun at a time Figure The portion facing the sun experiences day while the other half away from the sun experiences night The circle that divides the day from night on the globe is called the circle of illumination This circle does not coincide with the axis as you see in the Figure The earth takes about hours to complete one rotation around its axis The period of rotation is known as the earthday This is the daily motion of the earth What would happen if the earth did not rotate The portion of the earth facing the sun would always experience day thus bringing continuous warmth to the region The other half would remain in darkness and be freezing cold all the time Life would not have been possible in such extreme conditions The ancient Indian astronomer Aryabhata had stated that the earth is round and rotates on its own axis The second motion of the earth around the sun in its orbit is called revolution It takes ¼ days one year to revolve around the sun We consider a year as consisting of days only and ignore six hours for the sake of convenience Six hours saved every year are added to make one day hours over a span of four years This surplus day is added to the month of February Thus every fourth year February is of days instead of days Such a year with days is called a leap year Find out when will the next leap year be From the Figure it is clear that the earth is going around the sun in an elliptical orbit Notice that throughout its orbit the earth is inclined in the same direction A year is usually divided into summer winter spring and autumn seasons Seasons change due to the change in the position of the earth around the sun Let’s Do Do you know how to draw an ellipse Take a pencil two pins and a loop of thread Now fix these pins on a paper as shown in the figure Put the loop on the paper enclosing these two pins inside the loop Now hold the pencil and draw the line keeping the thread tight and moving the pencil along it The figure represents an ellipse Look at the Figure You will see that on st June the Northern Hemisphere is tilted towards the sun The rays of the sun fall directly on the Tropic of Cancer As a result these areas receive more heat The areas near the poles receive less heat as the rays of the sun are slanting The North Pole is inclined towards the sun and the places beyond the Arctic Circle experience continuous daylight for about six months Since a large portion of the Northern Hemisphere is getting light from the sun it is summer in the regions north of the equator The longest day and the shortest night at these places occur on st June At this time in the Southern Hemisphere all these conditions are reversed It is winter season there The nights are longer than the days This position of the earth is called the Summer Solstice On nd December the Tropic of Capricorn receives direct rays of the sun as the South Pole tilts towards it As the sun’s rays fall vertically at the Tropic of Capricorn S a larger portion of the Southern Hemisphere gets light Therefore it is summer in the Southern Hemisphere with longer days and shorter nights The reverse happens in the Northern Hemisphere This position of the earth is called the Winter Solstice Do you know that Christmas is celebrated in Australia in the summer season On st March and September rd direct rays of the sun fall on the equator At this position neither of the poles is tilted towards the sun so the whole earth experiences equal days and equal nights This is called an equinox On rd September it is autumn season in the Northern Hemisphere and spring season in the Southern Hemisphere The opposite is the case on st March when it is spring in the Northern Hemisphere and autumn in the Southern Hemisphere Thus you find that there are days and nights and changes in the seasons because of the rotation and revolution of the earth respectively To understand the earth’s inclination in the same direction draw a big ellipse on the ground and take a flag w i t h a stick Stand anywhere on the line of the ellipse Point your flag to a fixed point far away like on a tree-top Now move along the ellipse keeping your flag always pointing towards that fixed point In this way the axis of the earth remains inclined permanently in the same position The revolution of the earth and the inclination of the earth’s axis in a fixed direction cause seasons You have learnt in the previous chapter about the advantages of a globe However globe has limitations as well A globe can be useful when we want to study the earth as a whole But when we want to study only a part of the earth as about our country states districts towns and villages it is of little help In such a situation we use maps A map is a representation or a drawing of the earth’s surface or a part of it drawn on a flat surface according to a scale But it is impossible to flatten a round shape completely We find that maps are useful to us for various purposes One map shows a small area and a few facts Another map may contain as many facts as a big book When many maps are put together we get an Atlas Atlases are of various sizes measurements drawn on different scales Maps provide more information than a globe They are of different types Some of them are described below Maps showing natural features of the earth such as mountains plateaus plains rivers oceans etc are called physical or relief maps POLITICAL MAPS Maps showing cities towns and villages and different countries and states of the world with their boundaries are called political maps THEMATIC MAPS Some maps focus on specific information such as road maps rainfall maps maps showing distribution of forests industries etc are known as thematic maps Suitable titles are given on the basis of information provided in these maps There are three Components of Maps distance direction and symbol Take an old rubber ball and draw whatever you like all over it You may also mark north pole and south pole on it Now cut this ball with a knife and try to flatten it Notice how the drawings are distorted Look at the Figure There is a scale It may be used for measuring distance between places For example the distance between the well and the tree is cm It means that the actual distance is metres Now the distance between the PO A to Karim’s house E is cm It means metres on the ground but you can not fly like a bird directly from E to A You will have to walk on the road Let us measure the total walking distance from E to C then C to M M to B and B to A Add all these distances This will be the total walking distance from Karim’s house to the post office Maps are drawings which reduce the entire world or a part of it to fit on a sheet of paper Or we can say maps are drawn to reduced scales But this reduction is done very carefully so that the distance between the places is real It can only be possible when a small distance on paper represents a large distance on the ground Therefore a scale is chosen for this purpose Scale is the ratio between the actual distance on the ground and the distance shown on the map For example the distance between your school and your home is km If you show this km distance by cm on a map it means cm on the map will show km on the ground The scale of your drawing will be cm km Thus scale is very important in any map If you know the scale you will be able to calculate the distance between any two places on a map When large areas like continents or countries are to be shown on a paper then we use a small scale For example cm on the map shows km of the ground It is called a small scale map When a small area like your village or town is to be shown on paper then we use a large scale that is cm on the map shows metres only on the ground It is called a large scale map Large scale maps give more information than small scale maps Most maps contain an arrow marked with the letter N at the upper right hand corner This arrow shows the north direction It is called the north line When you know the north you can find out other directions for example east west and south There are four major directions North South East and West {Figure a } They are called cardinal points Other four intermediate directions are north-east NE southeast SE south-west SW and north-west NW We can locate any place more accurately with the help of these intermediate directions Find out the following directions from the Figure a The direction of the Community Centre the playground from Vikas’s house b the direction of school from shops We can find out the direction of a place with the help of a compass It is an instrument used to find out main directions Its magnetic needle always points towards north-south direction {Figure b } It is the third important component of a map It is not possible to draw on a map the actual shape and size of different features such as buildings roads bridges trees railway lines or a well So they are shown by using certain letters shades colours pictures and lines These symbols give a lot of information in a limited space With the use of these symbols maps can be drawn easily and are simple to read Even if you don’t know the language of an area and therefore cannot ask someone for directions you can collect information from maps with the help of these symbols Maps have a universal language that can be understood by all There is an international agreement regarding the use of these symbols These are called conventional symbols Some of the conventional symbols are shown in the Figure Various colours are used for the same purpose For example generally blue is used for showing water bodies brown for mountain yellow for plateau and green is used for plains A sketch is a drawing mainly based on memory and spot observation and not to scale Sometimes a rough drawing is required of an area to tell where a particular place is located with respect to other places Suppose you want to go to your friend’s house but you don’t know the way Your friend may make a rough drawing to show the way to his house Such a rough drawing is drawn without scale and is called a sketch map A plan is a drawing of a small area on a large scale A large-scale map gives lot of information but there are certain things which we may sometimes want to know for example the length and breadth of a room which can’t be shown in a map At that time we can refer drawings drawn to scale called a plan Let’s Do Visit web portal School Bhuvan-NCERT and draw online neighbourhood map on satellite imageries Look at the Figure and find out i In which direction is the river flowing What kind of road passes by the side of village Dumri On what type of railway line is Sunderpur situated On which side of the railway bridge is the police station situated On which side of the railway line do the following lie a Chhatri b Church c Pond d Mosque e River f Post and Telegraph Office g Graveyard MAJOR DOMAINS OF THE EARTH Word Origin In the Greek language Lithos means Stone Atmos means Vapour Hudor means Water and Bios means Life Can you make words using the above As you have read in the first chapter the earth is the only planet which has life Human beings can live here because the life sustaining elements of land water and air are present on the earth The surface of the earth is a complex zone in which three main components of the environment meet overlap and interact The solid portion of the earth on which we live is called the Lithosphere The gaseous layers that surround the earth is the Atmosphere where oxygen nitrogen carbondioxide and other gases are found Water covers a very big area of the earth’s surface and this area is called the Hydrosphere The Hydrosphere comprises water in all its forms that is ice water and water vapour The Biosphere is the narrow zone where we find land water and air together which contains all forms of life The solid portion of the earth is called the Lithosphere It comprises the rocks of the earth’s crust and the thin layers of soil that contain nutrient elements which sustain organisms There are two main divisions of the earth’s surface The large landmasses are known as the continents and the huge water bodies are called the ocean basins All the oceans of the world are connected with one another Look at the map of the world Figure Are all the land masses connected with one another The level of seawater remains the same everywhere Elevation of land is measured from the level of the sea which is taken as zero Continents There are seven major continents These are separated by large water bodies These continents are Asia Europe Africa North America South America Australia and Antarctica Look at the map of the world Figure and notice that the greater part of the land mass lies in the Northern Hemisphere Asia is the largest continent It covers about onethird of the total land area of the earth The continent lies in the Eastern Hemisphere The Tropic of Cancer passes through this continent Asia is separated from Europe by the Ural mountains on the west Figure The combined landmass of Europe and Asia is called the Eurasia Europe Asia Europe is much smaller than Asia The continent lies to the west of Asia The Arctic Circle passes through it It is bound by water bodies on three sides Look at the map of the world and locate it Africa is the second largest continent after Asia The Equator or latitude runs almost through the middle of the continent A large part of Africa lies in the Northern Hemisphere Look at the Figure you will find that it is the only continent through which the Tropic of Cancer the Equator and the Tropic of Capricorn pass The Sahara Desert the world’s largest hot desert is located in Africa The continent is bound on all sides by oceans and seas Look at the world map Figure You will notice that the world’s longest river the Nile flows through Africa Notice where the Equator the Tropic of Cancer and the Tropic of Capricorn pass in the map of Africa North America is the third largest continent of the world It is linked to South America by a very narrow strip of land called the Isthmus of Panama The continent lies completely in the Northern and Western Hemisphere Three oceans surround this continent Can you name these oceans Edmund Hillary New Zealand and Tenzing Norgay Sherpa India were the first men to climb the highest mountain peak Mt Everest on the planet earth on th May Junko Tabei Japan was the first woman to reach the summit on th May The first Indian woman to climb the highest peak on rd May was Bachendri Pal The highest mountain peak Mt Everest is metres above the sea level The greatest depth of metres is recorded at Mariana Trench in the Pacific Ocean Could you imagine that depth of sea is much more than the highest point South America lies mostly in the Southern Hemisphere Which two oceans surround it on the east and the west The Andes world’s longest mountain range runs through its length from north to south Figure South America has the world’s largest river the Amazon Australia is the smallest continent that lies entirely in the Southern Hemisphere It is surrounded on all sides by the oceans and seas It is called an Figure Isthmus and Strait island continent Antarctica completely in the Southern Hemisphere is a huge continent The South Pole lies almost at the centre of this continent As it is located in the South Polar Region it is permanently covered with thick ice sheets There are no permanent human settlements Many countries have research stations in Antarctica India also has research stations there These are named as Maitri and Dakshin Gangotri The earth is called the blue planet More than per cent of the earth is covered with water and per cent is with land Hydrosphere consists of water in all its forms As running water in oceans and rivers and in lakes ice in glaciers underground water and the water vapour in atmosphere all comprise the hydrosphere More than of the Earth’s water is found in the oceans and is too salty for human use A large proportion of the rest of the water is in the form of icesheets and glaciers or under the ground and a very small percentage is available as fresh water for human use Hence despite being a blue planet we face a shortage of water no Oceans Oceans are the major part of hydrosphere They are all interconnected The ocean waters are always moving The three chief movements of ocean waters are the waves the tides and the ocean currents The five major oceans are the Pacific Ocean the Atlantic Ocean the Indian Ocean the Southern Ocean and the Arctic Ocean in order of their size Figure The Pacific Ocean is the largest ocean It is spread over one-third of the earth Mariana Trench the deepest part of the earth lies in the Pacific Ocean The Pacific Ocean is almost circular in shape Asia Australia North and South Americas surround it Look at the map and find out the location of the continents around the Pacific Ocean The Atlantic Ocean is the second largest Ocean in the world It is S shaped It is flanked by the North and South Americas on the western side and Europe and Africa on the eastern side The coastline of Atlantic Ocean is highly indented This irregular and indented coastline provides ideal location for natural harbours and ports From the point of view of commerce it is the busiest Ocean The Indian Ocean is the only ocean named after a country that is India The shape of ocean is almost triangular In the north it is bound by Asia in the west by Africa and in the east by Australia The Southern Ocean encircles the continent of Antarctica and extends northward to degrees south latitude The Arctic Ocean is located within the Arctic Circle and surrounds the North Pole It is connected with the Pacific Ocean by a narrow stretch of shallow water known as Berring strait It is bound by northern coasts of North America and Eurasia The earth is surrounded by a layer of gas called the Thermosphere atmosphere This thin blanket of air is an integral and important aspect of the planet It provides us with the air we breathe and protects us from the harmful effects of sun’s rays Mesosphere The atmosphere extends up to a height of about kilometres The atmosphere is divided into five layers based on composition temperature and other properties These layers starting from earth’s surface are called the troposphere the stratosphere the mesosphere the thermosphere and the exosphere Stratosphere The atmosphere is composed mainly of nitrogen and oxygen which make up about per cent of clean dry air Nitrogen per cent oxygen per cent and other gases like carbondioxide argon and others Troposphere comprise per cent by volume Oxygen is the breath of life while nitrogen helps in the growth of living organisms Carbon dioxide though present in minute amount is important as it absorbs heat radiated by the earth thereby keeping the planet warm It is also essential for the growth of plants The density of the atmosphere varies with height You know the climbers experience problems in breathing due to this decrease in the density of air They have to carry with them oxygen cylinders to be able to breathe at high altitudes The temperature also decreases as we go upwards The atmosphere exerts pressure on the earth This varies from place to place Some areas experience high pressure and some areas low pressure Air moves from high pressure to low pressure Moving air is known as wind The biosphere is the narrow zone of contact between the land water and air It is in this zone that life that is unique to this planet exists There are several species of organisms that vary in size from microbes and bacteria to huge mammals All the living organisms including humans are linked to each other and to the biosphere for survival The organisms in the biosphere may broadly be divided into the plant kingdom and the animal kingdom The three domains of the earth interact with each other and affect each other in some way or the other For example cutting of forests for fulfilling our needs of wood or clearing land for agriculture may lead to fast removal of soil from slopes Similarly earth’s surface may be changed due to natural calamities like earthquakes For example there could be submergence of land as happened in the case of Tsunami recently Parts of Andaman Nicobar islands were submerged under water Discharge of waste material into lakes and rivers makes the water unsuitable for human use It also damages other forms of life Emission from industries thermal power plants and vehicles pollute the air Carbon dioxide CO is an important constituent of air But increase in the amount of CO leads to increase in global temperatures This is termed as global warming There is thus a need to limit the use of resources of the earth to maintain the balance of nature between the domains of the lithosphere the atmosphere and the hydrosphere MAJOR LANDFORMS OF THE EARTH Do you know A hill is a land surface that rises higher than the surrounding area Generally a steep hill with an elevation of more than metres is termed as a mountain Name some mountains with a height of more than metres You must have seen some of the landform features as shown in the Figure below You will notice that the surface of the earth is not the same everywhere The earth has an infinite variety of landforms Some parts of the lithosphere may be rugged and some flat These landforms are a result of two processes You will be amazed to know that the ground you are standing on is slowly moving Within the earth a continuous movement is taking place The first or the internal process leads to the upliftment and sinking of the earth’s surface at several places MOUNTAINS A mountain is any natural elevation of the earth surface The mountains may have a small summit and a broad base It is considerably higher than the surrounding area Some mountains are even higher than the clouds As you go higher the climate becomes colder In some mountains there are permanently frozen rivers of ice They are called glaciers There are some mountains you cannot see as they are under the sea Because of harsh climate less people live in the mountain areas Since the slopes are steep less land is available for farming The second or the external process is the continuous wearing down and rebuilding of the land surface The wearing away of the earth’s surface is called erosion The surface is being lowered by the process of erosion and rebuilt by the process of deposition These two processes are carried out by running water ice and wind Broadly we can group different landforms depending on elevation and slope as mountains plateaus and plains Do you know Mauna Kea Hawaii in the Pacific Ocean is an undersea mountain It is higher than Mount Everest being metres high Mountains may be arranged in a line known as range Many mountain systems consist of a series of parallel ranges extending over hundreds of kilometres The Himalayas the Alps and the Andes are mountain ranges of Asia Europe and South America respectively Figure Mountains vary in their heights and shape There are three types of mountains- Fold Mountains Block Mountains and the Volcanic Mountains The Himalayan Mountains and the Alps are young fold mountains with rugged relief and high conical peaks The Aravali range in India is one of the oldest fold mountain systems in the world The range has considerably worn down due to the processes of erosion The Appalachians in North America and the Ural mountains in Russia Figure have rounded features and low elevation They are very old fold mountains Block Mountains are created when large areas are broken and displaced vertically The uplifted blocks are termed as horsts and the lowered blocks are called graben The Rhine valley and the Vosges mountain in Europe are examples of such mountain systems Locate them on the world map in the atlas and find out some more examples of this type of landforms Volcanic mountains are formed due to volcanic activity Mt Kilimanjaro in Africa and Mt Fujiyama in Japan are examples of such mountains Mountains are very useful The mountains are a storehouse of water Many rivers have their source in the glaciers in the mountains Reservoirs are made and the water is harnessed for the use of people Water from the mountains is also used for irrigation and generation of hydro-electricity The river valleys and terraces are ideal for cultivation of crops Mountains have a rich variety of flora and fauna The forests provide fuel fodder shelter and other products like gum raisins etc Mountains provide an idyllic site for tourists They visit the mountains for their scenic beauty Several sports like paragliding hang gliding river rafting and skiing are popular in the mountains Can you name some places in the Himalayas associated with these sports A plateau is an elevated flat land It is a flat-topped table land standing above the surrounding area A plateau may have one or more sides with steep slopes The height of plateaus often varies from few hundred metres to several thousand metres Plateaus like mountains may be young or old The Deccan plateau in India is one of the oldest plateaus The East African Plateau in Kenya Tanzania and Uganda and the Western plateau of Australia are other examples The Tibet plateau Figure p is the highest plateau in the world with a height of to metres above the mean sea level Plateaus are very useful because they are rich in mineral deposits As a result many of the mining areas in the world are located in the plateau areas The African plateau is famous for gold and diamond mining In India huge reserves of iron coal and manganese are found in the Chhotanagpur plateau In the plateau areas there may be several waterfalls as the river falls from a great height In India the Hundru falls in the Chhotanagpur plateau on the river Subarnarekha and the Jog falls in Karnataka are examples of such waterfalls The lava plateaus are rich in black soil that are fertile and good for cultivation Many plateaus have scenic spots and are of great attraction to tourists Plains are large stretches of flat land They are generally not more than metres above mean sea level Some plains are extremely level Others may be slightly rolling and undulating Most of the plains are formed by rivers and their tributaries The rivers flow down the slopes of mountains and erode them They carry forward the eroded material Then they deposit their load consisting of stones sand and silt along their courses and in their valleys It is from these deposits that plains are formed Generally plains are very fertile Construction of transport network is easy Thus these plains are very thickly-populated regions of the world Some of the largest plains made by the rivers are found in Asia and North America For example in Asia these plains are formed by the Ganga and the Brahmaputra in India and the Yangtze in China Plains are the most useful areas for human habitation There is great concentration of people as more flat land is available for building houses as well as for cultivation Because of fertile soils the land is highly productive for cultivation In India too the Indo-Gangetic plains are the most densely populated regions of the country Swachh Bharat Mission Healthy mind lives in healthy body and for a healthy body clean environment particularly clean water air and hygienic surroundings are pre-requisites Swachh Bharat Mission a government of India Programme aims to achieve all these for people Humans have been living on different kinds of landforms in different ways Life is difficult in mountainous areas Plains provide much better conditions It is easy to grow crops build a house or a road in a plain than a mountain Can you point out some differences in the ways people live on different kinds of landforms Sometimes Figure A polluted river natural calamities such as earthquakes volcanic eruption storms and floods cause widespread destruction Huge loss of life and property takes place By creative awareness about such incidences we may lower the risks You may find out from your own surroundings in how many ways we use the land and water Quite often we use the land in a wasteful manner for example constructing houses on a fertile land Similarly we throw garbage on land or in water making them dirty We should avoid using such important gifts of nature in a careless manner The available land is not only for our use It is our duty to leave the earth a better place for future generations as well Look carefully at photograph nos Write one sentence about each of the photograph Name the landform features shown in the photograph nos and What appears to be the main use of this land Photograph no What activities do you see in the photograph nos and OUR COUNTRY INDIA The peninsula is a piece of land that is surrounded by water on three sides figure India is a country of vast geographical expanse In the north it is bound by the lofty Himalayas The Arabian Sea in the west the Bay of Bengal in the east and the Indian Ocean in the south wash the shores of the Indian peninsula India has an area of about million sq km The north-south extent from Kashmir to Kanyakumari is about km And the east-west extent from Arunachal Pradesh to Kuchchh is about km The lofty mountains the Great Indian Desert the Northern Plains the uneven plateau surface and the coasts and islands present a diversity of landforms There is a great variety in the climate vegetation wildlife as well as in the language and culture In this diversity we find unity that is reflected in traditions that bind us as one nation India has a population of more than one hundred twenty crores since the year It is the second most populous country of the world after China India is located in the northern hemisphere The Tropic of Cancer N passes almost halfway through the country Figure From south to north main land of India extends between N and N latitudes From west to east India extends between E and E longitudes If we divide the world into eastern and western hemispheres which hemisphere would India belong to Due to great longitudinal extent of about there could be a wide differences in local time of places located at two extreme points of India As such the difference between these two points would be of about two hours As you have learnt earlier the local time changes by four minutes for every one degree of longitude The sun rises about two hours earlier in the east Arunachal Pradesh than in the west Gujarat You have already read earlier why the local time of longitude of 'E has been taken as the Indian Standard Time This meridian or longitude is also termed as the Standard Meridian of India Do you know Large countries which stretch extensively from east to west do not have a single Standard Time for the whole country The USA and Canada have seven and six time zones respectively Do you remember how many time zones are there in Russia There are seven countries that share land boundaries with India Find out names of these countries from the Figure How many of these countries do not have access to any ocean or sea Across the sea to the south lie our island neighbours Sri Lanka and Maldives Sri Lanka is separated from India by the Palk Strait India is a vast country For administrative purposes the country is divided into States and Union Territories Appendix-I Delhi is the national capital The states have been formed mainly on the basis of languages PHYSICAL DIVISIONS Tributary A river or stream which contributes its water to a main river by discharging it into main river from either side Figure Do you know The Ganga and the Brahmaputra form the world’s largest delta the Sundarbans delta The delta is triangular in shape It is an area of land formed at the mouth of the river Where rivers enter the sea that point is called the mouth of the river Figure India is marked by a diversity of physical features such as mountains plateaus plains coasts and islands Standing as sentinels in the north are the lofty snow-capped Himalayas Him alaya mean the abode of snow The Himalayan mountains are divided into three main parallel ranges The northernmost is the Great Himalaya or Himadri The worlds highest peaks are located in this range Middle Himalaya or Himachal lies to the south of H imadri Many popular hill stations are situated here Find out the names of five hill stations The Shiwalik is the southernmost range The Northern Indian plains lie to the south of the Himalayas They are generally level and flat These are formed by the alluvial deposits laid down by the rivers the Indus the Ganga the Brahmaputra and their tributaries These river plains provide fertile land for cultivation That is the reason for high concentration of population in these plains In the western part of India lies the Great Indian desert It is a dry hot and sandy stretch of land It has very little vegetation To the south of northern plains lies the Peninsular plateau It is triangular in shape The relief is highly uneven This is a region with numerous hill ranges and valleys Aravali hills one of the oldest ranges of the world border it on the north-west side The Vindhyas and the Satpuras are the important ranges The rivers Narmada and Tapi flow through these ranges These are westflowing rivers that drain into the Arabian Sea The Western Ghats or Sahyadris border the plateau in the west and the Eastern Ghats provide the eastern boundary While the Western Ghats are almost continuous the Eastern Ghats are broken and uneven Figure The plateau is rich in minerals like coal and iron-ore To the West of the Western Ghats and the East of Eastern Ghats lie the Coastal plains The western coastal plains are very narrow The eastern Coastal plains are much broader There are a number of east flowing rivers The rivers Mahanadi Godavari Krishna and Kaveri drain into the Bay of Bengal These rivers have formed fertile deltas at their mouth The Sunderban delta is formed where the Ganga and Brahmaputra flow into the Bay of Bengal Alluvial deposits These are very fine soils brought by rivers and deposited in the river basins Let’s Do Many girls are named after rivers eg Yamuna Mandakini and Kaveri Do you know anyone in your locality who is named after a river Ask your parents and others and make a list of such names Could you also find other names related to water e g Shabnam Do you know Corals are skeletons of tiny marine animals called Polyps When the living polyps die their skeletons are left Other poplyps grow on top of the hard skeleton which grows higher and higher thus forming the coral islands Figure shows Coral islands Figure Coral Islands Two groups of islands also form part of India Lakshadweep Islands are located in the Arabian Sea These are coral islands located off the coast of Kerala The Andaman and the Nicobar Islands lie to the southeast of the Indian mainland in the Bay of Bengal Do you know which group of islands were affected by the Tsunami in Find out through newspaper reports and by speaking to people how in different ways people faced this challenge when Tsunami struck the Indian coast Tsunami is a huge sea wave generated due to an earthquake on the sea floor INDIA CLIMATE VEGETATION AND WILDLIFE You read in newspapers daily and watch on T V or hear others talking about weather You must know that weather is about day to day changes in the atmosphere It includes changes in temperature rainfall and sunshine etc For example as such it may be hot or cold sunny or cloudy windy or calm You must have noticed that when it is hot continuously for several days you don’t need any warm clothing You also like to eat or drink cold things In contrast there are days together you feel cold without woollen clothes when it is very windy and chilly you would like to have something hot to eat Broadly the major seasons recognised in India are Cold Weather Season Winter December to February Hot Weather Season Summer March to May Southwest Monsoon Season Rainy June to September Season of Retreating Monsoon Autumn October and November C OLD WEATHER SEASON OR WINTER During the winter season the sun rays do not fall directly in the region As a result the temperatures are quite low in northern India HOT WEATHER SEASON OR SUMMER In the hot weather season sun rays more or less directly fall in this region Temperature becomes very high Hot and dry winds called loo blow during the day People in all parts of our country drink delicious cool drinks called Sharbat made from fruits available in their regions They are excellent thirst-quenchers and protect our bodies from the ill-effect of the harsh loo Have you tried Sharbat made from raw mango bel lemon tamarind kokum phalsa watermelon and buttermilk made from curds for example chhaachh mattha mori chash etc Many make banana and mango milkshakes too After a hot summer the first rains bring much joy All our languages have melodious songs on rains They sound happy and bring cheer Learn two songs on rains and sing them together Write or collect five poems on rains Ask your friends neighbours and family members for names for rains and other seasons in different languages For instance Varsha Hindi Pous Marathi Barish Urdu Borsha Bengali SOUTH WEST MONSOON SEASON OR RAINY SEASON This season is marked by the onset and advance of monsoon The winds blow from Arabian Sea and Bay of Bengal towards the land They carry moisture with them When these winds strike the mountain barriers rainfall occurs Winds move back from the mainland to the Bay of Bengal This is the season of the retreating monsoons The southern parts of India particularly Tamil Nadu and Andhra Pradesh receive rainfall in this season However the climate is about the average weather condition which have been measured over many years The climate of India has broadly been described as Monsoon type Monsoon is taken from the Arabic word mausim which means seasons Due to India’s location in the tropical region most of the rain is brought by monsoon winds Agriculture in India is dependent on rains Good monsoons mean adequate rain and a bountiful crop What would happen if monsoons were weak or even worse failed to occur one year Tick ü the correct answer Crops will be affected not affected The level of the water in a well will come up go down Summer will be longer shorter The climate of a place is affected by its location altitude distance from the sea and relief Therefore we experience regional differences in the climate of India Jaisalmer and Bikaner in the desert of Rajasthan are very hot while Drass and Kargil in Jammu and Kashmir are freezing cold Coastal places like Mumbai and Kolkata experience moderate climate They are neither too hot nor too cold Being on the coast these places are very humid Mawsynram in Meghalaya receives the world’s highest rainfall while in a particular year it might not rain at all in Jaisalmer in Rajasthan We see a variety of plant life in our surroundings How nice it is to play in a field with green grasses There are also small plants called bushes and shrubs like cactus and flowering plants etc Besides there are many tall trees some with many branches and leaves like neem mango or some which stand with few leaves such as palm The grasses shrubs and trees which grow on their own without interference or help from human beings are called natural vegetation Do you wonder how these differ from each other Different types of natural vegetation are dependent on different climatic conditions among which the amount of rainfall is very important Due to varied climatic conditions India has a wide range of natural vegetation Forests are very useful for us They perform various functions Plants release oxygen that we breathe and absorb carbon dioxide The roots of the plants bind the soil thus they control soil erosion Forests provide us with timber for furniture fuel wood fodder medicinal plants and herbs lac honey gum etc Leela’s parents planted a sapling of neem to celebrate her birth On each birthday a different sapling was planted It was watered regularly and protected from severe heat cold and animals Children took care not to harm it When Leela was twenty-one beautiful trees stood in and around her house Birds built their nests on them flowers bloomed butterflies fluttered around them children enjoyed their fruits swung on their branches and played in their shade Forests are the natural habitat of wild life Natural vegetation has been destroyed to a large extent because of the reckless cutting of trees We should plant more trees and protect the existing ones and make people aware of the importance of trees We can have special programmes like Van Mahotsav to involve more people in making our earth green WILD LIFE Forests are home to a variety of wild life There are thousands of species of animals and a large variety of reptiles amphibians mammals birds insects and worms which dwell in the forest INDIA CLIMATE VEGETATION AND WILDLIFE The tiger is our national animal It is found in various parts of the country Gir forest in Gujarat is the home of Asiatic lions Elephants and one-horned rhinoceroses roam in the forests of Assam Elephants are also found in Kerala and Karnataka Camels and wild asses are found in the Great Indian desert and the Rann of Kuchchh respectively Wild goats snow leopards bears etc are found in the Himalayan region Besides these many other animals are found in our country such as monkey wolf jackal nilgai cheetal etc India is equally rich in bird life The peacock is our national bird Other common birds are parrots pigeons mynah geese bulbul and ducks There are several bird sanctuaries which have been created to give birds their natural habitat These provide the birds protection from hunters Can you name five birds that are commonly found in your area There are several hundreds of species of snakes found in India Cobras and kraits are important among them Due to cutting of forests and hunting several species of wildlife of India are declining rapidly Many species have already become extinct In order to protect them many national parks sanctuaries and biosphere reserves have been set up The Government has also started Project Tiger and Project Elephant to protect these animals Can you name some wildlife sanctuaries of India and locate them on a map You can also contribute in conserving wildlife You can refuse to buy things made from parts of the bodies of animals such as their bones horns fur skins and feathers Every year we observe wildlife week in the first week of October to create awareness of conserving the habitats of the animal kingdom What will happen if tigers vanish from our forests Have you ever visited any tiger reserves or a zoo where tigers are kept Migratory Birds Some birds such as Pintail Duck Curlews Flamingo Osprey and Little Stint migrate to our country in winter season every year Smallest migratory bird Little Stint Weighing as low as gram from Arctic region travel over km to reach India CHAPTER NEW EMPIRES AND KINGDOMS Arvind had been chosen to act as a king in the school play He had expected to march solemnly in splendid robes to twirl his moustaches and wield the silver-paper wrapped sword with gusto Imagine his surprise when he was told he would also have to sit and play a veena and recite poetry A musician-king Who was that he wondered Arvind was supposed to be acting as Samudragupta a famous ruler of a dynasty known as the Guptas We know about Samudragupta from a long inscription inscribed on the Ashokan pillar at Allahabad It was composed as a Kavya by Harishena who was a poet and a minister at the court of Samudragupta This inscription is of a special kind known as a prashasti a Sanskrit word meaning in praise of While prashastis were composed for some of the rulers you read about in Chapter such as Gautamiputra Shri Satakarni they became far more important from the time of the Guptas Let us see what Samudragupta’s prashasti tells us The poet praised the king in glowing terms as a warrior as a king who won victories in battle who was learned and the best of poets He is also described as equal to the gods The prashasti was composed in very long sentences Here is part of one such sentence Whose body was most charming being covered with the plenteous beauty of the marks of hundreds of scars caused by battle-axes arrows spikes spears barbed darts swords iron clubs javelins barbed arrows long arrows and many other weapons What does this description tell you about the king And also about how kings fought wars If you look at Map page you will notice an area shaded in green You will also find a series of red dots along the east coast And you will find areas marked in purple and blue as well This map is based on the information provided in the prashasti Harishena describes four different kinds of rulers and tells us about Samudragupta’s policies towards them The rulers of Aryavarta the area shaded in green on the map Here there were nine rulers who were uprooted and their kingdoms were made a part of Samudragupta’s empire The king who played the veena Some other qualities of Samudragupta are shown on coins such as this one where he is shown playing the veena The rulers of Dakshinapatha Here there were twelve rulers some of whose capitals are marked with red dots on the map They surrendered to Samudragupta after being defeated and he then allowed them to rule again The inner circle of neighbouring states including Assam coastal Bengal Nepal and a number of gana sanghas remember Chapter in the northwest marked in purple on the map They brought tribute followed his orders and attended his court The rulers of the outlying areas marked in blue on the map perhaps the descendants of the Kushanas and Shakas and the ruler of Sri Lanka who submitted to him and offered daughters in marriage Find Prayaga the old name for Allahabad Ujjain and Pataliputra Patna on the map These were important centres of the Gupta rulers What was the difference between the way in which Samudragupta treated the rulers of Aryavarta and Dakshinapatha Can you suggest any reasons for this difference Most prashastis also mention the ancestors of the ruler This one The era beginning in the mentions Samudragupta’s great BCE is traditionally grandfather grandfather father and associated with Gupta king mother His mother Kumara devi Chandragupta who had belonged to the Lichchhavi gana while founded it as a mark of victory over the Shakas and his father Chandragupta was the first assumed the title of ruler of the Gupta dynasty to adopt the Vikramaditya grand title of maharaj-adhiraja a title that Samudragupta also used His great grandfather and grandfather are mentioned simply as maha-rajas It seems as if the family gradually rose to importance Arrange these titles in order of importance raja maharaj-adhiraja maha-raja Samudragupta in turn figures in the genealogies lists of ancestors of later rulers of the dynasty such as his son Chandragupta We know about him from inscriptions and coins He led an expedition to western India where he overcame the last of the Shakas According to later belief his court was full of learned people About some of them whom you will read in Chapter While we can learn about the Gupta rulers from their inscriptions and coins we can find out about some kings from biographies Harshavardhana who ruled nearly years ago was one such ruler His court poet Banabhatta wrote his biography the Harshacharita in Sanskrit This gives us the genealogy of Harsha and ends with his becoming king Xuan Zang about whom you read in Chapter also spent a lot of time at Harsha’s court and left a detailed account of what he saw Harsha was not the eldest son of his father but became king of Thanesar after both his father and elder brother died His brother-in-law was the ruler of Kanauj see Map and he was killed by the ruler of Bengal Harsha took over the kingdom of Kanauj and then led an army against the ruler of Bengal Although he was successful in the east and conquered Magadha and probably Bengal also he was not as successful elsewhere He tried to cross the Narmada to march into the Deccan but was stopped by a ruler belonging to the Chalukya dynasty Pulakeshin Look at political map of India and list the present-day states which Harshavardhana passed through when he went a to Bengal and b up to the Narmada The Pallavas and Chalukyas were the most important ruling dynasties in south India during this period The kingdom of the Pallavas spread from the region around their capital Kanchipuram to the Kaveri delta while that of the Chalukyas was centred around the Raichur Doab between the rivers Krishna and Tungabhadra Aihole the capital of the Chalukyas was an important trading centre see Map It developed as a religious centre with a number of temples The Pallavas and Chalukyas frequently raided one another’s lands especially attacking the capital cities which were prosperous towns The best-known Chalukya ruler was Pulakeshin We know about him from a prashasti composed by his court poet Ravikirti This tells us about his ancestors who are traced back through four generations from father to son Pulakeshin evidently got the kingdom from his uncle According to Ravikirti he led expeditions along both the west and the east coasts Besides he checked the advance of Harsha There is an interesting play of words in the poem Harsha means happiness The poet says that after this defeat Harsha was no longer Harsha Pulakeshin also attacked the Pallava king who took shelter behind the walls of Kanchipuram But the Chalukya victory was short-lived Ultimately both the Pallavas and the Chalukyas gave way to new rulers belonging to the Rashtrakuta and Chola dynasties about which you will study in Class VII Who were the other rulers who tried to control the coasts and why Hint see Chapter As in the case of earlier kings land revenue remained important for these rulers and the village remained the basic unit of administration There were some new developments as well Kings adopted a number of steps to win the support of men who were powerful either economically or socially or because of their political and military strength For instance Some important administrative posts were now hereditary This means that sons succeeded fathers to these posts For example the poet Harishena was a maha-danda-nayaka or chief judicial officer like his father Sometimes one person held many offices For instance besides being a maha-danda-nayaka Harishena was a kumar-amatya meaning an important minister and a sandhi-vigrahika meaning a minister of war and peace Besides important men probably had a say in local administration These included the nagarashreshthi or chief banker or merchant of the city the sarthavaha or leader of the merchant caravans These policies were reasonably effective but sooner or later some of these powerful men grew strong enough to set up independent kingdoms What do you think may have been the advantages and disadvantages of having hereditary officers Like earlier rulers some of these kings maintained a well-organised army with elephants chariots cavalry and foot soldiers Besides there were military leaders who provided the king with troops whenever he needed them They were not paid regular salaries Instead some of them received grants of land They collected revenue from the land and used this to maintain soldiers and horses and provide equipment for warfare These men were known as samantas Whenever the ruler was weak samantas tried to become independent The inscriptions of the Pallavas mention a number of local assemblies These included the sabha which was an assembly of brahmin land owners This assembly functioned through subcommittees which looked after irrigation agricultural operations making roads local temples etc The ur was a village assembly found in areas where the land owners were not brahmins And the nagaram was an organisation of merchants It is likely that these assemblies were controlled by rich and powerful landowners and merchants Many of these local assemblies continued to function for centuries We can catch an occasional glimpse of the lives of ordinary people from plays and other accounts Let us look at some of these Kalidasa is known for his plays depicting life in the king’s court An interesting feature about these plays is that the king and most brahmins are shown as speaking Sanskrit while women and men other than the king and brahmins use Prakrit His most famous play Abhijnana Shakuntalam is the story of the love between a king named Dushyanta and a young woman named Shakuntala We find an interesting description of the plight of a poor fisherman in this play A fisherman found a precious ring which the king had given to Shakuntala but which had been accidentally swallowed by a fish When he went to the palace with it the gatemen accused him of theft and the chief police officer was rather rude However the king was happy when he saw the ring and sent a reward for the fisherman Then the police officer and the gatemen decided to take a share of the reward and went along with the fisherman to have a drink Do you think that if a poor man finds something and reports this to the police he would be treated like this today Name a famous man who taught in Prakrit and a king who issued inscriptions in Prakrit hint see Chapters and The Chinese pilgrim Fa Xian noticed the plight of those who were treated as untouchables by the high and mighty They were expected to live on the outskirts of the city He writes If such a man enters a town or a market place he strikes a piece of wood in order to keep himself separate people hearing this sound know what it means and avoid touching him or brushing against him And Banabhatta provides us with a vivid picture of the king’s army on the move The king travelled with an enormous amount of equipment Apart from weapons there were things of daily use such as pots pans furniture golden footstools food including animals such as goat deer rabbits vegetables spices carried on carts or loaded on to pack animals such as camels and elephants This huge army was accompanied by musicians beating drums and others playing horns and trumpets Villagers had to provide hospitality along the way They came with gifts of curds gur and flowers and provided fodder for the animals They also tried to meet the king and place their complaints and petitions before him The army left a trail of destruction behind Elephants often trampled down the huts of villagers and the oxen yoked to the caravans of merchants ran away scared by the tumult As Banabhatta says The whole world was swallowed up in dust Make a list of all the things that were carried with the army What did the villagers bring for the king Find Arabia on Map pages Although it is a desert it was at the hub of communications for centuries In fact Arab merchants and sailors played an important role in the sea trade between India and Europe see page Others who lived in Arabia were the Bedouins pastoral tribes depending mainly on camels hardy animals that could survive in the desert Around years ago Prophet Muhammad introduced a new religion Islam in Arabia Like Christianity Islam was a religion that laid stress on the equality and unity of all before Allah the one supreme god Here is a verse from the Quran the sacred book of Islam For Muslim men and women for believing men and women for devout men and women for true men and women for men and women who are patient and constant for men and women who humble themselves for men and women who give in charity for men and women who fast for men and women who guard their chastity and for men and women who engage much in Allah’s remembrance for them has Allah prepared forgiveness and great reward Within a hundred years Islam spread to North Africa Spain Iran and India Arab sailors who were already familiar with the coastal settlements of the subcontinent now brought the new religion with them Arabs soldiers conquered Sind in present-day Pakistan about years ago Trace the routes that would have been taken by these sailors and soldiers Before you read Mridu is a young girl growing up in Madras now called Chennai with Tapi her grandmother and Thatha her grandfather One afternoon Tapi takes her to her aunt Rukku Manni’s house to meet her cousins Lalli Ravi and Meena A Gift of Chappals A smiling Rukku Manni threw open the door Ravi and Meena rushed out and Ravi pulled Mridu into the house Wait let me take off my slippers protested Mridu She set them out neatly near a pair of large black ones Those were grey actually with dust You could see the clear mark of every toe on the front part of each slipper The marks for the two big toes were long and scrawny Mridu didn’t have much time to wonder about whose slippers they were because Ravi dragged her to the backyard behind a thick bitter-berry bush There inside a torn football lined with sacking and filled with sand lay a very small kitten lapping up milk from a coconut half-shell We found him outside the gate this morning He was mewing and mewing poor thing said Meena It’s a secret Amma says Paati will leave for our Paddu Mama’s house if she knows we have a cat People are always telling us to be kind to animals but when we are they scream Ooh don’t bring that dirty creature here said Ravi Do you know how hard it is just to get a little milk from the kitchen Paati saw me with a glass in my hand just now I told her I’m very hungry I want to drink it but the way she looked at me I had to drink most of it to throw her off the scent Then she wanted the tumbler back Paati Paati I’ll wash it myself why should I put you to trouble I told her I had to run and pour the milk into this coconut shell and then run back and wash the tumbler and put it back before she got really suspicious Now we have to think of some other way to feed Mahendran Mahendran This little kitty’s name is Mahendran Mridu was impressed It was a real name not just a cute kitty-cat name Actually his full name is Mahendravarma Pallava Poonai M P Poonai for short if you like He’s a fine breed of cat Just look at his fur Like a lion’s mane And you know what the emblem of the ancient Pallava kings was don’t you he looked expectantly at Mridu Mridu giggled Think I’m joking Well just wait I’ll show you sometime It’s clear you don’t know a thing about history Haven’t been to Mahabalipuram have you he said mysteriously Well when our class went to Mahabalipuram I saw a statue of his thatha’s thatha’s thatha’s thatha’s thatha’s etcetera etcetera Fact is Mahendran here is descended from that very same ancient cat A close relative scientifically speaking of none other than the lion The Pallava lion emblem of the Pallava dynasty Ravi went on walking around the bitter-berry bush waving a twig up and down his eyes sparkling This cat is a descendant of none other than the Mahabalipuram Rishi-Cat And if I may just remind you they worshipped cats in ancient Egypt How he loved the sound of his own voice Meena and Mridu exchanged looks What does that have to do with anything Mridu demanded Huh I’m telling you this cat is descended from the Egyptian cat-god no goddess Bastet Ya That’s it So Well one of the descendants of that cat-goddess was a stowaway in one of the Pallava ships and his descendant was the Mahabalipuram Rishi-Cat whose descendant is Ravi flourished his twig at Mahendran M P Poonai here whoop EEK he shrieked very pleased with himself Mahendran looked up alarmed He had just been sharpening his claws on the edge of the coconut shell But worse than Ravi’s awful whoop EEK was a Kreech from the window What a weird sound If Mridu was startled M P Poonai was frightened out of his wits Hair standing on end he bounced up and scurried towards a bamboo tray of red chillies that had been set out to dry Trying to hide beneath it he tipped a few chillies over himself Mi-a-aw he howled miserably The kreeching went on and on What’s that noise said Mridu That’s Lalli learning to play the violin grunted Ravi She’ll never learn a thing The musicmaster just goes on playing like a train whizzing on and on while Lalli’s all the time derailing Going completely off track What is the secret that Meena shares with Mridu in the backyard How does Ravi get milk for the kitten Who does he say the kitten’s ancestors are Do you believe him Ravi has a lot to say about M P Poonai This shows that i he is merely trying to impress Mridu his knowledge of history is sound he has a rich imagination he is an intelligent child Which of these statements do you agree disagree to What was the noise that startled Mridu and frightened Mahendran Mridu crept up to the window Lalli was sitting a little distance away awkwardly holding her violin and bowstring her elbows jutting out and her eyes glazed with concentration In front of her with most of his back to the window was the bony figure of the music-master He had a mostly bald head with a fringe of oiled black hair falling around his ears and an old-fashioned tuft A gold chain gleamed around his leathery neck and a diamond ring glittered on his hand as it glided up and down the stem of the violin A large foot stuck out from beneath his gold-bordered veshti edge and he was beating time on the floor with the scrawny big toe He played a few notes Lalli stumbled behind him on her violin which looked quite helpless and unhappy in her hands What a difference The music-master’s notes seemed to float up and settle perfectly into the invisible tracks of the melody It was like the wheels of a train fitting smoothly into the rails and whizzing along as Ravi said Mridu stared at that huge beringed hand moving effortlessly up the violin’s stem making lovely music Squawk There was Lalli derailing again Amma came a wail from the gate Ammaoh Ravi send that beggar away cried his mother from the back verandah where she was chatting with Tapi He has been coming here every day for the past week and it’s time he found another house to beg from Paati explained to Tapi Mridu and Meena followed Ravi out The beggar was already in the garden making himself quite at home He had spread his upper cloth under the neem tree and was leaning against its trunk apparently prepared to take a little snooze while he waited for the alms to appear Go away said Ravi sternly My Paati says it’s time you found another house to beg from The beggar opened his eyes very wide and gazed at each of the children one by one The ladies of this house he said at last in a voice choked with feeling are very kind souls I have kept my body and soul together on their generosity for a whole week I cannot believe that they would turn me away He raised his voice Amma Amma-oh Sad his wail might be but it certainly wasn’t feeble It began in a deep strong rumble somewhere in his withered belly and came booming out of his mouth with its few remaining teeth stained brown with betel-chewing Ravi tell him there’s nothing left in the kitchen called Rukku Manni And he’s not to come again tell him that She sounded fed up Ravi didn’t have to repeat it all to the beggar What his mother said had been easy for them all to hear there under the neem tree The beggar sat up and sighed I’ll go I’ll go he said wearily Only let me have a rest here under this tree The sun is so hot the tar has melted on the road My feet are already blistered He stretched out his feet to show large pink peeling blisters on the soles of his bare feet I suppose he doesn’t have the money to buy chappals Mridu whispered to Meena Ravi Have you got an old pair in the house somewhere I don’t know said Ravi Mine are too small to fit his feet or I’d have given them to him And his feet were larger than Mridu’s and Meena’s The beggar was shaking out his upper cloth and tightening his dhoti He raised his eyes and looked fearfully at the road gleaming in the afternoon heat He needs something on his feet Meena said her big eyes filling It’s not fair Ssh said Ravi I’m thinking about it Blubbering it’s not fair it’s not fair isn’t going to help In two minutes he’ll be frying his feet on that road What he needs is a pair of chappals So where do we get them Come let’s search the house He pushed Mridu and Meena into the house Just as she stepped into the verandah Mridu’s eyes fell on the odd-looking chappals she had noticed when she arrived Ravi she whispered to him Whose are those Ravi turned and glanced at the shabby-looking but sturdy old slippers He beamed and nodded These are just the right size he said picking them up Mridu and Meena followed him nervously back into the garden Here said Ravi to the beggar dropping the slippers in front of the old man Wear these and don’t come back The beggar stared at the slippers hurriedly flung his towel over his shoulder pushed his feet into them and left muttering a blessing to the children In a minute he had vanished around the corner of the street The music-master came out of the house and took an unappreciative look at the three of them sitting quietly under the tree playing marbles Then he searched for his chappals in the verandah where he had put them Lalli he called after a few moments She hurried up to him Have you seen my chappals my dear I remember having kept them here Ravi Mridu and Meena silently watched Lalli and the music-master search every corner of the verandah He scurried around looking over the railing and crouching near the flower pots to look between them Brand new they were I went all the way to Mount Road to buy them he went on saying They cost a whole month’s fees do you know Soon Lalli went in to tell her mother Rukku Manni appeared looking harassed with Paati following her Where could they be It’s really quite upsetting to think someone might have stolen them So many vendors come to the door worried Paati Rukku Manni caught sight of Ravi Mridu and Meena sitting under the tree Have you children she began and then seeing they were curiously quiet went on more slowly seen anyone lurking around the verandah A sharp V-shaped line had formed between her eyebrows Another straight tighter one appeared in place of her usually soft pleasant mouth Rukku Manni was angry thought Mridu with a shiver She wouldn’t be so upset if she knew about the poor beggar with sores on his feet she tried to tell herself Taking a deep breath she cried Rukku Manni there was a beggar here Poor thing he had such boils on his feet So said Rukku Manni grimly turning to Ravi You gave the music-master’s chappals to that old beggar who turns up here Children these days groaned Paati Amma didn’t you tell me about Karna who gave away everything he had even his gold earrings he was so kind and generous Silly snapped Rukku Manni Karna didn’t give away other people’s things he only gave away his own But my chappals wouldn’t have fitted the beggar’s feet Ravi rushed brashly on And Amma if they did fit would you really not have minded Ravi said Rukku Manni very angry now Go inside this minute She hurried indoors and brought out Gopu Mama’s hardly worn new chappals These should fit you Sir Please put these on I am so sorry My son has been very naughty The musicmaster’s eyes lit up He put them on trying not to look too happy Well I suppose these will have to do These days children have no respect for elders what to do A Hanuman incarnate only Rama can save such a naughty fellow Rukku Manni’s eyes flashed She didn’t seem to like Ravi being called a monkey even a holy monkey She stood stiff and straight by the front door It was clear she wanted him to leave quickly When he had clattered off in his new chappals she said Mridu come in and have some tiffin Honestly how do you children think of such things Thank God your Gopu Mama doesn’t wear his chappals to work As she walked towards the kitchen with Mridu and Meena she suddenly began to laugh But he’s always in such a hurry to throw off his shoes and socks and get into his chappals as soon as he comes home What’s your Mama going to say this evening when I tell him I gave his chappals to the music-master Before you read Can a shoemaker be called an artist Yes if he has the same skill and pride in his trade as any other artist and the same respect for it too Mr Gessler a German shoemaker settled in London is a perfect artist Read this story to see how he devotes his life to his art I knew him from the days of my extreme youth because he made my father’s boots He lived with his elder brother in his shop which was in a small by-street in a fashionable part of London The shop had a certain quiet distinction There was no sign upon it other than the name of Gessler Brothers and in the window a few pairs of boots He made only what was ordered and what he made never failed to fit To make boots such boots as he made seemed to me then and still seems to me mysterious and wonderful I remember well my shy remarks one day while stretching out to him my youthful foot Isn’t it awfully hard to do Mr Gessler And his answer given with a sudden smile from out of the redness of his beard Id is an ardt It was not possible to go to him very often his boots lasted terribly having something beyond the temporary some essence of boot stitched into them One went in not as into most shops but restfully as one enters a church and sitting on the single wooden chair waited A guttural sound and the tip-tap of his slippers beating the narrow wooden stairs and he would stand before one without coat a little bent in leather apron with sleeves turned back blinking as if awakened from some dream of boots And I would say How do you do Mr Gessler Could you make me a pair of Russian-leather boots Without a word he would leave me retiring whence he came or into the other portion of the shop and I would continue to rest in the wooden chair inhaling the incense of his trade Soon he would come back holding in his hand a piece of gold-brown leather With eyes fixed on it he would remark What a beaudiful biece When I too had admired it he would speak again When do you wand dem And I would answer Oh As soon as you conveniently can And he would say Tomorrow fordnighd Or if he were his elder brother I will ask my brudder Then I would murmur ‘’Thank you Good morning Mr Gessler Good morning’ he would reply still looking at the leather in his hand And as I moved to the door I would hear the tip-tap of his slippers going up the stairs to his dream of boots I cannot forget that day on which I had occasion to say to him Mr Gessler that last pair of boots creaked you know He looked at me for a time without replying as if expecting me to withdraw or qualify the statement then said ld shouldn’d ’ave greaked It did I’m afraid You god dem wed before dey found demselves I don’t think so At that he lowered his eyes as if hunting for memory of those boots and I felt sorry I had mentioned this grave thing Zend dem back he said I will look at dem Zome boods he continued slowly are bad from birdt If I can do noding wid dem I take dem off your bill Once once only I went absent-mindedly into his shop in a pair of boots bought in an emergency at some large firm He took my order without showing me any leather and I could feel his eyes penetrating the inferior covering of my foot At last he said Dose are nod my boods The tone was not one of anger nor of sorrow not even of contempt but there was in it something quiet that froze the blood He put his hand down and pressed a finger on the place where the left boot was not quite comfortable Id urds you dere he said Dose big virms ’ave no self-respect And then as if something had given way within him he spoke long and bitterly It was the only time I ever heard him discuss the conditions and hardships of his trade Dey get id all he said dey get id by advertisement nod by work Dey take id away from us who lofe our boods Id gomes to dis bresently I haf no work Every year id gets less You will see And looking at his lined face I saw things I had never noticed before bitter things and bitter struggle and what a lot of grey hairs there seemed suddenly in his red beard As best I could I explained the circumstances of those ill-omened boots But his face and voice made so deep an impression that during the next few minutes I ordered many pairs They lasted longer than ever And I was not able to go to him for nearly two years It was many months before my next visit to his shop This time it appeared to be his elder brother handling a piece of leather Well Mr Gessler I said how are you He came close and peered at me I am breddy well he said slowly but my elder brudder is dead And I saw that it was indeed himself but how aged and wan And never before had I heard him mention his brother Much shocked I murmured Oh I am sorry Yes he answered he was a good man he made a good bood But he is dead And he touched the top of his head where the hair had suddenly gone as thin as it had been on that of his poor brother to indicate I suppose the cause of his death Do you wand any boods And he held up the leather in his hand ld’s a beaudiful biece I ordered several pairs It was very long before they came but they were better than ever One simply could not wear them out And soon after that I went abroad It was over a year before I was again in London And the first shop I went to was my old friend’s I had left a man of sixty I came back to one of seventy-five pinched and worn who genuinely this time did not at first know me Do you wand any boods he said I can make dem quickly id is a zlack dime I answered Please please I want boots all around every kind I had given those boots up when one evening they came One by one I tried them on In shape and fit in finish and quality of leather they were the best he had ever made I flew downstairs wrote a cheque and posted it at once with my own hand A week later passing the little street I thought I would go in and tell him how splendidly the new boots fitted But when I came to where his shop had been his name was gone I went in very much disturbed In the shop there was a young man with an English face Mr Gessler in I said No sir he said No but we can attend to anything with pleasure We’ve taken the shop over Yes yes I said but Mr Gessler Oh he answered dead Dead But I only received these boots from him last Wednesday week Ah he said poor old man starved himself Slow starvation the doctor called it You see he went to work in such a way Would keep the shop on wouldn’t have a soul touch his boots except himself When he got an order it took him such a time People won’t wait He lost everybody And there he’d sit going on and on I will say that for him not a man in London made a better boot But look at the competition He never advertised Would have the best leather too and do it all himself Well there it is What could you expect with his ideas But starvation That may be a bit flowery as the saying is but I know myself he was sitting over his boots day and night to the very last you see I used towatch him Never gave himself time to eat never had a penny in the house All went in rent and leather How he lived so long I don’t know He regularly let his fire go out He was a character But he made good boots Yes I said he made good boots Before you read Nishad a boy of seven also called Seven because his name means the seventh note on the musical scale and his ten-year-old sister Maya are very curious about one Mr Nath Then one day the children’s marble rolls into Mr Nath’s room and Nishad gets a chance to see him Is he a crook on the run Why is his face badly scarred Why has he no friends Nishad’s mother a doctor knows Mr Nath as a patient who is very polite As we walked back towards the clinic Seven said He doesn’t look anything like a monster Maya But did you see how thin he is Maybe he’s very poor and can’t afford to eat He can’t be poor if he’s a crook on the run I told him He’s probably got millions of rupees stashed away somewhere in that room Do you really think he’s a criminal Maya He doesn’t look like one Nishad looked doubtful Of course he’s one Seven I said and he certainly isn’t starving Mr Mehta told us that Ramesh brings his meals up from the restaurant downstairs But Maya Mr Mehta told us he doesn’t work anywhere so how can he possibly have money to pay for food Nishad said Exactly I exclaimed He must have lots of money hidden somewhere maybe in that trunk in his room It’s probably full of silver and gold and jewels and What rubbish Nishad interrupted I know I’m right stupid I told him By the way Seven did you see his scars I couldn’t it was too dark but I bet he got them during a shootout with the police or something Mummy told us quite clearly they were burn scars Nishad said firmly Perhaps the police had to set his house on fire to force him out I suggested Seven looked unsure On the Monday following Mamma’s birthday Seven went alone with her to the clinic at Girgaum as I was spending the evening with a schoolfriend When they returned Nishad told me he’d been to see Mr Nath and I felt most annoyed that I hadn’t been there Seven had been quite upset about Mr Nath’s gaunt appearance and was sure that he was starving He told me that he had knocked loudly on Mr Nath’s door that evening and said Open the door quickly Mr Nath The man had opened it and asked him Lost another marble He had obviously recognised my brother No said Nishad He had taken the man’s hand in his own and thrust a bar of chocolate into it Did you get a chance to peek into the trunk Seven I asked Nishad looked disappointed He didn’t even ask me in he said Then he smiled But I did find out something Maya I went down to the restaurant where Ramesh works and talked to him Good for you Mr Detective I said patting him on the back I hope you questioned him properly Seven looked pleased Ramesh told me that he takes two meals for Mr Nath every morning and evening and two cups of tea one in the morning and one in the afternoon Ramesh says he’s not very particular about what he eats it’s always the same food two chapattis some dal and a vegetable Mr Nath pays cash and tips well Ramesh told me something very strange Maya Seven added Almost every Sunday he carries two lunches to Mr Nath’s room and the same man is with him each time He’s tall fair stout and wears spectacles Ramesh says his visitor talks a lot unlike Mr Nath who hardly speaks Well done Nishad I told him Now that we’ve made some progress with our inquiries we’ll have to sort out all the facts like expert detectives so that we can trap the crook How you do go on Maya Seven sighed How can you possibly imagine he’s a crook He looks so ordinary Criminals can look quite ordinary smarty I retorted Did you see the picture of the Hyderabadi housebreaker in the papers yesterday He looked like any man on the street Nishad looked doubtful The monsoons broke the next day Dark clouds accompanied by blinding flashes of lightning and roaring rolls of thunder burst with all their fury flooding the streets with a heavy downpour School was to have reopened after the summer holidays but no traffic could move through the flooded roads and there was an unexpected holiday I thought I’d spend the time usefully I sat at my desk in our bedroom with a sheet of paper before me He looked up questioningly I’ve listed all the facts we know about Mr Nath which might help us to trap him I said Want to hear Seven nodded Fact Number I read his name is Mr Nath We must discover his first name Do you think that’s his real name Maya Nishad asked Probably not I said Most crooks have an alias I added a big question mark after Nath Fact Number I read on the tenants at Shankar House say he’s mad strange and unfriendly Number he doesn’t talk to anyone and is mannerless But he did talk to us Maya and Mamma says he’s very polite Nishad interrupted He only talked to us because he had to I said and since he was under Mamma’s medical treatment he had to be polite Fact number he doesn’t receive any letters Seven nodded Number he’s been living in Room of Shankar House for more than a year I continued Number he doesn’t work and sits in his room all day Number the kids in Shankar House and even some of the grown-ups are scared of him Number he has no visitors except for a spectacled fair fat man who visits him on Sundays for lunch Number food and tea are taken to his room by Ramesh from the restaurant downstairs He doesn’t care what he eats pays his bill immediately and tips well That ends my list Have I forgotten anything Seven Nishad had obviously not been paying too much attention to my list of facts All he could say was Poor man Maya he must be so lonely if he doesn’t have any friends How can a crook have friends idiot I almost shouted At least he has one friend the one who meets him on Sundays said Nishad A brilliant thought occurred to me just then That man must be Mr Nath’s accomplice in crime I said Maybe he keeps all the loot and he comes now and then to give part of it to his partner Mr Nath for expenses That’s it I’m sure I’m right If you insist on calling him a criminal I don’t think I want to discuss anything with you Maya said Nishad angrily He can’t be such a bad man if he gives Ramesh such generous tips Ramesh probably knows something about his past so Mr Nath must be bribing him to keep quiet I said Nishad glared at me with his arms tightly crossed across his chest I was beginning to get fed up with him How can we make any progress with our investigations if you take that attitude Seven I asked I’ll cooperate only if you give up this idea about him being an escaped crook said Seven You really make me angry I almost hit him I make you angry you stupid oaf I shouted You make me mad What is the point of all these enquiries if he’s not a crook If you think he’s a nobody what’s the idea of bothering about him please tell me Nishad looked thoughtful I’d like to find out why he’s so thin and why he’s so lonely I want to know why he doesn’t have any friends and lives alone Try to understand Seven told him if he’s lived in Shankar House for a year and hasn’t made a single friend there’s something wrong He’s obviously scared that someone will recognise him and give him up to the cops Maybe no one’s tried to make friends with him Nishad protested Why should anyone bother You’ve seen what a nasty bear he is said don’t care said Nishad stubbornly like him and I’m going to try and be his friend Friends with a crook Ha You’re crazy Seven said The cops will take you to jail with him Do you want that to happen you idiot Nishad merely glared at me and quietly walked out of the room My theories seemed to have made no impression on him at all Before you read If you wish to go on a long bicycle ride the bicycle should be in good condition If possible an expert mechanic should overhaul it But what happens if the machine has a will of its own and the mechanic knows next to nothing A man I knew proposed one evening we should go for a long bicycle ride together on the following day and I agreed I got up early for me I made an effort and was pleased with myself He came half an hour late I was waiting for him in the garden It was a lovely day He said That’s a good-looking machine of yours How does it run Oh like most of them I answered easily enough in the morning goes a little stiffly after lunch He caught hold of it by the front wheel and the fork and shook it violently I said Don’t do that you’ll hurt it I did not see why he should shake it it had not done anything to him Besides if it wanted shaking I was the proper person to shake it I felt much as I should had he started whacking my dog He said This front wheel wobbles I said It doesn’t if you don’t wobble it It didn’t wobble as a matter of fact nothing worth calling a wobble He said This is dangerous have you got a hammer I ought to have been firm but I thought that perhaps he really did know something about the business I went to the tool shed to see what I could find When I came back he was sitting on the ground with the front wheel between his legs He was playing with it twiddling it round between his fingers the remnant of the machine was lying on the gravel path beside him He said It looks to me as if the bearings were all wrong I said Don’t you trouble about it any more you will make yourself tired Let us put it back and get off He said We may as well see what is the matter with it now it is out He talked as though it had dropped out by accident Before I could stop him he had unscrewed something somewhere and out rolled all over the path some dozen or so little balls Catch ‘em he shouted catch ‘em We mustn’t lose any of them He was quite excited about them We grovelled round for half an hour and found sixteen He said he hoped we had got them all because if not it would make a serious difference to the machine I put them for safety in my hat It was not a sensible thing to do I admit He then said that while he was about it he would see to the chain for me and at once began taking off the gear-case I did try to dissuade him from that I told him what an experienced friend of mine once said to me solemnly If anything goes wrong with your gear-case sell the machine and buy a new one it comes cheaper He said People talk like that who understand nothing about machines Nothing is easier than taking off a gear-case I had to confess he was right In less than five minutes he had the gear-case in two pieces lying on the path and was grovelling for screws He said it was always a mystery to him the way screws disappeared Common sense continued to whisper to me ‘Stop him before he does any more mischief You have a right to protect your own property from the ravages of a lunatic Take him by the scruff of the neck and kick him out of the gate ’ But I am weak when it comes to hurting other people’s feelings and I let him muddle on He gave up looking for the rest of the screws He said screws had a knack of turning up when you least expected them and that now he would see to the chain He tightened it till it would not move next he loosened it until it was twice as loose as it was before Then he said we had better think about getting the front wheel back into its place again I held the fork open and he worried with the wheel At the end of ten minutes I suggested he should hold the fork and that I should handle the wheel and we changed places At length we did get the thing into position and the moment it was in position he burst out laughing I said What’s the joke He said Well I am an ass It was the first thing he had said that made me respect him I asked him what had led him to the discovery He said We’ve forgotten the balls I looked for my hat it was lying topsy-turvy in the middle of the path He was of a cheerful disposition He said Well we must put back all we can find and trust to providence We found eleven We fixed six on one side and five on the other and half an hour later the wheel was in its place again It need hardly be added that it really did wobble now a child might have noticed it He said it would do for the present I said Watching you do this is of real use to me It is not only your skill that fascinates me it is your cheery confidence in yourself your inexplicable hopefulness that does me good Thus encouraged he set to work to refix the gear-case He stood the bicycle against the house and worked from the off side Then he stood it against a tree and worked from the on side Then I held it for him while he lay on the ground with his head between the wheels and worked at it from below and dropped oil upon himself Then he took it away from me and doubled himself across it till he lost his balance and slid over on to his head Then he lost his temper and tried bullying the thing The bicycle I was glad to see showed spirit and the subsequent proceedings degenerated into little else than a rough-and-tumble fight between him and the machine One moment the bicycle would be on the gravel path and he on top of it the next the position would be reversed he on the gravel path the bicycle on him Now he would be standing flushed with victory the bicycle firmly fixed between his legs But his triumph would be short-lived By a sudden quick movement it would free itself and turning upon him hit him sharply over the head with one of its handles At a quarter to one dirty and dishevelled cut and bleeding he said I think that will do and rose and wiped his brow The bicycle looked as if it also had had enough of it Which had received most punishment it would have been difficult to say took him into the back kitchen where so far as was possible he cleaned himself Then I sent him home Before you read Sport is an integral part of a healthy life It is one way in which we amuse ourselves compete with each other and stay fit Among the various sports such as hockey football and tennis cricket appears to be the most appealing national entertainment today How much do we really know about the game called cricket The Story of Cricket I Cricket grew out of the many stick-andball games played in England years ago The word bat is an old English word that simply means stick or club By the seventeenth century cricket had evolved enough to be recognisable as a distinct game Till the middle of the eighteenth century bats were roughly the same shape as hockey sticks curving outwards at the bottom There was a simple reason for this the ball was bowled underarm along the ground and the curve at the end of the bat gave the batsman the best chance of making contact One of the peculiarities of cricket is that a Test match can go on for five days and still end in a draw No other modern team sport takes even half as much time to complete A football match is generally over in an hour-and-a-half Even baseball completes nine innings in less than half the time that it takes to play a limited-overs match the shortened version of modern cricket Another curious characteristic of cricket is that the length of the pitch is specified yards but the size or shape of the ground is not Most other team sports such as hockey and football lay down the dimensions of the playing area Cricket does not Grounds can be oval like the Adelaide Oval or nearly circular like Chepauk in Chennai A six at the Melbourne Cricket Ground needs to clear much more ground than it does at Feroz Shah Kotla in Delhi There’s a historical reason behind both these oddities Cricket was the earliest modern team sport to be codified The first written Laws of Cricket were drawn up in They stated the principals shall choose from amongst the gentlemen present two umpires who shall absolutely decide all disputes The stumps must be inches high and the bail across them six inches The ball must be between five and six ounces and the two sets of stumps yards apart The world’s first cricket club was formed in Hambledon in the s and the Marylebone Cricket Club MCC was founded in During the s and s it became common to pitch the ball through the air rather than roll it along the ground This change gave bowlers the options of length deception through the air plus increased pace It also opened new possibilities for spin and swing In response batsmen had to master timing and shot selection One immediate result was the replacement of the curved bat with the straight one The weight of the ball was limited to between ½ to ¾ ounces and the width of the bat to four inches In the first leg-before law was published Also around this time a third stump became common By three days had become the length of a major match and this year also saw the creation of the first six-seam cricket ball If you look at the game’s equipment you can see how cricket both changed with changing times and yet fundamentally remained true to its origins in rural England Cricket’s most important tools are all made of natural preindustrial materials The bat is made with leather twine and cork Even today both bat and ball are handmade not industrially manufactured The material of the bat changed slightly over time Once it was cut out of a single piece of wood Now it consists of two pieces the blade which is made out of the wood of the willow tree and the handle which is made out of cane that became available as European colonialists and trading companies established themselves in Asia Unlike golf and tennis cricket has refused to remake its tools with industrial or man-made materials plastic fibreglass and metal have been firmly rejected But in the matter of protective equipment cricket has been influenced by technological change The invention of vulcanised rubber led to the introduction of pads in and protective gloves soon afterwards and the modern game would be unimaginable without helmets made out of metal and synthetic lightweight materials The origins of Indian cricket are to be found in Bombay and the first Indian community to start playing the game was the small community of Zoroastrians the Parsis Brought into close contact with the British because of their interest in trade and the first Indian community to westernise the Parsis founded the first Indian cricket club the Oriental Cricket Club in Bombay in Parsi clubs were funded and sponsored by Parsi businessmen like the Tatas and the Wadias The white cricket elite in India offered no help to the enthusiastic Parsis In fact there was a quarrel between the Bombay Gymkhana a whites-only club and Parsi cricketers over the use of a public park The Parsis complained that the park was left unfit for cricket because the polo ponies of the Bombay Gymkhana dug up the surface When it became clear that the colonial authorities were prejudiced in favour of their white compatriots the Parsis built their own gymkhana to play cricket in The rivalry between the Parsis and the Bombay Gymkhana had a happy ending for these pioneers of Indian cricket A Parsi team beat the Bombay Gymkhana at cricket in just four years after the foundation of the Indian National Congress in an organisation that was lucky to have amongst its early leaders the great Parsi statesman and intellectual Dadabhai Naoroji Moder n cricket is dominated by Tests and one-day internationals played between national teams The players who Palwankar Baloo born become famous who live At a time when on in the memories of Indians were not allowed cricket’s public are those to play Test cricket he was the greatest Indian who have played for their slow bowler of his time country The players Indian fans remember even now are those who were fortunate enough to play Test cricket C K Nayudu an outstanding Indian batsman of his time lives on in the popular imagination when some of his great contemporaries like Palwankar Vithal and Palwankar Baloo have been forgotten Even though Nayudu was past his cricketing prime when he played for India in its first Test matches against England starting in his place in India’s cricket history is assured because he was the country’s first Test captain India entered the world of Test cricket in a decade and a half before it became an independent nation This was possible because Test cricket from its origins in was organised as a contest between different parts of the British empire not sovereign nations The first Test was played between England and Australia when Australia was still a white-settler colony Similarly the small countries of the Caribbean that together make up the West Indies team were British colonies till well after the Second World War Television coverage changed cricket It expanded the audience for the game by beaming cricket into small towns and villages It also broadened cricket’s social base Children who had never previously had the chance to watch international cricket because they lived outside the big cities could now watch and learn by imitating their heroes The technology of satellite television and the world-wide reach of multi-national television companies created a global market for cricket Matches in Sydney could now be watched live in Surat Since India had the largest viewership for the game amongst the cricket-playing nations and the largest market in the cricketing world the game’s centre of gravity shifted to South Asia This shift was symbolised by the shifting of the ICC headquarters from London to tax-free Dubai One hundred and fifty years ago the first Indian cricketers the Parsis had to struggle to find an open space to play in Today the global marketplace has made Indian players the best-paid most famous cricketers in the game men for whom the world is a stage This transformation was made up of many smaller changes the replacement of the gentlemanly amateur by the paid professional the triumph of the one-day game as it overshadowed Test cricket in terms of popularity and the remarkable changes in global commerce and technology Environment After the long vacation when Ravi started going to school again he noticed that the only playground next to his school was dug up People said that a huge building with many flats will be constructed there Ravi was almost in tears when he realised that the big playground with its soft grass marigolds and butterflies is gone for ever He shared his feelings with his classmates In the assembly the Principal too sadly observed See how our environment is changing In the class Ravi asked his teacher What is environment Whatever you see in your surroundings said the teacher Ravi thought aloud That means the school building tables chairs in the classroom even that open field the road the garbage my friends all are parts of our environment Yes said the teacher but wait Some objects are created by nature for example mountains rivers trees animals Others are made by people for example roads cars clothes books Now work in pairs Make a list with your classmate sitting next to you of the creations of nature and by human beings Ravi Paramjeet Jessy Mustafa Asha were all excited about making the list Why is our environment changing asked Iqbal It’s all because of our needs They are increasing day by day we are therefore modifying and at times even destroying our natural surroundings the teacher replied Environment is our basic life support system It provides the air we breath the water we drink the food we eat and the land where we live How do human beings modify this natural environment The car fumes pollute the air water is collected in a pot food is served in vessels and land is used to build factories Human beings make cars mills factories and manufacture containers This is how human beings modify natural environment From the above conversation you understand that the place people things and nature that surround any living organism is called environment It is a combination of natural and human made phenomena While the natural environment refers to both biotic and abiotic conditions existing on the earth human environment reveals the activities creations and interactions among human beings NATURAL ENVIRONMENT Land water air plants and animals comprise the natural environment You are familiar with the meaning of lithosphere hydrosphere atmosphere and biosphere from your previous class Let us learn some more facts about these domains Lithosphere is the solid crust or the hard top layer of the earth It is made up of rocks and minerals and covered by a thin layer of soil It is an irregular surface with various landforms such as mountains plateaus plains valleys etc Landforms are found over the continents and also on the ocean floors Lithosphere is the domain that provides us forests grasslands for grazing land for agriculture and human settlements It is also a source of mineral wealth The domain of water is referred to as hydrosphere It comprises various sources of water and different types of water bodies like rivers lakes seas oceans etc It is essential for all living organisms The atmosphere is the thin layer of air that surrounds the earth The gravitational force of the earth holds the atmosphere around it It protects us from the harmful rays and scorching heat of the sun It consists of a number of gases dust and water vapour The changes in the atmosphere produce changes in the weather and climate Plant and animal kingdom together make biosphere or the living world It is a narrow zone of the earth where land water and air interact with each other to support life What is ecosystem At an NCC camp that Ravi’s class was attending Jessy exclaimed What a heavy downpour It reminds me of my home in Kerala You should come and see how it pours and pours and pours over the lush green fields and coconut plantations Heera from Jaisalmer exclaimed We get no rains We see only ‘kikar and sand as far as the eyes can see But you also find camels said Ravi Heera says Not just camels If you visit our desert you will see snakes lizards and many insects too Ravi wondered Why do the animals the vegetation and the way people live vary from place to place Are they all related to each other Oh yes very much so the teacher replied All plants animals and human beings depend on their immediate surroundings Often they are also interdependent on each other This relation between the living organisms as well as the relation between the organisms and their surroundings form an ecosystem There could be an ecosystem of large rain forest grassland desert mountains lake river ocean and even a small pond Do you think the park in which Ravi and his friends played formed an ecosystem HUMAN ENVIRONMENT Human beings interact with the environment and modify it according to their need Early humans adapted themselves to the natural surroundings They led a simple life and fulfilled their requirements from the nature around them With time needs grew and became more varied Humans learn new ways to use and change environment They learn to grow crops domesticate animals and lead a settled life The wheel was invented surplus food was produced barter system emerged trade started and commerce developed Industrial revolution enabled large scale production Transportation became faster Information revolution made communication easier and speedy across the world Have you ever thought why you love eating a juicy watermelon in summer and hot roasted peanuts in winter A perfect balance is necessary between the natural and human environment Humans must learn to live and use their environment in a harmonious way Nurie a girl from Mizoram from Ravi’s class often talks about the lush green surroundings of her place Seeing Ravi upset at having lost his playground Nurie invited him to visit her home state during the coming vacation Ravi’s teacher asked the students to draw the landscape houses and activities of the people and places they visit during the holidays Inside our Earth The earth our homeland is a dynamic planet It is constantly undergoing changes inside and outside Have you ever wondered what lies in the interior of the earth What is the earth made up of InteRIOR OF THE EARTH Just like an onion the earth is made up of several concentric layers with one inside another The uppermost layer over the earth’s surface is called the crust It is the thinnest of all the layers It is about km on the continental masses and only km on the ocean floors The main mineral constituents of the continental mass are silica and alumina It is thus called sial si-silica and al-alumina The oceanic crust mainly consists of silica and magnesium it is therefore called sima si-silica and ma-magnesium Just beneath the crust is the mantle which extends up to a depth of km below the crust The innermost layer is the core with a radius of about km It is mainly made up of nickel and iron and is called nife ni nickel and fe ferrous i e iron The central core has very high temperature and pressure ROCKS AND MINERALs The earth’s crust is made up of various types of rocks Any natural mass of mineral matter that makes up the earth’s crust is called a rock Rocks can be of different colour size and texture There are three major types of rocks igneous rocks sedimentary rocks and metamorphic rocks When the molten magma cools it becomes solid Rocks thus formed are called igneous rocks They are also called primary rocks There are two types of igneous rocks intrusive rocks and extrusive rocks Can you imagine lava coming out from the volcanoes Lava is actually fiery red molten magma coming out from the interior of the earth on its surface When this molten lava comes on the earth’s surface it rapidly cools down and becomes solid Rocks formed in such a way on the crust are called extrusive igneous rocks They have a very fine grained structure For example basalt The Deccan plateau is made up of basalt rocks Sometimes the molten magma cools down deep inside the earth’s crust Solid rocks so formed are called intrusive igneous rocks Since they cool down slowly they form large grains Granite is an example of such a rock Grinding stones used to prepare paste powder of spices and grains are made of granite Rocks roll down crack and hit each other and are broken down into small fragments These smaller particles are called sediments These sediments are transported and deposited by wind water etc These loose sediments are compressed and hardened to form layers of rocks These types of rocks are called sedimentary rocks For example sandstone is made from grains of sand These rocks may also contain fossils of plants animals and other micro- organisms that once lived on them Igneous and sedimentary rocks can change into metamorphic rocks under great heat and pressure For example clay changes into slate and limestone into marble Rocks are very useful to us The hard rocks are used for making roads houses and buildings You use stones in many games For example seven stones pitthoo hop- scotch stapu kit kit five stones gitti Find out some more such games by asking your grand parents parents neighbours etc You will be surprised to know that one type of rock changes to another type under certain conditions in a cyclic manner This process of transformation of the rock from one to another is known as the rock cycle You have already learnt when the molten magma cools it solidifies to become igneous rock These igneous rocks are broken down into small particles that are transported and deposited to form sedimentary rocks When the igneous and sedimentary rocks are subjected to heat and pressure they change into metamorphic rocks The metamorphic rocks which are still under great heat and pressure melt down to form molten magma This molten magma again can cool down and solidify into igneous rocks Rocks are made up of different minerals Minerals are naturally occurring substances which have certain physical properties and definite chemical composition Minerals are very important to humankind Some are used as fuels For example coal natural gas and petroleum They are also used in industries iron aluminium gold uranium etc in medicine in fertilisers etc Our Changing Earth The lithosphere is broken into a number of plates known as the Lithospheric plates You will be surprised to know that these plates move around very slowly just a few millimetres each year This is because of the movement of the molten magma inside the earth The molten magma inside the earth moves in a circular manner as shown in the activity The movement of these plates causes changes on the surface of the earth The earth movements are divided on the basis of the forces which cause them The forces which act in the interior of the earth are called as Endogenic forces and the forces that work on the surface of the earth are called as Exogenic forces Endogenic forces sometimes produce sudden movements and at the other times produce slow movements Sudden movements like earthquakes and volcanoes cause mass destruction over the surface of the earth A volcano is a vent opening in the earth’s crust through which molten material erupts suddenly Similarly when the Lithospheric plates move the surface of the earth vibrates The vibrations can travel all round the earth These vibrations are called earthquakes The place in the crust where the movement starts is called the focus The place on the surface above the focus is called the epicentre Vibrations travel outwards from the epicentre as waves Greatest damage is usually closest to the epicentre and the strength of the earthquake decreases away from the centre Although earthquakes cannot be predicted the impact can certainly be minimised if we are prepared before-hand Some common earthquake prediction methods adopted locally by people include studying animal behaviour fish in the ponds get agitated snakes come to the surface MAJOR LAND FORMS The landscape is being continuously worn away by two processes weathering and erosion Weathering is the breaking up of the rocks on the earth’s surface Erosion is the wearing away of the landscape by different agents like water wind and ice The eroded material is carried away or transported by water wind etc and eventually deposited This process of erosion and deposition create different landforms on the surface of the earth Work of a River The running water in the river erodes the landscape When the river tumbles at steep angle over very hard rocks or down a steep valley side it forms a waterfall As the river enters the plain it twists and turns forming large bends known as meanders Due to continuous erosion and deposition along the sides of the meander the ends of the meander loop come closer and closer In due course of time the meander loop cuts off from the river and forms a cut-off lake also called an ox-bow lake At times the river overflows its banks This leads to the flooding of the neighbouring areas As it floods it deposits layers of fine soil and other material called sediments along its banks This leads to the formation of a flat fertile floodplain The raised banks are called levees As the river approaches the sea the speed of the flowing water decreases and the river begins to break up into a number of streams called distributaries The river becomes so slow that it begins to deposit its load Each distributary forms its own mouth The collection of sediments from all the mouths forms a delta Work of Sea Waves The erosion and deposition of the sea waves gives rise to coastal landforms Seawaves continuously strike at the rocks Cracks develop Over time they become larger and wider Thus hollow like caves are formed on the rocks They are called sea caves As these cavities become bigger and bigger only the roof of the caves remain thus forming sea arches Further erosion breaks the roof and only walls are left These wall like features are called stacks The steep rocky coast rising almost vertically above sea water is called sea cliff The sea waves deposit sediments along the shores forming beaches Work of Ice Glaciers are rivers of ice which too erode the landscape by bulldozing soil and stones to expose the solid rock below Glaciers carve out deep hollows there As the ice melts they get filled up with water and become beautiful lakes in the mountains The material carried by the glacier such as rocks big and small sand and silt gets deposited These deposits form glacial moraines Work of wind Have you ever visited a desert Try to collect some pictures of sand dunes An active agent of erosion and deposition in the deserts is wind In deserts you can see rocks in the shape of a mushroom commonly called mushroom rocks Winds erode the lower section of the rock more than the upper part Therefore such rocks have narrower base and wider top When the wind blows it lifts and transports sand from one place to another When it stops blowing the sand falls and gets deposited in low hill like structures These are called sand dunes When the grains of sand are very fine and light the wind can carry it over very long distances When such sand is deposited in large areas it is called loess Large deposits of loess is found in China Air Our earth is surrounded by a huge blanket of air called atmosphere All living beings on this earth depend on the atmosphere for their survival It provides us the air we breathe and protects us from the harmful effects of the sun’s rays Without this blanket of protection we would be baked alive by the heat of the sun during day and get frozen during night So it is this mass of air that has made the temperature on the earth liveable COMPOSITION OF THE ATMOSPHERE Do you know that the air we take in while breathing is actually a mixture of many gases Nitrogen and oxygen are two gases which make up the bulk of the atmosphere Carbon dioxide helium ozone argon and hydrogen are found in lesser quantities Apart from these gases tiny dust particles are also present in the air The pie chart gives you the percentage of different constituents of air Nitrogen is the most plentiful gas in the air When we inhale we take some amount of nitrogen into our lungs and exhale it But plants need nitrogen for their survival They can not take nitrogen directly from the air Bacteria that live in the soil and roots of some plants take nitrogen from the air and change its form so that plants can use it Oxygen is the second most plentiful gas in the air Humans and animals take oxygen from the air as they breathe Green plants produce oxygen during photosynthesis In this way oxygen content in the air remains constant If we cut trees then this balance gets disturbed Carbon dioxide is another important gas Green plants use carbon dioxide to make their food and release oxygen Humans or animals release carbon dioxide The amount of carbon dioxide released by humans or animals seems to be equal to the amount used by the plants which make a perfect balance However the balance is upset by burning of fuels such as coal and oil They add billions of tons of carbon dioxide into the atmosphere each year As a result the increased volume of carbon dioxide is affecting the earth’s weather and climate STRUCTURE OF THE ATMOSPhere Our atmosphere is divided into five layers starting from the earth’s surface These are Troposphere Stratosphere Mesosphere Thermosphere and Exosphere Troposphere This layer is the most important layer of the atmosphere Its average height is km The air we breathe exists here Almost all the weather phenomena like rainfall fog and hailstorm occur in this layer Stratosphere Above the troposphere lies the stratosphere It extends up to a height of km This layer is almost free from clouds and associated weather phenomenon making conditions most ideal for flying aeroplanes One important feature of stratosphere is that it contains a layer of ozone gas We have just learnt how it protects us from the harmful effect of the sun rays Mesosphere This is the third layer of the atmosphere It lies above the stratosphere It extends up to the height of km Meteorites burn up in this layer on entering from the space Thermosphere In thermosphere temperature rises very rapidly with increasing height Ionosphere is a part of this layer It extends between km This layer helps in radio transmission In fact radio waves transmitted from the earth are reflected back to the earth by this layer Exosphere The upper most layer of the atmosphere is known as exosphere This layer has very thin air Light gases like helium and hydrogen float into the space from here Is it going to rain today Will it be bright and sunny today How many times have we heard this from anxious cricket fans speculating the fate of a One Day match If we imagine our body to be a radio and the mind its speaker weather is something that fiddles with its control knobs Weather is this hour-to-hour day to day condition of the atmosphere A hot or humid weather may make one irritable A pleasant breezy weather may make one cheerful and even plan for an outing Weather can change dramatically from day to day However the average weather condition of a place for a longer period of time represents the climate of a place Now do you understand why we have daily weather forecasts Temperature The temperature you feel everyday is the temperataure of the atmosphere The degree of hotness and coldness of the air is known as temperature The temperature of the atmosphere changes not only between day and night but also from season to season Summers are hotter than winters An important factor that influences the distribution of temperature is insolation Insolation is the incoming solar energy intercepted by the earth The amount of insolation decreases from the equator towards the poles Therefore the temperature decreases in the same manner Now do you understand why poles are covered with snow If the earth’s temperature rises too high it would become too warm for some crops to grow Temperature in cities is much higher than that of villages The concrete and metals in buildings and the asaphalt of roads get heated up during the day This heat is released during the night Also the crowded high rise buildings of the cities trap the warm air and thus raise the temperature of the cities Air Pressure You will be surprised to know that air above us presses us with a great force on our bodies However we don’t even feel it This is because the air presses us from all directions and our body exerts a counter pressure Air pressure is defined as the pressure exerted by the weight of air on the earth’s surface As we go up the layers of atmosphere the pressure falls rapidly The air pressure is highest at sea level and decreases with height Horizontally the distribution of air pressure is influenced by temperature of air at a given place In areas where temperature is high the air gets heated and rises This creates a low-pressure area Low pressure is associated with cloudy skies and wet weather In areas having lower temperature the air is cold It is therefore heavy Heavy air sinks and creates a high pressure area High pressure is associated with clear and sunny skies The air always moves from high pressure areas to low pressure areas Wind The movement of air from high pressure area to low pressure areas is called wind You can see wind at work as it blows dry leaves down the pavement or uproots trees during a storm Sometimes when the wind blows gently you can even see it blowing away smoke or fine dust At times wind can be so strong that it is difficult to walk against it You must have experienced it is not easy to hold an umbrella on a windy day Think of some other examples when strong winds have created problems for you Winds can be broadly divided into three types Permanent winds The trade winds westerlies and easterlies are the permanent winds These blow constantly throughout the year in a particular direction Seasonal winds These winds change their direction in different seasons For example monsoons in India Local winds These blow only during a particular period of the day or year in a small area For example land and sea breeze Do you recall the hot and dry local wind of northern planes of India It is called loo Odisha located on the eastern seacoast of India is prone to cyclones that originate in the Bay of Bengal On October cyclone hit five districts of the state Another supercyclone occurred on the October that devastated large portions of the state The damages caused were mainly due to three factors wind velocity rain and tidal surge The winds of up to km per hour lasted for over hours These high velocity winds uprooted trees and damaged the kutcha houses Roof tops of several industrial sheds and other houses were also blown away Power supply and telecom lines snapped completely Heavy rain occurred under the influence of the cyclone for three days continuously These rains led to flooding in the major rivers of Odisha The cyclonic winds caused tidal waves that swept km inland and brought massive destruction to the coastal areas The to m high tidal wave intruded suddenly and caused massive damage to the standing paddy crops The cyclone originated as a depression in the Gulf of Thailand near east of Port Blair on October and gradually moved in a northwestward direction It intensified into a supercyclone and hit the area between Erasama and Balikuda in Odisha on October at a m The supercyclone swept the entire coast of Odisha including the cities of Bhubaneshwar and Cuttack and coastal towns About million people were affected A large number of livestock were killed Standing crops of paddy vegetables and fruits were heavily damaged Due to salinisation caused by tidal surge large tracts of agricultural land have turned infertile Large tracts of sal teak and bamboo plantations have disappeared The mangrove forests between Paradeep and Konark vanished Moisture When water evaporates from land and different water bodies it becomes water vapour Moisture in the air at any time is known as humidity When the air is full of water vapour we call it a humid day As the air gets warmer its capacity to hold the water vapour increases and so it becomes more and more humid On a humid day clothes take longer to dry and sweat from our body does not evaporate easily making us feel very uncomfortable When the water vapour rises it starts cooling The water vapour condenses causing formation of droplets of water Clouds are just masses of such water droplets When these droplets of water become too heavy to float in air then they come down as precipitation Jet planes flying in the sky leave a white trail behind them The moisture from their engines condenses We see trails of this condensed moisture for some time when there is no air movement to disturb it Precipitation that comes down to the earth in liquid form is called rain Most of the ground water comes from rainwater Plants help preserve water When trees on hill sides are cut rainwater flows down the bare mountains and can cause flooding of low-lying areas On the basis of mechanism there are three types of rainfall the convectional rainfall the orographic rainfall and the cyclonic rainfall Rainfall is very important for the survival of plants and animals It brings fresh water to the earth’s surface If rainfall is less water scacity and drought occur On the other hand if it is more floods take place Water When you think of water what images come to your mind You think of rivers the waterfalls the pitter patter of raindrops water in your taps Children love to float paper boats in rain puddles By noon the puddles vanish Where does the water go The sun’s heat causes evaporation of water into vapour When the water vapour cools down it condenses and forms clouds From there it may fall on the land or sea in the form of rain snow or sleet The process by which water continually changes its form and circulates between oceans atmosphere and land is known as the water cycle Fig Our earth is like a terrarium The same water that existed centuries ago still exists today The water used to irrigate a field in Haryana may have flowed down the Amazon River a hundred years ago The major sources of fresh water are the rivers ponds springs and glaciers The ocean bodies and the seas contain salty water The water of the oceans is salty or saline as it contains large amount of dissolved salts Most of the salt is sodium chloride or the common table salt that you eat DISTRIBUTION OF WATER BODIES We all know that three-fourth of the earth surface is covered by water If there is more water than land on this earth why do so many countries face water scarcity Is all the water on earth available to us The following table gives the distribution of water in percentage Water is absolutely essential for survival Water alone can quench our thirst when we are thirsty Now don’t you think we are wasting a precious resource when we use water carelessly OCEAN CIRCULATION There is something magical about walking bare feet on the seashore The wet sand on the beach the cool breeze the seabirds the smell of the salt in the air and music of the waves everything is so fascinating Unlike the calm waters of ponds and lakes ocean water keeps moving continuously It is never still The movements that occur in oceans can be broadly categorised as waves tides and currents Waves When you are playing throw ball on the beach and the ball falls into the water what happens It is fun to watch how the ball gets washed back to the shore by the waves When the water on the surface of the ocean rises and falls alternately they are called waves During a storm the winds blowing at very high speed form huge waves These may cause tremendous destruction An earthquake a volcanic eruption or underwater landslides can shift large amounts of ocean water As a result a huge tidal wave called tsunami that may be as high as m is formed The largest tsunami ever measured was m high These waves travel at a speed of more than km per hour The tsunami of caused wide spread damage in the coastal areas of India The Indira point in the Andaman and Nicobar islands got submerged after the tsunami Tsunami or the harbour wave struck havoc in the Indian Ocean on the December The wave was the result of the earthquake that had its epicenter close to the western boundary of Sumatra The magnitude of the earthquake was on the Richter scale As the Indian plate went under the Burma plate there was a sudden movement of the sea floor causing the earthquake The ocean floor was displaced by about m and tilted in a downwardly direction A huge mass of ocean water flowed to fill in the gap that was being created by the displacement This marked the withdrawal of the water mass from the coastlines of the landmasses in the south and southeast Asia After thrusting of the Indian plate below the Burma plate the water mass rushed back towards the coastline Tsunami travelled at a speed of about km per hour comparable to speed of commercial aircraft and completely washed away some of the islands in the Indian ocean The Indira point in the Andaman and Nicobar islands that marked the southernmost point of India got completely submerged As the wave moved from earthquake epicenter from Sumatra towards the Andaman islands and Sri Lanka the wave length decreased with decreasing depth of water The travel speed also declined from km per hour to less than km per hour Tsunami waves travelled upto a depth of km from the coast killing more than people and affected more than lakh of houses In India the worst affected were the coastal areas of Andhra Pradesh Tamil Nadu Kerala Puducherry and the Andaman and Nicobar Islands While the earthquake cannot be predicted in advance it is possible to give a three-hour notice of a potential tsunami Such early warning systems are in place across the Pacific ocean but not in the Indian Ocean Tsunamis are rare in the Indian Ocean as the seismic activity is less as compared to the Pacific The tsunami that ravaged the South and South east Asian coasts in December is the most devastating tsunami in the last several hundred years The large damage caused to life and property was primarily a result of lack of monitoring the early warning systems and knowledge among the coast dwellers of Indian ocean The first indication that tsunami is approaching is the rapid withdrawal of water from the coastal region followed by destructive wave When this happened on the coast instead of people going to high ground they started assembling at the coast to view the miracle As a consequence there was a large casualty of curious onlookers when the gigantic wave tsunami struck Tides The rhythmic rise and fall of ocean water twice in a day is called a tide It is high tide when water covers much of the shore by rising to its highest level It is low tide when water falls to its lowest level and recedes from the shore Natural Vegetation and Wildlife Salima was excited about the summer camp she was attending She had gone to visit Manali in Himachal Pradesh along with her class mates She recalled how surprised she was to see the changes in the landform and natural vegetation as the bus climbed higher and higher The deep jungles of the foothills comprising sal and teak slowly disappeared She could see tall trees with thin pointed leaves and cone shaped canopies on the mountain slopes She learnt that those were coniferous trees She noticed blooms of bright flowers on tall trees These were the rhododendrons From Manali as she was travelling up to Rohtang pass she saw that the land was covered with short grass and snow in some places From Salima’s observations we surmise that there is a close relationship between height of land and the character of vegetations With the change in height the climate changes and that changes natural vegetation The growth of vegetation depends on temperature and moisture It also depends on factors like slope and thickness of soil The type and thickness of natural vegetation varies from place to place because of the variation in these factors Natural vegetation is generally classified in to three broad categories as follows a Forests Which grow where temperature and rainfall are plentiful to support a tree cover Depending upon these factors dense and open forests are grown Grasslands Which grow in the region of moderate rain c Shrubs Thorny shrurbs and scrubs grow in the dry region Salima was sharing her experience of Himalayan trip with her father Her father visited various places in the world He told Salima about his observations of the variety of vegetation in different parts of different continents He mentioned about coniferous forests in the sub polar regions thorny bushes in the deserts thick tropical hardwood forest in the humid regions and many more Salima realised the Himalayas have almost all variety of vegetation which one can see while moving from the equator to the polar region The changes in the type of natural vegetation occur mainly because of the changes of climatic condition Let us get to know the different types of natural vegetation of the world with their characteristic features and wildlife inhabiting there FORESTS Tropical Evergreen Forests These forests are also called tropical rainforests These thick forests occur in the regions near the equator and close to the tropics These regions are hot and receive heavy rainfall throughout the year As there is no particular dry season the trees do not shed their leaves altogether This is the reason they are called evergreen The thick canopies of the closely spaced trees do not allow the sunlight to penetrate inside the forest even in the day time Hardwood trees like rosewood ebony mahogany are common here Tropical Deciduous Forests Tropical deciduous are the monsoon forests found in the large part of India northern Australia and in central America These regions experience seasonal changes Trees shed their leaves in the dry season to conserve water The hardwood trees found in these forests are sal teak neem and shisham Hardwood trees are extremely useful for making furniture transport and constructional materials Tigers lions elephants langoors and monkeys are the common animals of these regions and The temperate evergreen forests are located in the mid- latitudinal coastal region They are commonly found along the eastern margin of the continents e g In south east USA South China and in South East Brazil They comprise both hard and soft wood trees like oak pine eucalyptus etc Temperate Deciduous Forests As we go towards higher latitudes there are more temperate deciduous forests These are found in the north eastern part of USA China New Zealand Chile and also found in the coastal regions of Western Europe They shed their leaves in the dry season The common trees are oak ash beech etc Deer foxes wolves are the animals commonly found Birds like pheasants monals are also found here and You have learnt that most of the east and north east margins of the continents are covered by temperate evergreen and deciduous trees The west and south west margins of the continents are different They have Mediterranean vegetation It is mostly found in the areas around the Mediterranean sea in Europe Africa and Asia hence the name This kind of vegetation is also found outside the actual Mediterranean region in California in the USA south west Africa south western South America and South west Australia These regions are marked for hot dry summers and mild rainy winters Citrus fruits such as oranges figs olives and grapes are commonly cultivated here because people have removed the natural vegetation in order to cultivate what they want to There isn’t much wildlife here Coniferous Forests In the higher latitudes of Northern hemisphere the spectacular Coniferous forests are found a and These are also called as Taiga These forests are also seen in the higher altitudes These are the trees which Salima found in the Himalayas in abundance They are tall softwood evergreen trees The woods of these trees are very useful for making pulp which is used for manufacturing paper and newsprint Match boxes and packing boxes are also made from softwood Chir pine cedar are the important variety of trees in these forests Silver fox mink polar bear are the common animals found here GRASSLAnds Tropical grasslands These occur on either side of the equator and extend till the tropics This vegetation grows in the areas of moderate to low amount of rainfall The grass can grow very tall about to metres in height Savannah grasslands of Africa are of this type Elephants zebras giraffes deer leopards are common in tropical grasslands Temperate grasslands These are found in the mid- latitudinal zones and in the interior part of the continents Usually grass here is short and nutritious Wild buffaloes bisons antilopes are common in the temperate region Thorny bushes These are found in the dry desert like regions Tropical deserts are located on the western margins of the continents The vegetation cover is scarce here because of scanty rain and scorching heat Identify the desert regions in the world map Can you name the great desert of India Name some of the common animals of the desert which you have learnt earlier If you reach the polar region you will find the place extremely cold The growth of natural vegetation is very limited here Only mosses lichens and very small shrubs are found here It grows during the very short summer This is called Tundra type of vegetation This vegetation is found in the polar areas of Europe Asia and North America The animals have thick fur and thick skin to protect themselves from the cold climatic conditions Seal walruses musk-oxen Arctic owl Polar bear and snow foxes are some of the animals found here Salima’s father showed her some photographs of thick forests In some of the photographs Salima observed that people were cutting trees and clearing the forests Her father explained that the local people wanted their land for agriculture and settlements so they cleared up the forests Salima started wondering if all forests are cleared then where will the wild life go Will the forest take its original shape again If people go on cutting the trees like this will there be enough oxygen water vapour timber fruits nuts available in future Do you agree with Salima Hold a discussion with your friends about the depletion of our diversified flora and fauna Suggest some measures to conserve them Human Environment-Settlement Transport and Communication In you have learnt that early human beings depended entirely on nature for food clothing and shelter but with time they learnt new skills to grow food build homes and develop better means of transport and communication In this way they modified the environment where they lived Settlements are places where people build their homes Early human beings lived on trees and in caves When they started to grow crops it became necessary to have a permanent home The settlements grew near the river valleys as water was available and land was fertile With the development of trade commerce and manufacturing human settlements became larger Settlement flourished and civilizations developed near river valleys Do you recall the names of civilization that grew along the banks of rivers Indus Tigris Nile and Hwang-He Settlements can be permanent or temporary Settlements which are occupied for a short time are called temporary settlements The people living in deep forests hot and cold deserts and mountains often dwell in such temporary settlements They practice hunting gathering shifting cultivation and transhumance However more and more settlements today are permanent settlements In these settlements people build homes to live in It was Mary’s birthday party She and her friends were waiting for Gurpreet to arrive so that Mary could cut the cake At last Gurpreet arrived- tired coughing and wheezing She explained that the traffic jam was terrible Mary’s mother Mrs Thomas patted Gurpreet’s back and sighed Oof The pollution in our city Prasad had recently come from his village He asked Why do we have such traffic jams and such pollution in the cities The number of vehicles is increasing day by day due to the growing population in the cities Mary’s father Mr Thomas replied Mary asked Then why are people coming to the cities Her mother replied They come looking for jobs better education and medical facilities Mary further enquired If so many people keep coming to cities where will all the people live Mr Thomas said That is why you see so many slums and squatter settlements where people stay in congested and unhygienic conditions Shortage of power and water supply are common problems in the cities Prasad said Our villages may not have big cinema halls well-equipped schools and good hospitals but we have lot of open spaces and fresh air to breathe in When my grandfather was sick we had to rush him to the city hospital From the above conversation we can identify two different pictures of settlements the rural and the urban settlements The villages are rural settlement where people are engaged in activities like agriculture fishing forestry crafts work and trading etc Rural settlements can be compact or scattered A compact settlement is a closely built area of dwellings wherever flat land is available In a scattered settlement dwellings are spaced over an extensive area This type of settlement is mostly found in hilly tracts thick forests and regions of extreme climate In rural areas people build houses to suit their environment In regions of heavy rainfall they have slanting roofs Places where water accumulates in the rainy season the houses are constructed on a raised platform or stilts Thick mud walled houses with thatched roofs are very common in areas of hot climate Local materials like stones mud clay straw etc are used to construct houses The towns are small and the cities are larger urban settlements In urban areas the people are engaged in manufacturing trading and services Name some of the villages towns and cities of your state TRANSPORT Transport is the means by which people and goods move In the early days it took a great deal of time to travel long distances People had to walk and used animals to carry their goods Invention of the wheel made transport easier With the passage of time different means of transport developed but even today people use animals for transport In our country donkeys mules bullocks and camels are common In the Andes Mountains of South America llamas are used as are yaks in Tibet The early traders from other countries used to take several months to reach India They took either the sea route or the land route Aeroplanes have made travel faster Now it takes only hours to travel from India to Europe Modern means of transport thus saves time and energy The four major means of transport are roadways railways waterways and airways ROADWAY The most commonly used means of transport especially for short distances are roads They can be metalled pucca and unmetalled kutcha and The plains have a dense network of roads Roads have also been build in terrains like deserts forests and even high mountains Manali-Leh highway in the Himlayan Mountains is one of the highest roadways in the world Roads built underground are called subways under paths Flyovers are built over raised structures RAILWAYS The railways carry heavy goods and people over long distances quickly and cheaply The invention of the steam engine and the Industrial Revolution helped in speedy development of rail transport Diesel and electric engines have largely replaced the steam engines In places super fast trains have been introduced to make the journey faster The railway network is well developed over the plain areas Advanced technological skills have enabled laying of railway lines in difficult mountain terrains also But these are much fewer in number Indian railway network is well developed It is the largest in Asia WATERWAys You have already learnt that since early days waterways were used for transportation Waterways are the cheapest for carrying heavy and bulky goods over long distances They are mainly of two types inland waterways and sea routes Navigable rivers and lakes are used as inland waterways Some of the important inland waterways are the Ganga-Brahmaputra river system the Great Lakes in North America and the river Nile in Africa Sea routes and oceanic routes are mostly used for transporting merchandise and goods from one country to another These routes are connected with the ports Some of the important ports of the world are Singapore and Mumbai in Asia New York Los Angeles in North America Rio de Janerio in South America Durban and Cape Town in Africa Sydney in Australia London and Rotterdam in Europe Can you name some more ports of the world AIRWAYs This is the fastest way of transport developed in the early twentieth century It is also the most expensive due to high cost of fuels Air traffic is adversely affected by bad weather like fog and storms It is the only mode of transport to reach the most remote and distant areas especially where there are no roads and railways Helicopters are extremely useful in most inaccessible areas and in time of calamities for rescuing people and distributing food water clothes and medicines Some of the important airports are Delhi Mumbai New York London Paris Frankfurt and Cairo COMMUNICATIOn Communication is the process of conveying messages to others With the development of technology humans have devised new and fast modes of communication The explains the evolution of the communication system The advancement in the field of communication has brought about an information revolution in the world Different modes of communication are used to provide information to educate as well as to entertain Through newspapers radio and television we can communicate with a large number of people They are therefore called mass media The satellites have made communication even faster Satellites have helped in oil exploration survey of forest underground water mineral wealth weather forecast and disaster warning Now we can send electronic mails or e-mails through Internet Wireless telephonic communications through cellular phones have become very popular today Internet not only provides us with worldwide information and interaction but has also made our lives more comfortable Now we can reserve tickets for railways airways and even cinemas and hotels sitting at home With this kind of inter connectivity of people services and institutions across the world we are a large global society Human Environment Interactions The Tropical and Subtropical Region Renuka was excited Shrikant Uncle was home after a gap of nearly four months He was a wildlife photographer and travelled widely Renuka’s interest in wildlife and forests began at an early age when her uncle introduced her to books on nature Pictures of distant lands and people who lived there always fascinated her In these pictures Renuka you can see people from different parts of the world some from dry deserts some from frozen lands and some from hot wet rainforests They look so different from me observed Renuka They may look different but they share the same basic needs of life food clothing and shelter explained Shrikant Uncle Their children do the same things as you probably do play games quarrel sometimes and then make-up sing dance and help the families with various things that need to be done They live closer to nature and very early in their lives have learnt to care for nature They learn how to catch fish and how to collect material from the forests In s and you will learn about the life of people in the different natural regions of the world LIFE IN THE AMAZON BASIN Before learning about the Amazon basin let us look at the map Notice that the tropical region lies very close to the equator between N and S So it is referred to as the equatorial region The river Amazon flows through this region Notice how it flows from the mountains to the west and reaches the Atlantic Ocean to the east The place where a river flows into another body of water is called the river’s mouth Numerous tributaries join the Amazon River to form the Amazon basin The river basin drains portions of Brazil parts of Peru Bolivia Ecuador Columbia and a small part of Venezuela Name the countries of the basin through which the equator passes CLIMATE As you now know the Amazon Basin stretches directly on the equator and is characterized by hot and wet climate throughout the year Both day and nights are almost equally hot and humid The skin feels sticky It rains almost everyday that too without much warning The day temperatures are high with very high humidity At night the temperature goes down but the humidity remains high RAINFORESTS As it rains heavily in this region thick forests grow The forests are in fact so thick that the dense roof created by leaves and branches does not allow the sunlight to reach the ground The ground remains dark and damp Only shade tolerant vegetation may grow here Orchids bromeliads grow as plant parasites The rainforest is rich in fauna Birds such as toucans humming birds macaw with their brilliantly coloured plumage oversized bills for eating make them different from birds we commonly see in India These birds also make loud sounds in the forests Animals like monkeys sloth and ant-eating tapirs are found here Various species of reptiles and snakes also thrive in these jungles Crocodiles snakes pythons abound Anaconda and boa constrictor are some of the species Besides the basin is home to thousands of species of insects Several species of fishes including the flesh-eating Piranha fish is also found in the river This basin is thus extraordinarily rich in the variety of life found there Bromeliads are special plants that store water in their leaves Animals like frogs use these pockets of water for laying their eggs PEOPLE OF THE RAINFORESTS People grow most of their food in small areas after clearing some trees in the forest While men hunt and fish along the rivers women take care of the crops They mainly grow tapioca pineapple and sweet potato As hunting and fishing are uncertain it is the women who keep their families alive by feeding them the vegetables they grow They practice slash and burn agriculture The staple food is manioc also known as cassava that grows under the ground like the potato They also eat queen ants and egg sacs Cash crops like coffee maize and cocoa are also grown The rainforests provide a lot of wood for the houses Some families live in thatched houses shaped like beehives There are other large apartment-like houses called Maloca with a steeply slanting roof Life of the people of the Amazon basin is slowly changing In the older days the heart of the forest could be reached only by navigating the river In the Trans Amazon highway made all parts of the rainforest accessible Aircrafts and helicopters are also used for reaching various places The indigenous population was pushed out from the area and forced to settle in new areas where they continued to practice their distinctive way of farming The developmental activities are leading to the gradual destruction of the biologically diverse rainforests It is estimated that a large area of the rainforest has been disappearing annually in the Amazon basin You can see that this destruction of forests has a much wider implication The topsoil is washed away as the rains fall and the lush forest turns into a barren landscape LIFE IN THE GANGA-BRAHMAPUTRA BASIN The tributaries of rivers Ganga and Brahmaputra together form the Ganga-Brahmaputra basin in the Indian subcontinent The basin lies in the sub-tropical region that is situated between N to N latitudes The tributaries of the River Ganga like the Ghaghra the Son the Chambal the Gandak the Kosi and the tributaries of Brahmaputra drain it Look at the atlas and find names of some tributaries of the River Brahmaputra The plains of the Ganga and the Brahmaputra the mountains and the foothills of the Himalayas and the Sundarbans delta are the main features of this basin Ox-bow lakes dot the plain area The area is dominated by monsoon climate The monsoon brings rains from mid-June to mid-September The summers are hot and the winters cool Look at the map of India Find out the states in which the Ganga-Brahmputra basin lies The basin area has varied topography The environment plays a dominant role in the distribution of the population The mountain areas with steep slopes have inhospitable terrain Therefore less number of people live in the mountain area of the Ganga- Brahmaputra basin The plain area provides the most suitable land for human habitation The soil is fertile Agriculture is the main occupation of the people where flat land is available to grow crops The density of population of the plains is very high The main crop is paddy Since cultivation of paddy requires sufficient water it is grown in the areas where the amount of rainfall is high Wheat maize sorghum gram and millets are the other crops that are grown Cash crops like sugarcane and jute are also grown Banana plantations are seen in some areas of the plain In West Bengal and Assam tea is grown in plantations Silk is produced through the cultivation of silk worms in parts of Bihar and Assam In the mountains and hills where the slopes are gentle crops are grown on terraces The vegetation cover of the area varies according to the type of landforms In the Ganga and Brahmaputra plain tropical deciduous trees grow along with teak sal and peepal Thick bamboo groves are common in the Brahmaputra plain The delta area is covered with the mangrove forests In parts of Uttarakhand Sikkim and Arunachal Pradesh coniferous trees like pine deodar and fir can be seen because the climate is cool and the slopes are steep There is a variety of wildlife in the basin Elephants tigers deer and monkeys are common The one-horned rhinoceros is found in the Brahmaputra plain In the delta area Bengal tiger and crocodiles are found Aquatic life abounds in the fresh river waters the lakes and the Bay of Bengal Sea The most popular varieties of the fish are the rohu catla and hilsa Fish and rice is the staple diet of the people living in the area Binod is a fisherman living in the Matwali Maun village of Bihar He is a happy man today With the efforts of the fellow fishermen Ravindar Kishore Rajiv and others he cleaned the maun or the ox-bow lake to cultivate different varieties of fish The local weed vallineria hydrilla that grows in the lake is the food of the fish The land around the lake is fertile He sows crops such as paddy maize and pulses in these fields The buffalo is used to plough the land The community is satisfied The Ganga-Brahmaputra plain has several big towns and cities The cities of Allahabad Kanpur Varanasi Lucknow Patna and Kolkata all with the population of more than ten lakhs are located along the River Ganga The wastewater from these towns and industries is discharged into the rivers This leads to the pollution of the rivers All the four ways of transport are well developed in the Ganga-Brahmaputra basin In the plain areas the roadways and railways transport the people from one place to another The waterways is an effective means of transport particularly along the rivers Kolkata is an important port on the River Hooghly The plain area also has a large number of airports Tourism is another important activity of the basin Taj Mahal on the banks of River Yamuna in Agra Allahabad on the confluence of the Rivers Ganga and Yamuna Buddhists stupas in Uttar Pradesh and Bihar Lucknow with its Imambara Assam with Kaziranga and Manas with wild life sanctuaries and Arunachal Pradesh with a distinct tribal culture are some of the places worth a visit Life in the Deserts In you have seen that water means life to plants animals and people It is difficult for anyone to live in places where there is no water to drink where there is no grass for their cattle to feed on and where there is no water to help the crops to grow We will now learn about the places in the world where people have learned to cope with extreme harsh temperatures in some places as hot as fire and some as cold as ice These are the desert areas of the world These are characterised by low rainfall scanty vegetation and extreme temperatures Depending on the temperatures there can be hot deserts or cold deserts The people inhabit these lands wherever little water is available to practise agriculture THE HOT DESERT SAHARA Look at the map of the world and the continent of Africa Locate the Sahara desert covering a large part of North Africa It is the world’s largest desert It has an area of around million sq km Do you recall that India has an area of million sq km The Sahara desert touches eleven countries These are Algeria Chad Egypt Libya Mali Mauritania Morocco Niger Sudan Tunisia and Western Sahara When you think of a desert the picture that immediately comes to your mind is that of sand But besides the vast stretches of sands that Sahara desert is covered with there are also gravel plains and elevated plateaus with bare rocky surface These rocky surfaces may be more than m high at some places Climate The climate of the Sahara desert is scorching hot and parch dry It has a short rainy season The sky is cloudless and clear Here the moisture evaporates faster than it accumulates Days are unbelievably hot The temperatures during the day may soar as high as heating up the sand and the bare rocks which in turn radiates heat making everything around hot The nights may be freezing cold with temperatures nearing zero degrees Flora and Fauna Vegetation in the Sahara desert includes cactus date palms and acacia In some places there are oasis green islands with date palms surrounding them Camels hyenas jackals foxes scorpions many varieties of snakes and lizards are the prominent animal species living there People The Sahara desert despite its harsh climate has been inhabited by various groups of people who pursue different activities Among them are the Bedouins and Tuaregs These groups are nomadic tribes rearing livestock such as goats sheep camels and horses These animals provide them with milk hides from which they make leather for belts slippers water bottles hair is used for mats carpets clothes and blankets They wear heavy robes as protection against dust storms and hot winds The oasis in the Sahara and the Nile Valley in Egypt supports settled population Since water is available the people grow date palms Crops such as rice wheat barley and beans are also grown Egyptian cotton famous worldwide is grown in Egypt The discovery of oil a product in great demand throughout the world in Algeria Libya and Egypt is constantly transforming the Sahara desert Other minerals of importance that are found in the area include iron phosphorus manganese and uranium The cultural landscape of the Sahara is undergoing change Gleaming glass cased office buildings tower over mosques and superhighways crisscross the ancient camel paths Trucks are replacing camels in the salt trade Tuaregs are seen acting as guides to foreign tourists More and more nomadic herdsmen are taking to city life finding jobs in oil and gas operations THE COLD DESERT LADAKH Ladakh is a cold desert lying in the Great Himalayas on the eastern side of Jammu and Kashmir The Karakoram Range in the north and the Zanskar mountains in the south enclose it Several rivers flow through Ladakh Indus being the most important among them The rivers form deep valleys and gorges Several glaciers are found in Ladakh for example the Gangri glacier The altitude in Ladakh varies from about m in Kargil to more than m in the Karakoram Due to its high altitude the climate is extremely cold and dry The air at this altitude is so thin that the heat of the sun can be felt intensely The day temperatures in summer are just above zero degree and the night temperatures well below It is freezing cold in the winters when the temperatures may remain below for most of the time As it lies in the rain shadow of the Himalayas there is little rainfall as low as cm every year The area experiences freezing winds and burning hot sunlight You will be surprised to know that if you sit in the sun with your feet in the shade you may suffer from both sunstroke and frost bite at the same time Flora and Fauna Due to high aridity the vegetation is sparse There are scanty patches of grasses and shrubs for animals to graze Groves of willows and poplars are seen in the valleys During the summers fruit trees such as apples apricots and walnuts bloom Several species of birds are sighted in Ladakh Robins redstarts Tibetan snowcock raven and hoopoe are common Some of these are migratory birds The animals of Ladakh are wild goats wild sheep yak and special kinds of dogs The animals are reared to provide for the milk meat and hides Yak’s milk is used to make cheese and butter The hair of the sheep and goat is used to make woollens People Do you find any resemblance between the people of Ladakh and the inhabitants of Tibet and Central Asia The people here are either Muslims or Buddhists In fact several Buddhists monasteries dot the Ladakhi landscape with their traditional ‘gompas’ Some famous monasteries are Hemis Thiksey Shey and Lamayuru In the summer season the people are busy cultivating barley potatoes peas beans and turnip The climate is so harsh in winter months that people keep themselves engaged in festivities and ceremonies The women are very hard working They work not only in the house and fields but also manage small business and shops Leh the capital of Ladakh is well connected both by road and air The National Highway A connects Leh to Kashmir Valley through the Zoji la Pass Can you name some more passes in the Himalayas Tourism is a major activity with several tourists streaming in from within India and abroad Visits to the gompas treks to see the meadows and glaciers witnessing ceremonies and festivities are important activities Life of people is undergoing change due to modernisation But the people of Ladakh have over the centuries learned to live in balance and harmony with nature Due to scarcity of resources like water and fuel they are used with reverence and care Nothing is discarded or wasted Nutrition in Plants In Class you learnt that food is essential for all living organisms You also learnt that carbohydrates proteins fats vitamins and minerals are components of food These components of food are called nutrients and are necessary for our body All living organisms require food Plants can synthesise food for themselves but animals including humans cannot They get it from plants or animals that eat plants Thus humans and animals are directly or indirectly dependent on plants utilisation by the body The mode of nutrition in which organisms make food themselves from simple substances is called autotrophic auto self trophos nourishment nutrition Therefore plants are called autotrophs Animals and most other organisms take in food prepared by plants They are called heterotrophs heteros other MODE OF NUTRITION IN PLANTS Plants are the only organisms that can prepare food for themselves by using water carbon dioxide and minerals The raw materials are present in their surroundings The nutrients enable living organisms to build their bodies to grow to repair damaged parts of their bodies and provide the energy to carry out life processes Nutrition is the mode of taking food by an organism and its Now we may ask where the food factories of plants are located whether food is made in all parts of a plant or only in certain parts How do plants obtain the raw materials from the surroundings How do they transport them to the food factories of plants PHOTOSYNTHESIS FOOD MAKING PROCESS IN PLANTS Leaves are the food factories of plants Therefore all the raw materials must reach the leaf Water and minerals present in the soil are absorbed by the roots and transported to the leaves Carbon dioxide from air is taken in through the tiny pores present on the surface of leaves These pores are surrounded by ‘guard cells’ Such pores are called stomata c You have seen that buildings are made of bricks Similarly the bodies of living organisms are made of tiny units called cells Cells can be seen only under the microscope Some organisms are made of only one cell The cell is enclosed by a thin outer boundary called the cell membrane Most cells have a distinct centrally located spherical structure called the nucleus The nucleus is surrounded by a jelly-like substance called cytoplasm Water and minerals are transported to the leaves by the vessels which run like pipes throughout the root the stem the branches and the leaves They form a continuous path or passage for the nutrients to reach the leaf They are called vessels You will learn more about transport of materials in plants in The leaves have a green pigment called chlorophyll It helps leaves to capture the energy of the sunlight This energy is used to synthesise prepare food from carbon dioxide and water Since the synthesis of food occurs in the presence of sunlight it is called photosynthesis Photo light synthesis to combine So we find that chlorophyll sunlight carbon dioxide and water are necessary to carry out the process of photosynthesis It is a unique process on the earth The solar energy is captured by the leaves and stored in the plant in the form of food Thus sun is the ultimate source of energy for all living organisms Can you imagine life on earth in the absence of photosynthesis In the absence of photosynthesis there would not be any food The survival of almost all living organisms directly or indirectly depends upon the food made by the plants Besides oxygen which is essential for the survival of all organisms is produced during photosynthesis In the absence of photosynthesis life would be impossible on the earth During photosynthesis chlorophyll containing cells of leaves in the presence of sunlight use carbon dioxide and water to synthesise carbohydrates The process can be represented in an equation Besides leaves photosynthesis also takes place in other green parts of the plant in green stems and green branches The desert plants have scale- or spine-like leaves to reduce loss of water by transpiration These plants have green stems which carry out photosynthesis During the process oxygen is released The presence of starch in leaves indicates the occurrence of photosynthesis Starch is also a carbohydrate Take two potted plants of the same kind Keep one in the dark or in a black box for hours and the other in sunlight Perform iodine test with the leaves of both the plants as you did in Class VI Record your results Now leave the pot which was earlier kept in the dark in the sunlight for days and perform the iodine test again on its leaves Record your observations in your notebook The leaves other than green also have chlorophyll The large amount of red brown and other pigments mask the green colour Photosynthesis takes place in these leaves also You have just learnt that plants synthesise carbohydrates through the process of photosynthesis The carbohydrates are made of carbon hydrogen and oxygen These are used to synthesise other components of food such as proteins and fats But proteins are nitrogenous substances which contain nitrogen From where do the plants obtain nitrogen Recall that nitrogen is present in abundance in gaseous form in the air However plants cannot absorb nitrogen in this form Soil has certain bacteria that convert gaseous nitrogen into a usable form and release it into the soil These are absorbed by the plants along with water Also you might have seen farmers adding fertilisers rich in nitrogen to the soil In this way the plants fulfil their requirements of nitrogen along with the other constituents Plants can then synthesise proteins and vitamins You often see slimy green patches in ponds or stagnant water bodies These are generally formed by the growth of organisms called algae Can you guess why algae are green in colour They contain chlorophyll which gives them the green colour Algae can also prepare their own food by photosynthesis OTHER MODES OF NUTRITION IN PLANTS There are some plants which do not have chlorophyll They cannot synthesise food How do they survive and from where do they derive nutrition Like humans and animals such plants depend on the food produced by other plants They use the heterotrophic mode of nutrition Look at Do you see a yellow wiry branched structure twining around the stem and branches of a tree This is a plant called Cuscuta Amarbel It does not have chlorophyll It takes readymade food from the plant on which it is climbing The plant on which it climbs is called the host Since it deprives the host of valuable nutrients Cuscuta is called the parasite Are we and other animals also a kind of parasites You should think about it and discuss with your teacher Boojho is confused If the pitcher plant is green and carries out photosynthesis then why does it feed on insects Lid Paheli wants to know whether mosquitoes bed bugs lice and leeches that suck our blood are also parasites Have you seen or heard of plants that can eat animals There are a few plants which can trap insects and digest them Is it not amazing Such plants may be green or of some other colour Look at the plant in The pitcher-like or jug-like structure is the modified part of leaf The apex of the leaf forms a lid which can open and close the mouth of the pitcher Inside the pitcher there are hair which are directed downwards When an insect lands in the pitcher the lid closes and the trapped insect gets entangled into the hair The lid closes and the insect is trapped The insect is digested by the digestive juices secreted in the pitcher and its nutrients are absorbed Such insect-eating plants are called insectivorous plants Is it possible that such plants do not get all the required nutrients from the soil in which they grow SAPROTROPHS You might have seen packets of mushrooms sold in the vegetable market You may have also seen fluffy umbrella-like patches growing in moist soils or on rotting wood during the rainy season Let us find out what type of nutrients they need to survive and from where they get them These organisms are called fungi They have a different mode of nutrition They absorb the nutrients from the bread This mode of nutrition in which organisms take in nutrients from dead and decaying matter is called saprotrophic nutrition Such organisms with saprotrophic mode of nutrition are called saprotrophs Fungi also grow on pickles leather clothes and other articles that are left in hot and humid weather for long time During the rainy season they spoil many things Ask your parents about the menace of fungi in your house The fungal spores are generally present in the air When they land on wet and warm things they germinate and grow Now can you figure out how we can protect our things from getting spoiled Some organisms live together and share both shelter and nutrients This relationship is called symbiosis For example certain fungi live inside the roots of plants The plants provide nutrients to the fungus and in return the fungus provides water and certain nutrients In organisms called lichens a chlorophyll-containing partner which is an alga and a fungus live together The fungus provides shelter water and minerals to the alga and in return the alga prepares and provides food to the fungus Packet of mushrooms a mushroom growing on decayed material Boojho wants to know how these organisms acquire nutrients They do not have mouths like animals do They are not like green plants as they lack chlorophyll and cannot make food by photosynthesis Activity Take a piece of bread and moisten it with water Leave it in a moist warm place for days or until fluffy patches appear on them What is the colour of these patches Observe the patches under a microscope or a magnifying glass Write down your observations in the notebook You will see cotton-like threads spread on the piece of bread Paheli is keen to know whether her beautiful shoes which she wore on special occasions were spoiled by fungi during the rainy season She wants to know how fungi appear suddenly during the rainy season HOW NUTRIENTS ARE REPLENISHED IN THE SOIL Boojho says once his grandfather told him that his wheat fields were spoiled by a fungus He wants to know if fungi cause diseases also Paheli told him that many fungi like yeast and mushrooms are useful but some fungi cause diseases in plants animals including humans Some fungi are also used as medicines Have you seen farmers spreading manure or fertilisers in the fields or gardeners using them in lawns or in pots Do you know why this is done You learnt that plants absorb minerals and nutrients from the soil So their amounts in the soil keep on declining Fertilisers and manures contain nutrients such as nitrogen potassium phosphorous etc These nutrients need to be added from time to time to enrich the soil We can grow plants and keep them healthy if we can fulfil the nutrient requirement of plants Usually crop plants absorb a lot of nitrogen and the soil becomes deficient in nitrogen You learnt that though nitrogen gas is available in plenty in the air plants cannot use it in the manner they can use carbon dioxide They need nitrogen in a soluble form The bacterium called Rhizobium can take atmospheric nitrogen and convert it into a usable form But Rhizobium cannot make its own food So it often lives in the roots of gram peas moong beans and other legumes and provides them with nitrogen In return the plants provide food and shelter to the bacteria They thus have a symbiotic relationship This association is of great significance for the farmers They can reduce the use of nitrogenous fertiliser where leguminous plants are grown Most of the pulses dals are obtained from leguminous plants In this you learnt that most of the plants are autotrophs Only a few plants are parasitic or saprotrophic They derive nutrition from other organisms All animals are categorised as heterotrophs since they depend on plants and other animals for food Can we say that the insectivorous plants are partial heterotrophs Nutrition in Animals You have learnt in that plants can prepare their own food by the process of photosynthesis but animals cannot Animals get their food from plants either directly by eating plants or indirectly by eating animals that eat plants Some animals eat both plants and animals Recall that all organisms including humans require food for growth repair and functioning of the body Animal nutrition includes nutrient requirement mode of intake of food and its utilisation in the body You have studied in Class that food consists of many components Try to recall and list them below The components of food such as carbohydrates are complex substances These complex substances cannot be utilised as such So they are broken down into simpler substances The breakdown of complex components of food into simpler substances is called digestion Simpler substances DIFFERENT WAYS OF TAKING FOOD The mode of taking food into the body varies in different organisms Bees and humming-birds suck the nectar of plants infants of human and many other animals feed on mother’s milk Snakes like the python swallow the animals they prey upon Some aquatic animals filter tiny food particles floating nearby and feed upon them Activity What is the type of food and mode of feeding of the following animals Write down your observations in the given Table You may find the list of modes of feeding given below the Table helpful Table Various modes of feeding Amazing fact Starfish feeds on animals covered by hard shells of calcium carbonate After opening the shell the starfish pops out its stomach through its mouth to eat the soft animal inside the shell The stomach then goes back into the body and the food is slowly digested Buccal cavity Salivary gland Oesophagus Liver Starfish Gall bladder DIGESTION IN HUMANS Stomach Pancreas We take in food through the mouth digest and utilise it The unused parts of the food are defecated Have you ever wondered what happens to the food inside the body The food passes through a continuous canal which begins at the buccal cavity and ends at the anus The canal can be divided into various compartments the buccal cavity foodpipe or oesophagus stomach small intestine large intestine ending in the rectum and the anus Is it not a very long path These parts together form the alimentary canal digestive tract The food components gradually get digested as food travels through the various compartments The inner walls of the stomach and the small intestine and the various glands associated with the canal such as salivary glands the liver and the pancreas secrete digestive juices The digestive juices convert complex Small intestine Large intestine Rectum Anus Human digestive system substances of food into simpler ones The digestive tract and the associated glands together constitute the digestive system Now let us know what happens to the food in different parts of the digestive tract The mouth and buccal cavity Food is taken into the body through the mouth The process of taking food into Milk teeth and permanent teeth Do you remember about falling of your teeth some years ago The first set of teeth grows during infancy and they fall off at the age between six to eight years These are termed milk teeth The second set that replaces them are the permanent teeth The permanent teeth may last throughout life or fall off during old age or due to some dental disease Molar Boojho is fascinated by the highly coiled small intestine seen in He wants to know its length Would you like to make a wild guess We have given its approximate length on page Just imagine how such a long structure is accommodated in a small space within our body Premolar Canine Incisor the body is called ingestion We chew the food with the teeth and break it down mechanically into small pieces Each tooth is rooted in a separate socket in the gums Our teeth vary in appearance and perform different functions Accordingly they are given different names Arrangement of teeth and different type of teeth which ones for piercing and tearing Also find out the ones that are used for chewing and grinding Record your observations in Table Activity Type of teeth Wash your hands Look into the mirror and count your teeth Use your index finger to feel the teeth How many kinds of teeth could you find Take a piece of an apple or bread and eat it Which teeth do you use for biting and cutting and Cutting and biting teeth Piercing and tearing teeth Chewing and grinding teeth NUTRITION IN ANIMALS Table Number of teeth Total Lower jaw Upper jaw Our mouth has the salivary glands which secrete saliva Do you know the action of saliva on food Let us find out Activity Take two test tubes Label them ‘A’ and ‘B’ In test tube ‘A’ put one teaspoonful of boiled rice in test tube ‘B’ keep one teaspoonful of boiled rice after chewing it for to minutes Add mL of water in both the test tubes Now pour drops of iodine solution in each test tube and observe Why is there a change in colour in the test tubes Discuss the results with your classmates and your teacher The saliva breaks down the starch into sugars The tongue is a fleshy muscular organ attached at the back to the floor of the buccal cavity It is free at the front and can be moved in all directions Do you know the functions of the tongue We use our tongue for talking Besides it mixes saliva with the food during chewing and helps in swallowing food We also taste food with our tongue It has taste buds that detect different tastes of food We can find out the Iodine solution Water Boiled rice Effect of saliva on starch Sweets and tooth decay Normally bacteria are present in our mouth but they are not harmful to us However if we do not clean our teeth and mouth after eating a many harmful bacteria also begin to live and grow in it These bacteria break down the sugars present from the leftover food and release acids see to know what an acid is The acids gradually damage the teeth This is called tooth decay If it is not treated in time it causes severe toothache and in extreme cases results in tooth loss Chocolates sweets soft drinks and other sugar products are the major culprits of tooth decay Therefore one should clean the teeth with a brush or datun and c dental floss a special strong thread which is moved between two teeth to take out trapped food particles at least twice a day and rinse the mouth after every meal Also one should not put dirty fingers or any unwashed object in the mouth Gradual decay of tooth SCIENCE Sometimes when you eat in a hurry talk or laugh while eating you may cough get hiccups or a choking sensation This happens when food particles enter the windpipe The windpipe carries air from the nostrils to the lungs It runs adjacent to the foodpipe But inside the throat air and food share a common passage Then how is food prevented from entering the windpipe During the act of swallowing a flap-like valve closes the passage of the windpipe and guides the food into the foodpipe If by chance food particles enter the windpipe we feel choked get hiccups or cough Now write down your observations and label Repeat this activity with other classmates The foodpipe oesophagus Regions of the tongue for different tastes The swallowed food passes into the foodpipe or oesophagus Look at The foodpipe runs along the neck Paheli wants to know how food moves in the opposite direction during vomiting Activity Prepare a separate sample each of i sugar solution common salt solution lemon juice and juice of crushed neem leaf or bitter gourd Blindfold one of your classmates and ask her him to take out the tongue and keep it in straight and flat position Use a clean toothpick to put the above samples one by one on different areas of the tongue as shown in Use a new toothpick for each sample Ask the classmate which areas of the tongue could detect the sweet salty sour and bitter substances Food Oesophagus Stomach Movement of the food in the oesophagus of the alimentary canal and the chest Food is pushed down by movement of the wall of the foodpipe Actually this movement takes place throughout the alimentary canal and pushes the food downwards At times the food is not accepted by our stomach and is vomited out Recall the instances when you vomited after eating and think of the reason for it Discuss with your parents and teacher NUTRITION IN ANIMALS The stomach The stomach is a thick-walled bag Its shape is like a flattened J and it is the widest part of the alimentary canal It receives food from the food pipe at one end and opens into the small intestine at the other The inner lining of the stomach secretes mucous hydrochloric acid and digestive juices The mucous protects the lining of the stomach The acid kills many bacteria that enter along with the food and makes the medium in the stomach acidic and helps the digestive juices to act The digestive juices break down the proteins into simpler substances The small intestine The small intestine is highly coiled and is about metres long It receives secretions from the liver and the pancreas Besides its wall also secretes juices The liver is a reddish brown gland situated in the upper part of the abdomen on the right side It is the largest gland in the body It secretes bile juice that is stored in a sac called the gall bladder The bile plays an important role in the digestion of fats The pancreas is a large cream coloured gland located just below the stomach The pancreatic juice acts on carbohydrates fats and proteins and changes them into simpler forms The working of the stomach was discovered by a strange accident In a man named Alexis St Martin was badly hit by a shot gun The bullet had seriously damaged the chest wall and made a hole in his stomach He was brought to an American army doctor William Beaumont The doctor saved the patient but he could not close the hole properly and left it bandaged Beaumont took it as a great opportunity to see the inside of the stomach through the hole He made some wonderful observations Beaumont found that the stomach was churning Alexis St Martin’s shotgun wound food Its wall secreted a fluid which could digest the food He also observed that the end of the stomach opens into the intestine only after the digestion of the food inside the stomach is completed SCIENCE The partly digested food now reaches the lower part of the small intestine where the intestinal juice completes the digestion of all components of the food The carbohydrates get broken into simple sugars such as glucose fats into fatty acids and glycerol and proteins into amino acids Absorption in the small intestine The large intestine is wider and shorter than small intestine It is about metre in length Its function is to absorb water and some salts from the undigested food material The remaining waste passes into the rectum and remains there as semi-solid faeces The faecal matter is removed through the anus from time-to-time This is called egestion The digested food can now pass into the blood vessels in the wall of the intestine This process is called absorption The inner walls of the small intestine have thousands of finger-like outgrowths These are called villi singular villus Can you guess what the role of villi could be in the intestine The villi increase the surface area for absorption of the digested food Each villus has a network of thin and small blood vessels close to its surface The surface of the villi absorbs the digested food materials The absorbed substances are transported via the blood vessels to different organs of the body where they are used to build complex substances such as the proteins required by the body This is called assimilation In the cells glucose breaks down with the help of oxygen into carbon dioxide and water and energy is released The food that remains undigested and unabsorbed enters into the large intestine Large intestine DIGESTION IN GRASS-EATING ANIMALS Have you observed cows buffaloes and other grass-eating animals chewing continuously even when they are not eating Actually they quickly swallow the grass and store it in a part of the stomach called rumen Here the food gets partially digested and is called cud But later the cud returns to the mouth in small lumps and the animal chews it This process is called rumination and these animals are called ruminants The grass is rich in cellulose a type of carbohydrate In ruminants like cattle deer etc bacteria present in rumen Diarrhoea Sometime you may have experienced the need to pass watery stool frequently This condition is known as diarrhoea It may be caused by an infection food poisoning or indigestion It is very common in India particularly among children Under severe conditions it can be fatal This is because of the excessive loss of water and salts from the body Diarrhoea should not be neglected Even before a doctor is consulted the patient should be given plenty of boiled and cooled water with a pinch of salt and sugar dissolved in it This is called Oral Rehydration Solution ORS NUTRITION IN ANIMALS Paheli wants to know why these animals cannot chew food properly at the time they take it in Boojho wants to know why we cannot digest cellulose like the cattle do Oesophagus Small Intestine Rumen helps in digestion of cellulose Many animals including humans cannot digest cellulose Animals like horses rabbit etc have a large sac-like structure called Caecum between the oesophagus and the small intestine The cellulose of the food is digested here by the action of certain bacteria which are not present in humans So far you have learnt about animals which possess the digestive system But there are many small organisms which do not have a mouth and a digestive system Then how do they acquire and digest food In the section below you will learn another interesting way of food intake FEEDING AND DIGESTION IN AMOEBA Amoeba is a microscopic single-celled organism found in pond water Amoeba has a cell membrane a rounded dense nucleus and many small bubble-like vacuoles in its cytoplasm Amoeba constantly changes its shape and position It pushes out one or more finger-like projections called pseudopodia or false feet for movement and capture of food Nucleus Pseudopodium Food particle ingestion Amoeba feeds on some microscopic organisms When it senses food it pushes out pseudopodia around the food particle and engulfs it The food becomes trapped in a food vacuole Digestive juices are secreted into the food vacuole They act on the food and break it down into simpler substances Gradually the digested food is absorbed The absorbed substances are used for growth maintenance and multiplication The undigested residue of the food is expelled outside by the vacuole The basic process of digestion of food and release of energy is the same in all animals In a later you will learn about the transport of food absorbed by the intestine to the various parts of the body Fibre to Fabric In Class you have learnt about some fibres obtained from plants You also learnt that wool and silk fibres are obtained from animals Wool is obtained from the fleece hair of sheep or yak Silk fibres come from cocoons of the silk moth Do you know which part of the sheep’s body yields fibres Are you aware how these fibres are converted into the woollen yarn that we buy from the market to knit sweaters Do you have any idea how silk fibres are made into silk which is woven into saris In this we shall try to find answers to these questions Like us the hairy skin of the sheep has two types of fibres that form its fleece i the coarse beard hair and the fine soft under-hair close to the skin The fine hair provide the fibres for making wool Some breeds of sheep possess only fine under -hair Their parents are specially chosen to give birth to sheep which have only soft underhair This process of selecting parents for obtaining special characters in their offspring such as soft under hair in sheep is termed ‘selective breeding’ Animal fibres wool and silk WOOL Wool comes from sheep goat yak and some other animals These wool-yielding animals bear hair on their body Do you know why these animals have a thick coat of hair Hair trap a lot of air Air is a poor conductor of heat as you would learn in So hair keeps these animals warm Wool is derived from these hairy fibres Activity Feel the hair on your body and arms and those on your head Do you find any difference Which one seems coarse and which one is soft Sheep with thick growth of hair Animals that yield wool Several breeds of sheep are found in different parts of our country Table However the fleece of sheep is not the only source of wool though wool commonly available in the market is sheep wool Yak wool is common in Tibet and Ladakh Mohair is obtained from angora goats found in hilly regions such as Jammu and Kashmir Wool is also obtained from goat hair The under fur of Kashmiri goat is soft It is woven into fine shawls called Pashmina shawls The fur hair on the body of camels is also used as wool Llama and Alpaca found in South America also yield wool and Activity Procure outline maps of India and the world Find out and mark the places on the map where you find animals that provide wool Use different colours to denote the location for different wool yielding animals Activity Collect pictures of animals whose hair is used as wool Stick them in your scrap book If you are unable to get pictures try and draw them from the ones given in this book Find out words for sheep goat camel and yak in your local language and also in other languages of our country From fibres to wool For obtaining wool sheep are reared Their hair is cut and processed into wool Let us learn about this process Rearing and breeding of sheep If you travel to the hills in Jammu Kashmir Himachal Pradesh Uttaranchal Arunachal Pradesh and Sikkim or the plains of Haryana Punjab Rajasthan and Gujarat you can see shepherds taking their herds of sheep for grazing Sheep are herbivores and prefer grass and leaves Apart from grazing sheep rearers also feed them on a mixture of pulses corn jowar oil cakes material left after taking out oil from seeds and minerals In winter sheep are kept indoors and fed on leaves grain and dry fodder Sheep are reared in many parts of our country for wool Table gives the names of some breeds of sheep reared in our country for producing wool The quality and texture of the fibres obtained from them is also indicated in the table Certain breeds of sheep have thick coat of hair on their body which yields good quality wool in large quantities As mentioned earlier these sheep are selectively bred with one parent being a sheep of good breed Once the reared sheep have developed a thick growth of hair hair is shaved off for getting wool Processing fibres into wool The wool which is used for knitting sweaters or for weaving shawls is the finished product of a long process which involves the following steps Step I The fleece of the sheep along with a thin layer of skin is removed from its body a This process is called shearing Machines similar to those used by barbers are used to shave off hair Usually hair are removed during the hot weather This enables sheep to survive without their protective coat of hair The hair provide woollen fibres Woollen fibres are then processed to obtain woollen yarn Shearing does not hurt the sheep just as it does not hurt when you get a hair cut or your father shaves his beard Do you know why The uppermost layer of the skin is dead Also the hair of sheep grow again just as your hair does Step The sheared skin with hair is thoroughly washed in tanks to remove grease dust and dirt This is called scouring Nowadays scouring is done by machines and c Step After scouring sorting is done The hairy skin is sent to a factory where hair of different textures are separated or sorted Step The small fluffy fibres called burrs are picked out from the hair These are the same burrs which sometimes appear on your sweaters The fibres are scoured again and dried This is the wool ready to be drawn into fibres Step The fibres can be dyed in various colours as the natural fleece of sheep and goats is black brown or white Step The fibres are straightened combed and rolled into yarn The longer fibres are made into wool for sweaters and the shorter fibres are spun and woven into woollen cloth a Shearing a sheep Scouring in tanks Rolling into yarn c Scouring by machines The processing of fibre into wool can be represented as follows Shearing Scouring Sorting Cleaning of burrs Rolling Dyeing FIBRE TO FABRIC Occupational hazard Wool industry is an important means of livelihood for many people in our country But sorter’s job is risky as sometimes they get infected by a bacterium anthrax which causes a fatal blood disease called sorter’s disease Such risks faced by workers in any industry are called occupational hazards Life history of silk moth The female silk moth lays eggs from which hatch larvae which are called caterpillars or silkworms They grow in size and when the caterpillar is ready to enter the next stage of its life history called pupa it first weaves a net to hold itself Then it swings its head from side to side in the form of the figure of eight During these movements of the head the caterpillar secretes fibre made of a protein which hardens on exposure to air and becomes silk fibre Soon the caterpillar completely covers itself by silk fibres and turns into pupa This covering is known as cocoon The further development of the pupa into moth continues inside the cocoon Silk fibres are used for weaving silk cloth Can you imagine that the soft silk yarn is as strong as a comparable thread of steel The silk yarn thread is obtained from the cocoon of the silk moth There is a variety of silk moths which look very different from one another and the silk yarn they yield is different in texture coarse smooth shiny etc Thus tassar silk mooga silk kosa silk etc are obtained from cocoons spun by different types of moths The most common silk moth is the mulberry silk moth The silk fibre from the cocoon of this moth is soft lustrous and elastic and can be dyed in beautiful colours Sericulture or culture of silkworms is a very old occupation in India India produces plenty of silk on a commercial scale Boojho is wondering why it hurts when someone pulls his hair but not when he goes for a haircut Boojho is wondering why a cotton garment cannot keep us as warm in winter as a woollen sweater does a Male Female Adult silk moths Activity Debate amongst your classmates whether it is fair on the part of humans to rear sheep and then chop off their hair for getting wool c Eggs on mulberry leaves Silkworm SILK Silk fibres are also animal fibres Silkworms spin the ‘silk fibres’ The rearing of silkworms for obtaining silk is called sericulture Find out from your mother aunt grandmother the kind of silk saris they have List the kinds of silk Before we discuss the process of obtaining silk it is necessary to know the interesting life history of the silk moth e Cocoon f Cocoon with developing moth a to f Life history of silk moth SCIENCE Activity Collect pieces of silk cloth of various types and paste them in your scrap book You can find them in a tailor’s shop among the heap of waste cut pieces Take help of your mother aunt or teacher and identify the types of silk such as mulberry silk tassar silk eri silk mooga silk etc Compare the texture of these silks with that of the artificial silk pieces which contain synthetic fibres Try and collect pictures of different moths whose caterpillars provide the various types of silk Activity Take an artificial synthetic silk thread and a pure silk thread Burn these threads carefully Did you notice any difference in the smell while burning Now burn a woollen fibre carefully Did it smell like burning of artificial silk or that of pure silk Can you explain why To remember when the cocoon stage is reached in the life history of the silk moth try the following activity Activity Photocopy Cut out pictures of the stages of the life history of the silk moth and paste them on pieces of cardboard or chart paper Jumble them Now try and arrange the stages in the correct sequence in a cyclic form Whoever does it fastest wins You may also describe the life history in your own words Write it down in your scrap book In India women are significantly involved in various kinds of industries related to silk production These are rearing of silkworms reeling of silk from cocoons and processing of raw silk into fabrics By their enterprise they contribute to the nation’s economy China leads the world in silk production India also ranks among the leading silk producing countries FIBRE TO FABRIC From cocoon to silk For obtaining silk moths are reared and their cocoons are collected to get silk threads Rearing silkworms A female silk moth lays hundreds of eggs at a time a The eggs are stored carefully on strips of cloth or paper and sold to silkworm farmers The farmers keep eggs under hygienic conditions and under suitable conditions of temperature and humidity The eggs are warmed to a suitable temperature for the larvae to hatch from eggs This is done when mulberry trees bear a fresh crop of leaves The larvae called caterpillars or silkworms eat day and night and increase enormously in size c Leaf of Mulberry a Female silkworm moth with eggs Mulberry tree c Larva Caterpillar Silkworm feeding on mulberry leaves Cocoons Rearing silkworms Discovery of silk The exact time of discovery of silk is perhaps unknown According to an old Chinese legend the empress Si-lung-Chi was asked by the emperor Huang-ti to find the cause of the damaged leaves of mulberry trees growing in their garden The empress found white worms eating up mulberry leaves She also noticed that they were spinning shiny cocoons around them Accidentally a cocoon dropped into her cup of tea and a tangle of delicate threads separated from the cocoon Silk industry began in China and was kept a closely guarded secret for hundreds of years Later on traders and travellers introduced silk to other countries The route they travelled is still called the ‘silk route’ SCIENCE The larvae are kept in clean bamboo trays along with freshly chopped mulberry leaves After to days the caterpillars stop eating and move to a tiny chamber of bamboo in the tray to spin cocoons Small racks or twigs may be provided in the trays to which cocoons get attached The caterpillar or silkworm spins the cocoon inside which develops the silk moth Processing silk A pile of cocoons is used for obtaining silk fibres The cocoons are kept under the sun or boiled or exposed to steam The silk fibres separate out The process of taking out threads from the cocoon for use as silk is called reeling the silk Reeling is done in special machines which unwind the threads or fibres of silk from the cocoon Silk fibres are then spun into silk threads which are woven into silk cloth by weavers Paheli wants to know if the cotton thread and silk thread are spun and woven in the same manner Heat In you learnt that woollen clothes are made from animal fibres You also know that cotton clothes are made from plant fibres We wear woollen clothes during winters when it is cold outside Woollen clothes keep us warm We prefer to wear light coloured cotton clothes when it is hot These give us a feeling of coolness You might have wondered why particular types of clothes are suitable for a particular season In winter you feel cold inside the house If you come out in the sun you feel warm In summer you feel hot even inside the house How do we know whether an object is hot or cold How do we find out how hot or cold an object is In this we shall try to seek answers to some of these questions Activity HOT AND COLD Take three small tubs containers Label them as A and C Put cold water in container A and hot water in container In our day-to-day life we come across a number of objects Some of them are hot and some of them are cold Tea is hot and ice is cold List some objects you use commonly in Table Mark these objects as hot or cold Do not touch objects which are too hot Be careful while handling a candle flame or a stove We see that some objects are cold while some are hot You also know that some objects are hotter than others while some are colder than others How do we decide which object is hotter than the other We often do it by touching the objects But is our sense of touch reliable Let us find out Make sure that water is not so hot that you burn your hand Table Hot and cold objects Object Ice cream Cold Cool A C Warm Hot √ Spoon in a tea cup Fruit juice Handle of a frying pan Feeling water in three containers Mix some cold and hot water in container C Now dip your left hand in container A and the right hand in container After keeping the hands in the two containers for minutes put both the hands simultaneously in container C Do both the hands get the same feeling Boojho says My left hand tells me that the water in mug C is hot and the right hand tells me that the same water is cold What should I conclude A clinical thermometer Boojho’s confusion shows that we cannot always rely on our sense of touch to decide whether an object is hot or cold Sometimes Boojho wondered which of the two scales it may deceive us shown in he should read Paheli told Then how do we find him that India has adopted the celsius scale out how hot an object really and we should read that scale The other scale is A reliable measure of the with the range degrees is the hotness of an object is its Fahrenheit scale F It was in use earlier temperature Temperature is measured by a device called thermometer A clinical thermometer reads temperature from to MEASURING TEMPERATURE Have you seen a thermometer Recall that when you or someone else in your family had fever the temperature was measured by a thermometer The thermometer that measures our body temperature is called a clinical thermometer Hold the thermometer in your hand and examine it carefully If you do not have a thermometer request a friend to share it with you A clinical thermometer looks like the one shown in A clinical thermometer consists of a long narrow uniform glass tube It has a bulb at one end This bulb contains mercury Outside the bulb a small shining thread of mercury can be seen If you do not see the mercury thread rotate the thermometer a bit till you see it You will also find a scale on the thermometer The scale we use is the celsius scale indicated by Activity Reading a thermometer Let us learn how to read a thermometer First note the temperature difference indicated between the two bigger marks Also note down the number of divisions SCIENCE Precautions to be observed while using a clinical thermometer § Thermometer should be washed before and after use preferably with an antiseptic solution § Ensure that before use the mercury level is below § Read the thermometer keeping the level of mercury along the line of sight See § Handle the thermometer with care If it hits against some hard object it can break § Don’t hold the thermometer by the bulb while reading it shown by smaller marks between these marks Suppose the bigger marks read one degree and there are five divisions between them Then one small division can read Wash the thermometer preferably with an antiseptic solution Hold it firmly and give it a few jerks The jerks will bring the level of mercury down Ensure that it falls below Now place the bulb of the thermometer under your tongue After one minute take the thermometer out and note the reading This is your body temperature The temperature should always be stated with its unit What did you record as your body temperature The normal temperature of human body is Note that the temperature is stated with its unit Paheli measured her body temperature She got worried as it was not exactly Let us try to assure Paheli that there is nothing wrong with her Activity Measure the body temperature of some of your friends at least with a Table Body temperature of some persons Name Temperature Correct method of reading a clinical thermometer HEAT clinical thermometer Record your observations as in Table Is the body temperature of every person The temperature of every person may not be It could be slightly higher or slightly lower Actually what we call normal temperature is the average body temperature of a large number of healthy persons The clinical thermometer is designed to measure the temperature of human body only The temperature of human body normally does not go below or aboveThat is the reason that this thermometer has the range Different types of thermometers are used for different purposes The maximum and minimum temperatures of the previous day reported in weather reports are measured by a thermometer called the maximum-minimum thermometer this thermometer Look at it carefully and note the highest and the lowest temperature it can measure The range of a laboratory thermometer is generally from to Also as you did in the case of the clinical thermometer find out how much a small division on this thermometer reads You would need this information to read the thermometer correctly Let us now learn how this thermometer is used Boojho got a naughty idea He wanted to measure the temperature of hot milk using a clinical thermometer Paheli stopped him from doing so Activity Do not use a clinical thermometer for measuring the temperature of any object other than the human body Also avoid keeping the thermometer in the sun or near a flame It may break Take some tap water in a beaker or a mug Dip the thermometer in water so that the bulb is immersed in water but does not touch the bottom or the sides of the container Hold the thermometer vertically Observe the movement of mercury in the thermometer Wait till the mercury thread becomes steady LABORATORY THERMOMETER How do we measure the temperature of other objects For this purpose there are other thermometers One such thermometer is known as the laboratory thermometer The teacher will show you A laboratory thermometer SCIENCE In addition to the precautions to be taken while reading a clinical thermometer the laboratory thermometer § should be kept upright not tilted § bulb should be surrounded from all sides by the substance of which the temperature is to be measured The bulb should not touch the surface of the container Are there any variations in the readings Discuss the possible reasons Let us try to answer this question Activity Note the reading This is the temperature of water at that time Compare the temperature of water recorded by each student in the class Take some hot water in a beaker or a mug Dip the thermometer in water Wait till the mercury thread becomes steady and note the temperature Now take out the thermometer from water Observe carefully what happens now Do you notice that as soon as you take the thermometer out of water the level of mercury begins to fall This means that the temperature must be read while the thermometer is in water You may recall that while taking your own temperature you have to take the thermometer out of your mouth to note the reading Can you then use the laboratory thermometer to measure your body temperature Obviously it is not convenient to use the laboratory thermometer for this purpose Why does the mercury not fall or rise in a clinical thermometer when taken out of the mouth Observe a clinical thermometer again Do you see a kink near the bulb What is the use of the kink It prevents mercury level from falling on its own Boojho now understands why clinical thermometer cannot be used to measure high temperatures But still wonders whether a laboratory thermometer can be used to measure his body temperature Boojho wonders why the level of mercury should change at all when the bulb of the thermometer is brought in contact with another object Measuring temperature of water with a laboratory thermometer HEAT A clinical thermometer has a kink in it There is a lot of concern over the use of mercury in thermometers Mercury is a toxic substance and is very difficult to dispose of if a thermometer breaks These days digital thermometers are available which do not use mercury Paheli asks Does it mean that heat will not be transferred if the temperature of two objects is the same Activity Take a rod or flat strip of a metal say of aluminium or iron Fix a few small wax pieces on the rod These pieces should be at nearly equal distances Clamp the rod to a stand If you do not find a stand you can put one end of the rod in between bricks Now heat the other end of the rod and observe What happens to the wax pieces Do these pieces begin to fall Which piece falls the first Do you think that heat is transferred from the end nearest to the flame to the other end The process by which heat is transferred from the hotter end to the colder end of an object is known as conduction In solids generally the heat is transferred by the process of conduction TRANSFER OF HEAT You might have observed that a frying pan becomes hot when kept on a flame It is because the heat passes from the flame to the utensil When the pan is removed from the fire it slowly cools down Why does it cool down The heat is transferred from the pan to the surroundings So you can understand that in both cases the heat flows from a hotter object to a colder object In fact in all cases heat flows from a hotter object to a colder object How does heat flow Let us investigate Flow of heat through a metal strip Conduction of heat by different materials Do all substances conduct heat easily You must have observed that the metallic pan for cooking has a plastic or wooden handle Can you lift a hot pan by holding it from the handle without getting hurt Touch the other end Enter your observation in Table The materials which allow heat to pass through them easily are conductors of heat For examples aluminum iron and copper The materials which do not allow heat to pass through them easily are poor conductors of heat such as plastic and wood Poor conductors are known as insulators The water and air are poor conductors of heat Then how does the heat transfer take place in these substances Let us find out Activity Take a round bottom flask if flask is not available a beaker can be used Fill it two-thirds with water Place it on a tripod or make some arrangement to place the flask in such a way that you can heat it by placing a candle below it Wait till the water in the flask is still Place a crystal of potassium Activity permanganate at the bottom of the flask Heat water in a small pan or a beaker gently using a straw Now heat the water Collect some articles such as a steel by placing the candle just below the spoon plastic scale pencil and divider crystal Dip one end of each of these articles in Write your observation in your hot water Wait for a few notebook and also draw a picture of Table what you observe When water is heated Article Material with Does the other the water near the flame gets which the article end get hot hot Hot water rises up is made of Yes No The cold water from the sides moves down towards the source of heat This water also gets hot and rises and water from the sides moves down This process continues till the whole water gets heated This mode of heat transfer is known as convection How does the heat travel in air In which direction does the smoke go The air near the heat source gets hot and rises The air from the sides comes in to take its place In this way the air gets heated The following activity confirms this idea Steel spoon Metal Yes HEAT Transfer of heat by convection in air Convection of heat in water Activity Light a candle Keep one hand above the flame and one hand on the side of the flame Do your hands feel equally hot If not which hand feels hotter And why Be careful Keep your hands at a safe distance from the flame so that they do not get burnt Notice that towards the top the air gets heated by convection Therefore the hand above the flame feels hot On the sides however there is no convection and air does not feel as hot as at the top The people living in the coastal areas experience an interesting phenomenon During the day the land gets heated faster than the water The air over the land becomes hotter and rises up The cooler air from the sea rushes in towards the land to take its place The warm air from the land moves towards the sea to complete the cycle The air from the sea is called the sea breeze To receive the cooler sea breeze the windows of the houses in coastal areas are made to face the sea At night it is exactly the reverse The water cools down more slowly than the land So the cool air from the land moves towards the sea This is called the land breeze When we come out in the sun we feel warm How does the heat from the sun reach us It cannot reach us by conduction or convection as there is no medium such as air in most part of the space between the earth and the sun Sea breeze and Land breeze From the sun the heat comes to us by another process known as radiation The transfer of heat by radiation does not require any medium It can take place whether a medium is present or not When we sit in front of a room heater we get heat by this process A hot utensil kept away from the flame cools down as it transfers heat to the surroundings by radiation Our body too gives heat to the surroundings and receives heat from it by radiation All hot bodies radiate heat When this heat falls on some object a part of it is reflected a part is absorbed and a part may be transmitted The temperature of the object increases due to the absorbed part of the heat Why are you advised to use an umbrella when you go out in the sun KINDS OF CLOTHES WE WEAR IN SUMMER AND WINTER You know that in summer we prefer light-coloured clothes and in winter we usually wear dark-coloured clothes Why is it so Let us find out Activity Take two identical tin cans Paint the outer surface of one black and of the other white Pour equal amounts of water in each and leave them in the mid-day sun for about an hour Measure the temperature of water in both the cans Do you find any difference in the temperatures In which can is the water warmer You can feel the difference even by touching water in the two cans We often use electricity and fuels like coal and wood to keep our houses cool or warm Is it possible to construct buildings that are not affected much by heat and cold outside This can be done by constructing outer walls of buildings so that they have trapped layers of air One way of doing this is to use hollow bricks which are available these days Fill the two cans used in Activity with the same amount of hot water at the same temperature say at oC Leave the cans in a room or in a shade Note the temperature of water after minutes Does the temperature of water in both the cans fall by the same amount Do these activities suggest to you the reason why it is more comfortable to wear white or light-coloured clothes in the summer and dark-coloured clothes in the winter Dark surfaces absorb more heat and therefore we feel comfortable with dark coloured clothes in the winter Light coloured clothes reflect most of the heat that falls on them and therefore we feel more comfortable wearing them in the summer Woollen clothes keep us warm in winter In the winter we use woollen clothes Wool is a poor conductor of heat Moreover there is air trapped in between the wool fibres This air prevents the flow of heat from our body to the cold surroundings So we feel warm Suppose you are given the choice in winter of using either one thick blanket or two thin blankets joined together What would you choose and why Remember that there would be a layer of air in between the blankets Acids Bases and Salts We use in our daily life a large number of substances such as lemon tamarind common salt sugar and vinegar Do they have the same taste Let us recall tastes of some edible substances listed in Table If you have not tasted any of these substances taste it now and enter the result in Table Substance Lemon juice Orange juice Vinegar Curd Tamarind imli Sugar Common salt Amla Baking soda Grapes Unripe mango Cucumber Taste sour bitter any other You find that some of these substances taste sour some taste bitter some taste sweet and some taste salty ACIDS AND BASES Curd lemon juice orange juice and vinegar taste sour These substances taste sour because they contain acids The chemical natur e of such substances is acidic The word acid comes from the Latin word acere which means sour The acids in these substances are natural acids What about baking soda Does it also taste sour If not what is its taste Since it does not taste sour it means that it has no acids in it It is bitter in taste If you rub its solution between fingers it feels soapy Generally substances like these which are bitter in taste and feel soapy on touching are known as bases The nature of such substances is said to be basic If we cannot taste every substance how do we find its nature Special type of substances are used to test whether a substance is acidic or basic These substances are known as indicators The indicators change their colour when added to a solution containing an acidic or a basic substance Turmeric litmus China rose petals Gudhal etc are some of the naturally occurring indicators NATURAL INDICATORS AROUND US Do you know Name of acid Acetic acid Found in Vinegar Formic acid Ant’s sting Citric acid Citrus fruits such as oranges lemons etc Lactic acid Curd Oxalic acid Spinach Ascorbic acid Amla Citrus fruits Litmus A natural dye Vitamin C Tartaric acid Tamarind grapes unripe mangoes etc All the acids mentioned above occur in nature Name of base Found in Calcium hydroxide Lime water The most commonly used natural indicator is litmus It is extracted from lichens a It has a mauve purple colour in distilled water When added to an acidic solution it turns red and when added to a basic solution it turns blue It is available in the form of a solution or in the form of strips of paper known as litmus paper Generally it is available as red and blue litmus paper Ammonium hydroxide Window cleaner Sodium hydroxide Soap Potassium hydroxide Magnesium hydroxide Milk of magnesia a Can I taste all substances to find their taste No Have you not read the caution We should not taste unknown substances They could harm us a Lichens and Red and blue litmus paper SCIENCE Activity § Mix some water with lemon juice in a plastic cup tumbler test tube § Put a drop of the above solution on a strip of the red litmus paper with the help of a dropper Is there any change in colour § Repeat the same exercise with the blue litmus paper Note down if there is any change in colour Perform the same activity with the following substances Tap water detergent solution aerated drink soap solution shampoo common salt solution sugar solution vinegar baking soda solution milk of magnesia washing soda solution lime water If possible make solutions in distilled water Record your observations as in Table In your Table are there any substances on which litmus had no effect Name those substances The solutions which do not change the colour of either red or blue litmus are known as neutral solutions These substances are neither acidic nor basic Children performing litmus test Turmeric is another natural indicator Activity § Take a tablespoonful of turmeric powder Add a little water and make a paste § Make turmeric paper by depositing turmeric paste on blotting paper filter paper and drying it Cut thin strips of the yellow paper obtained § Put a drop of soap solution on the strip of turmeric paper What do you observe To prepare limewater take some water in a tumbler and add some lime chuna into it Stir the solution and keep it for some time Pour a little from the top This is lime water Table S No Test solution Effect on red litmus paper ACIDS BASES AND SALTS Effect on blue litmus paper Inference You can prepare a greeting card for your mother on her birthday Apply turmeric paste on a sheet of plane white paper and dry it Draw a beautiful flower with soap solution with the help of a cotton bud You will get a beautiful greeting card Now I understand why a turmeric stain on my white shirt is turned to red when it is washed with soap It is because the soap solution is basic Acid Turmeric paste Indicator Base Soap solution Similarly test the solutions listed in Table and note down your observations You may try solutions of other substances also China Rose as Indicator China rose Activity Collect some China rose Gudhal petals and place them in a beaker Add some warm water Keep the mixture for some time till water becomes coloured Use the coloured water as an indicator Add five drops of the indicator to each of the solutions given in Table What is the effect of the indicator on acidic basic and neutral solutions China rose indicator turns acidic solutions to dark pink magenta and basic solutions to green Final colour Paheli brought the following paheli riddle for you Coffee is brown And bitter in taste Is it an acid Or a base Don’t give the answer Without any test You are in the dark With its taste Activity I am not getting the same result when using solid baking soda on dry litmus paper Why Make a solution of baking soda and then try The teacher is requested to get the dilute solution of the following chemicals from his her school laboratory or from a nearby school hydrochloric acid sulphuric acid nitric acid acetic acid sodium hydroxide ammonium hydroxide calcium hydroxide lime water Table S No Name of acid Dilute hydrochloric acid Effect on litmus paper Effect on turmeric paper Effect on China rose solution ACIDS BASES AND SALTS Are you familiar with the term acid rain Have you ever heard about damaging effect of acid rain As the name indicates the rain containing excess of acids is called an acid rain Where do these acids come from The rain becomes acidic because carbon dioxide sulphur dioxide and nitrogen dioxide which are released into the air as pollutants dissolve in rain drops to form carbonic acid sulphuric acid and nitric acid respectively Acid rain can cause damage to buildings historical monuments plants and animals Great care should be taken while handling laboratory acids and bases because these are corrosive in nature irritating and harmful to skin Demonstrate the effect of the three indicators on each of these solutions Record your observations in Table NEUTRALISATION We have learnt that acids turn blue litmus red and bases turn red litmus blue Let us see what happens when an acid is mixed with a base We are going to use an indicator you have not used so far It is called phenolphthalein Stir the tube gently Is there any change in the colour of the solution Continue adding the sodium hydroxide solution drop by drop while stirring till the pink colour just appears Now add one more drop of dilute hydrochloric acid What do you observe The solution again becomes colourless Again add one drop of sodium hydroxide solution Is there any change in colour The solution again becomes pink in colour It is evident that when the solution is basic phenolphthalein gives a pink colour On the other hand when the solution is acidic it remains colourless Fill one fourth of a test tube with dilute hydrochloric acid Note down its colour Note down the colour of phenolphthalein solution also Add drops of the indicator to the acid Now shake the test tube gently Do you observe any change in colour of the acid Add to the acidic solution a drop of sodium hydroxide solution by a dropper Base Acid Indicator Process of neutralisation SCIENCE When an acidic solution is mixed with a basic solution both the solutions neutralise the effect of each other When an acid solution and a base solution are mixed in suitable amounts both the acidic nature of the acid and the basic nature of the base are destroyed The resulting solution is neither acidic nor basic Touch the test tube immediately after neutralisation What do you observe In neutralisation reaction heat is always produced or evolved The evolved heat raises the temperature of the reaction mixture In neutralisation reaction a new substance is formed This is called salt Salt may be acidic basic or neutral in nature Thus neutralisation can be defined as follows The reaction between an acid and a base is known as neutralisation Salt and water are produced in this process with the evolution of heat Acid Base Salt Water Heat is evolved The following reaction is an example Hydrochloric acid HCl Sodium hydroxide NaOH Sodium chloride NaCl Water H O Boojho added dilute sulphuric acid to lime water Will the reaction mixture become hot or cool NEUTRALISATION IN EVERYDAY LIFE Indigestion Our stomach contains hydrochloric acid It helps us to digest food as you have learnt in But too much of acid in the stomach causes indigestion Sometimes indigestion is painful To relieve indigestion we take an antacid such as milk of magnesia which contains magnesium hydroxide It neutralises the effect of excessive acid Ant bite When an ant bites it injects the acidic liquid formic acid into the skin The effect of the acid can be neutralised by rubbing moist baking soda sodium hydrogencarbonate or calamine solution which contains zinc carbonate Soil treatment Excessive use of chemical fertilisers makes the soil acidic Plants do not grow well when the soil is either too acidic or too basic When the soil is too acidic it is treated with bases like quick lime calcium oxide or slaked lime calcium hydroxide If the soil is basic organic matter compost is added to it Organic matter releases acids which neutralises the basic nature of the soil Factory wastes The wastes of many factories contain acids If they are allowed to flow into the water bodies the acids will kill fish and other organisms The factory wastes are therefore neutralised by adding basic substances Physical and Chemical Changes Every day you come across many changes in your surroundings These changes may involve one or more substances For example your mother may ask you to dissolve sugar in water to make a cold drink Making a sugar solution is a change Similarly setting curd from milk is a change Sometimes milk becomes sour Souring of milk is a change Stretched rubber band also represents a change Make a list of ten changes you have noticed around you In this we shall perform some activities and study the nature of these changes Broadly these changes are of two kinds physical and chemical PHYSICAL CHANGES Activity Cut a piece of paper in four square pieces Cut each square piece further into four square pieces Lay these pieces on the floor or a table so that the pieces acquire the shape of the original piece of paper Obviously you cannot join the pieces back to make the original piece but is there a change in the property of the paper Activity Collect the chalk dust lying on the floor near the chalkboard in your classroom Or crush a small piece of chalk into dust Add a little water to the dust to make a paste Roll it into the shape of a piece of chalk Let it dry Did you recover chalk from the dust Activity Paper pieces Take some ice in a glass or plastic tumbler Melt a small portion of ice by placing the tumbler in the sun You have now a mixture of ice and water Now place the tumbler in a freezing mixture ice plus common salt Does the water become solid ice once again SCIENCE Activity Boil some water in a container Do you see the steam rising from the surface of water Hold an inverted pan by its handle over the steam at some distance from the boiling water Observe the inner surface of the pan Do you see any droplet of water there Activity Be careful while handling a flame Hold a used hack-saw blade with a pair of tongs Keep the tip of the free end of the blade on the gas stove Wait for a few minutes Does the colour of the tip of the blade change Remove the blade from the flame Observe the tip once again after some time Does it get back its original colour In Activities and above you saw that paper and a piece of chalk underwent changes in size In Activities and water changed its state from solid to liquid or from gas to liquid In Activity the hack-saw blade changed colour on heating Properties such as shape size colour and state of a substance are called its physical properties A change in which a substance undergoes a change in its physical properties is called a physical change A physical change is generally reversible In such a change no new substance is formed Let us now consider the other kind of change CHEMICAL CHANGE A change with which you are quite familiar is the rusting of iron If you leave a piece of iron in the open for some time it acquires a film of brownish substance This substance is called rust and the process is called rusting Iron gates of parks or farmlands iron benches kept in lawns and gardens almost every article of iron kept in the open gets rusted At home you must have seen shovels and spades getting rusted when exposed to the atmosphere for some time In the kitchen a wet iron pan tawa often gets rusted if left in that state for some time Rust is not iron It is different from iron on which it gets deposited Let us consider a few more changes where new substances are formed Rusting iron PHYSICAL AND CHEMICAL CHANGES Activity To be demonstrated by the teacher The equations here are different from those in mathematics In equations of this kind the arrow implies ‘becomes’ No attempt should be made to balance chemical equations at this stage It is dangerous to look for long at the burning magnesium ribbon The teachers should advise children not to stare at the burning ribbon Get a small piece of a thin strip or ribbon of magnesium Clean its tip with sandpaper Bring the tip near a candle flame It burns with a brilliant white light When it is completely burnt it leaves behind a powdery ash Does the ash look like the magnesium ribbon The change can be represented by the following equation Magnesium Mg Oxygen O Magnesium oxide MgO Magnesium ribbon burning Collect the ash and mix it with a small amount of water Stir the mixture aqueous solution well Test the mixture with blue and red litmus papers Does the mixture turn red litmus blue Does the mixture turn blue litmus red On the basis of this test how do you classify the aqueous solution acidic or basic On dissolving the ash in water it forms a new substance This change can be written in the form of the following equation Magnesium oxide MgO Water H O Magnesium hydroxide Mg OH As you have already learnt in magnesium hydroxide is a base So magnesium oxide is a new substance formed on burning of magnesium Magnesium hydroxide is another new substance formed by mixing magnesium oxide with water SCIENCE Activity To be demonstrated by the teacher Dissolve about a teaspoonful of copper sulphate blue vitriol or neela thotha in about half a cup of water in a glass tumbler or a beaker Add a few drops of dilute sulphuric acid to the solution You should get a blue coloured solution Save a small sample of the solution in a test tube or a small glass bottle Drop a nail or a used shaving blade into the remaining solution Wait for half an hour or so Observe the colour of the solution Compare it with the colour of the sample solution saved separately colour of the solution from blue to green is due to the formation of iron sulphate a new substance The brown deposit on the iron nail is copper another new substance We can write the reaction as Copper sulphate solution blue Iron Iron sulphate solution green Copper brown deposit Activity Take about a teaspoonful of vinegar in a test tube Add a pinch of baking soda to it You would hear a hissing sound and see bubbles of a gas coming out Pass this gas through freshly prepared lime water as shown in What happens to the lime water Iron sulphate greenish Copper sulphate blue Change in colour of the copper sulphate solution due to reaction with iron Do you see any change in the colour of the solution Take out the nail or the blade Has it changed in any way The changes that you notice are due to a reaction between copper sulphate and iron The change of The change in the test tube is as follows Vinegar Acetic acid Baking soda Sodium hydrogencarbonate Carbon dioxide other substances Set up to pass gas through lime water Carbon dioxide CO Lime water Ca OH Calcium Carbonate CaCO Water H O When carbon dioxide is passed through lime water calcium carbonate is formed which makes lime water milky The turning of lime water into milky is a standard test of carbon dioxide You will use it in to show that the air we breathe out is rich in carbon dioxide In Activities you saw that in each change one or more new substances were formed In Activity the ash was the new substance formed when magnesium was burnt in air In Activity the reaction of copper sulphate with iron produced iron sulphate and copper Both of these are new substances Copper was deposited on the shaving blade of iron In Activity vinegar and baking soda together produced carbon dioxide which turned lime water milky Can you name the new substance formed in this reaction A change in which one or more new substances are formed is called a chemical change A chemical change is also called a chemical reaction Chemical changes are very important in our lives All new substances are formed as a result of chemical changes For example digestion of food in our body ripening of fruits fermentation of grapes etc happen due to series of chemical changes A medicine is the end product of a chain of chemical reactions Useful new materials such as plastics and detergents are produced by chemical reactions Indeed every new material is discovered by studying chemical changes We have seen that one or more new substances are produced in a chemical change In addition to new products the following may accompany a chemical change n Heat light or any other radiation ultraviolet for example may be given off or absorbed n Sound may be produced n A change in smell may take place or a new smell may be given off n A colour change may take place n A gas may be formed Let us look at some examples You saw that burning of magnesium ribbon is a chemical change Burning of coal wood or leaves is also a chemical change In fact burning of any substance is a chemical change Burning is always accompanied by production of heat SCIENCE Explosion of a firework is a chemical change You know that such an explosion produces heat light sound and unpleasant gases that pollute the atmosphere That is why you are advised not to play with fireworks When food gets spoiled it produces a foul smell Shall we call this change a chemical change You must have noticed that a slice of an apple acquires a brown colour if it is not consumed immediately If you have not seen this change in colour cut a fresh slice of apple and keep it away for some time Repeat the same activity with a slice of potato or brinjal The change of colour in these cases is due to the formation of new substances Are not these changes chemical changes In you neutralised an acid with a base Is neutralisation a chemical change A protective shield You must have heard of the ozone layer in our atmosphere It protects us from the harmful ultraviolet radiation which come from the sun Ozone absorbs this radiation and breaks down to oxygen Oxygen is different from ozone Can we call the breaking down of ozone a chemical change If ultraviolet radiation were not absorbed by ozone it would reach the earth’s surface and cause harm to us and other life forms Ozone acts as a natural shield against this radiation We learnt in that plants produce their food by a process called photosynthesis Can we call photosynthesis a chemical change Paheli said that even digestion is a chemical change RUSTING OF IRON Let us get back to rusting This is one change that affects iron articles and slowly destroys them Since iron is used in making bridges ships cars truck bodies and many other articles the monetary loss due to rusting is huge The process of rusting can be represented by the following equation Iron Fe Oxygen O from the air water H O rust iron oxide Fe O For rusting the presence of both oxygen and water or water vapour is essential In fact if the content of moisture in air is high which means if it is more humid rusting becomes faster So how do we prevent rusting Prevent iron articles from coming in contact with oxygen or water or both One simple way is to apply a coat of paint or grease In fact these coats should be applied regularly to prevent rusting Another way is to deposit a layer of a metal like chromium or zinc on iron PHYSICAL AND CHEMICAL CHANGES Oh that is why my friend Rita is always complaining about iron articles rusting so fast She lives near the coast This process of depositing a layer of zinc on iron is called galvanisation The iron pipes we use in our homes to carry water are galvanised to prevent rusting You know that ships are made of iron and a part of them remains under water On the part above water also water drops keep clinging to the ship’s outer surface Moreover the water of the sea contains many salts The salt water makes the process of rust formation faster Therefore ships suffer a lot of damage from rusting in spite of being Stainless steel is made by mixing iron with carbon and metals like chromium nickel and manganese It does not rust Activity To be performed in the presence of the teacher Use only dilute sulphuric acid Be careful while boiling water Take a cupful of water in a beaker and add a few drops of dilute sulphuric acid Heat the water When it starts boiling add copper sulphate powder slowly while stirring continuously Continue adding copper sulphate powder till no more powder can be dissolved Filter the solution Allow it to cool Do not disturb the solution when it is cooling Look at the solution after some time Can you see the crystals of copper sulphate If not wait for some more time You have learnt about physical and chemical changes Try to identify changes that you observe around you as physical or chemical changes Weather Climate and Adaptations of Animals to Climate Do you remember the things that you were asked to pack when you were heading for a hill station When the sky is cloudy your parents insist that you carry an umbrella Have you heard elders in your family discuss the weather before planning a family function You must have also heard the experts discussing the weather before the start of a game Have you ever wondered why The weather may have a profound effect on the game It has a profound effect on our lives Many of our daily activities are planned based on the weather predicted for that day There are daily reports of the weather on the television and radio and in the newspapers But do you know what this weather really is In this we will study about the weather and climate We will also see how different forms of life are adapted to the climate of their habitat WEATHER In a sample of weather report from a newspaper is given We find that the daily weather report carries information about the temperature humidity and rainfall during the past hours It also predicts the weather for the day Humidity as you might know is a measure of the moisture in air A sample of a weather report from a newspaper I wonder who prepares these reports The weather reports are prepared by the Meteorological Department of the Government This department collects data on temperature wind etc and makes the weather prediction Activity Cut out the weather reports of the last week from any newspaper If you do not get a newspaper at home borrow from your neighbours or friends and copy these reports in your notebook You can also collect weather reports from a library Paste all the cut-outs on a white sheet or on a chart paper Now record the information from the weather reports collected by you in Table The first row is just a sample Fill all the columns according to the data in the chart that you have prepared Rainfall is measured by an instrument called the rain gauge It is basically a measuring cylinder with a funnel on top to collect rainwater Do all the seven days have the same maximum and minimum temperatures humidity and rainfall The maximum and minimum temperatures recorded may be the same for some of the days However all the parameters are not the same on any two days Over a week there may be considerable variation The dayto-day condition of the atmosphere at a place with respect to the temperature humidity rainfall windspeed etc is called the weather at that place The temperature humidity and other factors are called the elements of the weather The weather of a place changes day after day and week after week That is why we often say today’s weather is too humid or the weather was warm last week The weather is such a complex phenomenon that it can vary over very short periods of time It can happen sometimes that it is sunny in the morning but suddenly clouds appear from nowhere and it starts raining heavily Or a heavy rain may vanish in a matter of minutes and give way to bright sunshine You must have had several such experiences Try to recall any such experience and share it with your friends Since weather is such a complex phenomenon it is not easy to predict WEATHER CLIMATE AND ADAPTATIONS OF ANIMALS TO CLIMATE Graph showing the variation of maximum temperature during to August As it is clear from any weather report the maximum and minimum temperatures are recorded every day Do you know how these temperatures are recorded In you have learnt that there are special thermometers for this purpose called maximum and minimum thermometers Can you guess when during the day we have the maximum temperature and when the minimum The maximum temperature of the day occurs generally in the afternoon while the minimum temperature occurs generally in the early morning Can you now understand why in summers we feel so miserable in the afternoon and comparatively comfortable early in the morning I wonder why weather changes so frequently What is the source of weather in the first place All changes in the weather are caused by the sun The sun is a huge sphere of hot gases at a very high temperature The distance of the sun from us is very large Even then the energy sent out by the sun is so huge that it is the source of all heat and light on the earth So the sun is the primary source of energy that causes changes in the weather Energy absorbed and reflected by the earth’s surface oceans and the atmosphere play important roles in determining the weather at any place If you live near the sea you would have realised that the weather at your place is different from that of a place in a desert or near a mountain What about the times of sunrise and sunset You know that in winters it becomes dark early and you do not get much time to play Are the days shorter in winter than in summer Try to find it out yourself by completing the project given at the end of the CLIMATE Meteorologists record the weather every day The records of the weather have been preserved for the past several decades These help us to determine the weather pattern at a place The average weather pattern taken over a long time say years is called the climate of the place If we find that the temperature at a place is high most of the time then we say that the climate of that place is hot If there is also heavy rainfall on most of the days in the same place then we can say that the climate of that place is hot and wet In Table and we have given the climatic condition at two places in India The mean temperature for a given month is found in two steps First we find the average of the temperatures recorded during the month Second we calculate the average of such average temperatures over many years That gives the mean temperature The two places are Srinagar in Jammu and Kashmir and Thiruvananthapuram in Kerala By looking at Tables and we can easily see the difference in the climate of Jammu Kashmir and Kerala We can see that Kerala is very hot and wet in comparison to Jammu Kashmir which has a moderately hot and wet climate for a part of the year Similar data for the western region of India for example Rajasthan will show that the temperature is high during most part of the year But during winter which lasts only for a few months the temperature is quite low This region receives very little rainfall This is the typical desert climate It is hot and dry The northeastern India receives rain for a major part of the year Therefore we can say that the climate of the north-east is wet CLIMATE AND ADAPTATION Climate has a profound effect on all living organisms Animals are adapted to survive in the conditions in which they live Animals living in very cold and hot climate must possess special features to protect themselves against the extreme cold or heat Recall from of your Class science book the definition of adaptation Features and habits that help animals to adapt to their surroundings are a result of the process of evolution In you will learn about the effect of weather and climate on soil Here we will study the effect of climate on animals only In Class VI you have read about adaptations of animals to certain habitats As examples of adaptation of animals to climatic conditions we discuss only animals living in polar regions and tropical rainforests As the name suggests the polar regions are situated near the poles i e north pole and south pole Some well-known countries that belong to the polar regions are Canada Greenland Iceland Norway Sweden Finland Alaska in U S A and Siberian region of Russia Examples of some countries where the tropical rainforests are found are India Malaysia Indonesia Brazil Republic of Congo Kenya Uganda and Nigeria Activity Take an outline map of the world Mark the polar regions in blue Similarly mark the tropical regions in red i The polar regions The polar regions present an extreme climate These regions are covered with snow and it is very cold for most part of the year For six months the sun does not set at the poles while for the other six months the sun does not rise In winters the temperature can be as low as Animals living there have adapted to these severe conditions Let us see how they are adapted by considering the examples of polar bears and penguins Polar bears have white fur so that they are not easily visible in the snowy white background It protects them from their predators It also helps them in catching their prey To protect them from extreme cold they have two thick layers of fur They also have a layer of fat under their skin In fact they are so well-insulated that they have to move slowly and rest often to avoid getting overheated Physical activities on warm days necessitate cooling So the polar bear goes for swimming It is a good swimmer Its paws are wide and large which help it not only to swim well but also walk with ease in the snow While swimming under water it can close its nostrils and can remain under water for long durations It has a strong sense of smell so that it can catch its prey for food We can understand the adaptations of polar bears with the help of the flow chart shown in Another well-known animal living in the polar regions is the penguin It is also white and merges well with the white background It also has a thick skin and a lot of fat to protect it from cold You may have seen pictures of penguins huddled together This they do to keep warm Recall how warm you feel when you are in a hall full of people Penguins huddled together The white fur is not easily visible in the snowy white background Adaptations of polar bear WEATHER CLIMATE AND ADAPTATIONS OF ANIMALS TO CLIMATE Like polar bears penguins are also good swimmers Their bodies are streamlined and their feet have webs making them good swimmers Other animals living in the polar regions are many types of fishes musk oxen reindeers foxes seals whales and birds It is to be noted that while fish can remain under cold water for long birds must remain warm to survive They migrate to warmer regions when winter sets in They come back after the winter is over You know probably that India is one of the destinations of many of these birds You must have seen or heard about the Siberian crane that comes from Siberia to places like Bharatpur in Rajasthan and Sultanpur in Haryana and some Do fishes and butterflies also migrate like birds Migratory birds in their habitat Migratory birds in flight Did you know Some migratory birds travel as much as km to escape the extreme climatic conditions at home Generally they fly high where the wind flow is helpful and the cold conditions allow them to disperse the heat generated by their flight muscles But how these birds travel to the same place year after year is still a mystery It seems that these birds have a built in sense of direction and know in which direction to travel Some birds probably use landmarks to guide them Many birds may be guided by the sun during the day and stars at night There is some evidence that birds may use the magnetic field of the earth to find direction And it is not only birds that migrate mammals many types of fish and insects are also known to migrate seasonally in search of more hospitable climates The tropical rainforests The tropical region has generally a hot climate because of its location around the equator Even in the coldest month the temperature is generally higher than about During hot summers the temperature may cross Days and nights are almost equal in length throughout the year These regions get plenty of rainfall An important feature of this region is the tropical rainforests Tropical rainforests are found in Western Ghats and Assam in India Southeast Asia Central America and Central Africa Because of continuous warmth and rain this region supports wide variety of plants and animals The major types of animals living in the rainforests are monkeys apes gorillas tigers elephants leopards lizards snakes birds and insects Let us read about the adaptations of these animals to a hot humid climate The climatic conditions in rainforests are highly suitable for supporting an enormous number and a variety of animals Since the numbers are large there is intense competition for food and shelter Many animals are adapted to living on the trees Red-eyed frog has developed sticky pads on its feet to help it climb trees on which it lives To help them live on the trees monkeys have long tails for grasping branches Their hands and feet are such that they can easily hold on to the branches As there is competition for food some animals are adapted to get food not easily reachable A striking example is that of the bird Toucan which possesses a long large beak This helps a toucan to reach the fruits on branches which are otherwise too weak to support its weight Many tropical animals have sensitive hearing sharp eyesight thick skin and a skin colour which helps them to camouflage by blending with the surroundings This is to protect them from predators For example big cats lions and tigers have thick skins and sensitive hearing The lion-tailed macaque also called Beard ape lives in the rainforests of Western Ghats Its most outstanding feature is the silver-white mane which surrounds the head from the cheeks down to its chin It is a good climber and spends a major part of its life on the tree It feeds mainly on fruits It also eats seeds young leaves stems flowers and buds This beard ape also searches for insects under the bark of the trees Since it is able to get sufficient food on the trees it rarely comes down on the ground Another well-known animal of Indian tropical rainforest is the elephant It has adapted to the conditions of rainforests in many remarkable ways Look at its trunk It uses it as a nose because of which it has a strong sense of smell The trunk is also used by it for picking up food Moreover its tusks are modified teeth These can tear the bark of trees that elephant loves to eat So the elephant is able to handle the competition for food rather well Large ears of the elephant help it to hear even very soft sounds They also help the elephant to keep cool in the hot and humid climate of the rainforest Winds Storms and Cyclones Orissa was hit by a cyclone with wind speed of km h on October The cyclone smashed houses making people homeless On October the same year a second cyclone with wind speed of km h hit Orissa again It was accompanied by water waves about m high Thousands of people lost their lives Property worth crores of rupees was destroyed The cyclone affected agriculture transport communication and electricity supply But what are cyclones How are they formed Why are they so destructive In this we shall seek answers to some of these questions We begin with some activities involving air These activities will clarify some basic features concerning a cyclone Before we begin remember that the moving air is called the wind AIR EXERTS PRESSURE Activity Whenever an activity involves heating be very careful It is advised that such activities are per for med in the presence of an elderly person from your family Or carry out these activities in the presence of your teacher Image taken by a satellite of a cyclone approaching the coast of Orissa Courtesy India Meteorological Department New Delhi You need to boil water in the following activity Take a tin can with a lid Fill it approximately half with water Heat the can on a candle flame till the water boils Let the water boil for a few minutes Blow out the candle Immediately put the lid tightly on the can Be careful in handling the hot can Put the can carefully in a shallow metallic vessel or a washbasin Pour fresh water over the can What happens to the shape of the can SCIENCE Can with hot water being cooled Can you guess why the shape of the can gets distorted If you cannot get a tin can take a soft plastic bottle Fill it with hot water Empty the bottle and immediately cap it tightly Place the bottle under running water Recall now some of your experiences When you fly a kite does the wind coming from your back help If you are in a boat is it easier to row it if there is wind coming from behind you Do you find it difficult to ride a bicycle against the direction of the wind You know that we have to fill air into the bicycle tube to keep it tight Also you know that a bicycle tube overfilled with air may burst What is the air doing inside the tube Discuss with your friends how the air in the bicycle tube keeps it in shape All these experiences show that the air exerts pressure It is due to this pressure that the leaves of trees banners or flags flutter when the wind is blowing You can list some more experiences which show that the air has pressure Let us now try to explain why the can or the bottle gets distorted As water is poured over the can some steam in the can condenses into water reducing the amount of air inside The pressure of air inside the can decreases than the pressure exerted by the air from outside the can As a result the can gets compressed This activity again confirms that air exerts pressure HIGH SPEED WINDS ARE ACCOMPANIED BY REDUCED AIR PRESSURE Activity Blowing into the bottle Crumple a small piece of paper into a ball of size smaller than the mouth of an empty bottle Hold the empty bottle on its side and place the paper ball just inside its mouth Now try to blow on the ball to force it into the bottle Try the activity with bottles of different sizes Challenge your friends if they can force the paper ball in by blowing into the bottle Paheli and Boojho are thinking about the following question Why is it difficult to force the paper ball into the bottle Paheli thinks that the strip will be lifted up Boojho thinks that the strip will bend down Activity Blow the balloons Take two balloons of approximately equal size Put a little water into the balloons Blow up both the balloons and tie each one to a string Hang the balloons cm apart on a cycle spoke or a stick Blow in the space between the balloons What did you expect What happens Try different ways of blowing on the balloons to see what happens Can you blow and lift Hold a strip of paper cm long and cm wide between your thumb and forefinger as shown in the Now blow over the paper What do you think will happen to the paper Let us try to understand the observations in Activities and Were the observations along the lines you thought Do you get the feeling that the increased wind speed is accompanied by a reduced air pressure When we blow into the mouth of the bottle the air near the mouth has higher speed This decreases the pressure there The air pressure inside the bottle is higher than near the mouth The air inside the bottle pushes the ball out In Activity you saw that when you blew between the balloons they moved towards each other How could this happen This could happen if the pressure of air between the balloons were somehow reduced The pressure outside the balloons would then push them towards each other In Activity you saw that when you blew over the paper strip it went upwards Again this could happen if blowing over the paper reduced the air pressure above the strip We see that the increased wind speed is indeed accompanied by a reduced air pressure Can you imagine what would happen if high-speed winds blew over the roofs of buildings If the roofs were weak they could be lifted and blown away If you have any such experience share it with your friends Let us try to understand how winds are produced how they bring rain and how they can be destructive sometimes You already know that when air moves it is called wind Air moves from the region where the air pressure is high to the region where the pressure is low The greater the difference in pressure the faster the air moves But how are the pressure differences created in nature Is the difference in temperature involved The following activities will help you to understand this AIR EXPANDS ON HEATING Activity Take a boiling tube Stretch a balloon tightly over the neck of the tube You can use a tape to make it tight Pour some hot water in a beaker Insert the boiling tube with the balloon in the hot water Observe for minutes for any change in shape of the balloon Take the tube out let it cool down to the room temperature Take some ice-cold water in another beaker and place the tube with the balloon in cold water for minutes Observe the change in the shape of the balloon Think and try to answer What makes the balloon inflated when the boiling tube is placed in hot water Why is the same balloon deflated when the tube is kept in cold water Can we infer from the first observation that air expands on heating Can you now state what happens to the air in the boiling tube when it cools down The next activity is very interesting This will make you understand more about hot air Does this activity indicate that warm air rises up As the warm air rises up it pushes the bag above the candle Does the disturbance of the balance suggest that the warm air is lighter than the cold air Can you now explain why smoke always rises up Also it is important to remember that on heating the air expands and occupies more space When the same thing occupies more space it becomes lighter The warm air is therefore lighter than the cold air That is the reason that the smoke goes up In nature there are several situations where warm air rises at a place The air pressure at that place is lowered The cold air from the surrounding areas rushes in to fill its place This sets up convection in air as you learnt in WIND CURRENTS ARE GENERATED DUE TO UNEVEN HEATING ON THE EARTH These situations are Hot air rising up a Uneven heating between the equator and the poles You might have learnt in Geography that regions close to the equator get maximum heat from the Sun The air in these regions gets warm The warm air rises and the cooler air from the regions in the degrees latitude belt on either side of the equator moves in These winds blow from the north and the south towards the equator At the poles the air is colder than that at latitudes about degrees The warm air at these latitudes rises up and the cold wind from the polar regions rushes in to take its place In this way wind circulation is set up from the poles to the warmer latitudes as shown in Uneven heating of land and water You have read about the sea breeze and the land breeze in In summer near the equator the land warms up faster and most of the time the temperature of the land is higher than that of water in the oceans The air over the land gets heated and rises This causes the winds to flow from the oceans towards the land These are monsoon winds The word monsoon is derived from the Arabic word ‘mausam’ which means ‘season’ In winter the direction of the wind flow gets reversed it flows from the land to the ocean I want to know what these winds do for us The wind flow pattern because of uneven heating on the earth I wonder why the winds shown in the figure are not in the exact north-south direction The winds would have flown in the north-south direction from north to south or from south to north A change in direction is however caused by the rotation of the earth The winds from the oceans carry water and bring rain It is a part of the water cycle The monsoon winds carry water and it rains Clouds bring rain and give us happiness Farmers in our country depend mainly on rains for their harvests There are many folk songs associated with clouds and rain Sing and enjoy with your friends if you know such a song Here is one for you WINDS STORMS AND CYCLONES Roaring clouds across the sky Tell us that monsoon’s here Dark and floating clouds then pour Raindrops every where Clouds make lightning flash overhead And irrigate fields with rain Clouds make earth its fragrance spread When wet with drops of rain Rising from the ocean vast Clouds fill up with rain Rain to ocean back at last To mingle with ocean again However it is not always a happy ending Rains often create problems Can you list some of the problems You can discuss the causes and solutions of the problems with your teacher and parents In nature itself there are certain situations that can sometimes create disasters and pose threat to humans animals and plant life Let’s study two such situations thunderstorms and cyclones Uneven heating of land especially the Rajasthan desert generates monsoon winds from southwest direction in summer These winds carry lots of water from the Indian Ocean Uneven heating of land and water in winter generate winds from the northwest colder land These colder winds carry little water hence bring small amount of rain in winter Courtesy India Meteorological Department New Delhi SCIENCE THUNDERSTORMS AND CYCLONES Structure of a cyclone Thunderstorms develop in hot humid tropical areas like India very frequently The rising temperatures produce strong upward rising winds These winds carry water droplets upwards where they freeze and fall down again The swift movement of the falling water droplets along with the rising air create lightning and sound It is this event that we call a thunderstorm You will read about lightning in higher classes The centre of a cyclone is a calm area It is called the eye of the storm A large cyclone is a violently rotating mass of air in the atmosphere to km high The diameter of the eye varies from to km It is a region free of clouds and has light winds Around this calm and clear eye there is a cloud region of about km in size In this region there are high-speed winds km h and thick clouds with heavy rain Away from this region the wind speed gradually decreases The formation of a cyclone is a very complex process A model is shown in If a storm is accompanied by lightning we must take the following precautions § Do not take shelter under an isolated tree If you are in a forest take shelter under a small tree Do not lie on the ground § Do not take shelter under an umbrella with a metallic end § Do not sit near a window Open garages storage sheds metal sheds are not safe places to take shelter § A car or a bus is a safe place to take shelter § If you are in water get out and go inside a building How a thunderstorm becomes a cyclone You know that water requires heat when it changes from liquid to vapour state Does the water give back heat when vapour condenses into liquid Can you recall any experience to support this Before cloud formation water takes up heat from the atmosphere to change into vapour When water vapour changes back to liquid form as raindrops this heat is released to the atmosphere The heat released to the atmosphere warms the air around The air tends to rise and causes a drop in pressure More air rushes to the centre of the storm This cycle is repeated The chain of events ends with the formation of a very low-pressure system with very high-speed winds revolving around it It is this weather condition that we call a cyclone Factors like wind speed wind direction temperature and humidity contribute to the development of cyclones WINDS STORMS AND CYCLONES The image of the ‘eye’ of a cyclone Rising water caused by a cyclone Formation of a cyclone Courtesy India Meteorological Department New Delhi DESTRUCTION CAUSED BY CYCLONES Cyclones can be very destructive Strong winds push water towards the shore even if the storm is hundreds of kilometres away These are the first indications of an approaching cyclone The water waves produced by the wind are so powerful that a person cannot overcome them The low pressure in the eye lifts water surface in the centre The rising water may be as high as metres It appears like a water-wall moving towards the shore As a result the seawater enters the low-lying coastal areas causing severe loss of life and property It also reduces the fertility of the soil Continuous heavy rainfall may further worsen the flood situation High-speed winds accompanying a cyclone can damage houses telephones and other communication systems trees etc causing tremendous loss of life and property SCIENCE A cyclone is known by different names in different parts of the world It is called a ‘hurricane’ in the American continent In Philippines and Japan it is called a ‘typhoon’ Regions near the equator where cyclones form Cyclones are worldwide phenomena The diameter of a tornado can be as small as a metre and as large as a km or even wider The funnel of a tornado sucks dust Protecting debris and everything from a tornado near it at the base due to low pressure and throws them out near the top Here are a few accounts of the survivors of tornados from Discovery channel’s Young Discovery Series I saw the cloud coming and tried to take shelter inside But as soon as I reached for the doorknob the house took off into the sky I was not hurt at all After the storm we had to clean the debris from the wheat fields We picked up splintered boards and tree branches as well as dead chickens with their feathers blown off and rabbits looked like they had been skinned A tornado shelter is a room situated deep inside or underground having no windows Or otherwise it is better to shut windows and take shelter under a table workbench where debris cannot reach One has to bow down on knees protecting head and neck using arms WINDS STORMS AND CYCLONES Cyclone Hurricane North Atlantic Ocean Indian Ocean Tornadoes In our country they are not very frequent A tornado is a dark funnel shaped cloud that reaches from the sky to the ground Most of the tornadoes are weak A violent tornado can travel at speeds of about km h Tornadoes may form within cyclones The whole coastline of India is vulnerable to cyclones particularly the east coast The west coast of India is less vulnerable to cyclonic storms both in terms of intensity and frequency of the cyclones EFFECTIVE SAFETY MEASURES § § A cyclone forecast and warning service Rapid communication of warnings to the § Construction of cyclone shelters in the cyclone prone areas and Administrative arrangements for moving people fast to safer places Action on the part of the people We should not ignore the warnings issued by the meteorological department through TV radio or newspapers § We should make necessary arrangements to shift the essential household goods domestic animals and vehicles etc to safer places avoid driving on roads through standing water as floods may have damaged the roads and keep ready the phone numbers of all emergency services like police fire brigade and medical centres Some other precautions if you are staying in a cyclone hit area § Do not drink water that could be contaminated Always store drinking water for emergencies § Do not touch wet switches and fallen power lines § Do not go out just for the sake of fun § Do not pressurise the rescue force by making undue demands § Cooperate and help your neighbours and friends § Image of a tornado National Severe Storm Laboratory NSSL Courtesy India Meteorological Department New Delhi We have learnt that all storms are low pressure systems Wind speed plays an important role in the formation of storms It is therefore important to measure the wind speed The instrument that measures the wind speed is called an anemometer An anemometer for measuring the speed of wind Courtesy India Meteorological Department New Delhi Government agencies the ports fishermen ships and to the general public ADVANCED TECHNOLOGY HAS HELPED These days we are better protected In the early part of the last century coastal residents may have had less than a day to prepare or evacuate their homes from an oncoming cyclone The world today is very different Thanks to satellites and radars a Cyclone alert or Cyclone watch is issued hours in advance of any expected storm and a Cyclone warning is issued hrs in advance The message is broadcast every hour or half hour when a cyclone is nearer the coast Several national and international organisations cooperate to monitor the cyclone-related disasters Soil Soil is one of the most important natural resources It provides anchorage to the plants and supplies water and nutrients It is the home for many organisms Soil is essential for agriculture Agriculture provides food clothing and shelter for all Soil is thus an inseparable part of our life The earthy fragrance of soil after the first rain is always refreshing Children playing with soil SOIL TEEMING WITH LIFE One day during the rainy season Paheli and Boojho observed an earthworm coming out of the soil Paheli wondered whether there were other organisms also in the soil Let us find out Activity Collect some soil samples and observe them carefully You can use a hand lens Examine each sample carefully and fill in Table § Discuss your observations with your friends § Are the soil samples collected by your friends similar to the ones collected by you Boojho and Paheli have used soil in many ways They enjoy playing with it It is a great fun indeed Make a list of the uses of soil I wonder why I found some pieces of plastic articles and polythene bags in the soil sample collected from the roadside and the garden Polythene bags and plastics pollute the soil They also kill the organisms living in the soil That is why there is a demand to ban the polythene bags and plastics Other substances which pollute the soil are a number of waste products chemicals and pesticides Waste products and chemicals should be treated before they are released into the soil The use of pesticides should be minimised Layers of soil Do you see layers of particles of different sizes in the glass tumbler § Draw a diagram showing these layers § Are there some dead rotting leaves or animal remains floating on water The rotting dead matter in the soil is called humus You probably know that the soil is formed by the breaking down of rocks by the action of wind water and climate This process is called weathering The nature of any soil depends upon the rocks from which it has been formed and the type of vegetation that grows in it A vertical section through different layers of the soil is called the soil profile SOIL PROFILE Soil is composed of distinct layers Perform the following activity to find out how these layers are arranged Soil profile We usually see the top surface of the soil not the layers below it If we look at the sides of a recently dug ditch we can see the inner layers of the soil too Such a view enables us to observe the soil profile at that place Soil profile can also be seen while digging a well or laying the foundation of a building It can also be seen at the sides of a road on a hill or at a steep river bank The uppermost horizon is generally dark in colour as it is rich in humus and minerals The humus makes the soil fertile and provides nutrients to growing plants This layer is generally soft porous and can retain more water It is called the topsoil or the A-horizon This provides shelter for many living organisms such as worms rodents moles and beetles The roots of small plants are embedded entirely in the topsoil The next layer has a lesser amount of humus but more of minerals This layer is generally harder and more compact and is called the B-horizon or the middle layer The third layer is the C-horizon which is made up of small lumps of rocks with cracks and crevices Below this layer is the bedrock which is hard and difficult to dig with a spade SOIL TYPES As you know weathering of rocks produces small particles of various materials These include sand and clay The relative amount of sand and clay depends upon the rock from which the particles were formed that is the parent rock The mixture of rock particles and humus is called the soil Living organisms such as bacteria plant roots and earthworm are also important parts of any soil The soil is classified on the basis of the proportion of particles of various sizes If soil contains greater proportion of big particles it is called sandy soil If the proportion of fine particles is relatively higher then it is called clayey soil If the amount of large and fine particles is about the same then the soil is called loamy Thus the soil can be classified as sandy clayey and loamy The size of the particles in a soil has an influence on its properties Sand particles are quite large They cannot fit close together so there are large spaces between them These spaces are filled with air We say that the sand is well aerated Water can drain quickly through the spaces between the sand particles So sandy soils tend to be light well aerated and rather dry Clay particles being much smaller pack tightly together leaving little space for air Unlike sandy soil water can be held in the tiny gaps between the particles of clay So clayey soils have less air But they are heavy as they hold more water than the sandy soils The best topsoil for growing plants is loam Loamy soil is a mixture of sand clay and another type of soil particle known as silt Silt occurs as a deposit in riverbeds The size of the silt particles is between those of sand and clay The loamy soil also has humus in it It has the right water holding capacity for the growth of plants I want to know What kind of soil should be used for making earthen pots matkas and surahis Activity Collect samples of clayey loamy and sandy soils Take a fistful of soil from one of the samples Remove any pebbles rocks or grass blades from it Now add water drop-by-drop and knead the soil a Add just enough water so that a ball can be made from it but at the same time it should not be sticky Try to make a ball c from this soil On a flat surface roll this ball into a cylinder Try to make a ring from this cylinder e Repeat this activity with other samples also Does the extent to which a soil can be shaped indicate its type Can you suggest which type of soil would be the best for making pots toys and statues PROPERTIES OF SOIL You have listed some uses of soil Let us perform some activities to find the characteristics of the soil Percolation rate of water in soil Boojho and Paheli marked two different squares of cm × cm each one on the floor of their house and the other on the kutcha unpaved road They filled two bottles of the same size with water They emptied the water from the bottles one each at the same time in the two squares They observed that the water on the floor flowed down and was not absorbed On the kutcha road on the other hand the water was absorbed Now let us perform an activity to understand this For this activity divide yourself into three teams Name the teams A and C You will be finding out how fast the water passes down the soil You will need a hollow cylinder or a pipe Ensure that each team uses pipes of the same diameter Some suggestions for obtaining such a pipe are given below If possible get a small tin can and cut off its bottom If PVC pipe approx diameter cm is available cut it into cm long pieces and use them At the place where you collect the soil place the pipe about cm deep in the ground Pour mL water in the pipe slowly For measuring mL water you can use any empty mL bottle Note the time when you start pouring water When all the water has percolated leaving the pipe empty note the time again Be careful not to let the water spill over or run down on the outside of the pipe while pouring Calculate the rate of percolation by using the following formula Calculate the rate of percolation in your soil sample Compare your findings with others and arrange the soil samples in the increasing order of the rate of percolation MOISTURE IN SOIL Have you ever passed through a farmland during a hot summer day Perhaps you noticed that the air above the land is shimmering Why is it so Try out this activity and find the answer Activity Removing moisture from the soil ABSORPTION OF WATER BY SOIL Do all the soils absorb water to the same extent Let us find out Activity Take a boiling tube Put two spoonfulls of a soil sample in it Heat it on a flame and observe it Let us find out what happens upon heating Do you see water drops any where If yes where did you find them On heating water in the soil evaporates moves up and condenses on the cooler inner walls of the upper part of the boiling tube On a hot summer day the vapour coming out of the soil reflect the sunlight and the air above the soil seems to shimmer After heating the soil take it out of the tube Compare it with the soil which has not been heated Note the difference between the two Take a plastic funnel Take a filter paper or a piece of newspaper sheet fold and place it as shown in the figure Weigh g of dry powdered soil and pour it into the funnel Measure a certain amount of water in a measuring cylinder and pour it drop by drop on the soil You can use a dropper for this purpose Do not let all the water fall at one spot Pour water all over the soil Keep pouring water till it starts dripping percentage of water absorbed Dropper Filter paper Funnel Beaker Absorption of water in the soil Subtract the amount of water left in the measuring cylinder from the amount you started with This is the amount of water retained by the soil Record your results in your notebook in the following manner Weight of soil g Initial volume of water in the measuring cylinder U mL Final volume of water in the measuring cylinder mL Volume of water absorbed by the soil U mL Weight of water absorbed by the soil U g mL of water has weight equal to g U Repeat this activity with different soil samples Would you get the same results for all the samples Discuss the results with your friends and answer the following question § Which soil would have the highest percolation rate § Which soil would have the lowest percolation rate § Boojho heard from his neighbour that days after the rain the level of water in a pond or well rises Which type of soil will allow water to reach a well faster and in greater amount § Which type of soil retains the highest amount of water and which retains the least § Can you suggest any method to let more rain water percolate and reach the water underground SOIL AND CROPS Different types of soils are found in different parts of India In some parts there is clayey soil in some parts there is loamy soil while in some other parts there is sandy soil Soil is affected by wind rainfall temperature light and humidity These are some important climatic factors which affect the soil profile and bring changes in the soil structure The climatic factors as well as the components of soil determine the various types of vegetation and crops that might grow in any region Clayey and loamy soils are both suitable for growing cereals like wheat and gram Such soils are good at retaining water For paddy soils rich in clay and organic matter and having a good capacity to retain water are ideal For lentils masoor and other pulses loamy soils which drain water easily are required For cotton sandy loam or loam which drain water easily and can hold plenty of air are more suitable Crops such as wheat are grown in the fine clayey soils because they are rich in humus and are very fertile Find from your teachers parents and farmers the type of soils and crops grown in your area Enter the data in the following Table Which kind of soil would be most suitable for planting rice Soil with a higher or lower rate of percolation Gram g and kilogram kg are actually units of mass A mass of gram weighs gram weight and a mass of kilogram weighs kilogram weight However in daily life and in commerce and industry the distinction between gram and gram weight is generally omitted A case study John Rashida and Radha went to Leeladhar Dada and Sontosh Malviya of Sohagpur in Madhya Pradesh Leeladhar Dada was preparing the soil to make items like surahi matki kalla earthen frying pan etc The following is the conversation they all had with Leeladhar Dada Where was the soil obtained from Dada We brought the black soil from a piece of barren land How is the soil prepared Dada Dry soil will be placed in a large tank and would be cleaned of pebbles etc After removing these things the soil will be soaked for around hours This soil would be kneaded after mixing horse dung The kneaded soil would be placed on the wheel and given appropriate shape The final shape is given with hands The items are coloured after three days of drying All the items are baked at high temperature after drying in the air Why is the horse dung mixed in soil Dada Burnt horse dung helps open up the pores in the soil So that water could percolate out of the matkas and surahis evaporate and cools the water inside You know Sohagpuri surahis and matkas are famous in far off places like Jabalpur Nagpur Prayagaraj erstwhile Allahabad etc What is the difference between rate of percolation and the amount of water retained Boojho you seem to have forgotten what you read earlier Go and reread the lesson again and you will find the answer Respiration in Organisms One day Boojho was eagerly waiting to meet his grandparents who were coming to the town after a year He was in a real hurry as he wanted to receive them at the bus-stop He ran fast and reached the bus-stop in a few minutes He was breathing rapidly His grandmother asked him why he was breathing so fast Boojho told her that he came running all the way But the question got stuck in his mind He wondered why running makes a person breathe faster The answer to Boojho’s question lies in understanding why we breathe Breathing is a part of respiration Let us learn about respiration WHY DO WE RESPIRE In you learnt that all organisms are made of small microscopic units called cells A cell is the smallest structural and functional unit of an organism Each cell of an organism performs certain functions such as nutrition transport excretion and reproduction To perform these functions the cell needs energy Even when we are eating sleeping or reading we require energy But where does this energy come from Can you say why your parents insist that you should eat regularly The food has stored energy which is released during respiration Therefore all living organisms respire to get energy from food During breathing we breathe in air You know that air contains oxygen We breathe out air which is rich in carbon dioxide The air we breathe in is transported to all parts of the body and ultimately to each cell In the cells oxygen in the air helps in the breakdown of food The process of breakdown of food in the cell with the release of energy is called cellular respiration Cellular respiration takes place in the cells of all organisms In the cell the food glucose is broken down into carbon dioxide and water using oxygen When breakdown of glucose occurs with the use of oxygen it is called aerobic respiration Food can also be broken down without using oxygen This is called anaerobic respiration Breakdown of food releases energy You should know that there are some organisms such as yeast that can survive in the absence of air They are called anaerobes They get energy through anaerobic respiration In the absence of oxygen glucose breaks down into alcohol and carbon dioxide as given below SCIENCE Yeasts are single-celled organisms They respire anaerobically and during this process yield alcohol They are therefore used to make wine and beer Our muscle cells can also respire anaerobically but only for a short time when there is a temporary deficiency of oxygen During heavy exercise fast running cycling walking for many hours or heavy weight lifting the demand for energy is high But the supply of oxygen to produce the energy is limited Then anaerobic respiration takes places in the muscle cells to fulfil the demand of energy Have you ever wondered why you get muscle cramps after heavy exercise The cramps occur when muscle cells respire anaerobically The partial breakdown of glucose produces lactic acid The accumulation of lactic acid causes muscle cramps We get relief from cramps after a hot water bath or a massage Can you guess why it is so Hot water bath or massage improves circulation of blood As a result the supply of oxygen to the muscle cells increases The increase in the supply of oxygen results in the complete breakdown of lactic acid into carbon dioxide and water BREATHING Activity Do this activity under the supervision of your teacher During exercise some muscles may respire anaerobically RESPIRATION IN ORGANISMS Close your nostrils and mouth tightly and look at a watch What did you feel after some time How long were you able to keep both of them closed Note down the time for which you could hold your breath So now you know that you cannot survive for long without breathing Breathing means taking in air rich in oxygen and giving out air rich in carbon dioxide with the help of respiratory organs The taking in of air rich in oxygen into the body is called inhalation and giving out of air rich in carbon dioxide is known as exhalation It is a continuous process which goes on all the time and throughout the life of an organism The number of times a person breathes in a minute is termed as the breathing rate During breathing inhalation and exhalation take place alternately A breath means one inhalation plus one exhalation Would Holding breath Boojho noticed that when he released his breath after holding it for some time he had to breathe heavily Can you tell him why it was so you like to find out your breathing rate Do you want to know whether it is constant or it changes according to the requirement of oxygen by the body Let us find out by doing the following activity Activity Generally we are not aware that we are breathing However if you try you can count your rate of breathing Breathe in and out normally Find out how many times you breathe in and breathe out in a minute Did you inhale the same number of times as you exhaled Now count your breathing rate number of breaths minute after brisk walk and after running Record your breathing rate as soon as you finish and also after complete rest Tabulate your findings and compare your breathing rates under different conditions with those of your classmates From the above activity you must have realised that whenever a person needs extra energy he she breathes faster Table Changes in breathing rate under different conditions Name of the classmate Normal Breathing rate After a brisk After running walk for fast m At rest minutes Self SCIENCE On an average an adult human being at rest breathes in and out times in a minute During heavy exercise the breathing rate can increase upto times per minute While we exercise not only do we breathe fast we also take deep breaths and thus inhale more oxygen supplied to our cells It speeds up the breakdown of food and more energy is released Does this explain w h y do w e f e e l h u n g r y a f t e r a physical activity When you feel drowsy does your breathing rate slow down Does your body receive sufficient oxygen Activity Figure shows the various activities carried out by a person during a normal day Can you say in which activity the rate of breathing will be the slowest and in which it will be the fastest Assign numbers to the pictures in the order of increasing rate of breathing according to your experience Variation in the breathing rate during different activities RESPIRATION IN ORGANISMS Paheli wants to know why we yawn when we are sleepy or drowsy HOW DO WE BREATHE Let us now learn about the mechanism of breathing Normally we take in air through our nostrils When we inhale air it passes through our nostrils into the nasal cavity From the nasal cavity the air reaches our lungs through the windpipe Lungs are present in the chest cavity This cavity is surrounded by ribs on the sides A large muscular sheet called diaphragm forms the floor of the chest cavity Breathing involves the movement of the diaphragm and the rib cage During inhalation ribs move up and outwards and diaphragm moves down This movement increases space in our chest cavity and air rushes into the lungs The lungs get filled with air During exhalation ribs move down and inwards while diaphragm moves up to its former position This reduces the size of the chest cavity and air is pushed out of the lungs These movements in our body can be felt easily Take a deep breath Keep your palm on the abdomen feel the movement of abdomen What do you find After having learnt that during breathing there are changes in the size of the chest cavity children got involved in the chest expansion competition Smoking damages lungs Smoking is also linked to cancer It must be avoided Everyone was boasting that she he could expand it the maximum How about doing this activity in the class with your classmates Fig Human respiratory system The air around us has various types of unwanted particles such as smoke dust pollens etc When we inhale the particles get trapped in the hair present in our nasal cavity However sometimes these particles may get past the hair in the nasal cavity This may irritate the lining of the cavity as a result of which we sneeze Sneezing expels these foreign particles from the inhaled air and a dust free clean air enters our body TAKE CARE When you sneeze you should cover your nose so that the foreign particles you expel are not inhaled by other persons Take a deep breath Measure the size of the chest with a measuring tape and record your observations in Table Measure the size of the chest again when expanded and indicate which classmate shows the maximum expansion of the chest We can understand the mechanism of breathing by a simple model Take a wide plastic bottle Remove the bottom Get a Y-shaped glass or plastic tube Make a hole in the lid so that the tube may pass through it To the forked end of the tube fix two deflated balloons Introduce the tube into the bottle as shown in Now cap the bottle Seal it to make it airtight To the open base of the bottle tie a thin rubber or plastic sheet using a large rubber band Air is drawn in Air forced out Ribs move back Ribs move out Diaphragm moves down a Inhalation Diaphragm moves back Exhalation Mechanism of breathing in human beings Table Effect of breathing on the chest size of some classmates Name of the classmate RESPIRATION IN ORGANISMS Size of the chest cm During inhalation During exhalation Difference in size Measuring chest size To understand the expansion of the lungs pull the rubber sheet from the base downwards and watch the balloons Next push the rubber plastic sheet up and observe the balloons Did you see any changes in the balloons What do the balloons in this model represent What does the rubber sheet represent Now you should be able to explain the mechanism of breathing the hole in the lid in such a way that it dips in lime water Now blow gently through the straw a few times Is there a change in the appearance of lime water Can you explain this change on the basis of what you learnt in You are aware that air we inhale or exhale is a mixture of gases What do we exhale Do we exhale only carbon dioxide or a mixture of gases along with it You must have also observed that if you exhale on a mirror a film of moisture appears on its surface From where do these droplets come Boojho wants to know how much air a person can hold in the lungs WHAT DO WE BREATHE OUT Activity Take a slender clean test tube or a glass plastic bottle Make a hole in its lid and fix it on the bottle Pour some freshly prepared lime water in the test-tube Insert a plastic straw through Balloons Ruber sheet Fig Model to show mechanism of breathing Breathe for Better Life Regular traditional breathing exercise pranayama can increase the capacity of lungs to take in more air Thus more oxygen can be supplied to the body cells resulting in release of more energy SCIENCE Boojho wants to know if cockroaches snails fish earthworms ants and mosquitoes also have lungs Straw Lime water Fig Effect of exhaled air on lime water The percentage of oxygen and carbon dioxide in inhaled and exhaled air Inhaled air Exhaled air These openings are called spiracles Insects have a network of air tubes called tracheae for gas exchange Oxygen rich air rushes through spiracles into the tracheal tubes diffuses into the body tissue and reaches every cell of the body Similarly carbon dioxide from the cells goes into the tracheal tubes and moves out through spiracles These air tubes or tracheae are found only in insects and not in any other group of animals BREATHING IN OTHER ANIMALS Animals such as elephants lions cows goats frogs lizards snakes birds have lungs in their chest cavities like the human beings How do other organisms breathe Do they also have lungs like those of human beings Let us find out Cockroach A cockroach has small openings on the sides of its body Other insects also have similar openings RESPIRATION IN ORGANISMS Fig Tracheal system Earthworm Recall from of Class that earthworms breathe through their skins The skin of an earthworm feels moist and slimy on touching Gases can easily pass through them Though frogs have a pair of lungs like human beings they can also breathe through their skin which is moist and slippery Boojho has seen in television programmes that whales and dolphins often come up to the water surface They even release a fountain of water sometimes while moving upwards Why do they do so BREATHING UNDER WATER Can we breathe and survive in water There are many organisms which live in water How do they breathe under water You have studied in Class that gills in fish help them to use oxygen dissolved in water Gills are projections of the skin You may wonder how gills help in breathing Gills are well supplied with blood vessels for exchange of gases Gills DO PLANTS ALSO RESPIRE Like other living organisms plants also respire for their survival as you have learnt in Class VI They also take in oxygen from the air and give out carbon dioxide In the cells oxygen is used to break down glucose into carbon dioxide and water as in other organisms In plants each part can independently take in oxygen from the air and give out carbon dioxide You have already learnt in that the leaves of the plants have tiny pores called stomata for exchange of oxygen and carbon dioxide Paheli wants to know whether roots which are underground also take in oxygen If so how Like all other living cells of the plants the root cells also need oxygen to generate energy Roots take up air from the air spaces present between the soil particles Soil particles Root hair Breathing organs in fish Roots absorb air from the soil SCIENCE Can you guess what would happen if a potted plant is overwatered In this you learnt that respiration is a vital biological process All living organisms need to respire to get the energy needed for their survival Transportation in Animals and Plants You have learnt earlier that all organisms need food water and oxygen for survival They need to transport all these to various parts of their body Further animals need to transport wastes to parts from where they can be removed Have you wondered how all this is achieved Look at Do you see the heart and the blood vessels They function to transport substances and together form the circulatory system In this you shall learn about transport of substances in animals and plants Heart Vein Artery CIRCULATORY SYSTEM Blood What happens when you get a cut on your body Blood flows out But what is blood Blood is the fluid which flows in blood vessels It transports substances like digested food from the small intestine to the other parts of the body It carries oxygen from the lungs to the cells of the body It also transports waste for removal from the body How does the blood carry various substances Blood is composed of a fluid called plasma in which different types of cells are suspended Why is the colour of blood red One type of cells are the red blood cells RBC which contain a red pigment called haemoglobin Haemoglobin binds with oxygen and transports it to all the parts of the body and ultimately to all the cells It will be difficult to provide oxygen efficiently to all the cells of the body without haemoglobin The presence of haemoglobin makes blood appear red The blood also has white blood cells WBC which fight against germs that may enter our body Boojho fell down while playing a game and his knee got injured Blood was coming out from the cut After some time he noticed that bleeding had stopped and a dark red clot had plugged the cut Boojho was puzzled about this The clot is formed because of the presence of another type of cells in the blood called platelets Blood vessels There are different types of blood vessels in the body You know that during inhalation a fresh supply of oxygen fills the lungs Oxygen has to be transported to the rest of the body Also the blood picks up the waste materials including carbon dioxide from the cells This blood has to go back to the heart for transport to the lungs for removal of carbon dioxide as you have learnt in So two types of blood vessels arteries and veins are present in the body Arteries carry oxygen-rich blood from the heart to all parts of the body Since the blood flow is rapid and at a high pressure the arteries have thick elastic walls Let us perform an activity to study the flow of blood through arteries Activity Place the middle and index finger of your right hand on the inner side of your left wrist Can you feel some throbbing movements Why do you think there is throbbing This throbbing is called the pulse and it is due to the blood flowing in the arteries Count the number of pulse beats in one minute How many pulse beats could you count The number of beats per minute is called the pulse rate A resting person usually has a pulse rate between and beats per minute Find other places in your body where you can feel the pulse Record your own pulse beats per minute and those of your classmates Insert the values you obtained in Table and compare them I am confused I have learnt that an artery always carries oxygen-rich blood Paheli explained that the pulmonary artery carries blood from the heart so it is called an artery and not a vein It carries carbon dioxide-rich blood to the lungs Pulmonary vein carries oxygen-rich blood from the lungs to the heart Veins are the vessels which carry carbon dioxide-rich blood from all parts of the body back to the heart The veins have thin walls There are valves present in veins which allow blood to flow only towards the heart Blood Donation Hundreds of people die due to unavailability of blood Voluntary blood donation is harmless and painless and can save precious lives Blood can be donated at hospitals and other places authorised by the government Donated blood are stored with special care in Blood Banks Refer to Do you see the arteries divide into smaller vessels On reaching the tissues they divide further into extremely thin tubes called capillaries The capillaries join to form veins which empty into the heart Heart The heart is an organ which beats continuously to act as a pump for the transport of blood which carries other substances with it Imagine a pump working for years without stopping Absolutely impossible Yet our heart works like a pump non-stop Let us now learn about the heart The heart is located in the chest cavity with its lower tip slightly tilted towards the left Hold your fingers inwards on your palm That makes your fist Your heart is roughly the size of your fist What will happen if the blood rich in oxygen and the blood rich in carbon dioxide mix with each other To avoid this from happening the heart has four chambers The two upper chambers are called the atria singular atrium and the two lower chambers are called the ventricles The partition between the chambers helps to avoid mixing up of blood rich in oxygen with the blood rich in carbon dioxide To understand the functioning of the circulatory system start from the right side of the heart in and follow the arrows These arrows show the direction of the blood flow from the heart to the lungs and back to the heart from where it is pumped to the rest of the body Heartbeat The walls of the chambers of the heart are made up of muscles These muscles contract and relax rhythmically This rhythmic contraction followed by its relaxation constitute a heartbeat Remember that heartbeats continue every moment of our life If you place your hand on the left side of your chest you can feel your heartbeat The doctor feels your heartbeats with the help of an instrument called a stethoscope A doctor uses the stethoscope as a device to amplify the sound of the heart It consists of a chest piece that carries a sensitive diaphragm two ear pieces and a tube joining the parts Doctors can get clues about the condition of your heart by listening through a stethoscope Let us construct a model of a stethoscope with the materials that are available around us Activity Take a small funnel of cm in diameter Fix a rubber tube cm long tightly on the stem of the funnel Stretch a rubber sheet or a balloon on the mouth of the funnel and fix it tightly with a rubber band Put the open end of the tube on one of your ears Place the mouth of the funnel on your chest near the heart Now try to listen carefully Do you hear a regular thumping sound The sound is that of heart beats How many times did your heart beat in a minute Count again after running for minutes Compare your observations Record your own pulse rate and heart beat and that of your friends while resting and after running and record in Table Do you find any relationship between your heart beat and pulse rate Each heart beat generates one pulse in the arteries and the pulse rate per minute indicates the rate of heart beat The rhythmic beating of the various chambers of the heart maintain circulation of blood and transport of substances to the different parts of the body Boojho wonders if sponges and hydra also have blood Animals such as sponges and Hydra do not possess any circulatory system The water in which they live brings food and oxygen The English physician William Harvey A discovered the circulation of blood The current opinion in those days was that blood oscillates in the vessels of the body For his views Harvey was ridiculed and was called circulator He lost most of his patients However before he died Harvey’s idea about circulation was generally accepted as a biological fact The water carries away waste materials and carbon dioxide as it moves out Thus these animals do not need a circulatory fluid like the blood Let us now learn about the removal of waste other than carbon dioxide EXCRETION IN ANIMALS Recall how carbon dioxide is removed as waste from the body through the lungs during exhalation Also recall that the undigested food is removed during egestion Let us now find out how the other waste materials are removed from the body You may wonder where these unwanted materials come from When our cells perform their functions certain waste products are released These are toxic and hence need to be removed from the body The process of removal of wastes produced in the cells of the living organisms is called excretion The parts involved in excretion form the excretory system Excretory system in humans The waste which is present in the blood has to be removed from the body How can this be done A mechanism to filter the blood is required This is done by the blood capillaries in the kidneys When the blood reaches the two kidneys it contains both useful and harmful substances The useful substances are absorbed back into the blood The wastes dissolved in water are removed as urine From the kidneys the urine goes into the urinary bladder through tube-like ureters It is stored in the bladder and is passed out through the urinary opening at the end of a muscular tube called urethra The kindeys ureters bladder and urethra form the excretory system An adult human being normally passes about L of urine in hours The urine consists of water urea and other waste products We have all experienced that we sweat on a hot summer day The sweatcontains water and salts Boojho has seen that sometimes in summer white patches are formed on our clothes especially in areas like underarms These marks are left by salts present in the sweat Does sweat serve any other function We know that the water kept in an earthen pot matka is cooler This is because the water evaporates from the pores of the pot which causes cooling The way in which waste chemicals are removed from the body of the animal depends on the availability of water Aquatic animals like fishes excrete cell waste as ammonia which directly dissolves in water Some land animals like birds lizards snakes excrete a semi-solid white coloured compound uric acid The major excretory product in humans is urea Sometimes a person’s kidneys may stop working due to infection or injury As a result of kidney failure waste products start accumulating in the blood Such persons cannot survive unless their blood is filtered periodically through an artificial kidney This process is called dialysis TRANSPORTATION IN ANIMALS AND PLANTS Similarly when we sweat it helps to cool our body TRANSPORT OF SUBSTANCES IN PLANTS In you learnt that plants take water and mineral nutrients from the soil through the roots and transport it to the leaves The leaves prepare food for the plant using water and carbon dioxide during photosynthesis You also learnt in that food is the source of energy and every cell of an organism gets energy by the breakdown of glucose The cells use this energy to carry out vital activities of life Therefore food must be made available to every cell of an organism Have you ever wondered how water and nutrients absorbed by the root are transported to the leaves How is the food prepared by the leaves carried to the parts which cannot make food The root hair increase the surface area of the root for the absorption of water and mineral nutrients dissolved in water The root hair is in contact with the water present between the soil particles a Can you guess how water moves from the root to the leaves What kind of transport system is present in plants Boojho thinks that plants may have pipes to transport water to the entire plant like we have in our homes for the supply of water Well Boojho is right Plants have pipe-like vessels to transport water and nutrients from the soil The vessels are made of special cells forming the vascular tissue A tissue is a group of cells that perform specialised function in an organism The vascular tissue for the transport of water and nutrients in the plant is called the xylem a The xylem forms a continuous network of channels that connects roots to the leaves through the stem and branches and thus transports water to the entire plant a Stem placed in coloured water c Water moves up in the stem c Enlarged view of open end of stem Paheli says her mother puts ladyfinger and other vegetables in water if they are somewhat dry She wants to know how water enters into them You know that leaves synthesise food The food has to be transported to all parts of the plant This is done by the vascular tissue called the phloem Thus xylem and phloem transport substances in plants Activity We would require a glass tumbler water red ink a tender herb e g Balsam and a blade for this activity Pour water to fill one-third of the tumbler Add a few drops of red ink to the water Cut the base of the stem of the herb and place it in the glass as shown in a Observe it the next day Does any part of the herb appear red If yes how do you think the colour reached there You can cut the stem across and look for the red colour inside the stem and c From this activity we see that water moves up the stem In other words stem conducts water Just like the red ink minerals dissolved in water also move up the stem along with water Water and minerals go to leaves and other plant parts through narrow tubes xylem inside the stem TRANSPORTATION IN ANIMALS AND PLANTS Boojho wants to know why plants absorb a large quantity of water from the soil then give it off by transpiration Transpiration In Class you learnt that plants release a lot of water by the process of transpiration Plants absorb mineral nutrients and water from the soil Not all the water absorbed is utilised by the plant The water evaporates through the stomata present on the surface of the leaves by the process of transpiration The evaporation of water from leaves generates a suction pull the same that you produce when you suck water through a straw which can pull water to great heights in the tall trees Transpiration also cools the plant Reproduction in Plants To produce its kind is a characteristic of all living organisms You have already learnt this in Class VI The production of new individuals from their parents is known as reproduction But how do plants reproduce There are different modes of reproduction in plants which we shall learn in this Paheli thought that new plants always grow from seeds But she has never seen the seeds of sugarcane potato and rose She wants to know how these plants reproduce MODES OF REPRODUCTION In Class you learnt about different parts of a flowering plant Try to list the various parts of a plant and write the functions of each Most plants have roots stems and leaves These are called the vegetative parts of a plant After a certain period of growth most plants bear flowers You may have seen the mango trees flowering in spring It is these flowers that give rise to juicy mango fruit we enjoy in summer We eat the fruits and usually discard the seeds Seeds germinate and form new plants So what is the function of flowers in plants Flowers perform the function of reproduction in plants Flowers are the reproductive parts There are several ways by which plants produce their offspring These are categorised into two types i asexual and sexual reproduction In asexual reproduction plants can give rise to new plants without seeds whereas in sexual reproduction new plants are obtained from seeds Asexual reproduction In asexual reproduction new plants are obtained without production of seeds Vegetative propagation It is a type of asexual reproduction in which new plants are produced from roots stems leaves and buds Since reproduction is through the vegetative parts of the plant it is known as vegetative propagation Activity Cut a branch of rose or champa with a node This piece of branch is termed a cutting Bury the cutting in the soil A node is a part of the stem branch at which a leaf arises Water the cutting every day and observe its growth Observe and record the number of days taken for roots to come out and new leaves to arise Try the same activity by growing money plant in a jar of water and record your observations Node Potato plant sprouting from an ‘eye’ Likewise you can also grow ginger or turmeric Bryophyllum sprout leaf plant has buds in the margins of leaves If a leaf of this plant falls on a moist soil each bud can give rise to a new plant Roots of some plants can also give rise to new plants Sweet potato and dahlia are examples Plants such as cacti produce new plants when their parts get detached from the main plant body Each detached part can grow into a new plant You must have seen flower buds developing into flowers Apart from flower buds there are buds in the axil point of attachment of the leaf at the node of leaves which develop into shoots These buds are called vegetative buds A bud consists of a short stem around which immature overlapping leaves are present Vegetative buds can also give rise to new plants Activity Take a fresh potato Observe the scars on it with the help of a magnifying glass You may find bud s in them These scars are also called eyes Cut the potato into small portions each with an eye and bury them in the soil Water the pieces regularly for a few days and observe their progress What do you find Boojho wants to know if there is any advantage of vegetative propagation To be demonstrated by the teacher Take a piece of yeast cake or yeast powder from a bakery or a chemist shop Take a pinch of yeast and place it in a container with some water Add a spoonful of sugar and shake to dissolve it Keep it in the warm part of a room After an hour put a drop of this liquid on a glass slide and observe under a microscope What do you observe You may see the formation of new yeast cells Plants produced by vegetative propagation take less time to grow and bear flowers and fruits earlier than those produced from seeds The new plants are exact copies of the parent plant as they are produced from a single parent Later in this you will learn that plants produced by sexual reproduction have characters of both the parents Plants produce seeds as a result of sexual reproduction Budding You have already learnt about the tiny organisms like yeast can be seen only under a microscope These grow and multiply every few hours if sufficient nutrients are made available to them Remember that yeast is a single-celled organism Let us see how they reproduce Chain of buds New bud Reproduction in yeast by budding The small bulb-like projection coming out from the yeast cell is called a bud The bud gradually grows and gets detached from the parent cell and forms a new yeast cell The new yeast cell grows matures and produces more yeast cells Sometimes another bud arises from the bud forming a chain of buds If this process continues a large number of yeast cells are produced in a short time Fragmentation You might have seen slimy green patches in ponds or in other stagnant water bodies These are the algae When water and nutrients are available algae grow and multiply rapidly by fragmentation An alga breaks up into two or more fragments These fragments or pieces grow into new individuals This process continues and they cover a large area in a short period of time Sori Spore forming bodies Reproduction through spore formation in fern Fragmentation in spirogyra an alga Spore formation In you learnt that the fungi on a bread piece grow from spores which are present in the air Repeat Activity Observe the spores in the cottonlike mesh on the bread When spores are released they keep floating in the air As they are very light they can cover long distances Spores are asexual reproductive bodies Each spore is covered by a hard protective coat to withstand unfavourable conditions such as high temperature and low humidity So they can survive for a long time Under favourable conditions a spore germinates and develops into a new individual Plants such as moss and ferns also reproduce by means of spores SEXUAL REPRODUCTION Hypha Reproduction through spore formation in fungus You have learnt earlier the structure of a flower You know that the flowers are the reproductive parts of a plant Stamens are the male reproductive part and pistil is the female reproductive part Activity Take a mustard China rose petunia flower and separate its reproductive parts Study the various parts of a stamen and pistil Flowers which contain either only pistil or only stamens are called unisexual flowers Flowers which contain both stamens and pistil are called bisexual flowers Corn papaya and cucumber produce unisexual flowers whereas mustard rose and petunia have bisexual flowers Both male and female unisexual flowers may be present in the same plant or in different plants Could you identify the anther and the filament of a stamen a Anther contains pollen grains which produce male gametes A pistil consists of stigma style and ovary Ovary contains one or more ovules The female gamete or the egg is formed in an ovule In sexual reproduction a male and a female gamete fuse to form a zygote Boojho wants to know how the male gamete in the pollen grain reaches the female gamete present in the ovule Boojho wants to know why flowers are generally so colourful and fragrant Is it to attract insects Pollination Generally pollen grains have a tough protective coat which prevents them from drying up Since pollen grains are light they can be carried by wind or water Insects visit flowers and carry away pollen on their bodies Some of the pollen lands on the stigma of a flower of the same kind The transfer of pollen from the anther to the stigma of a flower is called pollination If the pollen lands on the stigma of the same flower or another flower of the same plant it is called self-pollination When the pollen of a flower lands on the stigma of a flower of a different plant of the same kind it is called cross-pollination a and Pollen grain germinating Fertilisation The cell which results after fusion of the gametes is called a zygote The process of fusion of male and female gametes to form a zygote is called fertilisation The zygote develops into an embryo FRUITS AND SEED FORMATION After fertilisation the ovary grows into a fruit and other parts of the flower fall off The fruit is the ripened ovary The seeds develop from the ovules The seed contains an embryo enclosed in a protective seed coat Some fruits are fleshy and juicy such as mango and orange Some fruits are hard like almonds and walnuts a and In nature same kind of plants grow at different places This happens because seeds are dispersed to different places Sometimes after a walk through a forest or a field or a park you may have found seeds or fruits sticking to your clothes Did you try to observe how these seeds were clinging to your clothes What do you think will happen if all seeds of a plant were to fall at the same place and grow there There would be severe competition for sunlight water minerals and space As a result the seeds would not grow into healthy plants Plants benefit by seed dispersal It prevents competition between the plant and its own seedlings for sunlight water and minerals It also enables the plants to invade new habitats for wider distribution Seeds and fruits of plants are carried away by wind water and animals Winged seeds such as those of drumstick and maple a and light seeds of grasses or hairy seeds of aak Madar and hairy fruit of sunflower a get blown off with the wind to far away places Some seeds are dispersed by water These fruits or seeds usually develop floating ability in the form of spongy or fibrous outer coat as in coconut Some seeds are dispersed by animals especially spiny seeds with hooks which get attached to the bodies of animals and are carried to distant places Examples are Xanthium and Urena Some seeds are dispersed when the fruits burst with sudden jerks The seeds are scattered far from the parent plant This happens in the case of castor and balsam Motion and Time In Class VI you learnt about different types of motions You learnt that a motion could be along a straight line it could be circular or periodic Can you recall these three types of motions Table gives some common examples of motions Identify the type of motion in each case Table Some examples of different types of motion SLOW OR FAST We know that some vehicles move faster than others Even the same vehicle may move faster or slower at different times Make a list of ten objects moving along a straight path Group the motion of these objects as slow and fast How did you decide which object is moving slow and which one is moving fast If vehicles are moving on a road in the same direction we can easily tell which one of them is moving faster than the other Let us look at the motion of vehicles moving on a road Activity Soldiers in a march past Bullock cart moving on a straight road Hands of an athlete in a race Pedal of a bicycle in motion Motion of the Earth around the Sun Motion of a swing Motion of a pendulum It is common experience that the motion of some objects is slow while that of some others is fast Look at It shows the position of some vehicles moving on a road in the same direction at some instant of time Now look at It shows the position of the same vehicles after some time From your observation of the two figures answer the following questions Which vehicle is moving the fastest of all Which one of them is moving the slowest of all The distance moved by objects in a given interval of time can help us to decide which one is faster or slower For example imagine that you have gone to see off your friend at the bus stand Suppose you start pedalling your bicycle at the same time as the bus begins to move The distance covered by you after minutes would be much smaller than that covered by the bus Would you say that the bus is moving faster than the bicycle We often say that the faster vehicle has a higher speed In a -metre race it is easy to decide whose speed is the highest One who takes shortest time to cover the distance of metres has the highest speed You are probably familiar with the word speed In the examples given above a higher speed seems to indicate that a given distance has been covered in a shorter time or a larger distance covered in a given time The most convenient way to find out which of the two or more objects is moving faster is to compare the distances moved by them in a unit time Thus if we know the distance covered by two buses in one hour we can tell which one is faster We call the distance covered by an object in a unit time as the speed of the object When we say that a car is moving with a speed of kilometres per hour it implies that it will cover a distance of kilometres in one hour However a car seldom moves with a constant speed for one hour In fact it starts moving slowly and then picks up speed So when we say that the car has a speed of kilometres per hour we usually consider only the total distance covered by it in one hour We do not bother whether the car has been moving with a constant speed or not during that hour The speed calculated here is actually the average speed of the car In this book we shall use the term speed for average speed So for us the speed is the total distance covered divided by the total time taken In everyday life we seldom find objects moving with a constant speed over long distances or for long durations of time If the speed of an object moving along a straight line keeps changing its motion is said to be non-uniform On the other hand an object moving along a straight line with a constant speed is said to be in uniform motion In this case the average speed is the same as the actual speed they found that the sun rises everyday in the morning The time between one sunrise and the next was called a day Similarly a month was measured from one new moon to the next A year was fixed as the time taken by the earth to complete one revolution of the sun Often we need to measure intervals of time which are much shorter than a day Clocks or watches are perhaps the most common time measuring devices Have you ever wondered how clocks and watches measure time The working of clocks is rather complex But all of them make use of some periodic motion One of the most well-known periodic motions is that of a simple pendulum We can determine the speed of a given object once we can measure the time taken by it to cover a certain distance In Class you learnt how to measure distances But how do we measure time Let us find out MEASUREMENT OF TIME If you did not have a clock how would you decide what time of the day it is Have you ever wondered how our elders could tell the approximate time of the day by just looking at shadows How do we measure time interval of a month A year Our ancestors noticed that many events in nature repeat themselves after definite intervals of time For example MOTION AND T IME to A to and back to O The pendulum also completes one oscillation when its bob moves from one extreme position A to the other extreme position and comes back to A The time taken by the pendulum to complete one oscillation is called its time period Activity Set up a simple pendulum as shown in a with a thread or string of length nearly one metre Switch off any fans nearby Let the bob of the pendulum come to rest at its A mean position Mark the mean O position of the bob on the floor below it or on the wall behind it a A simple Different To measure the time period of pendulum positions of the bob of an the pendulum we will need oscillating simple pendulum a stopwatch However if a stopwatch is not available a table A simple pendulum consists of a clock or a wristwatch can be used small metallic ball or a piece of stone To set the pendulum in motion suspended from a rigid stand by a gently hold the bob and move it slightly thread a The metallic ball to one side Make sure that the string is called the bob of the pendulum a shows the pendulum at attached to the bob is taut while you rest in its mean position When the bob displace it Now release the bob from its of the pendulum is released after taking displaced position Remember that the it slightly to one side it begins to move bob is not to be pushed when it is to and fro The to and fro released Note the time on the clock motion of a simple pendulum is an when the bob is at its mean position example of a periodic or an oscillatory Instead of the mean position you may motion note the time when the bob is at one of The pendulum is said to have its extreme positions Measure the time completed one oscillation when its bob the pendulum takes to complete starting from its mean position O moves oscillations Record your observations n Table The first observation shown is just a sample Your observations could be different from this Repeat this activity a few times and record your observations By dividing the time taken for oscillations by get the time taken for one oscillation or the time period of the pendulum Is the time period of your pendulum nearly the same in all cases Note that a slight change in the initial displacement does not affect the time period of your pendulum Nowadays most clocks or watches have an electric circuit with one or more Table Time period of a simple pendulum Units of time and speed The basic unit of time is a second Its symbol is s Larger units of time are minutes min and hours h You already know how these units are related to one another What would be the basic unit of speed Since the speed is distance time the basic unit of speed is m s Of course it could also be expressed in other units such as m min or km h You must remember that the symbols of all units are written in singular For example we write km and not kms or cm and not cms Boojho is wondering how many seconds there are in a day and how many hours in a year Can you help him There is an interesting story about the discovery that the time period of a given pendulum is constant You might have heard the name of famous scientist Galileo Galilie A It is said that once Galileo was sitting in a church He noticed that a lamp suspended from the ceiling with a chain was moving slowly from one side to the other He was surprised to find that his pulse beat the same number of times during the interval in which the lamp completed one oscillation Galileo experimented with various pendulums to verify his observation He found that a pendulum of a given length takes always the same time to complete one oscillation This observation led to the development of pendulum clocks Winding clocks and wristwatches were refinements of the pendulum clocks MOTION AND T IME Different units of time are used depending on the need For example it is convenient to express your age in years rather than in days or hours Similarly it will not be wise to express in years the time taken by you to cover the distance between your home and your school How small or large is a time interval of one second The time taken in saying aloud two thousand and one is nearby one second Verify it by counting aloud from two thousand and one to two thousand and ten The pulse of a normal healthy adult at rest beats about times in a minute that is about times in seconds This rate may be slightly higher for children Paheli wondered how time was measured when pendulum clocks were not available Many time measuring devices were used in different parts of the world before the pendulum clocks became popular Sundials water clocks and sand clocks are some examples of such devices Different designs of these devices were developed in different parts of the world MEASURING SPEED Having learnt how to measure time and distance you can calculate the speed of an object Let us find the speed of a ball moving along the ground Activity Draw a straight line on the ground with chalk powder or lime and ask one of your friends to stand to m away from it Let your friend gently roll a ball along the ground in a direction perpendicular to the line Note the time at the moment the ball crosses the line and also when it comes to rest How much time does the ball take to come to rest The smallest time interval that can be measured with commonly available clocks and watches is one second However now special clocks are available that can measure time intervals smaller than a second Some of these clocks can measure time intervals as small as one millionth or even one billionth of a second You might have heard the terms like microsecond and nanosecond One microsecond is one millionth of a second A nanosecond is one billionth of a second Clocks that measure such small time intervals are used for scientific research The time measuring devices used in sports can measure time intervals that are one tenth or one hundredth of a second On the other hand times of historical events are stated in terms of centuries or millenniums The ages of stars and planet are often expressed in billions of years Can you imagine the range of time intervals that we have to deal with Measure the distance between the point at which the ball crosses the line and the point where it comes to rest You can use a scale or a measuring tape Let different groups repeat the activity Record the measurements in Table In each case calculate the speed of the ball You may now like to compare your speed of walking or cycling with that of your friends You need to know the distance of the school from your home or from some other point Each one of you can then measure the time taken to cover that distance and calculate your speed It may be interesting to know who amongst you is the fastest Speeds of some living organisms are given in MOTION AND T IME Table Distance moved and time taken by a moving ball Name of the group Distance moved by the ball m Table in km h You can calculate the speeds in m s yourself Rockets launching satellites into earth’s orbit often attain speeds up to km s On the other hand a tortoise can move only with a speed of about cm s Can you calculate how fast is the rocket compared with the tortoise Once you know the speed of an object you can find the distance moved by it in a given time All you have to do is to multiply the speed by time Thus Distance covered Speed × Time You can also find the time an object would take to cover a distance while moving with a given speed Time taken s Speed Distance Time taken m s Time taken Distance Speed Boojho wants to know whether there is any device that measures the speed You might have seen a meter fitted on top of a scooter or a motorcycle Similarly meters can be seen on the dashboards of cars buses and other vehicles shows the dashboard of a car Note that one of the meters has km h written at one corner This is called a speedometer It records the speed directly in km h There is also another meter that measures the distance moved by the vehicle This meter is known as an odometer While going for a school picnic Paheli decided to note the reading on the odometer of the bus after every minutes till the end of the journey Later on she recorded her readings in Table Can you tell how far was the picnic spot from the school Can you calculate the speed of the bus Looking at the Table Boojho asked Paheli whether she can tell how far they would have travelled till AM Paheli had no answer to this question They went to their teacher She told them that one way to solve this problem is to plot a distance-time graph Let us find out how such a graph is plotted DISTANCE-TIME GRAPH You might have seen that newspapers magazines etc present information in various forms of graphs to make it Table Odometer reading at different times of the journey A bar graph showing runs scored by a team in each over Take a sheet of graph paper Draw two lines perpendicular to each other on it as shown in Mark the horizontal line as XOX' It is known as the x-axis Similarly mark the vertical line YOY' It is called the y-axis The point of intersection of XOX' and YOY' is known as the origin O The two quantities between which the graph is drawn are shown along these two axes We show the positive values on the x-axis along OX Similarly positive values on the y-axis are shown along OY In this we shall consider only the positive values of quantities You can make the graph by following the steps given below § Draw two perpendicular lines to represent the two axes and mark them as OX and OY as in § Decide the quantity to be shown along the x-axis and that to be shown along the y-axis In this case we show the time along the x-axis and the distance along the y-axis Choose a scale to represent the distance and another to represent the time on the graph For the motion of the car scales could be Time min cm Distance km cm Mark values for the time and the distance on the respective axes according to the scale you have chosen For the motion of the car mark the time min min on the x-axis from the origin O Similarly mark the distance km km on the y-axis Now you have to mark the points on the graph paper to represent each set of values for distance and time Observation recorded at S No in Table shows that at time min the distance moved is also zero The point corresponding to this set of values on the graph will therefore be the origin itself After minute the car has moved a distance of km To mark this set of values look for the point that represents minute on the x-axis Draw a line parallel to the y-axis at this point Then draw a line parallel to the x-axis from the point corresponding to distance km on the y-axis The point where these two lines intersect represents this set of values on the graph Similarly mark on the graph paper the points corresponding to different sets of values shows the set of points on the graph corresponding to positions of the car at various times Join all the points on the graph as shown in It is a straight line This is the distance-time graph for the motion of the car If the distance-time graph is a straight line it indicates that the object is moving with a constant speed However if the speed of the object keeps changing the graph can be of any other shape Generally the choice of scales is not as simple as in the example given in and We may have to choose two different scales to represent the desired quantities on the x-axis and the y-axis Let us try to understand this process with an example Let us again consider the motion of the bus that took Paheli and her friends to the picnic The distance covered and time taken by the bus are shown in Table The total distance covered by the bus is km If we decide to choose a scale km cm we shall have to draw an axis of length cm This is not possible on a sheet of paper On the other hand a scale km cm would require an axis of length only cm This scale is quite convenient However the graph may cover only a small part of the graph paper Some of the points to be kept in mind while choosing the most suitable scale for drawing a graph are the difference between the highest and the lowest values of each quantity § the intermediate values of each quantity so that with the scale chosen it is convenient to mark the values on the graph and § to utilise the maximum part of the paper on which the graph is to be drawn Suppose that you are given a graph paper of size cm × cm One of the scales which meets the above conditions and can accommodate the data of Table could be Distance km cm and Time min cm Can you now draw the distance-time graph for the motion of the bus Is the graph drawn by you similar to that shown in Distance-time graphs provide a variety of information about the motion when compared to the data presented by a table For example Table gives information about the distance moved by the bus only at some definite time intervals On the other hand from the distance-time graph we can find the distance moved by the bus at any instant of time Suppose we want to know how much distance the bus had travelled at AM We mark the point corresponding to the time AM on the x-axis Suppose this point is A Next we draw a line perpendicular to the x-axis or parallel to the y-axis at point A We then mark the point T on the graph at which this perpendicular line intersects it Next we draw a line through the point T parallel to the x-axis This intersects the y-axis at the point The distance corresponding to the point on the y-axis OB gives us the distance in km covered by the bus at AM How much is this distance in km Can you now help Paheli to find the distance moved by the bus at AM Can you also find the speed of the bus from its distance-time graph Electric Current and its Effects You might have tried the game ‘How steady is your hand ’ suggested in of Class VI If not you may try it out now Paheli and Boojho had also set up the game by connecting an electric circuit as suggested in Class VI They had lots of fun trying it out with their families and friends They enjoyed it so much that they decided to suggest it to a cousin of theirs who stayed in a different town So Paheli made a neat drawing showing how the various electric components were to be connected Fig Setup to check how steady your hand is Can you draw this circuit conveniently It made Boojho wonder if there was an easier way to represent these electric components SYMBOLS OF ELECTRIC COMPONENTS Some common electric components can be represented by symbols In Table some electric components and their symbols are shown You may come across different symbols for these components in different books However in this book we shall be using the symbols shown here Look at the symbols carefully In the symbol for the electric cell notice that there is a longer line and a shorter but thicker parallel line Do you recall that an electric cell has a positive terminal and a negative terminal In the symbol of the electric cell the longer line represents the positive terminal and the thicker shorter line represents the negative terminal For a switch the ‘ON’ position and the ‘OFF’ position are represented by the symbols as shown The wires used to connect the various components in a circuit are represented by lines In Table a battery and its symbol are also shown Do you know what a battery is Look at the symbol of a battery Can you make out what a battery could be For some of the activities we may need more than one cell So we connect two or more cells together as shown in Fig Notice that the positive terminal of one cell is connected to the negative terminal of the next cell Such a combination of two or more cells is called a battery Many devices such as torches transistors toys TV remote controls use batteries However in some of these devices the electric cells are not always placed one after the other as shown in Sometimes the cells are placed side by side Then how are the terminals of the cells connected Look carefully inside the battery compartment of any device There is usually a thick wire or a metal strip connecting the positive terminal of one cell to the negative terminal of the next cell Fig In order to help you to place the cells correctly in the battery compartment ‘ ’ and ‘ ’ symbols are usually printed there How can we connect the cells to prepare batteries for our activities You may make a cell holder as shown in Fig using a wooden block two iron strips and rubber bands It is necessary that the rubber bands hold the metal strips tightly You could also buy cell holders from the market for making batteries of two or more electric cells Place the cells in them properly such that the positive Paheli and Boojho wonder whether the batteries used in tractors trucks and inverters are also made from cells Then why is it called a battery Can you help them to find the answer to this question Truck battery and its cutout Make the electric circuit shown in You used a similar circuit in Class to make an electric bulb glow Do you remember that the bulb glows only when the switch is in the ‘ON’ position The bulb glows as soon as the switch is moved to the ‘ON’ position Copy this electric circuit in your notebook Make also a circuit diagram of this circuit using symbols for the various electric components Is your diagram similar to the one shown in It is much easier to draw a circuit diagram using symbols Therefore we generally represent an electric circuit by its circuit diagram shows another circuit diagram Is it identical to the circuit diagram shown in Fig In which way is it different Would the bulb glow in this electric circuit Recall that the bulb glows only when the switch is in the ‘ON’ position and the electric circuit is closed Never touch a lighted electric bulb connected to the mains It may be very hot and your hand may get burnt badly Do not experiment with the electric supply from the mains or a generator or an inverter You may get an electric shock which may be dangerous Use only electric cells for all the activities suggested here Notice that the key or switch can be placed anywhere in the circuit When the switch is in the ‘ON’ position the circuit from the positive terminal of the battery to the negative terminal is complete The circuit is then said to be closed and the current flows throughout the circuit instantly When the switch is in the ‘OFF’ position the circuit is incomplete It is said to be open No current flows through any part of the circuit If the filament of the bulb is broken would the circuit be complete Would the bulb still glow You might have noticed that a glowing electric bulb become warm Do you know why HEATING EFFECT OF ELECTRIC CURRENT Activity In the bulb there is a thin wire called the filament which glows when an electric current passes through it When the bulb gets fused its filament is broken Take an electric cell a bulb a switch and connecting wires Make an electric circuit as shown in Fig This activity has to be done using only one cell Keep the switch in the ‘OFF’ position Does the bulb glow Touch the bulb Now move the electric switch to the ‘ON’ position and let the bulb glow for a minute or so Again touch the bulb Do you feel any difference After moving the switch back to the ‘OFF’ position touch the bulb again The wire gets hot when an electric current passes through it This is the heating effect of the electric current Can you think of any electric appliance where the heating effect of the electric current is used Make a list of such appliances Activity Make a circuit as shown in Fig Take about cm long piece of nichrome wire and tie it between the nails You can get nichrome wire from an electric repair shop or you can use a piece of discarded coil of an electric heater Touch the wire Now switch on the current in the circuit by moving the switch to the ‘ON’ position You might have seen an electric room heater or an electric heater used for cooking All these contain a coil of wire This coil of wire is called an element You may have noticed that when these appliances are switched on Boojho could not see element in an electric iron Paheli told him that electrical appliances such as immersion heaters hotplates irons geysers electric kettles hair dryers have elements inside them Have you ever seen the element in any appliance Do not keep the switch in the ‘ON’ position for a long time otherwise the cell may become weak very quickly seconds touch the wire Do not hold it for a long time Switch off the current Touch the wire again after a few minutes Glowing filament of an electric bulb incandescent After a few seconds after connecting to the electric supply their elements become red hot and give out heat The amount of heat produced in a wire depends on its material length and thickness Thus for different requirements the wires of different materials and different lengths and thicknesses are used The wires used for making electric circuits do not normally become hot On the other hand the elements of some electric appliances become so hot that they are easily visible The filament of an electric bulb gets heated to such a high temperature that it starts glowing If a large current passes through a wire the wire may become so hot that it may even melt and break But is it possible for a wire to melt and break Let us check it out Incandescent electric bulbs are often used for lighting but they also give heat It means that a part of electricity consumed is used in producing heat This is not desirable as it results in the wastage of electricity The fluorescent tube-lights and compact fluorescent lamps CFLs are better electricity efficient lighting sources Nowadays the use of light emitting diode LED bulbs is increasing For producing a given intensity of light LED bulbs consume less electricity as compared to incandescent bulbs or fluorescent tubes or CFLs Thus LED bulbs are much electricity efficient and therefore being preferred Electric bulb tube-light CFL and LED It is advised to use electrical appliances and gadgets which are electricity efficient Bureau of Indian Standards New Delhi assigns a Standard Mark on products called ISI mark which is an assurance of conformity to the specifications given on the products It is therefore suggested to use ISI mark products Note Fluorescent tubes and CFLs contain mercury vapour toxic in nature Therefore damaged fluorescent tubes or CFLs need to be disposed off safely ELECTRIC CURRENT AND ITS EFFECTS buildings fuses are inserted in all electrical circuits There is a maximum limit on the current which can safely flow through a circuit If by accident the current exceeds this safe limit the wires Never try to investigate an electric fuse connected to mains circuit on your own You may however visit an electric repair shop and compare the burnt out fuses with the new ones Activity Make the circuit we used for Activity again However replace the cell with a battery of four cells Also in place of the nichrome wire tie a thin strand of steel wool The steel wool is commonly used for cleaning utensils and is available in grocery shops If there are any fans in the room switch them off Now pass the current through the circuit for sometime Observe the strand of steel wool carefully Note what happens Does the strand of steel wool melt and break Wires made from some special materials melt quickly and break when large electric currents are passed through them These wires are used for making electric fuses Fig One reason for excessive currents in electrical circuits is the direct touching of wires This may happen if the insulation on the wires has come off due to wear and tear This may cause a short circuit Another reason for excessive current can be the connection of many devices to a single socket This may cause overload in the circuit You might have read reports in newspapers about fires caused by short circuits and overloads may become overheated and may cause fire If a proper fuse is there in the circuit it will blow off and break the circuit These days Miniature circuit breakers MCBs are increasingly being used in place of fuses These are switches which automatically turn off when current in a circuit exceeds the safe limit You turn them on and the circuit is once again complete Look for ISI mark on MCBs also Miniature circuit breaker MCB Always use proper fuses which have been specified for particular applications carrying ISI mark Never use just any wire or strip of metal in place of a fuse prevents damages to electrical circuits and possible fires Fuses of different kinds are used for different purposes shows fuses used in our houses Fuses shown in are generally used in electrical appliances We observed the heating effect of the electric current and learnt how we use it to our advantage Does the electric current have other effects also Effect of current on a compass needle Take the cardboard tray from inside a discarded matchbox Wrap an electric wire a few times around the cardboard tray Place a small compass needle inside it Now connect the free ends of this wire to an electric cell through a switch as shown in Fig Note the direction in which the compass needle is pointing Bring a bar magnet near the compass needle Observe what happens Now while watching the compass needle carefully move the switch to the ‘ON’ position Hans Christian Oersted A What do you observe Does the compass needle deflect Move the switch back to the ‘OFF’ position Does the compass needle come back to its initial position Repeat the experiment a few times What does this experiment indicate We know that the needle of a compass is a tiny magnet which points in north-south direction When we bring a magnet close to it the needle gets deflected We have also seen that compass needle gets deflected when the current flows in a nearby wire Can you connect the two observations When the current flows through a wire does the wire behave like a magnet This is what a scientist called Hans Christian Oersted also wondered He was the first person who noticed the deflection of compass needle every time the current was passed through the wire So when electric current passes through a wire it behaves like a magnet This is the magnetic effect of the electric current In fact an electric current can be used to make magnets Do you find it too surprising Let us try it out An electromagnet Remember not to switch on the current for more than a few seconds at a time The electromagnet weakens the cell quickly if left connected ELECTROMAGNET Activity Take around cm long piece of insulated plastic or cloth covered or enamelled flexible wire and an iron nail say about cm long Wind the wire tightly around the nail in the form of a coil Connect the free ends of the wire to the terminals of a cell through a switch as shown in Fig Place some pins on or near the end of the nail Now switch on the current What happens Do the pins cling to the tip of the nail Switch off the current Are the pins still clinging to the end of the nail The coil in the above activity behaves like a magnet when electric current flows through it When the electric current is switched off the coil generally loses its magnetism Such coils are called electromagnets The electromagnets can be made very strong and can lift very heavy loads Do you remember the crane about which you read in of Class The end of such a crane has a strong electromagnet attached to it The electromagnets are also used to separate magnetic material from the junk Doctors use tiny electromagnets to take out small pieces of magnetic material that have accidentally fallen in the eye Many toys also have electromagnets inside them ELECTRIC BELL We are quite familiar with an electric bell It has an electromagnet in it Let us see how it works shows the circuit of an electric bell It consists of a coil of wire wound on an iron piece The coil acts as an electromagnet An iron strip with a hammer at one end is kept close to the electromagnet There is a contact screw near the iron strip When the iron strip is in contact with the screw the current flows through the coil which becomes an electromagnet It then pulls the iron strip In the process the hammer at the end of the strip strikes the gong of the bell to produce a sound However when the electromagnet pulls the iron strip it also breaks the circuit The current through the coil stops flowing Will the coil remain an electromagnet The coil is no longer an electromagnet It no longer attracts the iron strip The iron strip comes back to its original position and touches the contact screw again This completes the circuit The current flows in the coil and the hammer strikes the gong again This process is repeated in quick succession The hammer strikes the gong every time the circuit is completed This is how the bell rings Light You might have seen a beam of sunlight when it enters a room through a narrow opening or a hole You may have also seen beams of light from the headlamps of scooters cars and engines of trains a Similarly a beam of light can be seen from a torch Some of a Rail engine Light house Beams of light you may have seen a beam of searchlight from a light house or from an airport tower What do these experiences suggest LIGHT TRAVELS ALONG A STRAIGHT LINE Boojho recalls an activity he performed in Class VI In that activity he looked at a lighted candle first through a straight pipe and then through a bent pipe Why was Boojho not able to see the candle flame through a bent pipe This activity showed that light travels along straight lines How can we change the path of light Do you know what happens when light falls on a polished or a shiny surface Any polished or a shiny surface can act as a mirror What happens when light falls on a mirror You have learnt in Class that a mirror changes the direction of light that falls on it This change of direction by a mirror is called reflection of light Can you recall the activity in which you got the light of a torch reflected from a mirror Let us perform a similar activity Take a torch Cover its glass with a chart paper which has three narrow slits as shown in Spread a sheet of chart paper on a smooth wooden board Fix a plane mirror strip vertically on the chart paper Now direct the beam of light on the mirror from the torch with slits Place the torch in such a way that its light is seen along the chart paper on the board Now adjust its position so that the light from the torch strikes the plane mirror at an angle Does the mirror change the direction of light that falls on it Now move the torch slightly to either side Do you find any change in the direction of reflected light Paheli remembers the story of the lion and the rabbit from the Panchtantra in which the rabbit fooled the lion by showing him his reflection in water REFLECTION OF LIGHT One way to change the direction of light is to let it fall on a shiny surface For example a shining stainless steel plate or a shining steel spoon can change the direction of light The surface of water can also act like a mirror and change the path of light Have you ever seen the reflection of trees or buildings in water Look into the mirror along the direction of the reflected light Do you see the slits in the mirror This is the image of the slits This activity shows how light gets reflected from a plane mirror Let us play around with the images formed in mirrors and know a little more about them Handle the lighted candle with care It is better if this activity is performed in the presence of a teacher or an elder person Place a lighted candle in front of a plane mirror Try to see the flame of the candle in the mirror It appears as if a similar candle is placed behind the mirror The candle which appears behind the mirror is the image of the candle formed by the mirror The candle itself is the object Now move the candle to different positions in front of the mirror Observe the image in each case Paheli wants to know what makes things visible to us Boojho thinks that objects are visible only when light reflected from them reaches our eyes Do you agree with him Boojho noted in his notebook Is it not surprising that my image is of the same size as me whether the mirror is small or large Was the image upright in each case Did the flame appear on top of the candle as in the object Such an image is called erect An image formed by a plane mirror is erect and of the same size as the object Now place a vertical screen behind the mirror Try to obtain the image of the candle on this screen Can you get the image on the screen Now place the screen in front of the mirror Can you get the image on the screen now You will find that the image of the candle cannot be obtained on the screen in either case What about the distance of the image from mirror Let us perform another activity Activity Take a chess board If a chess board is not available draw on a chart paper × squares of equal size Draw a thick line in the middle of the paper Fix a plane mirror vertically on this line Place any small object such as a pencil sharpner at the boundary of the third square counting from the mirror Note the position of the image Now shift the object to the boundary of the fourth square Again note the position of the image Did you find any relation between the distance of the image from the mirror and that of the object in front of it Locating image in a plane mirror Paheli made a note in her notebook In a plane mirror the image is formed behind the mirror It is erect of the same size and is at the same distance from the mirror as the object is in front of it LIGHT You will find that the image is at the same distance behind the mirror as the object is in front of it Now verify this by placing the object anywhere on the chart paper RIGHT OR LEFT When you see your image in a plane mirror is it exactly like you Have you ever noticed that there is one interesting difference between you and your image in a mirror Let us find out Activity Stand in front of a plane mirror and look at your image Raise your left hand Which hand does your image raise Now touch your right ear Which ear does your hand touch in your image Observe carefully You will find that in the mirror the ‘right’ appears ‘left’ and the ‘left’ appears ‘right’ Note that only sides are interchanged the image does not appear upside down Now write down your name on a piece of paper and hold it in front of a plane Boojho saw an ambulance on the road He was surprised to see that the word ‘AMBULANCE’ in front was written in a strange manner Can you now understand why the word ‘AMBULANCE’ is written as in When the driver of a vehicle ahead of an ambulance looks in her his rear view mirror she he can read ‘AMBULANCE’ written on it and give way to it It is the duty of every one of us to allow an ambulance to pass without blocking its way You might have observed that in the side mirror of a scooter or a car the images of all the objects appear smaller than the objects themselves Have you ever wondered why is it so PLAYING WITH SPHERICAL MIRRORS Paheli and Boojho were waiting for their dinner Boojho lifted a stainless steel plate and saw his image in it Oh This plate acts as a plane mirror My image is erect and is of the same size Paheli saw her image using the back of a steel spoon Boojho look here I can also see my erect image though it is smaller in size This spoon also acts as a mirror of some kind said Paheli You can also use a spoon or any curved shining surface to see your image Now look at your image using the inner side of the spoon This time you may find that your image is erect and larger in size If you increase the distance of the spoon from your face you may see your image inverted You can also compare the image of your pen or pencil instead of your face Activity Take a stainless steel spoon Bring the outer side of the spoon near your face and look into it Do you see your image in it Is this image different from what you see in a plane mirror Is this image erect Is the size of the image the same smaller or larger Image from the inner side of a spoon The curved shining surface of a spoon acts as a mirror The most common example of a curved mirror is a spherical mirror If the reflecting surface of a spherical mirror is concave it is called a concave mirror If the reflecting surface is convex then it is a convex mirror Why are concave and convex mirrors called spherical mirrors Take a rubber ball and cut a portion of it with a knife or a hacksaw blade a Be careful Ask an elder person to help you in cutting the ball The inner surface of the cut ball is called concave and the outer surface is called convex A concave mirror forms a real image of the sun Convex surface Concave surface a A spherical mirror is a part of a sphere The inner surface of a spoon acts like a concave mirror while its outer surface acts like a convex mirror We know that the image of an object formed by a plane mirror cannot be obtained on a screen Let us investigate if it is also true for the image formed by a concave mirror Activity You will conduct Activity in the sunlight Be careful never look directly towards the Sun or its image as it may damage your eyes You may look at the image of the Sun when it is thrown on a screen or a wall Take a concave mirror Hold it facing the Sun Try to get the light reflected by the mirror on a sheet of paper Adjust the distance of the paper until you get a sharp bright spot on it Hold the mirror and the sheet of paper steady for a few minutes Does the paper start burning This bright spot is in fact the image of the Sun Notice that this image is formed on a screen An image formed on a screen is called a real image Recollect that in Activity the image formed by a plane mirror could not be obtained on a screen Such an image is called a virtual image Now let us try to obtain on the screen the image of a candle flame formed by a concave mirror Activity Fix a concave mirror on a stand any arrangement to keep the mirror steady would do and place it on a table Paste a piece of white paper on a cardboard sheet say about cm × cm This will act as a screen Keep a lighted candle on the table at a distance of about cm from the mirror Try to obtain the image of the flame on the screen For this move the screen till a sharp image of the flame is obtained Make sure that the screen does not obstruct the light from the candle falling on the mirror Is this image real or virtual Is it of the same size as the flame Now move the candle towards the mirror and place it at different distances from it In each case try to obtain the image on the screen Record your observation in Table Is it possible to obtain the image on the screen when the candle is too close to the mirror We see that the image formed by a concave mirror can be smaller or larger in size than the object The image may also be real or virtual Concave mirrors are used for many purposes You might have seen doctors using concave mirrors for examining eyes ears nose and throat Concave mirrors are also used by dentists to see an enlarged image of the teeth The reflectors of torches headlights of cars and scooters are concave in shape if the bell is also a kind of spherical mirror Can you recognise the type of the mirror Note that the reflecting surface of the bell is convex Repeat Activity now with a convex mirror in place of a concave mirror Record your observations in a Table similar to Table Could you get a real image at any distance of the object from the convex mirror Did you get an image larger in size than the object Can you now recognise the mirrors used as side mirrors in automobiles These are convex mirrors Convex mirrors can form images of objects spread over a large area So these help the drivers to see the traffic behind them You might have seen a magnifying glass It is used to read very small print You might have also used it to observe the body parts of a cockroach or an earthworm The magnifying glass is actually a type of a lens Lenses are widely used in spectacles telescopes and microscopes Try to add a few more uses of lenses to this list Get some lenses Touch and feel them Can you find some difference just by touching Those lenses which feel thicker in the middle than at the edges are convex lenses a Those which feel thinner in the middle than at the edges are concave lenses Notice that the lenses are transparent and light can pass through them a A convex lens and a concave lens Let us play with lenses It is dangerous to look through a lens at the Sun or a bright light You should also be careful not to focus sunlight with a convex lens on any part of your body A convex lens converges bends inward the light generally falling on it a Therefore it is called a converging lens On the other hand a concave lens diverges bends outward the light and is called a diverging lens Take a convex lens or magnifying glass Put it in the path of sunrays Place a sheet of paper as shown Adjust the distance between the lens and the paper till you get a bright spot on the paper Hold the lens and the paper in this position for a few minutes Does the paper begin to burn Now replace the convex lens with a concave lens Do you see a bright spot on the paper this time too Why are you not getting a bright spot this time We have seen in the case of mirrors that for different positions of the object the nature and size of the image change Is it true for lenses also Let us find out Activity of the candle on a paper screen placed on the other side of the lens You may have to move the screen towards or away from the lens to get a sharp image of the flame What kind of image did you get Is it real or virtual Now vary the distance of the candle from the lens Try to obtain the image of the candle flame every time on the paper screen by moving it Record your observations as you did in Activity for the concave mirror Take a convex lens and fix it on a stand as you did with the concave mirror Place it on a table Place a lighted candle at a distance of about cm from the lens a It means that we can see the image formed by a lens from the side opposite to that of the object Did you get in any position of the object an image which was erect and magnified Could this image be obtained on a screen Is the image real or virtual This is how a convex lens is used as a magnifying glass In a similar fashion study the images formed by a concave lens You will find that the image formed by a concave lens is always virtual erect and smaller in size than the object SUNLIGHT WHITE OR COLOURED Have you ever seen a rainbow in the sky You might have noticed that it appears usually after the rain when the Sun is low in the sky The rainbow is seen as a large arc in the sky with many colours How many colours are present in a rainbow When observed carefully there are seven colours in a rainbow though it may not be easy to distinguish all of them These are red orange yellow green blue indigo and violet You might have seen that when you blow soap bubbles they appear colourful Similarly when light is reflected from the surface of a Compact Disk CD you see many colours On the basis of these experiences could we say that the sunlight is a mixture of different colours Let us investigate Activity Does this mean that the white light consists of seven colours Take a glass prism Allow a narrow beam of sunlight through a small hole in the window of a dark room to fall on one face of the prism Let the light coming out of the other face of the prism fall on a white sheet of paper or on a white wall What do you observe Do you see colours similar to those in a rainbow This shows that the sunlight consists of seven colours The sunlight is said to be white light This means that the white light consists of seven colours Try to identify these colours and write their names in your notebook Can we mix these colours to get white light Let us try Paheli wants to tell you that you can see a rainbow only when your back is towards the sun A prism splits a beam of sunlight into seven colours Paint the seven rainbow colours on these segments as shown in a You can also paste coloured papers on these segments Make a small hole at the centre of the disc Fix the disc loosely on the tip of a refill of a ball pen Ensure that the disc rotates freely a Rotate the disc in the daylight When the disc is rotated fast the colours get mixed together and the disc appears to be whitish Such a disc is popularly known as Newton’s disc Paheli has a brilliant idea She has prepared a small top with a small circular disc with seven rainbow colours painted on it When the top rotates it appears nearly white Water A Precious Resource Jal Hai To Kal Hai If you have water you can think of the future You are perhaps aware that March is celebrated as the world water day A school celebrated ‘water day’ and invited posters from the children of your age group Some of the posters presented on that day are shown in What is the message you get from these posters Write your observations in your notebook and discuss them in the class Have you ever felt a shortage of water at home or at school Your parents or teachers must very often be advising you not to waste water No wonder we celebrate water day every year to attract the attention of everybody towards the importance of conserving water The amount of water recommended by the United Nations for drinking washing cooking and maintaining proper hygiene is a minimum of litres per person per day This amount is about two and a half buckets of water per person per day Is your family getting at least this much of water If yes you should consider yourself fortunate because millions of people in our country do not get enough water What about your friends and their families Share your experience with them In some places there is an acute shortage of water Taps running dry long queues for water fights marches and protests for demand of water have become a common sight especially during summers Some of the newspaper clippings shown in clearly indicate this message Is it not true that we face acute shortage of water Collect clippings from newspapers and magazines on the news items articles and pictures related to water shortage Paste them in your scrapbook and share it with your friends List some problems faced by the people and discuss them in the class Water shortage has become a matter of concern throughout the world It is estimated that in a few years from now more than one third of the people in the world could face water scarcity Before we discuss why water is getting scarce we must know how much water is available for use on our planet Year was observed as the International Year of Freshwater to make people aware of this dwindling natural resource Look at the picture of the earth taken from space Why does it appear blue Surely you can guess You are aware that about of the earth’s surface is covered with water Almost all the water on the earth is contained in the seas and oceans rivers lakes ice caps as groundwater and in the atmosphere However most of this water is not fit for human consumption directly The water that is fit for use is freshwater Perform the following activity to estimate roughly the relative amount of water available in some of these sources Take a medium-sized bucket and fill it up with water It contains about twenty litres of water Assume that this water represents all the water present on the earth Take a tea spoon of about mL capacity and transfer spoons of water from the bucket to a small container like a bath mug This represents total freshwater on the earth From the bath mug transfer thirty spoons of water to a glass tumbler This gives a measure of usable water present as groundwater Finally take out a quarter th spoonfull of water from the mug It represents all the water present in all the lakes and rivers of the world The water left in the bucket represents the saline water present in the seas oceans and partly as groundwater This water is not fit for human use The water left in the bath mug represents the water which is present in the frozen form in glaciers ice caps and permanent snow again not available readily Boojho wondered about the alarmingly small quantity of water available for our use Paheli quickly calculated and found that this amount is roughly of all water found on the earth WATER A PRECIOUS RESOURCE FORMS OF WATER Are you afraid that continuous use will some day exhaust all the water available for use You know that water on the earth has been maintained for millions of years by various processes which make the water cycle You have studied the water cycle in Class VI Write in your own words what you know about the water cycle You know that when water circulates through the water cycle it can be found in all the three forms i e solid liquid and gas at any given time somewhere on the earth The solid form snow and ice is present as ice caps at the poles of the earth snow-covered mountains and glaciers Liquid water is present in oceans lakes rivers and even underground The gaseous form is the water vapour present in the air around us The continuous cycling of water among its three forms keeps the total amount of water on the earth constant even when the whole world is using it Does it give you any relief Can you recall the processes involved in water cycle The following activity will help you Activity shows the processes involved in the water cycle They are labelled by numbers Match these numbers with the processes given in the jumbled form Most towns and cities have water supply system maintained by the civic bodies The water is drawn from nearby lakes rivers ponds or wells The water is supplied through a network of pipes Many villages do not have such a water supply system There people fetch water directly from the sources Often people and even children have to walk several kilometres to fetch water The children suffer a lot They cannot attend school regularly since they spend hours in fetching water Women fetching water Women have to perform a number of household chores If they have also to spend time to fetch water it adds to their burden A large number of people draw water from wells tube wells or hand pumps From where do these sources get water GROUNDWATER AS AN IMPORTANT SOURCE OF WATER If we dig a hole in the ground near a water body we may find that the soil is moist The moisture in the soil indicates the presence of water underground If we dig deeper and deeper we would reach a level where all the space between particles of soil and gaps between rocks are filled with water The upper level of this layer is called the water table The water table varies from place to place and it may even change at a given place The water table may be at a depth of less than a metre or may be several metres below the ground The water found below the water table is called groundwater What is the source of this groundwater The rainwater and water from other sources such as rivers and ponds seeps through the soil and fills the empty spaces and cracks deep below the ground The process of seeping of water into the ground is called infiltration The groundwater thus gets recharged by this process At places the groundwater is stored between layers of hard rock below the water table This is known as an aquifer Water in the aquifers can be usually pumped out with the help of tube wells or handpumps Have you ever been to a site where construction work is going on From Hand pump Stream or lake Recharge Water table Aquifer Groundwater Groundwater and water table where do the workers get water for construction May be you have seen boring being done at such sites to reach the water table Enquire from the people working there how deep they have to dig Can we keep on drawing water from under the ground How will it affect the water table agricultural activities are some common factors affecting water table Scanty rainfall is another factor that may deplete the water table Yet another factor affecting water table could be deforestation and decrease in the effective area for seepage of water DEPLETION OF WATER TABLE Increasing population creates demand for construction of houses shops offices roads and pavements This decreases the open areas like parks and playgrounds This in turn decreases the seepage of rainwater into the ground What could be the consequence Recall that a pukka floor does not allow water to seep in easily while in a grass lawn water seeps through in no time Water drawn from under the ground gets restored by seepage of rainwater The water table does not get affected as long as we draw as much water as is replenished by natural processes However water table may go down if the water is not sufficiently replenished This may happen due to many reasons Increase in population industrial and day by day This results in depletion of water table Increasing population Moreover a huge amount of water is required for construction work Often groundwater is used for this purpose So on the one hand we are consuming more groundwater and on the other we are allowing lesser water to seep into the ground This results in depletion of water table In fact the water table in some parts of many cities has gone down to alarmingly low levels Increasing industries Water is used by all the industries Almost everything that we use needs water somewhere in its production process The number of industries is increasing continuously Water used by most of the industries is drawn from the ground Activity DISTRIBUTION OF WATER The distribution of water over the globe is quite uneven due to a number of factors Some places have good amount of rain and are water-rich On the other hand there are deserts which have scanty rainfall India is a vast country and the rainfall is not the same everywhere Some regions have excessive rains while some others have very little rainfall Excessive rains cause floods whereas the absence of rains results in droughts Therefore some regions in our country may have floods while others may suffer from droughts at the same time Activity Name some industries familiar to you Make a list of the products obtained from these and used in our daily life Discuss with your teacher and parents how the growing industrial activity is responsible for the depletion of water table Agricultural activities A majority of farmers in India depend upon rains for irrigating their crops Irrigation systems such as canals are there only in a few places Even these systems may suffer from lack of water due to erratic rainfall Therefore farmers have to use groundwater for irrigation Population pressure on agriculture forces increasing use of groundwater Given here is the rainfall map of India It gives the average annual rainfall in different regions of our country Locate on the map the place you live in Are you blessed with sufficient rainfall Is there sufficient water available in your area throughout the year It may be possible that we are living in an area where there is sufficient rainfall yet there is shortage of water Can we attribute this to mismanagement of water resources WATER A PRECIOUS RESOURCE Government of India Copyright Based upon Survey of India map with the permission of the Surveyor General of India The territorial waters of India extend into the sea to a distance of twelve nautical miles measured from the appropriate baseline The external boundaries and coastlines of India agree with the Record Master Copy certified by Survey of India WATER MANAGEMENT You have read in Class that in many places a regular supply of water is provided by a well-planned pipe system When the civic authorities supply water through pipes not all of it may reach the destination You might have seen water supply pipes leaking and a lot of water gushing out of the pipes It is the responsibility of the civic authorities to prevent such wastage of precious water Mismanagement or wastage may take place at the level of individuals also All of us knowingly or unknowingly waste water while brushing teeth shaving bathing washing and during many other activities Leaking taps is another source of huge water wastage We waste water as though we do not need water the next time We have seen that most of the water that we get as rainfall just flows away This is a waste of precious natural resource The rainwater can be used to recharge the groundwater This is referred to as water harvesting or rainwater harvesting about which you have learnt in Class VI Find out if the buildings in your neighbourhood have water harvesting systems installed We have at many places in India an age old practice of water storage and water recharge like the bawris Bawri was the traditional way of collecting water With time the bawris fell into disuse and garbage started piling in these reservoirs However because of the acute water shortage people in these areas have had to rethink The bawris are being revived Today the situation is that inspite of scanty rains these places are managing their water needs well A farmer using water in the field can also use water economically Maybe you have heard of drip irrigation Drip irrigation is a technique of watering plants by making use of narrow tubings which deliver water directly at the base of the plant A case study Bhujpur in the Kutch area of Gujarat has a very erratic rainfall The only source of freshwater lies underground because rivers in this area do not have water throughout the year Over the years demand for water has grown The withdrawal of groundwater has far exceeded recharge As a result the water table has gone down alarmingly In the villagers along with a non-governmental organisation decided to harvest rainwater Eighteen check-dams were built on the Rukmavati river and its many tributaries The water so collected increased percolation through the soil and recharged the aquifers According to farmers the wells have water now and the water that flowed into the sea and was wasted has become available for irrigation WATER A PRECIOUS RESOURCE Water-wise habits Turn off taps while brushing Mop the floor instead of washing EFFECT OF WATER SCARCITY ON PLANTS Drip irrigation in a field WHAT ROLE YOU CAN PLAY Have you ever shown concern if you saw a tap leaking in your house school or any other place Leaking taps waste a lot of water You must make efforts to stop this leakage There are a number of ways you can adopt to minimise the wastage of water Let us begin We have given a few examples Add on You must have seen potted plants wilting and ultimately drying up if they did not get water even for a few days You have already learnt in that plants need water to get nutrients from the soil to prepare their food Just imagine the consequences if water is not available to plants The green character of the planet shall be lost This may mean the end of all life for a world without plants shall mean no food no oxygen not enough rain and innumerable other problems A successful initiative Rajasthan is a hot and dry place The challenge of natural scarcity of water was met by a successful experiment A band of social workers has transformed a dry area in the Alwar district into a green place They have revived five dried-up rivers Arveri Ruparel Sarsa Bhagani and Jahazwali by constructing water harvesting structures Forests Our Lifeline One evening Boojho entered the park with an elderly person He introduced him to his friends Prof Ahmad was a scientist working in the university The children started playing while Prof Ahmad sat on a bench in the corner He was tired as he had participated in the golden jubilee celebrations of the town After a while the children also came and sat around him They wanted to know about the celebrations Prof Ahmad told them that after the cultural programme the senior people discussed the town’s unemployment problem A plan was proposed to put up a factory by clearing an area of the forest just outside the town This would give the increasing population of the town a chance to get jobs The children were very surprised when Prof Ahmad told them that many people had objected to this idea A view of a forest This is because the forests serve as green lungs and water purifying systems in nature Prof Ahmad explained The children were confused Prof Ahmad realised that the children had not visited a forest The children also wanted to know more about the forest so they decided to visit it with Prof Ahmad VISIT TO A FOREST One Sunday morning the children packed a few things like a knife a hand lens a stick a notebook and walked together through a forest trail near a village On their way they met Tibu a young boy of their age group of nearby village who was taking cattle for grazing along with his aunt He was very agile running here and there to keep the herd together When he saw the children Tibu also started walking along with them while his aunt went on a different path As soon as they entered the forest Tibu raised his hand and signalled them to keep quiet because noise could disturb the animals living in the forest Tibu then took them to a place at a height to show them the broad view of the forest Children were surprised because they could not see any land The different treetops had formed green cover over the land However the cover was not uniformly green The environment was peaceful and a cool breeze was blowing This made children quite fresh and happy While coming down they got excited on hearing a sudden sound of birds and some noise from the top branches of the trees Tibu told them to relax since it was a normal phenomenon here Because of the children’s presence some monkeys had climbed higher up on the trees where they disturbed the birds Animals often give this type of warning call to alert other animals Tibu also told that many other animals like boar bison jackals porcupine elephants live in the deeper areas of the forest Prof Ahmad cautioned children that they should not go deep into the forest Boojho and Paheli remembered that they have studied about forests as an example of a habitat in Class They could see now how the forest provides a home for many animals and plants The land where the children were walking was uneven and covered with many trees Tibu helped them to identify sal teak semal sheesham neem palash fig khair amla bamboo kachnar Prof Ahmad pointed out that there are several other trees shrubs herbs and grasses in the forest The forest floor and the trees were also covered with different types of creepers and climbers The sun was barely visible through the leaves of the trees making it quite dark inside the forest Observe the various things in your home and make a list of those which are made from material which may have been obtained from the forest You might have many wooden items on your list like plywood fuel wood boxes paper matchsticks and furniture Do you know that gum oils spices fodder for animals and medicinal plants are also some of the products which we get from the forest Based on the products that we get from plants try to fill Table One example of each plant is already given Fill the table by adding more examples Sheila wondered who would have planted these trees Prof Ahmad replied that in nature trees produce enough seeds The forest floor provides favourable conditions for them to germinate and develop into seedlings and saplings Some grow up into trees He added that branchy part of a tree above the stem is known as the crown of the tree Prof Ahmad asked children to look up and observe how the branches of the tall trees look like a roof over the other plants in the forest He told them that this is called a canopy Activity Visit a forest or a park in your neighbourhood Observe the trees and try to identify them You can take the help of some elders or books on trees List the characteristics of the trees that you observe such as the height shape of leaves crown flowers and fruits Also draw the crowns of some trees Prof Ahmad pointed out that trees had crowns of different types and sizes These had created different horizontal layers in the forest These are known as understoreys Giant and tall trees constituted the top layer followed by shrubs and tall grasses and herbs formed the lowest layer Canopy Understorey Canopy and under storeys in a forest Would we see similar kind of trees in every forest asked Boojho Prof Ahmad said No due to different climatic conditions there are variations in the types of trees and other plants The types of animals also differ from forest to forest A few children were busy watching beautiful butterflies fluttering here and there on the flowers of shrubs and herbs Forest floor They had a close look at the bushes While doing that their hair and clothes had seeds and thorns clinging to them They came across numerous insects spiders squirrels ants and various other small animals on the bark of the trees plant leaves and on decaying leaves on the forest floor They started making sketches of these creatures The forest floor seemed dark coloured and was covered with a layer of dead and decaying leaves fruits seeds twigs and small herbs The decaying matter was moist and warm Children picked up various seeds and leaves for their collection Walking over the dead leaf layer on the forest floor was like walking over a spongy carpet Is the decaying matter always warm Prof Ahmad suggested that the children could perform an activity to get an answer to this question Activity Dig a small pit Put vegetable waste and leaves in it Cover them with soil Add some water After three days remove the upper layer of the soil Does the pit feel warm inside Paheli asked There are so many trees here Also there are many forest like this What difference will it make if we cut some trees for a factory Prof Ahmad said You have read about autotrophs heterotrophs and saprotrophs You have learnt how green plants produce food All animals whether herbivores or carnivores depend ultimately on plants for food Organisms which feed on plants often get eaten by other organisms and so on For example grass is eaten by insects which in turn is taken by the frog The frog is consumed by snakes This is said to form a food chain Grass insects frog snake eagle Many food chains can be found in the forest All food chains are linked If any one food chain is disturbed it affects other food chains Every part of the forest is dependent on the other parts If we remove one component say trees all other components would be affected Oxygen Carbon dioxide Photosynthesis Decomposers Soil Nutrients Water Interrelationship of plant soil and decomposers in a forest FORESTS OUR LIFELINE Prof Ahmad asked children to pick up leaves from the forest floor and observe them under a hand lens They found tiny mushrooms over the decaying leaves They also saw an army of tiny insects millipedes ants and beetle on them They were wondering how these organisms live there Prof Ahmad explained that apart from these animals which are easily seen there are several organisms and micro-organisms that live in the soil Paheli wondered what mushroom and other micro-organisms eat Prof Ahmad replied that they feed upon the dead plant and animal tissues and convert them into a dark coloured substance called humus You have learnt about humus in In which layer of the soil would you find humus What is its importance to the soil The micro-organisms which convert the dead plants and animals to humus are known as decomposers These micro-organisms play an important role in the forest Soon Paheli removed some dead leaves and discovered under them a layer of humus on forest floor The presence of humus ensures that the nutrients of the dead plants and animals are released into the soil From there these nutrients are again absorbed by the roots of the living plants What happens if an animal dies in the forest Sheila asked Tibu replied the dead animals become food for vultures crows jackals and insects In this way the nutrients are cycled So nothing goes waste in a forest Paheli reminded Prof Ahmad that he had not explained why forests are called green lungs Prof Ahmad explained that plants release oxygen through the process of photosynthesis The plants help to provide oxygen for animal respiration They also maintain the balance of oxygen and carbon dioxide in the atmosphere That is why forests are called lungs The children saw clouds forming in the sky Boojho recalled what he had learnt about the water cycle in Class VI Trees take in water from their roots and release water vapour into the air through evaporation If there were fewer trees how will the water cycle be affected Tibu told them that the forest is not just home to plants and animals Many people also live in the forest Some of them may belong to different tribes Tibu explained that these people depend mostly on the forests The forest provides them with food shelter water and medicines They have traditional knowledge about many medicinal plants in the forest While Boojho was drinking water from a small stream he saw some deer crossing the stream They disappeared into the bushes The dense bushes and the tall grass provide animals with the food and shelter They showed the children droppings of some animals and explained the difference between various types of droppings Prof Ahmad informed them that the forest officers could recognise the presence of some animals in the forest by their droppings and footprints Boojho called every one and showed them a large decaying heap of animal dropping Several beetles and grubs were feeding on the heap and a bunch of seedlings was sprouting These seedlings are of the herbs and shrubs Paheli remembered that she saw a Pipal sapling on the sidewall in her school Can you help her to understand how this would have happened also protect them from carnivores that live in the forest Tibu then started looking closely at the forest floor Soon he called and The animals also disperse the seeds of certain plants and help the forest to grow and regenerate The decaying animal dung also provides nutrients to the seedlings to grow said Prof Ahmad After listening to this Boojho noted in his notebook By harbouring greater variety of plants the forest provides greater opportunities for food and habitat for the herbivores Larger number of herbivores means increased availability of food for a variety of carnivores The wide variety of animals helps the forest to regenerate and grow Decomposers help in maintaining the supply of nutrients to the growing plants in the forest Therefore the forest is a ‘dynamic living entity’ full of life and vitality It was about afternoon and the children wanted to go back Tibu suggested another route for going back While they were going back it started raining However surprisingly they saw that the raindrops were not hitting the forest floor directly The uppermost layer of the forest canopy intercepted the flow of raindrops and most of the water was coming down through the branches and the stems of the trees From the leaves it was dripping slowly over branches of the shrubs and herbs They found that the ground was still dry After about half an hour the rain stopped They noticed that the layer of dead leaves over the forest floor appeared wet now But water did not stagnate in the forest Boojho thought that if it had rained so heavily in his town it would have flooded the drains and roads What would happen if it rains heavily in your town Prof Ahmad told them that the forest also acts as a natural absorber of rainwater and allows it to seep It helps maintain the water table throughout the year Forests not only help in controlling floods but also help maintain the flow of water in the streams so that we get a steady supply of water On the other hand if trees are not present rain hits the ground directly and may flood the area around it Heavy rain may also damages the soil Roots of trees normally bind the soil together but in their absence the soil is washed away or eroded The children spent an hour at Tibu’s village on their way back The weather of the village was quite pleasant Villagers told them that due to the surrounding forest they receive good rainfall The air also remained cool Noise pollution too is less because the forest absorbs the noise of the nearby highway The children learnt about the history of the village It surprised them that the villages and the agricultural fields of that area were created after clearing the forest about sixty years ago Tibu’s grandfather told them that when he was young the village was not as large as it was now It was also surrounded by forests Construction of roads buildings industrial development and increasing demand of wood created pressure on the forests and it started vanishing He was not happy that the forest adjoining their village is not regenerating and is on the verge of disappearing due to overgrazing of animals and indiscriminate felling of trees Prof Ahmad said that if we did things wisely we could preserve forests and environment as well as have development Children prepared a few pictures to show the consequences of such an event At the end of the visit Prof Ahmad asked children to sum up the importance of forests The children wrote Forests provide us with oxygen They protect soil and provide habitat to a large number of animals Forests help in bringing good rainfall in neighbouring areas They are a source of medicinal plants timber and many other useful products We must preserve our forests FORESTS OUR LIFELINE What would happen if forests disappear If forests disappear the amount of carbon dioxide in air will increase resulting in the increase of earth’s temperature In the absence of trees and plants the animals will not get food and shelter In the absence of trees the soil will not hold water which will cause floods Deforestation will endanger our life and environment Think what we can do to preserve our forests Wastewater Story All of us use water in our homes and make it dirty Dirty Are you surprised Rich in lather mixed with oil black brown water that goes down the drains from sinks showers toilets laundries is dirty It is called wastewater This used water should not be wasted We must clean it up by removing pollutants Have you ever thought where the wastewater goes and what happens to it WATER OUR LIFELINE Clean water is a basic need of human being Let us make a mindmap of the many uses of clean water Activity We have given one example of the use of clean water You can add many more Clean water put to use Drinking Clean water that is fit for use is unfortunately not available to all It has been reported that more than one billion of people have no access to safe drinking water This accounts for a large number of water-related diseases and even deaths People even children walk for several kilometres to collect clean water as you read in Is it not a serious matter for human dignity You have studied in about the increasing scarcity of freshwater due to population growth pollution industrial development mismanagement and other factors Realising the urgency of the situation on the World Water Day on March the General Assembly of the United Nations proclaimed the period as the International Decade for action on Water for life All efforts made during this decade aim to reduce by half the number of people who do not have access to safe drinking water There has been perceptible progress in the direction of the aim but still there is a lot to achieve Cleaning of water is a process of removing pollutants before it enters a water body or is reused This process of wastewater treatment is commonly known as Sewage Treatment It takes place in several stages WHAT IS SEWAGE Sewage is wastewater released by homes industries hospitals offices and other users It also includes rainwater that has run down the street during a storm or heavy rain The water that washes off roads and rooftops carries harmful substances with it Sewage is a liquid waste Most of it is water which has dissolved and suspended impurities Activity Locate an open drain near your home school or on the roadside and inspect water flowing through it Record colour odour and any other observation Discuss with your friends and your teacher and fill up the following Table We know that sewage is a complex mixture containing suspended solids organic and inorganic impurities nutrients saprophytes and disease causing bacteria and other microbes These include the following Organic impurities Human faeces animal waste oil urea urine pesticides herbicides fruit and vegetable waste etc Inorganic impurities Nitrates Phosphates metals Nutrients Phosphorus and Nitrogen Bacteria Such as vibrio cholera which causes cholera and salmonella paratyphi which causes typhoid Other microbes Such as protozones which cause dysentery WATER FRESHENS UP AN E VENTFUL JOURNEY In a home or a public building generally one set of pipes brings clean water and another set of pipes takes away wastewater Imagine that we could see through the ground We would see a network of big and small pipes called sewers forming the sewerage It is like a transport system that carries sewage from the point of being produced to the point of disposal i e treatment plant Manholes are located at every m to m in the sewerage at the junction of two or more sewers and at points where there is a change in direction Activity Study the sewage route in your home school building Do the following Make a line diagram of the sewage route Walk down the street or survey the campus to find the number of manholes If possible observe open drain and record which living organisms are found in and around it In case you do not have a sewerage system in your locality find out how sewage is being disposed off Treatment of polluted water Perform the following activity It will help you understand the processes that take place at the wastewater treatment plant Activity Divide yourself into groups to perform the activity Record observations at each stage Fill a large glass jar full of water Add some dirty organic matter such as grass pieces or orange peels a small amount of detergent and a few drops of an ink or any colour Cap the jar shake it well and let the mixture stand in the sun for two days After two days shake the mixture and pour a small sample into test tube Label this test tube Before treatment Sample How does it smell Use an aerator from an aquarium to bubble air through the sample in the glass jar Allow several hours for aeration leave the aerator attached overnight If you do not have an aerator use a mechanical stirrer or a mixer You may have to stir it several times The next day when aeration is complete pour another sample into a second test tube Label it as After aeration Sample Fold a piece of filter paper to form a cone Wet the paper with tap water and then insert the cone in a funnel Mount the funnel on a support as you have learnt in Class Place layers of sand fine gravel and finally medium gravel in the funnel An actual filtration plant does not use filter paper but the sand filter is several metres deep Pour the remaining aerated liquid through the filter into the beakers Do not allow the liquid to spill over the filter If the filtered liquid is not clear filter it a few times till you get clear water Pour a sample of the filtered water into a third test tube labelled Filtered Sample SCIENCE Wastewater is passed through bar screens Large objects like rags sticks cans plastic packets napkins are removed Filtration process Pour another sample of the filtered water into a fourth test tube Add a small piece of a chlorine tablet Mix well until the water is clear Label the test tube Chlorinated Sample Observe carefully the samples in all the test tubes Do not taste Just smell them Now answer the following questions a What changes did you observe in the appearance of the liquid after aeration Did aeration change the odour c What was removed by the sand filter Did chlorine remove the colour e Did chlorine have an odour Was it worse than that of the wastewater Bar screen Water then goes to a grit and sand removal tank The speed of the incoming wastewater is decreased to allow sand grit and pebbles to settle down WASTEWATER TREATMENT PLANT WWTP T reatment of wastewater involves physical chemical and biological processes which remove physical chemical and biological matter that contaminates the wastewater Grit and sand removal tank The water is then allowed to settle in a large tank which is sloped towards the middle Solids like faeces settle at the bottom and are removed with a scraper This is the sludge A skimmer removes the floatable solids like oil and grease Water so cleared is called clarified water The sludge is transferred to a separate tank where it is decomposed by the anaerobic bacteria The biogas produced in the process can be used as fuel or can be used to produce electricity Air is pumped into the clarified water to help aerobic bacteria to grow Bacteria consume human waste food waste soaps and other unwanted matter still remaining in clarified water After several hours the suspended microbes settle at the bottom of the tank as activated sludge The water is then removed from the top The activated sludge is about water The water is removed by sand drying beds or machines Dried sludge is used as manure returning organic matter and nutrients to the soil The treated water has a very low level of organic material and suspended matter It is discharged into a sea a river or into the ground Nature cleans it up further Sometimes it may be necessary to disinfect water with chemicals like chlorine and ozone before releasing it into the distribution system Become an active citizen Waste generation is a natural part of human activity But we can limit the The water in a river is cleaned naturally by processes that are similar to those adopted in a wastewater treatment plant Did you know It has been suggested that we should plant eucalyptus trees all along sewage ponds These trees absorb all surplus wastewater rapidly and release pure water vapour into the atmosphere type of waste and quantity of waste produced Often we have been repelled by offensive smell The sight of open drains is disgusting The situation worsens in the rainy season when the drains start overflowing We have to wade through the mud pools on the roads Most unhygienic and unsanitary conditions prevail Flies mosquitoes and other insects breed in it You can be an enlightened citizen and approach the municipality or the gram panchayat Insist that the open drains be covered If the sewage of any particular house makes the neighbourhood dirty you should Chemicals like paints solvents insecticides motor oil medicines may kill microbes that help purify water So do not throw them down the drain Used tealeaves solid food remains soft toys cotton sanitary towels etc should also be thrown in the dustbin These wastes choke the drains They do not allow free flow of oxygen This hampers the degradation process Don’t add to the load of WWTP Paheli wonders how request them to be more considerate about others’ health ETTER HOUSEKEEPING PRACTICES One of the ways to minimise or eliminate waste and pollutants at their source is to see what you are releasing down the drain Cooking oil and fats should not be thrown down the drain They can harden and block the pipes In an open drain the fats clog the soil pores reducing its effectiveness in filtering water Throw oil and fats in the dustbin In the year the Government of India has initiated a new mission known as Swachh Bharat under which a lot of drives such as proper sewage disposal and providing toilets for everyone have been started Vermi-processing toilet A design of a toilet in which humans excreta is treated by earthworms has been tested in India It has been found to be a novel low water-use toilet for safe processing of human waste The operation of the toilet is very simple and hygienic The human excreta is completely converted to vermi cakes a resource much needed for soil SANITATION AND DISEASE Poor sanitation and contaminated drinking water is the cause of a large number of diseases Let us look at our own country A vast number of our people are still without sewerage facilities Where do they relieve themselves A very large fraction of our people defecates in the open on dry riverbeds on railway tracks near fields and many a time directly in water Untreated human excreta is a health hazard It may cause water pollution and soil pollution Both the surface water and groundwater get polluted Groundwater is a source of water for wells tubewells springs and many rivers as you learnt in Thus it becomes the most common route for water borne diseases They include cholera typhoid polio meningitis hepatitis and dysentery Bhoojo wants to know how sewage is disposed of in an aeroplane ALTERNATIVE ARRANGEMENT FOR SEWAGE DISPOSAL To improve sanitation low cost onsite sewage disposal systems are being encouraged Examples are septic tanks chemical toilets composting pits Septic tanks are suitable for places where there is no sewerage system for hospitals isolated buildings or a cluster of to houses Some organisations offer hygienic on-site human waste disposal technology These toilets do not require scavenging Excreta from the toilet seats flow through covered drains into a biogas plant The biogas produced is used as a source of energy SANITATION AT PUBLIC PLACES In our country fairs are organised periodically A large number of people participate in them In the same way railway stations bus depots airports hospitals are very busy places Thousands of people visit them daily Large amount of waste is generated here It must be disposed of properly otherwise epidemics could break out The government has laid down certain standards of sanitation but unfortunately they are not strictly enforced However all of us can contribute in maintaining sanitation at public places We should not scatter litter anywhere If there is no dustbin in sight we should carry the litter home and throw it in the dustbin TRACING CHANGES THROUGH A THOUSAND YEARS Take a look at Maps and Map was made in CE by the Arab geographer Al-Idrisi The section reproduced here is a detail of the Indian subcontinent from his larger map of the world Map was made in the s by a French cartographer The two maps are quite different even though they are of the same area In al-Idrisi’s map south India is where we would expect to find north India and Sri Lanka is the island at the top Place-names are marked in Arabic and there are some well-known names like Kanauj in Uttar Pradesh spelt in the map as Qanauj Map was made nearly years after Map during which time information about the subcontinent had changed considerably This map seems more familiar to us and the coastal areas in particular are surprisingly detailed This map was used by European sailors and merchants on their voyages see Chapter Cartographer A person who makes maps TRACING CHANGES THROUGH A THOUSAND YEARS Map A section of the world map drawn by the geographer al-Idrisi in the twelfth century showing the Indian subcontinent from land to sea TRACING CHANGES Look at the areas in the interior of the subcontinent on Map Are they as detailed as those on the coast Follow the course of the River Ganga and see how it is shown Why do you think there is a difference in the level of detail and accuracy between the coastal and inland areas in this map Equally important is the fact that the science of cartography differed in the two periods When historians read documents maps and texts from the past they have to be sensitive to the different historical backgrounds the contexts in which information about the past was produced New and Old Terminologies If the context in which information is produced changes with time what about language and meanings Historical records exist in a variety of languages which have changed considerably over the years Medieval Persian for example is different from modern Persian The difference is not just with regard to grammar and vocabulary the meanings of words also change over time Take the term Hindustan for example Today we understand it as India the modern nation-state When the term was used in the thirteenth century by Minhaj-i-Siraj a chronicler who wrote in Persian he meant the areas of Punjab Haryana and the lands between the Ganga and Yamuna He used the term in a political sense for lands that were a part of the dominions of the Delhi Sultan The areas included in this term shifted with the extent of the Sultanate but the term never included south India By contrast in the early sixteenth century Babur used Hindustan to describe the geography the fauna and the culture of the inhabitants of the subcontinent As we will see later in the chapter this was somewhat similar to the way the fourteenth-century poet Amir Khusrau used the word Hind While the idea of a geographical and cultural entity like India did exist the term Hindustan did not carry the political and national meanings which we associate with it today Historians today have to be careful about the terms they use because they meant different things in the past Take for example a simple term like foreigner It is used today to mean someone who is not an Indian In the medieval period a foreigner was any stranger who appeared say in a given village someone who was not a part of that society or culture In Hindi the term pardesi might be used to describe such a person and in Persian ajnabi A city-dweller therefore might have regarded a forest-dweller as a foreigner but two peasants living in the same village were not foreigners to each other even though they may have had different religious or caste backgrounds Historians and their Sources Historians use different types of sources to learn about the past depending upon the period of their study and the nature of their investigation Last year for example you read about rulers of the Gupta dynasty and Harshavardhana In this book we will read about the following thousand years from roughly to You will notice some continuity in the sources used by historians for the study of this period They still rely on coins inscriptions architecture and textual records for information But there is also considerable discontinuity The number and variety of textual records increased dramatically during this period They slowly displaced other types of available information Through this period paper gradually became cheaper and more widely available People used it to write holy texts chronicles of rulers letters and teachings of saints petitions and judicial records and for registers of accounts and taxes Manuscripts were collected by wealthy people rulers monasteries and temples They were placed in libraries and archives These manuscripts and documents provide a lot of detailed information to historians but they are also difficult to use There was no printing press in those days so scribes copied manuscripts by hand If you have ever copied a friend’s homework you would know that this is not a simple exercise Sometimes you cannot read your friend’s handwriting and are forced to guess what is written As a result there are small but significant differences in your copy of your friend’s work Manuscript copying is somewhat similar As scribes copied manuscripts they also introduced small changes a word here a sentence there These small differences grew over centuries of copying until manuscripts of the The value of paper Compare the following In the middle of the thirteenth century a scholar wanted to copy a book But he did not have enough paper So he washed the writing off a manuscript he did not want dried the paper and used it A century later if you bought some food in the market you could be lucky and have the shopkeeper wrap it for you in some paper When was paper more expensive and easily available in the thirteenth or the fourteenth century Archive A place where documents and manuscripts are stored Today all national and state governments have archives where they keep all their old official records and transactions Fig A painting of a scribe making a copy of a manuscript This painting is only cm by cm in size Because of its size it is called a miniature Miniature paintings were sometimes used to illustrate the texts of manuscripts They were so beautiful that later collectors often took the manuscripts apart and sold just the miniatures TRACING CHANGES OUR PASTS same text became substantially different from one another This is a serious problem because we rarely find the original manuscript of the author today We are totally dependent upon the copies made by later scribes As a result historians have to read different manuscript versions of the same text to guess what the author had originally written On occasion authors revised their chronicles at different times The fourteenth-century chronicler Ziyauddin Barani wrote his chronicle first in and another version two years later The two differ from each other but historians did not know about the existence of the first version until the s It remained lost in large library collections New Social and Political Groups The study of the thousand years between and is a huge challenge to historians largely because of the scale and variety of developments that occurred over the period At different moments in this period new technologies made their appearance like the Persian Different kinds of handwriting could make the reading of Persian and Arabic difficult The nastaliq style on the left is cursive and easy to read the shikaste on the right is denser and more difficult wheel in irrigation the spinning wheel in weaving and firearms in combat New foods and beverages arrived in the subcontinent potatoes corn chillies tea and coffee Remember that all these innovations new technologies and crops came along with people who brought other ideas with them as well As a result this was a period of economic political social and cultural changes You will learn about some of these changes in Chapters and This was also a period of great mobility Groups of people travelled long distances in search of opportunity The subcontinent held immense wealth and the possibilities for people to carve a fortune One group of people who became important in this period were the Rajputs a name derived from Rajaputra the son of a ruler Between the eighth and fourteenth centuries the term was applied more generally to a group of warriors who claimed Kshatriya caste status The term included not just rulers and chieftains but also soldiers and commanders who served in the armies of different monarchs all over the subcontinent A chivalric code of conduct extreme valour and a great sense of loyalty were the qualities attributed to Rajputs by their poets and bards Other groups of people such as the Marathas Sikhs Jats Ahoms and Kayasthas a caste of scribes and secretaries also used the opportunities of the age to become politically important Throughout this period there was a gradual clearing of forests and the extension of agriculture a change faster and more complete in some areas than in others Changes in their habitat forced many forest-dwellers to migrate Others started tilling the land and became peasants These new peasant groups gradually began to be influenced by regional markets chieftains priests monasteries and temples They became part of large complex societies and were required to pay taxes and offer goods and services to local lords As a result significant economic and social differences emerged amongst peasants Some possessed more productive land others also kept cattle and some combined artisanal work with agricultural activity during the lean season As society became more differentiated people were grouped into jatis or sub-castes and ranked on the basis of their backgrounds and their occupations Ranks were not fixed permanently and varied according to the power influence and resources controlled by members of the jati The status of the same jati could vary from area to area Jatis framed their own rules and regulations to manage the conduct of their members These regulations were enforced by an assembly of elders described in some areas as the jati panchayat But jatis were also required to follow the rules of their villages Several villages were governed by a chieftain Together they were only one small unit of a state Of the technological economic social and cultural changes described in this section which do you think were most significant in the town or village in which you live Habitat Refers to the environment of a region and the social and economic lifestyle of its residents Region and Empire Large states like those of the Cholas Chapter Tughluqs Chapter or Mughals Chapter encompassed many regions A Sanskrit prashasti see Chapter for an example of a prashasti praising the Delhi Sultan Ghiyasuddin Balban explained that he was the ruler of a vast empire that stretched from Bengal Gauda in the east to Ghazni Gajjana in Afghanistan in the west and included all of south India Dravida People of different regions Gauda Andhra Kerala Karnataka Maharashtra and Gujarat apparently fled before his armies Historians regard these as exaggerated claims of conquests At the same time they try to understand why rulers kept claiming to have control over different parts of the subcontinent Language and region In the poet Amir Khusrau noted that there was a different language in every region of this land Sindhi Lahori Kashmiri Dvarsamudri in southern Karnataka Telangani in Andhra Pradesh Gujari in Gujarat Ma‘bari in Tamil Nadu Gauri in Bengal Awadhi in eastern Uttar Pradesh and Hindawi in the area around Delhi Amir Khusrau went on to explain that in contrast to these languages there was Sanskrit which did not belong to any region It was an old language and common people do not know it only the Brahmanas do Make a list of the languages mentioned by Amir Khusrau Prepare another list of the names of languages spoken today in the regions he mentioned Underline names that are similar and circle those that are different Did you notice that the names by which languages are known have changed over time By many regions already possessed distinct geographical dimensions and their own language and cultural characteristics You will learn more about these in Chapter They were also associated with specific ruling dynasties There was considerable conflict between these states Occasionally dynasties like the Cholas Khaljis Tughluqs and Mughals were able to build an empire that was pan-regional spanning diverse regions Not all these empires were equally stable or successful Compare for example Table in Chapters and What was the duration of rule of the Khalji and Mughal dynasties When the Mughal Empire declined in the eighteenth century it led to the re-emergence of regional states Chapter But years of imperial pan-regional rule had altered the character of the regions Across most of the subcontinent the regions were left with the legacies of the big and small states that had ruled over them This was apparent in the emergence of many distinct and shared traditions in the realms of governance the management of the economy elite cultures and language Through the thousand years between and the character of the different regions did not grow in isolation These regions felt the impact of larger pan-regional forces of integration without ever quite losing their distinctiveness The thousand years of history that we are exploring witnessed major developments in religious traditions People’s belief in the divine was sometimes deeply personal but more usually it was collective Collective belief in a supernatural agency religion was often closely connected with the social and economic organisation of local communities As the social worlds of these groups altered so too did their beliefs It was during this period that important changes occurred in what we call Hinduism today These included the worship of new deities the construction of temples by royalty and the growing importance of Brahmanas the priests as dominant groups in society Their knowledge of Sanskrit texts earned the Brahmanas a lot of respect in society Their dominant position was consolidated by the support of their patrons new rulers searching for prestige One of the major developments of this period was the emergence of the idea of bhakti of a loving personal deity that devotees could reach without the aid of priests or elaborate rituals You will be learning about this and other traditions in Chapter Do you remember what Amir Khusrau had to say regarding Sanskrit knowledge and Brahmanas Patron An influential wealthy individual who supports another person an artiste a craftsperson a learned man or a noble This was also the period when new religions appeared in the subcontinent Merchants and migrants first brought the teachings of the holy Quran to India in the seventh century Muslims regard the Quran as their holy book and accept the sovereignty of the one God Allah whose love mercy and bounty embrace all those who believe in Him without regard to social background Many rulers were patrons of Islam and the ulama learned theologians and jurists And like Hinduism Islam was interpreted in a variety of ways by its followers There were the Shia Muslims who believed that the Prophet Muhammad’s son-in-law Ali was the legitimate leader of the Muslim community and the Sunni Muslims who accepted the authority of the early leaders Khalifas of the community and the succeeding Khalifas There were other important differences between the various schools of law Hanafi and Shafi’i mainly in India and in theology and mystic traditions Thinking about Time and Historical Periods Historians do not see time just as a passing of hours days or years as a clock or a calendar Time also reflects changes in social and economic organisation in the persistence and transformation of ideas and beliefs The study of time is made somewhat easier by dividing the past into large segments periods that possess shared characteristics In the middle of the nineteenth century British historians divided the history of India into three periods Hindu Muslim and British This division was based on the idea that the religion of rulers was the only important historical change and that there were no other significant developments in the economy society or culture Such a division also ignored the rich diversity of the subcontinent Few historians follow this periodisation today Most look to economic and social factors to characterise the major elements of different moments of the past The histories you read last year included a wide range of early societies hunter-gatherers early farmers people living in towns and villages and early empires and kingdoms The histories you will be studying this year are often described as medieval You will find out more about the spread of peasant societies the rise of regional and imperial state formations sometimes at the cost of pastoral and forest people the development of Hinduism and Islam as major religions and the arrival of European trading companies These thousand years of Indian history witnessed considerable change After all the sixteenth and eighteenth centuries were quite different from the eighth or the eleventh Therefore describing the entire period as one historical unit is not without its problems Moreover the medieval period is often contrasted with the modern period Modernity carries with it a sense of material progress and intellectual advancement This seems to suggest that the medieval period was lacking in any change whatsoever But of course we know this was not the case During these thousand years the societies of the subcontinent were transformed often and economies in several regions reached a level of prosperity that attracted the interest of European trading companies As you read this book look out for signs of change and the historical processes at work Also whenever you can compare what you read in this book with what you read last year Look out for changes and continuities wherever you can and look at the world around you to see what else has changed or remained the same NEW KINGS AND KINGDOMS Many new dynasties emerged after the seventh century Map shows the major ruling dynasties in different parts of the subcontinent between the seventh and twelfth centuries Map Major kingdoms seventh-twelfth centuries Locate the Gurjara-Pratiharas Rashtrakutas Palas Cholas and Chahamanas Chauhans Can you identify the present-day states over which they exercised control OUR PASTS The Emergence of New Dynasties By the seventh century there were big landlords or warrior chiefs in different regions of the subcontinent Existing kings often acknowledged them as their subordinates or samantas They were expected to bring gifts for their kings or overlords be present at their courts and provide them with military support As samantas gained power and wealth they declared themselves to be maha-samanta maha-mandaleshvara the great lord of a circle or region and so on Sometimes they asserted their independence from their overlords One such instance was that of the Rashtrakutas in the Deccan Initially they were subordinate to the Chalukyas of Karnataka In the mid-eighth century Dantidurga a Rashtrakuta chief overthrew his Chalukya overlord and performed a ritual called hiranya-garbha literally the golden womb When this ritual was performed with the help of Brahmanas it was thought to lead to the rebirth of the sacrificer as a Kshatriya even if he was not one by birth In other cases men from enterprising families used their military skills to carve out kingdoms For instance the Kadamba Mayurasharman and the GurjaraPratihara Harichandra were Brahmanas who gave up their traditional professions and took to arms successfully establishing kingdoms in Karnataka and Rajasthan respectively Fig Wall relief from Cave Ellora showing Vishnu as Narasimha the man-lion It is a work of the Rashtrakuta period Do you think being born as a Kshatriya was important in order to become a ruler during this period Administration in the Kingdoms Many of these new kings adopted high-sounding titles such as maharaja-adhiraja great king overlord of kings tribhuvana-chakravartin lord of the three worlds and so on However in spite of such claims they often shared power with their samantas as well as with associations of peasants traders and Brahmanas In each of these states resources were obtained from the producers that is peasants cattle-keepers artisans who were often persuaded or compelled to surrender part of what they produced Sometimes these were claimed as rent due to a lord who asserted that he owned the land Revenue was also collected from traders Four hundred taxes The inscriptions of the Cholas who ruled in Tamil Nadu refer to more than terms for different kinds of taxes The most frequently mentioned tax is vetti taken not in cash but in the form of forced labour and kadamai or land revenue There were also taxes on thatching the house the use of a ladder to climb palm trees a cess on succession to family property etc In what ways was this form of administration different from the present-day system These resources were used to finance the king’s establishment as well as for the construction of temples and forts They were also used to fight wars which were in turn expected to lead to the acquisition of wealth in the form of plunder and access to land as well as trade routes The functionaries for collecting revenue were generally recruited from influential families and positions were often hereditary This was true about the army as well In many cases close relatives of the king held these positions Prashastis and Land Grants Prashastis contain details that may not be literally true But they tell us how rulers wanted to depict themselves as valiant victorious warriors for example These were composed by learned Brahmanas who occasionally helped in the administration The achievements of Nagabhata Many rulers described their achievements in prashastis you read about the prashasti of the Gupta ruler Samudragupta last year One prashasti written in Sanskrit and found in Gwalior Madhya Pradesh describes the exploits of Nagabhata a Pratihara king as follows The kings of Andhra Saindhava Sind Vidarbha part of Maharashtra and Kalinga part of Orissa fell before him even as he was a prince He won a victory over Chakrayudha the ruler of Kanauj He defeated the king of Vanga part of Bengal Anarta part of Gujarat Malava part of Madhya Pradesh Kirata forest peoples Turushka Turks Vatsa Matsya both kingdoms in north India Also see if you can find some of the areas mentioned in the inscription on Map Other rulers made similar claims as well Why do you think they made these claims Kings often rewarded Brahmanas by grants of land These were recorded on copper plates which were given to those who received the land Fig This is a set of copper plates recording a grant of land made by a ruler in the ninth century written partly in Sanskrit and partly in Tamil The ring holding the plates together is secured with the royal seal to indicate that this is an authentic document NEW KINGS AND KINGDOMS We have demarcated the boundaries of the land by making earthen embankments as well as by planting thorny bushes This is what the land contains fruit-bearing trees water land gardens and orchards trees wells open spaces pastureland a village anthills platforms canals ditches rivers silt-laden land tanks granaries fish ponds bee hives and deep lakes He who receives the land can collect taxes from it He can collect the taxes imposed by judicial officers as fines the tax on betel-leaves that on woven cloth as well as on vehicles He can build large rooms with upper stories made of baked bricks he can get large and small wells dug he can plant trees and thorny bushes if necessary he can get canals constructed for irrigation He should ensure that water is not wasted and that embankments are built List all the possible sources of irrigation mentioned Unusual for the twelfth century was a long Sanskrit poem containing the history of kings who ruled over Kashmir It was composed by an author named Kalhana He used a variety of sources including inscriptions documents eyewitness accounts and earlier histories to write his account Unlike the writers of prashastis he was often critical about rulers and their policies Warfare for Wealth You may have noticed that each of these ruling dynasties was based in a specific region At the same time they tried to control other areas One particularly OUR PASTS prized area was the city of Kanauj in the Ganga valley For centuries rulers belonging to the Gurjara-Pratihara Rashtrakuta and Pala dynasties fought for control over Kanauj Because there were three parties in this longdrawn conflict historians often describe it as the tripartite struggle As we will see pp rulers also tried to demonstrate their power and resources by building large temples So when they attacked one another’s kingdoms they often chose to target temples which were sometimes extremely rich You will read more about this in Chapter One of the best known of such rulers is Sultan Mahmud of Ghazni Afghanistan He ruled from to and extended control over parts of Central Asia Iran and the north-western part of the subcontinent He raided the subcontinent almost every year his targets were wealthy temples including that of Somnath Gujarat Much of the wealth Mahmud carried away was used to create a splendid capital city at Ghazni Sultan Mahmud was also interested in finding out more about the people he conquered and entrusted a scholar named Al-Biruni to write an account of the subcontinent This Arabic work known as the Kitab ul-Hind remains an important source for historians He consulted Sanskrit scholars to prepare this account Other kings who engaged in warfare included the Chahamanas later known as the Chauhans who ruled over the region around Delhi and Ajmer They attempted to expand their control to the west and the east where they were opposed by the Chalukyas of Gujarat and the Gahadavalas of western Uttar Pradesh The best-known Chahamana ruler was Prithviraja who defeated an Afghan ruler named Sultan Muhammad Ghori in but lost to him the very next year in Look at Map and suggest reasons why these rulers wanted to control Kanauj and the Ganga valley Sultan An Arabic term meaning ruler Look at Map again and discuss why the Chahamanas may have wanted to expand their territories NEW KINGS AND KINGDOMS A Closer Look The Cholas Map The Chola kingdom and its neighbours From Uraiyur to Thanjavur How did the Cholas rise to power A minor chiefly family known as the Muttaraiyar held power in the Kaveri delta They were subordinate to the Pallava kings of Kanchipuram Vijayalaya who belonged to the ancient chiefly family of the Cholas from Uraiyur captured the delta from the Muttaraiyar in the middle of the ninth century He built the town of Thanjavur and a temple for goddess Nishumbhasudini there The successors of Vijayalaya conquered neighbouring regions and the kingdom grew in size and power The Pandyan and the Pallava territories to the south and north were made part of this kingdom OUR PASTS Rajaraja I considered the most powerful Chola ruler became king in and expanded control over most of these areas He also reorganised the administration of the empire Rajaraja’s son Rajendra I continued his policies and even raided the Ganga valley Sri Lanka and countries of Southeast Asia developing a navy for these expeditions Splendid Temples and Bronze Sculpture The big temples of Thanjavur and Gangaikondacholapuram built by Rajaraja and Rajendra are architectural and sculptural marvels Chola temples often became the nuclei of settlements which grew around them These were centres of craft production Temples were also endowed with land by rulers as well as by others The produce of this land went into maintaining all the specialists who worked at the temple and very often lived near it priests garland makers cooks sweepers musicians dancers etc In other words temples were not only places of worship they were the hub of economic social and cultural life as well Amongst the crafts associated with temples the making of bronze images was the most distinctive Chola bronze images are considered amongst the finest in the world While most images were of deities sometimes images were made of devotees as well Agriculture and Irrigation Many of the achievements of the Cholas were made possible through new developments in agriculture Look at Map again Notice that the river Kaveri branches off into several small channels before emptying into the Bay of Bengal These channels overflow frequently depositing fertile soil on their banks Water from the channels also provides the necessary moisture for agriculture particularly the cultivation of rice Although agriculture had developed earlier in other parts of Tamil Nadu it was only from the fifth or sixth century that this area was opened up for large-scale cultivation Forests had to be cleared in some regions land had to be levelled in other areas In the delta region embankments had to be built to prevent flooding and canals had to be constructed to carry water to the fields In many areas two crops were grown in a year In many cases it was necessary to water crops artificially A variety of methods were used for irrigation In some areas wells were dug In other places huge tanks were constructed to collect rainwater Remember that irrigation works require planning organising labour and resources maintaining these works and deciding on how water is to be shared Most of the new rulers as well as people living in villages took an active interest in these activities Fig A ninth-century sluicegate in Tamil Nadu It regulated the outflow of water from a tank into the channels that irrigated the fields A sluice gate is traditionally a wood or metal barrier which is commonly used to control water levels and flow rates in rivers and canals The Administration of the Empire How was the administration organised Settlements of peasants known as ur became prosperous with the spread of irrigation agriculture Groups of such villages formed larger units called nadu The village council and the nadu performed several administrative functions including dispensing justice and collecting taxes Rich peasants of the Vellala caste exercised considerable control over the affairs of the nadu under the supervision of the central Chola government The Chola kings gave some rich landowners titles like muvendavelan a velan or peasant serving three kings araiyar chief etc as markers of respect and entrusted them with important offices of the state at the centre Types of land Chola inscriptions mention several categories of land vellanvagai land of non-Brahmana peasant proprietors brahmadeya land gifted to Brahmanas shalabhoga land for the maintenance of a school devadana tirunamattukkani land gifted to temples pallichchhandam land donated to Jaina institutions We have seen that Brahmanas often received land grants or brahmadeya As a result a large number of Brahmana settlements emerged in the Kaveri valley as in other parts of south India Each brahmadeya was looked after by an assembly or sabha of prominent Brahmana landholders These assemblies worked very efficiently Their decisions were recorded in detail in inscriptions often on the stone walls of temples Associations of traders known as nagarams also occasionally performed administrative functions in towns Inscriptions from Uttaramerur in Chingleput district Tamil Nadu provide details of the way in which the sabha was organised The sabha had separate committees to look after irrigation works gardens temples etc Names of those eligible to be members of these committees were written on small tickets of palm leaf these tickets were put into an earthenware pot from which a young boy was asked to take out the tickets one by one for each committee Inscriptions and texts Who could be a member of a sabha The Uttaramerur inscription lays down All those who wish to become members of the sabha should be owners of land from which land revenue is collected They should have their own homes They should be between and years of age They should have knowledge of the Vedas They should be well-versed in administrative matters and honest If anyone has been a member of any committee in the last three years he cannot become a member of another committee Anyone who has not submitted his accounts and those of his relatives cannot contest the elections Do you think women participated in these assemblies In your view are lotteries useful in choosing members of committees While inscriptions tell us about kings and powerful men here is an excerpt from the Periyapuranam a twelfthcentury Tamil work which informs us about the lives of ordinary men and women On the outskirts of Adanur was a small hamlet of Pulaiyas a name used for a social group considered outcastes by Brahmanas and Vellalas studded with small huts under old thatches and inhabited by agrarian labourers engaged in menial occupations In the thresholds of the huts covered with strips of leather little chickens moved about in groups dark children who wore bracelets of black iron were prancing about carrying little puppies In the shade of the marudu arjuna trees a female labourer put her baby to sleep on a sheet of leather there were mango trees from whose branches drums were hanging and under the coconut palms in little hollows on the ground tiny-headed bitches lay after whelping The red-crested cocks crowed before dawn calling the brawny Pulaiyar plural to their day’s work and by day under the shade of the kanji tree spread the voice of the wavy-haired Pulaiya women singing as they were husking paddy Were there any Brahmanas in this hamlet Describe all the activities that were taking place in the village Why do you think temple inscriptions ignore these activities NEW KINGS AND KINGDOMS China under the Tang dynasty In China an empire was established under the Tang dynasty which remained in power for about years from the seventh to the tenth centuries Its capital Xi’an was one of the largest cities in the world visited by Turks Iranians Indians Japanese and Koreans The Tang empire was administered by a bureaucracy recruited through an examination which was open to all who wished to appear for it This system of selecting officials remained in place with some changes till THE DELHI SULTANS In Chapter we saw that regions like the Kaveri delta became the centre of large kingdoms Did you notice that there was no mention of a kingdom with Delhi as its capital That was because Delhi became an important city only in the twelfth century Map Selected Sultanate cities of Delhi thirteenth-fourteenth centuries Take a look at Table Delhi first became the capital of a kingdom under the Tomara Rajputs who were defeated in the middle of the twelfth century by the Chauhans also referred to as Chahamanas of Ajmer It was under the Tomaras and Chauhans that Delhi became an important commercial centre Many rich Jaina merchants lived in the city and constructed several temples Coins minted here called dehliwal had a wide circulation The transformation of Delhi into a capital that controlled vast areas of the subcontinent started with the foundation of the Delhi Sultanate in the beginning of the thirteenth century Take a look at Table again and identify the five dynasties that together made the Delhi Sultanate The Delhi Sultans built many cities in the area that we now know as Delhi Look at Map and locate Dehli-i Kuhna Siri and Jahanpanah Finding Out about the Delhi Sultans Although inscriptions coins and architecture provide a lot of information especially valuable are histories tarikh singular tawarikh plural written in Persian the language of administration under the Delhi Sultans The authors of tawarikh were learned men secretaries administrators poets and courtiers who both recounted events and advised rulers on governance emphasising the importance of just rule The circle of justice Fakhr-i Mudabbir wrote in the thirteenth century Do you think the circle of justice is an appropriate term to describe the relationship between the king and his subjects OUR PASTS A king cannot survive without soldiers And soldiers cannot live without salaries Salaries come from the revenue collected from peasants But peasants can pay revenue only when they are prosperous and happy This happens when the king promotes justice and honest governance Keep the following additional details in mind the authors of tawarikh lived in cities mainly Delhi and hardly ever in villages They often wrote their histories for Sultans in the hope of rich rewards These authors advised rulers on the need to preserve an ideal social order based on birthright and gender distinctions Their ideas were not shared by everybody In Sultan Iltutmish’s daughter Raziyya became Sultan The chronicler of the age Minhaj-i Siraj recognised that she was more able and qualified than all her brothers But he was not comfortable at having a queen as ruler Nor were the nobles happy at her attempts to rule independently She was removed from the throne in What Minhaj-i Siraj thought about Raziyya Minhaj-i Siraj thought that the queen’s rule went against the ideal social order created by God in which women were supposed to be subordinate to men He therefore asked In the register of God’s creation since her account did not fall under the column of men how did she gain from all of her excellent qualities Birthright Privileges claimed on account of birth For example people believed that nobles inherited their rights to govern because they were born in certain families Gender distinctions Social and biological differences between women and men Usually these differences are used to argue that men are superior to women On her inscriptions and coins Raziyya mentioned that she was the daughter of Sultan Iltutmish This was in contrast to the queen Rudramadevi of the Kakatiya dynasty of Warangal part of modern Andhra Pradesh Rudramadevi changed her name on her inscriptions and pretended she was a man Another queen Didda ruled in Kashmir Her title is interesting it comes from didi or elder sister an obviously affectionate term given to a loved ruler by her subjects Express Minhaj’s ideas in your own words Do you think Raziyya shared these ideas Why do you think it was so difficult for a woman to be a ruler From Garrison Town to Empire The Expansion of the Delhi Sultanate Map Major cities captured by Shamsuddin Iltutmish Hinterland The lands adjacent to a city or port that supply it with goods and services Garrison town A fortified settlement with soldiers In the early thirteenth century the control of the Delhi Sultans rarely went beyond heavily fortified towns occupied by garrisons The Sultans seldom controlled the hinterland of the cities and were therefore dependent upon trade tribute or plunder for supplies Controlling garrison towns in distant Bengal and Sind from Delhi was extremely difficult Rebellion war even bad weather could snap fragile communication routes Delhi’s authority was also challenged by Mongol invasions from Afghanistan and by governors who rebelled at any sign of the Sultan’s weakness The Sultanate barely survived these challenges Its consolidation occurred during the reign of Ghiyasuddin Balban and further expansion under Alauddin Khalji and Muhammad Tughluq The first set of campaigns along the internal frontier of the Sultanate aimed at consolidating the hinterlands of the garrison towns During these campaigns forests were cleared in the Ganga-Yamuna doab and huntergatherers and pastoralists expelled from their habitat These lands were given to peasants and agriculture was encouraged New fortresses garrison towns and towns were established to protect trade routes and to promote regional trade The second expansion occurred along the external frontier of the Sultanate Military expeditions into southern India started during the reign of Alauddin Khalji see Map and culminated with Muhammad Tughluq In their campaigns Sultanate armies captured elephants horses and slaves and carried away precious metals By the end of Muhammad Tughluq’s reign years after somewhat humble beginnings the armies of the Delhi Sultanate had marched across a large part of the subcontinent They had defeated rival armies and seized cities The Sultanate collected taxes from the peasantry and dispensed justice in its realm But how complete and effective was its control over such a vast territory Map Alauddin Khalji’s campaign into south India Fig Quwwat al-Islam mosque and minaret built during the last decade of the twelfth century This was the congregational mosque of the first city built by the Delhi Sultans described in the chronicles as Dehli-iKuhna the old city The mosque was enlarged by Iltutmish and Alauddin Khalji The minar was built by two Sultans Qutbuddin Aybak and Iltutmish The Masjid Fig Begumpuri mosque built in the reign of Muhammad Tughluq was the main mosque of Jahanpanah the Sanctuary of the World his new capital in Delhi See Map OUR PASTS A mosque is called a masjid in Arabic literally a place where a Muslim prostrates in reverence to Allah In a congregational mosque masjid-i-jami or jama masjid Muslims read their prayers namaz together Members of the congregation choose the most respected learned male as their leader imam for the rituals of prayer He also delivers the sermon khutba during the Friday prayer During prayer Muslims stand facing Mecca In India this is to the west This is called the qibla The Delhi Sultans built several mosques in cities all over the subcontinent These demonstrated their claims to be protectors of Islam and Muslims Mosques also helped to create the sense of a community of believers Fig Moth ki Masjid built in the reign of Sikandar Lodi by his minister who shared a belief system and a code of conduct It was necessary to reinforce this idea of a community because Muslims came from a variety of backgrounds Fig Mosque of Jamali Kamali built in the late s Compare Figures and What similarities and differences do you notice amongst the mosques The mosques in Figures and show an evolution in architectural tradition that culminates in Shah Jahan’s mosque in Delhi see Fig in Chapter A Closer Look Administration and Consolidation under the Khaljis and Tughluqs The consolidation of a kingdom as vast as the Delhi Sultanate needed reliable governors and administrators Rather than appointing aristocrats and landed chieftains as governors the early Delhi Sultans especially Iltutmish favoured their special slaves purchased for military service called bandagan in Persian They were carefully trained to man some of the most important political offices in the kingdom Since they were totally dependent upon their master the Sultan could trust and rely upon them Slaves rather than sons The Sultans were advised A slave whom one has brought up and promoted must be looked after for it needs a whole lifetime and good luck to find a worthy and experienced slave Wise men have said that a worthy and experienced slave is better than a son you think of any reason why a slave would be Can better than a son Client Someone who is under the protection of another a dependent or hanger-on The Khaljis and Tughluqs continued to use bandagan and also raised people of humble birth who were often their clients to high political positions They were appointed as generals and governors However this also introduced an element of political instability Slaves and clients were loyal to their masters and patrons but not to their heirs New Sultans had their own servants As a result the accession of a new monarch often saw conflict between the old and the new nobility The patronage of these humble people by the Delhi Sultans also shocked many elites and the authors of Persian tawarikh criticised the Delhi Sultans for appointing the low and base-born to high offices Officials of Sultan Muhammad Tughluq Sultan Muhammad Tughluq appointed Aziz Khummar a wine distiller Firuz Hajjam a barber Manka Tabbakh a cook and two gardeners Ladha and Pira to high administrative posts Ziyauddin Barani a midfourteenth-century chronicler reported their appointments as a sign of the Sultan’s loss of political judgement and his incapacity to rule Why do you think Barani criticised the Sultan OUR PASTS Like the earlier Sultans the Khalji and Tughluq monarchs appointed military commanders as governors of territories of varying sizes These lands were called iqta and their holder was called iqtadar or muqti The duty of the muqtis was to lead military campaigns and maintain law and order in their iqtas In exchange for their military services the muqtis collected the revenues of their assignments as salary They also paid their soldiers from these revenues Control over muqtis was most effective if their office was not inheritable and if they were assigned iqtas for a short period of time before being shifted These harsh conditions of service were rigorously imposed during the reigns of Alauddin Khalji and Muhammad Tughluq Accountants were appointed by the state to check the amount of revenue collected by the muqtis Care was taken that the muqti collected only the taxes prescribed by the state and that he kept the required number of soldiers As the Delhi Sultans brought the hinterland of the cities under their control they forced the landed chieftains the samanta aristocrats and rich landlords to accept their authority Under Alauddin Khalji the state brought the assessment and collection of land revenue under its own control The rights of the local chieftains to levy taxes were cancelled and they were also forced to pay taxes The Sultan’s administrators measured the land and kept careful accounts Some of the old chieftains and landlords served the Sultanate as revenue collectors and assessors There were three types of taxes on cultivation called kharaj and amounting to about per cent of the peasant’s produce on cattle and on houses It is important to remember that large parts of the subcontinent remained outside the control of the Delhi Sultans It was difficult to control distant provinces like Bengal from Delhi and soon after annexing southern India the entire region became independent Even in the Gangetic plain there were forested areas that Sultanate forces could not penetrate Local chieftains established their rule in these regions Sometimes rulers like Alauddin Khalji and Muhammad Tughluq could force their control in these areas but only for a short duration Chieftains and their fortifications Ibn Battuta a fourteenth-century traveller from Morocco Africa explained that chieftains sometimes fortified themselves in mountains in rocky uneven and rugged places as well as in bamboo groves In India the bamboo is not hollow it is big Its several parts are so intertwined that even fire cannot affect them and they are on the whole very strong The chieftains live in these forests which serve them as ramparts inside which are their cattle and their crops There is also water for them within that is rain water which collects there Hence they cannot be subdued except by powerful armies who entering these forests cut down the bamboos with specially prepared instruments Describe the ways in which the chieftains arranged for their defence The Mongols under Genghis Khan invaded Transoxiana in north-east Iran in and the Delhi Sultanate faced their onslaught soon after Mongol attacks on the Delhi Sultanate increased during the reign of Alauddin Khalji and in the early years of Muhammad Tughluq’s rule This forced the two rulers to mobilise a large standing army in Delhi which posed a huge administrative challenge Let us see how the two Sultans dealt with this Alauddin Khalji Muhammad Tughluq Delhi was attacked twice in and As a defensive measure Alauddin Khalji raised a large standing army The Sultanate was attacked in the early years of Muhammad Tughluq’s reign The Mongol army was defeated Muhammad Tughluq was confident about the strength of his army and his resources to plan an attack on Transoxiana He therefore raised a large standing army Alauddin constructed a new garrison town named Siri for his soldiers See Map Rather than constructing a new garrison town the oldest of the four cities of Delhi Dehli-i Kuhna was emptied of its residents and the soldiers garrisoned there The residents of the old city were sent to the new capital of Daulatabad in the south The soldiers had to be fed This was done through the produce collected as tax from lands between the Ganga and Yamuna Tax was fixed at per cent of the peasant’s yield Produce from the same area was collected as tax to feed the army But to meet the expense of maintaining such a large number of soldiers the Sultan levied additional taxes This coincided with famine in the area The soldiers had to be paid Alauddin chose to pay his soldiers salaries in cash rather than iqtas The soldiers would buy their supplies from merchants in Delhi and it was thus feared that merchants would raise their prices To stop this Alauddin controlled the prices of goods in Delhi Prices were carefully surveyed by officers and merchants who did not sell at the prescribed rates were punished Muhammad Tughluq also paid his soldiers cash salaries But instead of controlling prices he used a token currency somewhat like present-day paper currency but made out of cheap metals not gold and silver People in the fourteenth century did not trust these coins They were very smart they saved their gold and silver coins and paid all their taxes to the state with this token currency This cheap currency could also be counterfeited easily Alauddin’s administrative measures were quite successful and chroniclers praised his reign for its cheap prices and efficient supplies of goods in the market He successfully withstood the threat of Mongol invasions Muhammad Tughluq’s administrative measures were a failure His campaign into Kashmir was a disaster He then gave up his plans to invade T ransoxiana and disbanded his large ar my Meanwhile his administrative measures created complications The shifting of people to Daulatabad was resented The raising of taxes and famine in the Ganga-Yamuna belt led to widespread rebellion And finally the token currency had to be recalled In this list of Muhammad Tughluq’s failures we sometimes forget that for the first time in the history of the Sultanate a Delhi Sultan planned a campaign to capture Mongol territory Unlike Alauddin’s defensive measures Muhammad Tughluq’s measures were conceived as a part of a military offensive against the Mongols The Sultanate in the Fifteenth and Sixteenth Centuries Take a look at Table again You will notice that after the Tughluqs the Sayyid and Lodi dynasties ruled from Delhi and Agra until By then Jaunpur Bengal Malwa Gujarat Rajasthan and the entire south India had independent rulers who established flourishing states and prosperous capitals This was also the period which saw the emergence of new ruling groups like the Afghans and the Rajputs Some of the states established in this period were small but powerful and extremely well administered Sher Shah Sur started his career as the manager of a small territory for his uncle in Bihar and eventually challenged and defeated the Mughal emperor Humayun Sher Shah captured Delhi and established his own dynasty Although the Sur dynasty ruled for only fifteen years it introduced an administration that borrowed elements from Alauddin Khalji and made them more efficient Sher Shah’s administration became the model followed by the great emperor Akbar when he consolidated the Mughal Empire ELSEWHERE The Three Orders the Peace of God Knights and the Crusades The idea of the Three Orders was first formulated in France in the early eleventh century It divided society into three classes those who prayed those who fought and those who tilled the land This division of society into Three Orders was supported by the Church to consolidate its dominant role in society This helped the emergence of a new warrior group called Knights The Church patronised this group and used them to propagate their idea of Peace of God The attempt was to direct warriors away from conflict amongst themselves and send them instead on a campaign against the Muslims who had captured the city of Jerusalem This led to a series of campaigns called the Crusades These campaigns in the service of God and the Church completely altered the status of Knights Originally these Knights did not belong to the class of nobles But by the end of the eleventh century in France and a century later in Germany the humble origins of these warriors were forgotten By the twelfth century nobles also wanted to be known as Knights THE MUGHAL EMPIRE Ruling as large a territory as the Indian subcontinent with such a diversity of people and cultures was an extremely difficult task for any ruler to accomplish in the Middle Ages Quite in contrast to their predecessors the Mughals created an empire and accomplished what had hitherto seemed possible for only short periods of time From the latter half of the sixteenth century they expanded their kingdom from Agra and Delhi until in the seventeenth century they controlled nearly all of the subcontinent They imposed structures of administration and ideas of governance that outlasted their rule leaving a political legacy that succeeding rulers of the subcontinent could not ignore Today the Prime Minister of India addresses the nation on Independence Day from the ramparts of the Red Fort in Delhi the residence of the Mughal emperors The Red Fort Who were the Mughals The Mughals were descendants of two great lineages of rulers From their mother’s side they were descendants of Genghis Khan died the Mongol ruler who ruled over parts of China and Central Asia From their father’s side they were the successors of Timur died the ruler of Iran Iraq and modern-day Turkey However the Mughals did not like to be called Mughal or Mongol This was because Genghis Khan’s memory was associated with the massacre of innumerable people It was also linked with the Uzbegs their Mongol competitors On the other hand the Mughals were proud of their Timurid ancestry not least of all because their great ancestor had captured Delhi in They celebrated their genealogy pictorially each ruler getting a picture made of Timur and himself Take a look at Figure which is somewhat like a group photograph Do you think this painting suggests that the Mughals claimed kingship as a birthright OUR PASTS A miniature painting dated of Timur his descendants and the Mughal emperors Timur is in the centre and on his right is his son Miran Shah the first Mughal emperor Babur’s great-greatgrandfather and then Abu Said Babur’s grandfather To the left of Timur are Sultan Muhammad Mirza Babur’s great-grandfather and Umar Shaikh Babur’s father The Mughal emperors Babur Akbar and Shah Jahan are the third fourth and fifth individuals on Timur’s right and on his left in the same order are Humayun Jahangir and Aurangzeb Mughal Military Campaigns Babur the first Mughal emperor succeeded to the throne of Ferghana in when he was only years old He was forced to leave his ancestral throne due to the invasion of another Mongol group the Uzbegs After years of wandering he seized Kabul in In he defeated the Sultan of Delhi Ibrahim Lodi at Panipat and captured Delhi and Agra Table charts some of the major campaigns of the Mughals Study it carefully and see if you can notice any long-term patterns You will notice for example that the Afghans were an immediate threat to Mughal authority Note the relationship between the Mughals and the Ahoms see also Chapter the Sikhs see also Chapters and and Mewar and Marwar see also Chapter How was Humayun’s relationship with Safavid Iran different from Akbar’s Did the annexation of Golconda and Bijapur in Aurangzeb’s reign end hostilities in the Deccan Cannons were an important addition in sixteenth-century warfare Babur used them effectively in the first battle of Panipat Gun powder technology was brought to India for warfare in the th century Fire arms were used for the first time in regions such as Gujarat Malwa and Deccan and was used by Babur in early th century THE MUGHAL EMPIRE Akbar was years old when he became emperor His reign can be divided into three periods Akbar became independent of the regent Bairam Khan and other members of his domestic staff Military campaigns were launched against the Suris and other Afghans against the neighbouring kingdoms of Malwa and Gondwana and to suppress the revolt of his half-brother Mirza Hakim and the Uzbegs In the Sisodiya capital of Chittor was seized and in Ranthambhor military campaigns in Gujarat were followed by campaigns in the east in Bihar Bengal and Orissa These campaigns were complicated by the revolt in support of Mirza Hakim expansion of Akbar’s empire Campaigns were launched in the north-west Qandahar was seized from the Safavids Kashmir was annexed as also Kabul after the death of Mirza Hakim Campaigns in the Deccan started and Berar Khandesh and parts of Ahmadnagar were annexed In the last years of his reign Akbar was distracted by the rebellion of Prince Salim the future Emperor Jahangir Jahangir Military campaigns started by Akbar continued The Sisodiya ruler of Mewar Amar Singh accepted Mughal service Less successful campaigns against the Sikhs the Ahoms and Ahmadnagar followed Prince Khurram the future Emperor Shah Jahan rebelled in the last years of his reign The efforts of Nur Jahan Jahangir’s wife to marginalise him were unsuccessful Shah Jahan Mughal campaigns continued in the Deccan under Shah Jahan The Afghan noble Khan Jahan Lodi rebelled and was defeated Campaigns were launched against Ahmadnagar the Bundelas were defeated and Orchha seized In the north-west the campaign to seize Balkh from the Uzbegs was unsuccessful and Qandahar was lost to the Safavids In Ahmadnagar was finally annexed and the Bijapur forces sued for peace In there was conflict over succession amongst Shah Jahan’s sons Aurangzeb was victorious and his three brothers including Dara Shukoh were killed Shah Jahan was imprisoned for the rest of his life in Agra Aurangzeb In the north-east the Ahoms were defeated in but rebelled again in the s Campaigns in the north-west against the Yusufzai and the Sikhs were temporarily successful Mughal intervention in the succession and internal politics of the Rathor Rajputs of Marwar led to their rebellion Campaigns against the Maratha chieftain Shivaji were initially successful But Aurangzeb insulted Shivaji who escaped from Agra declared himself an independent king and resumed his campaigns against the Mughals Prince Akbar rebelled against Aurangzeb and received support from the Marathas and the Deccan Sultanate He finally fled to Safavid Iran After Akbar’s rebellion Aurangzeb sent armies against the Deccan Sultanates Bijapur was annexed in and Golconda in From Aurangzeb personally managed campaigns in the Deccan against the Marathas who started guerrilla warfare Aurangzeb also had to face the rebellion in north India of the Sikhs Jats and Satnamis in the north-east of the Ahoms and in the Deccan of the Marathas His death was followed by a succession conflict amongst his sons Military campaigns under Akbar and Aurangzeb Mughal Traditions of Succession Mughal marriages with the Rajputs The mother of Jahangir was a Kachhwaha princess daughter of the Rajput ruler of Amber modernday Jaipur The mother of Shah Jahan was a Rathor princess daughter of the Rajput ruler of Marwar Jodhpur The Mughals did not believe in the rule of primogeniture where the eldest son inherited his father’s estate Instead they followed the Mughal and Timurid custom of coparcenary inheritance or a division of the inheritance amongst all the sons Follow the highlighted passages in Table and note the evidence for rebellions by Mughal princes Which do you think is a fairer division of inheritance primogeniture or coparcenary Mughal Relations with Other Rulers Take a look at Table once again You will notice that the Mughal rulers campaigned constantly against rulers who refused to accept their authority But as the Mughals became powerful many other rulers also joined them voluntarily The Rajputs are a good example of this Many of them married their daughters into Mughal families and received high positions But many resisted as well The Sisodiya Rajputs of Mewar refused to accept Mughal authority for a long time Once defeated however they were honourably treated by the Mughals given their lands watan back as assignments watan jagir The careful balance between defeating but not humiliating their opponents enabled the Mughals to extend their influence over many kings and chieftains But it was difficult to keep this balance all the time Look at Table again note that Aurangzeb insulted Shivaji when he came to accept Mughal authority What was the consequence of this insult Mansabdars and Jagirdars As the empire expanded to encompass different regions the Mughals recruited diverse bodies of people From a small nucleus of Turkish nobles Turanis they expanded to include Iranians Indian Muslims Afghans Rajputs Marathas and other groups Those who joined Mughal service were enrolled as mansabdars The term mansabdar refers to an individual who holds a mansab meaning a position or rank It was a grading system used by the Mughals to fix rank salary and military responsibilities Rank and salary were determined by a numerical value called zat The higher the zat the more prestigious was the noble’s position in court and the larger his salary The mansabdar’s military responsibilities required him to maintain a specified number of sawar or cavalrymen The mansabdar brought his cavalrymen for review got them registered their horses branded and then received money to pay them as salary Mansabdars received their salaries as revenue assignments called jagirs which were somewhat like iqtas But unlike muqtis most mansabdars did not actually reside in or administer their jagirs They only had rights to the revenue of their assignments which was collected for them by their servants while the mansabdars themselves served in some other part of the country Zat ranking Nobles with a zat of were ranked higher than those of In Akbar’s reign there were mansabdars with a rank of zat by Aurangzeb’s reign the number of mansabdars had increased to Would this have meant more expenditure for the state THE MUGHAL EMPIRE Details from a miniature from Shah Jahan’s reign depicting corruption in his father’s administration a corrupt officer receiving a bribe and a tax-collector punishing poor peasants In Akbar’s reign these jagirs were carefully assessed so that their revenues were roughly equal to the salary of the mansabdar By Aurangzeb’s reign this was no longer the case and the actual revenue collected was often less than the granted sum There was also a huge increase in the number of mansabdars which meant a long wait before they received a jagir These and other factors created a shortage in the number of jagirs As a result many jagirdars tried to extract as much revenue as possible while they had a jagir Aurangzeb was unable to control these developments in the last years of his reign and the peasantry therefore suffered tremendously Zabt and Zamindars The main source of income available to Mughal rulers was tax on the produce of the peasantry In most places peasants paid taxes through the rural elites that is the headman or the local chieftain The Mughals used one term zamindars to describe all intermediaries whether they were local headmen of villages or powerful chieftains Akbar’s revenue minister Todar Mal carried out a careful survey of crop yields prices and areas cultivated for a -year period On the basis of this data tax was fixed on each crop in cash Each province was divided into revenue circles with its own schedule of revenue rates for individual crops This revenue system was known as zabt It was prevalent in those areas where Mughal administrators could survey the land and keep very careful accounts This was not possible in provinces such as Gujarat and Bengal In some areas the zamindars exercised a great deal of power The exploitation by Mughal administrators could drive them to rebellion Sometimes zamindars and peasants of the same caste allied in rebelling against Mughal authority These peasant revolts challenged the stability of the Mughal Empire from the end of the seventeenth century Akbar Nama and Ain-i Akbari Akbar ordered one of his close friends and courtiers Abul Fazl to write a history of his reign Abul Fazl wrote a three-volume history of Akbar’s reign titled Akbar Nama The first volume dealt with Akbar’s ancestors and the second volume recorded the events of Akbar’s reign The third volume is the Ain-i Akbari It deals with Akbar’s administration household army the revenues and the geography of his empire It also provides rich details about the traditions and culture of the people living in India The most interesting aspect about the Ain-i Akbari is its rich statistical details about things as diverse as crops yields prices wages and revenues Akbar recieving the Akbar Nama from Abul Fazl A Closer Look Akbar’s Policies The broad features of administration were laid down by Akbar and were elaborately discussed by Abul Fazl in his book the Akbar Nama in particular in its last volume the Ain-i Akbari Abul Fazl explained that the empire was divided into provinces called subas governed by a subadar who carried out both political and military functions Each province also had a financial officer or diwan For the maintenance of peace and order in his province the subadar was supported by other officers such as the military paymaster bakhshi the minister in charge of religious and charitable patronage sadr military commanders faujdars and the town police commander kotwal Nur Jahan’s influence in Jahangir’s court Mehrunnisa married the Emperor Jahangir in and received the title Nur Jahan She remained extremely loyal and supportive to the monarch As a mark of honour Jahangir struck silver coins bearing his own titles on one side and on the other the inscription struck in the name of the Queen Begum Nur Jahan Dogma A statement or an interpretation declared as authoritative with the expectation that it would be followed without question Bigot An individual who is intolerant of another person’s religious beliefs or culture The adjoining document is an order farman of Nur Jahan The square seal states Command of her most Sublime and Elevated Majesty Nur Jahan Padshah Begum The round seal states by the sun of Shah Jahangir she became as brilliant as the moon may Nur Jahan Padshah be the lady of the age Akbar’s nobles commanded large armies and had access to large amounts of revenue While they were loyal the empire functioned efficiently but by the end of the seventeenth century many nobles had built independent networks of their own Their loyalties to the empire were weakened by their own self-interest While Akbar was at Fatehpur Sikri during the s he started discussions on religion with the ulama Brahmanas Jesuit priests who were Roman Catholics and Zoroastrians These discussions took place in the ibadat khana He was interested in the religion and social customs of different people Akbar’s interaction with people of different faiths made him realise that religious scholars who emphasised ritual and dogma were often bigots Their teachings created divisions and disharmony amongst his subjects This eventually Akbar holding discussions with learned individuals of different faiths in the ibadat khana Can you identify the Jesuit priests in this picture led Akbar to the idea of sulh-i kul or universal peace This idea of tolerance did not discriminate between people of different religions in his realm Instead it focused on a system of ethics honesty justice peace that was universally applicable Abul Fazl helped Akbar in framing a vision of governance around this idea of sulh-i kul This principle of governance was followed by Jahangir and Shah Jahan as well Sulh-i kul Jahangir Akbar’s son described his father’s policy of sulh-i kul in the following words As in the wide expanse of the divine compassion there is room for all classes and the followers of all creeds so in his Imperial dominions which on all sides were limited only by the sea there was room for the professors of opposite religions and for beliefs good and bad and the road to intolerance was closed Sunnis and Shias met in one mosque and Christians and Jews in one church to pray He consistently followed the principle of universal peace sulh-i kul Akbar commissioned the translation of many Sanskrit works into Persian A Maktab Khana or translation bureau was also established at Fatehpur Sikri for this purpose The Mahabharata Ramayana Lilavati and Yogavashisht were some of the notable Sanskrit works that were taken up for translation The Razmnamah Persian translation of the Mahabharata contains lavish illustrations of the events of Mahabharata THE MUGHAL EMPIRE The Mughal Empire in the Seventeenth Century and After The administrative and military efficiency of the Mughal Empire led to great economic and commercial prosperity International travellers described it as the fabled land of wealth But these same visitors were also appalled at the state of poverty that existed side by side with the greatest opulence The inequalities were glaring Documents from the twentieth year of Shah Jahan’s reign inform us that the highest-ranking mansabdars were only in number out of a total of This small number a mere per cent of the total number of mansabdars received per cent of the total estimated revenue of the empire as salaries for themselves and their troopers The Mughal emperors and their mansabdars spent a great deal of their income on salaries and goods This expenditure benefited the artisans and peasantry who supplied them with goods and produce But the scale of revenue collection left very little for investment in the hands of the primary producers the peasant and the artisan The poorest amongst them lived from hand to mouth and they could hardly consider investing in additional resources tools and supplies to increase productivity The wealthier peasantry and artisanal groups the merchants and bankers profited in this economic world The enormous wealth and resources commanded by the Mughal elite made them an extremely powerful group of people in the late seventeenth century As the authority of the Mughal emperor slowly declined his servants emerged as powerful centres of power in the regions They constituted new dynasties and held command of provinces like Hyderabad and Awadh Although they continued to recognise the Mughal emperor in Delhi as their master by the eighteenth century the provinces of the empire had consolidated their independent political identities We will read more about them in Chapter ELSEWHERE Kings and queens There were several great monarchs all near-contemporaries in different parts of the world in the sixteenth century These included the ruler of Ottoman Turkey Sultan Suleyman During his rule the Ottoman state expanded into Europe seizing Hungary and besieging Austria His armies also seized Baghdad and Iraq Much of north Africa all the way into Morocco acknowledged Ottoman authority Suleyman also reconstructed the Ottoman navy Its domination over the eastern Mediterranean brought the navy into competition with Spain In the Arabian Sea it challenged the Portuguese The monarch was given the title of alQanuni the lawgiver because of the large number of regulations qanun passed during his reign These were aimed to standardise administrative procedures throughout the expanding domains of the empire and specifically to protect the peasantry from forced labour and extraordinary taxes Later in the seventeenth century when public order declined in the Ottoman domains the reign of Suleyman Qanuni was remembered as a period of ideal governance out more about Akbar’s other contemporaries the ruler of Find England Queen Elizabeth I the Safavid ruler of Iran Shah Abbas and the more controversial Russian ruler Czar Ivan Vasilyevich also called Ivan the Terrible RULERS AND BUILDINGS shows the first balcony of the Qutb Minar Qutbuddin Aybak had this constructed around Notice the pattern created under the balcony by the small arches and geometrical designs Can you see two bands of inscriptions under the balcony These are in Arabic Notice that the surface of the minar is curved and angular Placing an inscription on such a surface required great precision Only the most skilled craftsperson could perform this task Remember that very few buildings were made of stone or brick years ago What would have been the impact of a building like the Qutb Minar on observers in the thirteenth century Between the eighth and the eighteenth centuries kings and their officers built two kinds of structures the first were forts palaces garden residences and tombs safe protected and grandiose places of rest in this world and the next the second were structures meant for public activity including temples mosques tanks wells caravanserais and bazaars Kings were expected to care for their subjects and by making structures for their use and comfort rulers hoped to win their praise Construction activity was also carried out by others including merchants They built temples mosques and wells However domestic architecture large mansions havelis of merchants has survived only from the eighteenth century The Qutb Minar is five storeys high The band of inscriptions you see are under its first balcony The first floor was constructed by Qutbuddin Aybak and the rest by Iltutmish around Over the years it was damaged by lightning and earthquakes and repaired by Alauddin Khalji Muhammad Tughluq Firuz Shah Tughluq and Ibrahim Lodi Labour for the Agra Fort Built by Akbar the Agra Fort required stone-cutters cement and lime-makers and labourers Engineering Skills and Construction Monuments provide an insight into the technologies used for construction Take something like a roof for example We can make this by placing wooden beams or a slab of stone across four walls But the task becomes difficult if we want to make a large room with an elaborate superstructure This requires more sophisticated skills Between the seventh and tenth centuries architects started adding more rooms doors and windows to buildings Roofs doors and windows were still made by placing a horizontal beam across two vertical columns a style of architecture called trabeate or corbelled Between the eighth and thirteenth centuries the trabeate style was used in the construction of temples mosques tombs and in buildings attached to large stepped-wells baolis Raniji ki baori or the ‘Queen’s Stepwell’ located in Bundi in Rajasthan is the largest among the fifty step wells that were built to meet the need for water Known for its architectural beauty the baori was constructed in C E by Rani Nathavat Ji the queen of Raja Anirudh Singh of Bundi Screen in the Quwwat al-Islam mosque Delhi late twelfth century Fig Corbelled technique used in the construction of the screen Temple Construction in the Early Eleventh Century The Kandariya Mahadeva temple dedicated to Shiva was constructed in by the king Dhangadeva of the Chandela dynasty Fig is the plan of the temple An ornamented gateway led to an entrance and the main hall mahamandapa where dances were performed The image of the chief deity was kept in the main shrine garbhagriha This was the place for ritual worship where only the king his immediate family and priests gathered The Fig a Khajuraho complex contained royal temples where commoners were not allowed entry The temples were decorated with elaborately carved sculptures What differences do you notice between the shikharas of the two temples Can you make out that the shikhara of the Rajarajeshvara temple is twice as high as that of the Kandariya Mahadeva The Rajarajeshvara temple at Thanjavur had the tallest shikhara amongst temples of its time Constructing it was not easy because there were no cranes in those days and the tonne stone for the top of the shikhara was too heavy to lift manually So the architects built an inclined path to the top of the temple placed the boulder on rollers and rolled it all the way to the top The path started more than km away so that it would not be too steep This was dismantled after the temple was constructed But the residents of the area remembered the experience of the construction of the temple for a long time Even now a village near the temple is called Charupallam the Village of the Incline Two technological and stylistic developments are noticeable from the twelfth century The weight of the superstructure above the doors and windows was sometimes carried by arches This architectural form was called arcuate A true arch The keystone at the centre of the arch transferred the weight of the superstructure to the base of the arch Limestone cement was increasingly used in construction This was very high-quality cement which when mixed with stone chips hardened into concrete This made construction of large structures easier and faster Take a look at the construction site in Figure True arch detail from the Alai Darwaza early fourteenth century Quwwat alIslam mosque Delhi A painting from the Akbar Nama dated showing the construction of the water-gate at the Agra Fort Describe what the labourers are doing the tools shown and the means of carrying stones Building Temples Mosques and Tanks Temples and mosques were beautifully constructed because they were places of worship They were also meant to demonstrate the power wealth and devotion of the patron Take the example of the Rajarajeshvara temple An inscription mentions that it was built by King Rajarajadeva for the worship of his god Rajarajeshvaram Notice how the names of the ruler and the god are very similar The king took the god’s name because it was auspicious and he wanted to appear like a god Through the rituals of worship in the temple one god Rajarajadeva honoured another Rajarajeshvaram The largest temples were all constructed by kings The other lesser deities in the temple were gods and goddesses of the allies and subordinates of the ruler The temple was a miniature model of the world ruled by the king and his allies As they worshipped their deities together in the royal temples it seemed as if they brought the just rule of the gods on earth Muslim Sultans and Padshahs did not claim to be incarnations of god but Persian court chronicles described the Sultan as the Shadow of God An inscription in the Quwwat al-Islam mosque explained that God chose Alauddin as a king because he had the qualities of Moses and Solomon the great lawgivers of the past The greatest lawgiver and architect was God Himself He created the world out of chaos and introduced order and symmetry A royal architect The Mughal emperor Shah Jahan’s chronicler declared that the ruler was the architect of the workshop of empire and religion Plan of the Jami Masjid built by Shah Jahan in his new capital at Shahjahanabad As each new dynasty came to power kings wanted to emphasise their moral right to be rulers Constructing places of worship provided rulers with the chance to proclaim their close relationship with God especially important in an age of rapid political change Rulers also offered patronage to the learned and pious and tried to transform their capitals and cities into great cultural centres that brought fame to their rule and their realm It was widely believed that the rule of a just king would be an age of plenty when the heavens would not withhold rain At the same time making precious water available by constructing tanks and reservoirs was highly praised Sultan Iltutmish won universal respect for constructing a large reservoir just outside Dehli-i-Kuhna It was called the Hauz-i-Sultani or the King’s Reservoir Can you find it on Map in Chapter Rulers often constructed tanks and reservoirs big and small for use by ordinary people Sometimes these tanks and reservoirs were part of a temple mosque note the small tank in the Jami Masjid in Fig or a gurdwara a place of worship and congregation for Sikhs Fig Importance of water The Persian terms abad populated prosperous and abadi flourishing are both derived from the word ab meaning water Harmandar Sahib Golden Temple with the holy sarovar tank in Amritsar Why were Temples Targeted Because kings built temples to demonstrate their devotion to God and their power and wealth it is not surprising that when they attacked one another’s kingdoms they often targeted these buildings In the early ninth century when the Pandyan king Shrimara Shrivallabha invaded Sri Lanka and defeated the king Sena I the Buddhist monk and chronicler Dhammakitti noted he removed all the valuables The statue of the Buddha made entirely of gold in the Jewel Palace and the golden images in the various monasteries all these he seized The blow to the pride of the Sinhalese ruler had to be avenged and the next Sinhalese ruler Sena II ordered his general to invade Madurai the capital of the Pandyas The Buddhist chronicler noted that the expedition made a special effort to find and restore the gold statue of the Buddha Similarly in the early eleventh century when the Chola king Rajendra I built a Shiva temple in his capital he filled it with prized statues seized from defeated rulers An incomplete list included a Sun-pedestal from the Chalukyas a Ganesha statue and several statues of Durga a Nandi statue from the eastern Chalukyas an image of Bhairava a form of Shiva and Bhairavi from the Kalingas of Orissa and a Kali statue from the Palas of Bengal Sultan Mahmud of Ghazni was a contemporary of Rajendra I During his campaigns in the subcontinent he attacked the temples of defeated kings and looted their wealth and idols Sultan Mahmud was not a very important ruler at that time But by destroying temples especially the one at Somnath he tried to win credit as a great hero of Islam In the political culture of the Middle Ages most rulers displayed their political might and military success by attacking and looting the places of worship of defeated rulers In what ways do you think the policies of Rajendra I and Mahmud of Ghazni were a product of their times How were the actions of the two rulers different c The chahar bagh adapted as a river-front garden at Lal Mahal Bari OUR PASTS Gardens Tombs and Forts Under the Mughals architecture became more complex Babur Humayun Akbar Jahangir and especially Shah Jahan were personally interested in literature art and architecture In his autobiography Babur described his interest in planning and laying out formal gardens placed within rectangular walled enclosures and divided into four quarters by artificial channels These gardens were called chahar bagh four gardens because of their symmetrical division into quarters Beginning with Akbar some of the most beautiful chahar baghs were constructed by Jahangir and Shah Jahan in Kashmir Agra and Delhi see Fig There were several important architectural innovations during Akbar’s reign For inspiration Akbar’s architects turned to the tombs of his Central Asian ancestor Timur The central towering dome and the tall gateway pishtaq became important aspects of Mughal architecture first visible in Humayun’s tomb The tomb was placed in the centre of a huge formal chahar bagh and built in the tradition known as eight paradises or hasht bihisht a central hall surrounded by eight rooms The building was constructed with red sandstone edged with white marble It was during Shah Jahan’s reign that the different elements of Mughal architecture were fused together in a grand harmonious synthesis His reign witnessed a huge amount of construction activity especially in Agra and Delhi The ceremonial halls of public and private audience diwan-i khas o am were carefully planned Placed within a large courtyard these courts were also described as chihil sutun or forty-pillared halls Shah Jahan’s audience halls were specially constructed to resemble a mosque The pedestal on which his throne was placed was frequently described as the qibla the direction faced by Muslims at prayer since everybody faced that direction when court was in session The idea of the king as a representative of God on earth was suggested by these architectural features The connection between royal justice and the imperial court was emphasised by Shah Jahan in his newly constructed court in the Red Fort at Delhi Behind the emperor’s throne were a series of pietra dura inlays that depicted the legendary Greek god Orpheus playing the lute It was believed that Orpheus’s music could calm ferocious beasts until they coexisted together peaceably The construction of Shah Jahan’s audience hall aimed to communicate that the king’s justice would treat the high and the low as equals creating a world where all could live together in harmony Pietra dura Coloured hard stones placed in depressions carved into marble or sandstone creating beautiful ornate patterns In the early years of his reign Shah Jahan’s capital was at Agra a city where the nobility had constructed their homes on the banks of the river Yamuna These were set in the midst of formal gardens constructed in the chahar bagh format The chahar bagh garden also had a variation that historians describe as the riverfront garden In this the dwelling was not located in the middle of the chahar bagh but at its edge close to the bank of the river Shah Jahan adapted the river-front garden in the layout of the Taj Mahal the grandest architectural accomplishment of his reign Here the white marble mausoleum was placed on a terrace by the edge of the river and the garden was to its south Shah Jahan develop this architectural form as a means to control the access that nobles had to the river In the new city of Shahjahanabad that he constructed in Delhi the imperial palace commanded the river-front Only specially favoured nobles like his eldest son Dara Shukoh were given access to the river All others had to construct their homes in the city away from the River Yamuna A reconstruction from a map of the river-front garden city of Agra Note how the garden palaces of the nobles are placed on both banks of the Yamuna The Taj Mahal is on the left Compare the layout of Agra with Shahjahanabad in Delhi in Figure Region and Empire As construction activity increased between the eighth and eighteenth centuries there was also a considerable sharing of ideas across regions the traditions of one region were adopted by another In Vijayanagara for example the elephant stables of the rulers were strongly influenced by the style of architecture found in the adjoining Sultanates of Bijapur and Golconda see Chapter In Vrindavan near Mathura temples were constructed in architectural styles that were very similar to the Mughal palaces in Fatehpur Sikri The creation of large empires that brought different regions under their rule helped in this cross-fertilisation of artistic forms and architectural styles Mughal rulers were particularly skilled in adapting regional architectural styles in the construction of their own buildings In Bengal for example the local rulers had developed a roof that was designed to resemble a thatched hut The Mughals liked this Bangla dome see Figures and in Chapter so much that they used it in their architecture The impact of other regions was also evident In Akbar’s capital at Fatehpur Sikri many of the buildings show the influence of the architectural styles of Gujarat and Malwa Even though the authority of the Mughal rulers waned in the eighteenth century the architectural styles developed under their patronage were constantly used and adapted by other rulers whenever they tried to establish their own kingdoms Churches that touched the skies From the twelfth century onwards attempts began in France to build churches that were taller and lighter than earlier buildings This architectural style known as Gothic was distinguished by high pointed arches the use of stained glass often painted with scenes drawn from the Bible and flying buttresses Tall spires and bell towers which were visible from a distance were added to the church One of the best-known examples of this architectural style is the church of Notre Dame in Paris which was constructed through several decades in the twelfth and thirteenth centuries Look at the illustration and try and identify the bell towers Decorated pillars and struts holding the extension of the roof in Jodh Bai palace in Fatehpur Sikri These follow architectural traditions of the Gujarat region Imagine You are an artisan standing on a tiny wooden platform held together by bamboo and rope fifty metres above the ground You have to place an inscription under the first balcony of the Qutb Minar How would you do this TOWNS TRADERS AND CRAFTSPERSONS What would a traveller visiting a medieval town expect to find This would depend on what kind of a town it was a temple town an administrative centre a commercial town or a port town to name just some possibilities In fact many towns combined several functions they were administrative centres temple towns as well as centres of commercial activities and craft production Map Some important centres of trade and artisanal production in central and south India Administrative Centres You read about the Chola dynasty in Chapter Let’s travel in our imagination to Thanjavur the capital of the Cholas as it was a thousand years ago The perennial river Kaveri flows near this beautiful town One hears the bells of the Rajarajeshvara temple built by King Rajaraja Chola The towns people are all praise for its architect Kunjaramallan Rajaraja Perunthachchan who has proudly carved his name on the temple wall Inside is a massive Shiva linga Besides the temple there are palaces with mandapas or pavilions Kings hold court in these mandapas issuing orders to their subordinates There are also barracks for the army Why do you think people regarded Thanjavur as a great town The town is bustling with markets selling grain spices cloth and jewellery Water supply for the town comes from wells and tanks The Saliya weavers of Thanjavur and the nearby town of Uraiyur are busy producing cloth for flags to be used in the temple festival fine cottons for the king and nobility and coarse cotton for the masses Some distance away at Svamimalai the sthapatis or sculptors are making exquisite bronze idols and tall ornamental bell metal lamps Temple Towns and Pilgrimage Centres Thanjavur is also an example of a temple town Temple towns r epresent a very important patter n of urbanisation the process by which cities develop Temples were often central to the economy and society Rulers built temples to demonstrate their devotion to various deities They also endowed temples with grants of land and money to carry out elaborate rituals feed pilgrims and priests and celebrate festivals Pilgrims who flocked to the temples also made donations Bronze bell metal and the lost wax technique Bronze is an alloy containing copper and tin Bell metal contains a greater proportion of tin than other kinds of bronze This produces a bell-like sound Chola bronze statues see Chapter were made using the lost wax technique First an image was made of wax This was covered with clay and allowed to dry Next it was heated and a tiny hole was made in the clay cover The molten wax was drained out through this hole Then molten metal was poured into the clay mould through the hole Once the metal cooled and solidified the clay cover was carefully removed and the image was cleaned and polished do you think were the advantages of using this technique Temple authorities used their wealth to finance trade and banking Gradually a large number of priests workers artisans traders etc settled near the temple to cater to its needs and those of the pilgrims Thus grew temple towns Towns emerged around temples such as those of Bhillasvamin Bhilsa or Vidisha in Madhya Pradesh and Somnath in Gujarat Other important temple towns included Kanchipuram and Madurai in Tamil Nadu and Tirupati in Andhra Pradesh Fig A bronze statue of Krishna subduing the serpent demon Kaliya Pilgrimage centres also slowly developed into townships Vrindavan Uttar Pradesh and Tiruvannamalai Tamil Nadu are examples of two such towns Ajmer Rajasthan was the capital of the Chauhan kings in the twelfth century and later became the suba headquarters under the Mughals It provides an excellent example of religious coexistence Khwaja Muinuddin Chishti the celebrated Sufi saint see also Chapter who settled there in the twelfth century attracted devotees from all creeds Near Ajmer is a lake Pushkar which has attracted pilgrims from ancient times A Network of Small Towns From the eighth century onwards the subcontinent was dotted with several small towns These probably emerged from large villages They usually had a mandapika or mandi of later times to which nearby villagers brought their produce to sell They also had market streets called hatta haat of later times lined with shops Besides there were streets for different kinds of artisans such as potters oil pressers sugar makers toddy makers smiths stonemasons etc While some traders lived in the town others travelled from town to town Many came from far and near to these towns to buy local articles and sell products of distant places like horses salt camphor saffron betel nut and spices like pepper Usually a samanta or in later times a zamindar built a fortified palace in or near these towns They levied taxes on traders artisans and articles of trade and sometimes donated the right to collect these taxes to local temples which had been built by themselves or by rich merchants These rights were recorded in inscriptions that have survived to this day Taxes on markets The following is a summary from a tenth-century inscription from Rajasthan which lists the dues that were to be collected by temple authorities There were taxes in kind on Sugar and jaggery dyes thread and cotton On coconuts salt areca nuts butter sesame oil On cloth Besides there were taxes on traders on those who sold metal goods on distillers on oil on cattle fodder and on loads of grain Some of these taxes were collected in kind while others were collected in cash Find out more about present-day taxes on markets who collects these how are they collected and what are they used for Traders Big and Small There were many kinds of traders These included the Banjaras see also Chapter Several traders especially horse traders formed associations with headmen who negotiated on their behalf with warriors who bought horses Since traders had to pass through many kingdoms and forests they usually travelled in caravans and formed guilds to protect their interests There were several such guilds in south India from the eighth century onwards the most famous being the Manigramam and Nanadesi These guilds traded extensively both within the peninsula and with Southeast Asia and China As you can see during this period there was a great circulation of people and goods What impact do you think this would have had on the lives of people in towns and villages Make a list of artisans living in towns There were also communities like the Chettiars and the Marwari Oswal who went on to become the principal trading groups of the country Gujarati traders including the communities of Hindu Baniyas and Muslim Bohras traded extensively with the ports of the Red Sea Persian Gulf East Africa Southeast Asia and China They sold textiles and spices in these ports and in exchange brought gold and ivory from Africa and spices tin Chinese blue pottery and silver from Southeast Asia and China The towns on the west coast were home to Arab Persian Chinese Jewish and Syrian Christian traders Indian spices and cloth sold in the Red Sea ports were purchased by Italian traders and eventually reached European markets fetching very high profits Spices grown in tropical climates pepper cinnamon nutmeg dried ginger etc became an important part of European cooking and cotton cloth was very attractive This eventually drew European traders to India We will shortly read about how this changed the face of trading and towns Kabul With its rugged mountainous landscape Kabul in present-day Afghanistan became politically and commercially important from the sixteenth century onwards Kabul and Qandahar were linked to the celebrated Silk Route Besides trade in horses was primarily carried on through this route In the seventeenth century Jean Baptiste Tavernier a diamond merchant estimated that the horse trade at Kabul amounted to Rs annually which was a huge sum in those days Camels carried dried fruits dates carpets silks and even fresh fruits from Kabul to the subcontinent and elsewhere Slaves were also brought here for sale Crafts in Towns The craftspersons of Bidar were so famed for their inlay work in copper and silver that it came to be called Bidri The Panchalas or Vishwakarma community consisting of goldsmiths bronzesmiths blacksmiths masons and carpenters were essential to the building of temples They also played an important role in the construction of palaces big buildings tanks and reservoirs Similarly weavers such as the Saliyar or Kaikkolars emerged as prosperous communities making donations to temples Some aspects of cloth making like cotton cleaning spinning and dyeing became specialised and independent crafts The changing fortunes of towns Some towns like Ahmedabad Gujarat went on to become major commercial cities but others like Thanjavur shrank in size and importance over the centuries Murshidabad West Bengal on the banks of the Bhagirathi which rose to prominence as a centre for silks and became the capital of Bengal in declined in the course of the century as the weavers faced competition from cheap mill-made cloth from England A Closer Look Hampi Masulipatnam and Surat The Architectural Splendour of Hampi Hampi is located in the Krishna-Tungabhadra basin which formed the nucleus of the Vijayanagara Empire founded in The magnificent ruins at Hampi reveal a well-fortified city No mortar or cementing agent was used in the construction of these walls and the technique followed was to wedge them together by interlocking A fortified city This is how a Portuguese traveller Domingo Paes described Hampi in the sixteenth century at the entrance of the gate where those pass who come from Goa this king has made within it a very strong city fortified with walls and towers these walls are not like those of other cities but are made of very strong masonry such as would be found in few other parts and inside very beautiful rows of buildings made after their manner with flat roofs Why do you think the city was fortified The architecture of Hampi was distinctive The buildings in the royal complex had splendid arches domes and pillared halls with niches for holding sculptures They also had well-planned orchards and pleasure gardens with sculptural motifs such as the lotus and corbels In its heyday in the fifteenthsixteenth centuries Hampi bustled with commercial and cultural activities Muslim merchants Chettis and agents of European traders such as the Portuguese thronged the markets of Hampi During their rule the Vijaynagara rulers took keen interest in building tanks and canals The Anantraj Sagar Tank was built with a km long earthern dam across the Maldevi river Krishnadeva Raya built a huge stone embankment between two hills to create a massive lake near Vijayanagara from which water was carried through aqueducts and channels to irrigate fields and gardens Temples were the hub of cultural activities and devadasis temple dancers performed before the deity royalty and masses in the many-pillared halls in the Virupaksha a form of Shiva temple The Mahanavami festival known today as Navaratri in the south was one of the most important festivals celebrated at Hampi Archaeologists have found the Mahanavami platform where the king received guests and accepted tribute from subordinate chiefs From here he also watched dance and music performances as well as wrestling bouts Hampi fell into ruin following the defeat of Vijayanagara in by the Deccani Sultans the rulers of Golconda Bijapur Ahmadnagar Berar and Bidar A Gateway to the West Surat Emporium A place where goods from diverse production centres are bought and sold Surat in Gujarat was the emporium of western trade during the Mughal period along with Cambay presentday Khambat and somewhat later Ahmedabad Surat was the gateway for trade with West Asia via the Gulf of Ormuz Surat has also been called the gate to Mecca because many pilgrim ships set sail from here The city was cosmopolitan and people of all castes and creeds lived there In the seventeenth century the Portuguese Dutch and English had their factories and warehouses at Surat According to the English chronicler Ovington who wrote an account of the port in on average a hundred ships of different countries could be found anchored at the port at any given time Hundi is a note recording a deposit made by a person The amount deposited can be claimed in another place by presenting the record of the deposit There were also several retail and wholesale shops selling cotton textiles The textiles of Surat were famous for their gold lace borders zari and had a market in West Asia Africa and Europe The state built numerous rest-houses to take care of the needs of people from all over the world who came to the city There were magnificent buildings and innumerable pleasure parks The Kathiawad seths or mahajans moneychangers had huge banking houses at Surat It is noteworthy that the Surat hundis were honoured in the far-off markets of Cairo in Egypt Basra in Iraq and Antwerp in Belgium However Surat began to decline towards the end of the seventeenth century This was because of many factors the loss of markets and productivity because of the decline of the Mughal Empire control of the sea routes by the Portuguese and competition from Bombay present-day Mumbai where the English East India Company shifted its headquarters in Today Surat is a bustling commercial centre Fishing in Troubled Waters Masulipatnam The town of Masulipatnam or Machlipatnam literally fish port town lay on the delta of the Krishna river In the seventeenth century it was a centre of intense activity Both the Dutch and English East India Companies attempted to control Masulipatnam as it became the most important port on the Andhra coast The fort at Masulipatnam was built by the Dutch A poor fisher town This is a description of Masulipatnam by William Methwold a Factor of the English East India Company in This is the chief port of Golconda where the Right Worshipfull East India Company have their Agent It is a small town but populous unwalled ill built and worse situated within all the springs are brackish It was first a poor fisher town afterwards the convenience of the road a place where ships can anchor made it a residence for merchants and so continues since our and the Dutch nation frequented this coast Factor Official in-charge of trading activities of the European Trading Companies Why did the English and the Dutch decide to establish settlements in Masulipatnam The Qutb Shahi rulers of Golconda imposed royal monopolies on the sale of textiles spices and other items to prevent the trade passing completely into the hands of the various East India Companies Fierce competition among various trading groups the Golconda nobles Persian merchants Telugu Komati Chettis and European traders made the city populous and prosperous As the Mughals began to extend their power to Golconda their representative the governor Mir Jumla who was also a merchant began to play off the Dutch and the English against each other In Mughal Emperor Aurangzeb annexed Golconda This caused the European Companies to look for alternatives It was a part of the new policy of the English East India Company that it was not enough if a port had connections with the production centres of the hinterland The new Company trade centres it was felt should combine political administrative and commercial roles As the Company traders moved to Bombay Calcutta present-day Kolkata and Madras present-day Chennai Masulipatnam lost both its merchants and prosperity and declined in the course of the eighteenth century being today nothing more than a dilapidated little town New Towns and Traders In the sixteenth and seventeenth centuries European countries were searching for spices and textiles which had become popular both in Europe and West Asia The English Dutch and French formed East India Companies in order to expand their commercial activities in the east Initially great Indian traders like Mulla Abdul Ghafur and Virji Vora who owned a large number of ships competed with them However the European Companies used their naval power to gain control of the sea trade and forced Indian traders to work as their agents Ultimately the English emerged as the most successful commercial and political power in the subcontinent The spurt in demand for goods like textiles led to a great expansion of the crafts of spinning weaving bleaching dyeing etc with more and more people taking them up Indian textile designs became increasingly refined However this period also saw the decline of the independence of craftspersons They now began to work on a system of advances which meant that they had to weave cloth which was already promised to European agents Weavers no longer had the liberty of selling their own cloth or weaving their own patterns They had to reproduce the designs supplied to them by the Company agents The eighteenth century saw the rise of Bombay Calcutta and Madras which are nodal cities today Crafts and commerce underwent major changes as merchants and artisans such as weavers were moved into the Black Towns established by the European companies within these new cities The blacks or native traders and craftspersons were confined here while the white rulers occupied the superior residencies of Fort St George in Madras or Fort St William in Calcutta The story of crafts and commerce in the eighteenth century will be taken up next year Vasco da Gama and Christopher Columbus In the fifteenth century European sailors undertook unprecedented explorations of sea routes They were driven by the desire to find ways of reaching the Indian subcontinent and obtaining spices Vasco da Gama a Portuguese sailor sailed down the African Coast went round the Cape of Good Hope and crossed over to the Indian Ocean His first journey took more than a year he reached Calicut in and returned to Lisbon the capital of Portugal the following year He lost two of his four ships and of the men at the start of the journey only survived In spite of the obvious hazards the routes that were opened up proved to be extremely profitable and he was followed by English Dutch and French sailors The search for sea routes to India had another unexpected fallout On the assumption that the earth was round Christopher Columbus an Italian decided to sail westwards across the Atlantic Ocean to find a route to India He landed in the West Indies which got their name because of this confusion in He was followed by sailors and conquerors from Spain and Portugal who occupied large parts of Central and South America often destroying earlier settlements in the area TRIBES NOMADS AND SETTLED COMMUNITIES You saw in Chapters and how kingdoms rose and fell Even as this was happening new arts crafts and production activities flourished in towns and villages Over the centuries important political social and economic developments had taken place But social change was not the same everywhere because different kinds of societies evolved differently It is important to understand how and why this happened In large parts of the subcontinent society was already divided according to the rules of varna These rules as prescribed by the Brahmanas were accepted by the rulers of large kingdoms The difference between the high and low and between the rich and poor increased Under the Delhi Sultans and the Mughals this hierarchy between social classes grew further Beyond Big Cities Tribal Societies There were however other kinds of societies as well Many societies in the subcontinent did not follow the social rules and rituals prescribed by the Brahmanas Nor were they divided into numerous unequal classes Such societies are often called tribes Members of each tribe were united by kinship bonds Many tribes obtained their livelihood from agriculture Others were hunter-gatherers or herders Most often they combined these activities to make full use of the natural resources of the area in which they lived Some tribes were nomadic and moved from one place to another A tribal group controlled land and pastures jointly and divided these amongst households according to its own rules On a physical map of the subcontinent identify the areas in which tribal people may have lived Many large tribes thrived in different parts of the subcontinent They usually lived in forests hills deserts and places difficult to reach Sometimes they clashed with the more powerful caste-based societies In various ways the tribes retained their freedom and preserved their separate culture But the caste-based and tribal societies also depended on each other for their diverse needs This relationship of conflict and dependence gradually caused both societies to change Who were Tribal People Contemporary historians and travellers give very scanty information about tribes A few exceptions apart tribal people did not keep written records But they preserved rich customs and oral traditions These were passed down to each new generation Presentday historians have started using such oral traditions to write tribal histories Tribal people were found in almost every region of the subcontinent The area and influence of a tribe varied at different points of time Some powerful tribes controlled large territories In Punjab the Khokhar tribe was very influential during the thirteenth and fourteenth centuries Later the Gakkhars became more important Their chief Kamal Khan Gakkhar was made a noble mansabdar by Emperor Akbar In Multan and Sind the Langahs and Arghuns dominated extensive regions before they were subdued by the Mughals The Balochis were another large and powerful tribe in the north-west They were divided into many smaller clans under different chiefs In the western Himalaya lived the shepherd tribe of Gaddis The distant north-eastern part of the subcontinent too was entirely dominated by tribes the Nagas Ahoms and many others In many areas of pr esent-day Bihar and Jharkhand Chero chiefdoms had emerged by the twelfth century Raja Man Singh Akbar’s famous general attacked and defeated the Cheros in A large amount of booty was taken from them but they were not entirely subdued Under Aurangzeb Mughal forces captured many Chero fortresses and subjugated the tribe The Mundas and Santals were among the other important tribes that lived in this region and also in Orissa and Bengal Clan A clan is a group of families or households claiming descent from a common ancestor Tribal organisation is often based on kinship or clan loyalties TRIBES NOMADS AND SETTLED COMMUNITIES The Maharashtra highlands and Karnataka were home to Kolis Berads and numerous others Kolis also lived in many areas of Gujarat Further south there were large tribal populations of Koragas Vetars Maravars and many others The large tribe of Bhils was spread across western and central India By the late sixteenth century many of them had become settled agriculturists and some even zamindars Many Bhil clans nevertheless remained huntergatherers The Gonds were found in great numbers across the present-day states of Chhattisgarh Madhya Pradesh Maharashtra and Andhra Pradesh How Nomads and Mobile People Lived Nomadic pastoralists moved over long distances with their animals They lived on milk and other pastoral products They also exchanged wool ghee etc with settled agriculturists for grain cloth utensils and other products Fig Bhils hunting deer by night Fig A chain of mobile traders connected India to the outside world Here you see nuts being gathered and loaded on the backs of camels Central Asian traders brought such goods to India and the Banjaras and other traders carried these to local markets They bought and sold these goods as they moved from one place to another transporting them on their animals The Banjaras were the most important tradernomads Their caravan was called tanda Sultan Alauddin Khalji Chapter used the Banjaras to transport grain to the city markets Emperor Jahangir wrote in his memoirs that the Banjaras carried grain on their bullocks from different areas and sold it in towns They transported food grain for the Mughal army during military campaigns With a large army there could be bullocks carrying grain The Banjaras Peter Mundy an English trader who came to India during the early seventeenth century has described the Banjaras In the morning we met a tanda of Banjaras with oxen They were all laden with grains such as wheat and rice These Banjaras carry their household wives and children along with them One tanda consists of many families Their way of life is similar to that of carriers who continuously travel from place to place They own their oxen They are sometimes hired by merchants but most commonly they are themselves merchants They buy grain where it is cheaply available and carry it to places where it is dearer From there they again reload their oxen with anything that can be profitably sold in other places In a tanda there may be as many as or hundred persons They do not travel more than or miles a day that too in the cool weather After unloading their oxen they turn them free to graze as there is enough land here and no one there to forbid them Nomads and itinerant groups Nomads are wandering people Many of them are pastoralists who roam from one pasture to another with their flocks and herds Similarly itinerant groups such as craftspersons pedlars and entertainers travel from place to place practising their different occupations Both nomads and itinerant groups often visit the same places every year Find out how grain is transported from villages to cities at present In what ways is this similar to or different from the ways in which the Banjaras functioned Many pastoral tribes reared and sold animals such as cattle and horses to the prosperous people Different castes of petty pedlars also travelled from village to village They made and sold wares such as ropes reeds straw matting and coarse sacks Sometimes mendicants acted as wandering merchants There were castes of entertainers who performed in different towns and villages for their livelihood Changing Society New Castes and Hierarchies As the economy and the needs of society grew people with new skills were required Smaller castes or jatis emerged within varnas For example new castes appeared amongst the Brahmanas On the other hand many tribes and social groups were taken into caste-based society and given the status of jatis Specialised artisans smiths carpenters and masons were also recognised as separate jatis by the Brahmanas Jatis rather than varna became the basis for organising society Deliberations on jati A twelfth-century inscription from Uyyakondan Udaiyar in Tiruchirapalli taluka in present-day Tamil Nadu describes the deliberations in a sabha Chapter of Brahmanas They deliberated on the status of a group known as rathakaras literally chariot makers They laid down their occupations which were to include architecture building coaches and chariots erecting gateways for temples with images in them preparing wooden equipment used to perform sacrifices building mandapas making jewels for the king Among the Kshatriyas new Rajput clans became powerful by the eleventh and twelfth centuries They belonged to different lineages such as Hunas Chandelas Chalukyas and others Some of these too had been tribes earlier Many of these clans came to be regarded as Rajputs They gradually replaced the older rulers especially in agricultural areas Here a developed society was emerging and rulers used their wealth to create powerful states The rise of Rajput clans to the position of rulers set an example for the tribal people to follow Gradually with the support of the Brahmanas many tribes became part of the caste system But only the leading tribal families could join the ruling class A large majority joined the lower jatis of caste society On the other hand many dominant tribes of Punjab Sind and the North-West Frontier had adopted Islam quite early They continued to reject the caste system The unequal social order prescribed by orthodox Hinduism was not widely accepted in these areas The emergence of states is closely related to social change amongst tribal people Two examples of this important part of our history are described below A Closer Look The Gonds The Gonds lived in a vast forested region called Gondwana or country inhabited by Gonds They practised shifting cultivation The large Gond tribe was further divided into many smaller clans Each clan had its own raja or rai About the time that the power of the Delhi Sultans was declining a few large Gond kingdoms were beginning to dominate the smaller Gond chiefs The Akbar Nama a history of Akbar’s reign mentions the Gond kingdom of Garha Katanga that had villages Shifting cultivation Trees and bushes in a forest area are first cut and burnt The crop is sown in the ashes When this land loses its fertility another plot of land is cleared and planted in the same way The administrative system of these kingdoms was becoming centralised The kingdom was divided into garhs Each garh was controlled by a particular Gond clan This was further divided into units of villages called chaurasi The chaurasi was subdivided into barhots which were made up of villages each The emergence of large states changed the nature of Gond society Their basically equal society gradually got divided into unequal social classes Brahmanas received land grants from the Gond rajas and became more influential The Gond chiefs now wished to be recognised as Rajputs So Aman Das the Gond raja of Garha Katanga assumed the title of Sangram Shah His son Dalpat married princess Durgawati the daughter of Salbahan the Chandel Rajput raja of Mahoba Dalpat however died early Rani Durgawati was very capable and started ruling on behalf of her five-year-old son Bir Narain Under her the kingdom became even more extensive In the Mughal forces under Asaf Khan attacked Garha Katanga A strong resistance was put up by Rani Durgawati She was defeated and preferred to die rather than surrender Her son too died fighting soon after Garha Katanga was a rich state It earned much wealth by trapping and exporting wild elephants to other kingdoms When the Mughals defeated the Gonds they captured a huge booty of precious coins and elephants They annexed part of the kingdom and granted the rest to Chandra Shah an uncle of Bir Narain Despite the fall of Garha Katanga the Gond kingdoms survived for some time However they became much weaker and later struggled unsuccessfully against the stronger Bundelas and Marathas Discuss why the Mughals were interested in the land of the Gonds The Ahoms The Ahoms migrated to the Brahmaputra valley from present-day Myanmar in the thirteenth century They created a new state by suppressing the older political system of the bhuiyans landlords During the sixteenth century they annexed the kingdoms of the Chhutiyas and of Koch-Hajo and subjugated many other tribes The Ahoms built a large state and for this they used firearms as early as the s By the s they could even make highquality gunpowder and cannons However the Ahoms faced many invasions from the south-west In the Mughals under Mir Jumla attacked the Ahom kingdom Despite their brave defence the Ahoms were defeated But direct Mughal control over the region could not last long The Ahom state depended upon forced labour Those forced to work for the state were called paiks A census of the population was taken Each village had to send a number of paiks by rotation People from heavily populated areas were shifted to less populated places Ahom clans were thus broken up By the first half of the seventeenth century the administration became quite centralised Almost all adult males served in the army during war At other times they were engaged in building dams irrigation systems and other public works The Ahoms also introduced new methods of rice cultivation Ahom society was divided into clans or khels There were very few castes of artisans so artisans in the Ahom areas came from the adjoining kingdoms A khel often controlled several villages The peasant was given land by his village community Even the king could not take it away without the community’s consent Originally the Ahoms worshipped their own tribal gods During the first half of the seventeenth century however the influence of Brahmanas increased Temples and Brahmanas were granted land by the king In the reign of Sib Singh Hinduism became the predominant religion But the Ahom kings did not completely give up their traditional beliefs after adopting Hinduism Why do you think the Mughals tried to conquer the land of the Ahoms Ahom society was very sophisticated Poets and scholars were given land grants Theatre was encouraged Important works of Sanskrit were translated into the local language Historical works known as buranjis were also written first in the Ahom language and then in Assamese Conclusion Considerable social change took place in the subcontinent during the period we have been examining Varna-based society and tribal people constantly interacted with each other This interaction caused both kinds of societies to adapt and change There were many different tribes and they took up diverse livelihoods Over a period of time many of them merged with castebased society Others however rejected both the caste system and orthodox Hinduism Some tribes established extensive states with well-organised systems of administration They thus became politically powerful This brought them into conflict with larger and more complex kingdoms and empires The Mongols Find Mongolia in your atlas The best-known pastoral and huntergatherer tribe in history were the Mongols They inhabited the grasslands steppes of Central Asia and the forested areas further north By Genghis Khan had united the Mongol and Turkish tribes into a powerful military force At the time of his death he was the ruler of extensive territories His successors created a vast empire At different points of time it included parts of Russia Eastern Europe and also China and much of West Asia The Mongols had well-organised military and administrative systems These were based on the support of different ethnic and religious groups DEVOTIONAL PATHS TO THE DIVINE You may have seen people perform rituals of worship or singing bhajans kirtans or qawwalis or even repeating the name of God in silence and noticed that some of them are moved to tears Such intense devotion or love of God is the legacy of various kinds of bhakti and Sufi movements that have evolved since the eighth century The Idea of a Supreme God Before large kingdoms emerged different groups of people worshipped their own gods and goddesses As people were brought together through the growth of towns trade and empires new ideas began to develop The idea that all living things pass through countless cycles of birth and rebirth performing good deeds and bad came to be widely accepted Similarly the idea that all human beings are not equal even at birth gained ground during this period The belief that social privileges came from birth in a noble family or a high caste was the subject of many learned texts Many people were uneasy with such ideas and turned to the teachings of the Buddha or the Jainas according to which it was possible to overcome social differences and break the cycle of rebirth through personal effort Others felt attracted to the idea of a Supreme God who could deliver humans from such bondage if approached with devotion or bhakti This idea advocated in the Bhagavadgita grew in popularity in the early centuries of the Common Era Shiva Vishnu and Durga as supreme deities came to be worshipped through elaborate rituals At the same time gods and goddesses worshipped in differ ent areas came to be identified with Shiva Vishnu or Durga In the process local myths and legends became a part of the Puranic stories and methods of worship recommended in the Puranas were introduced into the local cults Eventually the Puranas also laid down that it was possible for devotees to receive the grace of God regardless of their caste status The idea of bhakti became so popular that even Buddhists and Jainas adopted these beliefs A New Kind of Bhakti in South India Nayanars and Alvars The seventh to ninth centuries saw the emergence of new religious movements led by the Nayanars saints devoted to Shiva and Alvars saints devoted to Vishnu who came from all castes including those considered untouchable like the Pulaiyar and the Panars They were sharply critical of the Buddhists and Jainas and preached ardent love of Shiva or Vishnu as the path to salvation They drew upon the ideals of love and heroism as found in the Sangam literature the earliest example of Tamil literature composed during the early centuries of the Common Era and blended them with the values of bhakti The Nayanars and Alvars went from place to place composing exquisite poems in praise of the deities enshrined in the villages they visited and set them to music You can observe this process of local myths and legends receiving wider acceptance even today Can you find some examples around you DEVOTIONAL PATHS TO THE DIVINE Nayanars and Alvars There were Nayanars who belonged to different caste backgrounds such as potters untouchable workers peasants hunters soldiers Brahmanas and chiefs The best known among them were Appar Sambandar Sundarar and Manikkavasagar There are two sets of compilations of their songs Tevaram and Tiruvacakam Hagiography Writing of saints’ lives A bronze image of Manikkavasagar There were Alvars who came from equally divergent backgrounds the best known being Periyalvar his daughter Andal Tondaradippodi Alvar and Nammalvar Their songs were compiled in the Divya Prabandham Between the tenth and twelfth centuries the Chola and Pandya kings built elaborate temples around many of the shrines visited by the saint-poets strengthening the links between the bhakti tradition and temple worship This was also the time when their poems were compiled Besides hagiographies or religious biographies of the Alvars and Nayanars were also composed Today we use these texts as sources for writing histories of the bhakti tradition The devotee and the Lord This is a composition of Manikkavasagar Into my vile body of flesh You came as though it were a temple of gold And soothed me wholly and saved me O Lord of Grace O Gem most Pure Sorrow and birth and death and illusion You took from me and set me free O Bliss O Light I have taken refuge in You And never can I be parted from You Philosophy and Bhakti Shankara one of the most influential philosophers of India was born in Kerala in the eighth century He was an advocate of Advaita or the doctrine of the oneness of the individual soul and the Supreme God which is the Ultimate Reality He taught that Brahman the only or Ultimate Reality was formless and without any attributes He considered the world around us to be an illusion or maya and preached renunciation of the world and adoption of the path of knowledge to understand the true nature of Brahman and attain salvation Ramanuja born in Tamil Nadu in the eleventh century was deeply influenced by the Alvars According to him the best means of attaining salvation was through intense devotion to Vishnu Vishnu in His grace helps the devotee to attain the bliss of union with Him He propounded the doctrine of Vishishtadvaita or qualified oneness in that the soul even when united with the Supreme God remained distinct Ramanuja’s doctrine greatly inspired the new strand of bhakti which developed in north India subsequently Try and find out more about the ideas of Shankara or Ramanuja Basavanna’s Virashaivism We noted earlier the connection between the Tamil bhakti movement and temple worship This in turn led to a reaction that is best represented in the Virashaiva movement initiated by Basavanna and his companions like Allama Prabhu and Akkamahadevi This movement began in Karnataka in the mid-twelfth century The Virashaivas argued strongly for the equality of all human beings and against Brahmanical ideas about caste and the treatment of women They were also against all forms of ritual and idol worship Virashaiva vachanas These are vachanas or sayings attributed to Basavanna The rich Will make temples for Shiva What shall I A poor man Do My legs are pillars The body the shrine The head a cupola Of gold Listen O Lord of the meeting rivers Things standing shall fall But the moving ever shall stay The Vaishnava poet-saints of Maharashtra such as Jnaneshwar Namadeva Eknath and Tukaram were devotees of lord Vitthala Devotion around lord Vitthala gave rise to the Varkari sect which lay emphasis on an annual pilgrimage to Pandharpur The cult of Vitthala emerged as a powerful mode of devotion and was very popular amongst the people What is the temple that Basavanna is offering to God The Saints of Maharashtra From the thirteenth to the seventeenth centuries Maharashtra saw a great number of saint-poets whose songs in simple Marathi continue to inspire people The most important among them were Dnyaneshwar Gyaneshwar Namdev Eknath and Tukaram as well as women like Sakhubai and the family of Chokhamela who belonged to the untouchable Mahar caste This regional tradition of bhakti focused on the Vitthala a form of Vishnu temple in Pandharpur as well as on the notion of a personal god residing in the hearts of all people These saint-poets rejected all forms of ritualism outward display of piety and social differences based on birth In fact they even rejected the idea of renunciation and preferred to live with their families earning their livelihood like any other person while humbly serving fellow human beings in need A new humanist idea emerged as they insisted that bhakti lay in sharing others’ pain As the famous Gujarati saint Narsi Mehta said They are Vaishnavas who understand the pain of others Questioning the social order This is an abhang Marathi devotional hymn of Sant Tukaram He who identifies with the battered and the beaten Mark him as a saint For God is with him He holds Every forsaken man Close to his heart He treats A slave As his own son Says Tuka I won’t be tired to repeat again Such a man Is God In person Here is an abhang composed by Chokhamela’s son You made us low caste Why don’t you face that fact Great Lord Our whole life left-over food to eat You should be ashamed of this You have eaten in our home How can you deny it Chokha’s son Karmamela asks Why did you give me life Discuss the ideas about the social order expressed Nathpanthis Siddhas and Yogis A number of religious groups that emerged during this period criticised the ritual and other aspects of conventional religion and the social order using simple logical arguments Among them were the Nathpanthis Siddhacharas and Yogis They advocated renunciation of the world To them the path to salvation lay in meditation on the formless Ultimate Reality and the realisation of oneness with it To achieve this they advocated intense training of the mind and body through practices like yogasanas breathing exercises and meditation These groups became particularly popular among low castes Their criticism of conventional religion created the ground for devotional religion to become a popular force in northern India Islam and Sufism The sants had much in common with the Sufis so much so that it is believed that they adopted many ideas of each other Sufis were Muslim mystics They rejected outward religiosity and emphasised love and devotion to God and compassion towards all fellow human beings Islam propagated strict monotheism or submission to one God In the eighth and ninth centuries religious scholars developed different aspects of the Holy Law Shariat and theology of Islam While the religion of Islam gradually became more complex Sufis provided it with an additional dimension that favoured a more personal devotion to God The Sufis often rejected the elaborate rituals and codes of behaviour demanded by Muslim religious scholars They sought union with God much as a lover seeks his beloved with a disregard for the world Like the saint-poets the Sufis too composed poems expressing their feelings and a rich literature in prose including anecdotes and fables developed around them Among the great Sufis of Central Asia were Ghazzali Rumi and Sadi Like the Nathpanthis Siddhas and Yogis the Sufis too believed that the heart can be trained to look at the world in a different way They developed elaborate methods of training using zikr chanting of a name or sacred formula contemplation sama singing raqs dancing discussion of parables breath control etc under the guidance of a master or pir Thus emerged the silsilas a spiritual genealogy of Sufi teachers each following a slightly different method tariqa of instruction and ritual practice In Kashmir the Rishi order of Sufism flourished in the th and th centuries This order was established by Sheikh Nuruddin Wali also known as Nund Rishi and had a deep impact on the life of the people in Kashmir A number of shrines dedicated to Rishi saints can be found in many parts of Kashmir Hospice House of rest for travellers especially one kept by a religious order A large number of Sufis from Central Asia settled in Hindustan from the eleventh century onwards This process was strengthened with the establishment of the Delhi Sultanate Chapter when several major Sufi centres developed all over the subcontinent The Chishti silsila was among the most influential orders It had a long line of teachers like Khwaja Muinuddin Chishti of Ajmer Qutbuddin Bakhtiar Kaki of Delhi Baba Farid of Punjab Khwaja Nizamuddin Auliya of Delhi and Bandanawaz Gisudaraz of Gulbarga The Sufi masters held their assemblies in their khanqahs or h o s p i c e s D e o t e e s o f a l l descriptions including members of the royalty and nobility and ordinary people flocked to these k h a n q a h s T h e y d i s c u s s e d spiritual matters sought the blessings of the saints in solving their worldly problems or simply attended the music and dance sessions Often people attributed Sufi masters with miraculous powers that could relieve others of their illnesses and troubles The tomb or dargah of a Sufi saint became a place of pilgrimage to which thousands of people of all faiths thronged Devotees of all backgrounds visit Sufi shrines Finding the Lord Jalaluddin Rumi was a great thirteenth-century Sufi poet from Iran who wrote in Persian Here is an excerpt from his work He was not on the Cross of the Christians I went to the Hindu temples In none of them was there any sign He was not on the heights or in the lowlands I went to the Kaaba of Mecca He was not there I asked about him from Avicenna the philosopher He was beyond the range of Avicenna I looked into my heart In that his place I saw him He was in no other place New Religious Developments in North India The period after the thirteenth century saw a new wave of the bhakti movement in north India This was an age when Islam Brahmanical Hinduism Sufism various strands of bhakti and the Nathpanths Siddhas and Yogis influenced one another We saw that new towns Chapter and kingdoms Chapters and were emerging and people were taking up new professions and finding new roles for themselves Such people especially craftspersons peasants traders and labourers thronged to listen to these new saints and spread their ideas Chaitanyadeva a sixteenth-century bhakti saint from Bengal preached selfless devotion to Krishna-Radha In the picture you see a group of his followers engaged in ecstatic dancing and singing The essence of Shankaradeva’s devotion came to be known as Eka Sarana Nama Dharma supreme surrender to the One The teachings of Shankaradeva were based on the Bhagavad Gita and Bhagavata Purana He also encouraged the establishment of satra or monasteries for transmission of knowledge His major compositions included Kirtana-ghosha Some of them like Kabir and Baba Guru Nanak rejected all orthodox religions Others like Tulsidas and Surdas accepted existing beliefs and practices but wanted to make these accessible to all Tulsidas conceived of God in the form of Rama Tulsidas’s composition the Ramcharitmanas written in Awadhi a language used in eastern Uttar Pradesh is important both as an expression of his devotion and as a literary work Surdas was an ardent devotee of Krishna His compositions compiled in the Sursagara Surasaravali and Sahitya Lahari express his devotion Also contemporary was Shankaradeva of Assam late fifteenth century who emphasised devotion to Vishnu and composed poems and plays in Assamese He began the practice of setting up namghars or houses of recitation and prayer a practice that continues to date This tradition also included saints like Dadu Dayal Ravidas and Mirabai Mirabai was a Rajput princess married into the royal family of Mewar in the sixteenth century Mirabai became a disciple of Ravidas a saint from a caste considered untouchable She was devoted to Krishna and composed innumerable bhajans expressing her intense devotion Her songs also openly challenged the norms of the upper castes and became popular with the masses in Rajasthan and Gujarat A unique feature of most of the saints is that their works were composed in regional languages and could be sung They became immensely popular and were handed down orally from generation to generation Usually the poorest most deprived communities and women transmitted these songs often adding their own experiences Thus the songs as we have them today are as much a creation of the saints as of generations of people who sang them They have become a part of our living popular culture An important contribution of Bhakti saints was towards the development of music Jayadeva of Bengal composed the Gita Govinda in Sanskrit each song composed in a particular raga and tala A significant impact that these saints had on music was the use of bhajan kirtan and abhang These songs which emphasised on emotional experience had a tremendous appeal to the common people Beyond the Rana’s palace This is a song composed by Mirabai Ranaji I have left your norms of shame and false decorum of the princely life I have left your town And yet Rana why have you kept up enmity against me Rana you gave me a cup of poison I drank it laughing Rana I will not be destroyed by you And yet Rana why have you kept up enmity against me Why do you think Mirabai left the Rana’s palace A Closer Look Kabir Kabir who probably lived in the fifteenth-sixteenth centuries was one of the most influential saints He was brought up in a family of Muslim julahas or weavers settled in or near the city of Benares Varanasi We have little reliable information about his life We get to know of his ideas from a vast collection of verses called sakhis and pads said to have been composed by him and sung by wandering bhajan singers Some of these were later collected and preserved in the Guru Granth Sahib Panch Vani and Bijak In search of the True Lord Here is a composition of Kabir O Allah-Ram present in all living beings Have mercy on your servants O Lord Why bump your head on the ground Why bathe your body in water You kill and you call yourself humble But your vices you conceal Twenty-four times the Brahmana keeps the ekadasi fast While the Qazi observes the Ramzan Tell me why does he set aside the eleven months To seek spiritual fruit in the twelfth Hari dwells in the East they say And Allah resides in the West Search for him in your heart in the heart of your heart There he dwells Rahim-Ram Fig Kabir working on a loom Kabir’s teachings were based on a complete indeed vehement rejection of the major religious traditions His teachings openly ridiculed all forms of external worship of both Brahmanical Hinduism and Islam the pre-eminence of the priestly classes and the caste system The language of his poetry was a form of spoken Hindi widely understood by ordinary people He also sometimes used cryptic language which is difficult to follow Kabir believed in a formless Supreme God and preached that the only path to salvation was through bhakti or devotion Kabir drew his followers from among both Hindus and Muslims A Closer Look Baba Guru Nanak We know more about Baba Guru Nanak than about Kabir Born at Talwandi Nankana Sahib in Pakistan he travelled widely before establishing a centre at Kartarpur Dera Baba Nanak on the river Ravi A regular worship that consisted of the singing of his own hymns was established there for his followers Irrespective of their former creed caste or gender his followers ate together in the common kitchen langar The sacred space thus created by Baba Guru Nanak was known as dharmsal It is now known as Gurdwara Before his death in Baba Guru Nanak appointed one of his followers as his successor His name was Lehna but he came to be known as Guru Angad signifying that he was a part of Baba Guru Nanak himself Guru Angad compiled the compositions of Baba Guru Nanak to which he added his own in a new script known as Gurmukhi The three successors of Guru Angad also wrote under the name of Nanak and all of their compositions were compiled by Guru Arjan in To this compilation were added the writings of other figures like Shaikh Farid Sant Kabir Bhagat Namdev and Guru Tegh Bahadur In this compilation was authenticated by Guru Tegh Bahadur’s son and successor Guru Gobind Singh It is now known as Guru Granth Sahib the holy scripture of the Sikhs Fig An early manuscript of the Guru Granth Sahib The number of Baba Guru Nanak’s followers increased through the sixteenth century under his successors They belonged to a number of castes but traders agriculturists artisans and craftsmen predominated This may have something to do with Baba Guru Nanak’s insistence that his followers must be householders and should adopt productive and useful occupations They were also expected to contribute to the general funds of the community of followers By the beginning of the seventeenth century the town of Ramdaspur Amritsar had developed around the central Gurdwara called Harmandar Sahib Golden Temple It was virtually self-governing and modern historians refer to the early-seventeenth-century Sikh community as ‘a state within the state’ The Mughal emperor Jahangir looked upon them as a potential threat and he ordered the execution of Guru Arjan in The Sikh movement began to get politicised in the seventeenth century a development which culminated in the institution of the Khalsa by Guru Gobind Singh in The community of the Sikhs called the Khalsa Panth became a political entity The changing historical situation during the sixteenth and seventeenth centuries influenced the development of the Sikh movement The ideas of Martin Luther and the Reformation The sixteenth century was a time of religious ferment in Europe as well One of the most important leaders of the changes that took place within Christianity was Martin Luther Luther felt that several practices in the Roman Catholic Church went against the teachings of the Bible He encouraged the use of the language of ordinary people rather than Latin and translated the Bible into German Luther was strongly opposed to the practice of indulgences or making donations to the Church so as to gain forgiveness from sins His writings were widely disseminated with the growing use of the printing press Many Protestant Christian sects trace their origins to the teachings of Luther Baba Guru Nanak had a huge impact on this development from the very beginning He emphasised the importance of the worship of one God He insisted that caste creed or gender was irrelevant for attaining liberation His idea of liberation was not that of a state of inert bliss but rather the pursuit of active life with a strong sense of social commitment He himself used the terms nam dan and isnan for the essence of his teaching which actually meant right worship welfare of others and purity of conduct His teachings are now remembered as nam-japna kirt-karna and vandchhakna which also underline the importance of right belief and worship honest living and helping others Thus Baba Guru Nanak’s idea of equality had social and political implications This might partly explain the difference between the history of the followers of Baba Guru Nanak and the history of the followers of the other religious figures of the medieval centuries like Kabir Ravidas and Dadu whose ideas were very similar to those of Baba Guru Nanak EIGHTEENTH-CENTURY POLITICAL FORMATIONS If you look at Maps and closely you will see something significant happening in the subcontinent during the first half of the eighteenth century Notice how the boundaries of the Mughal Empire were reshaped by the emergence of a number of independent kingdoms By notice how another power the British had successfully grabbed major chunks of territory in eastern India What these maps tell us is that political conditions in eighteenthcentury India changed quite dramatically and within a relatively short span of time In this chapter we will read about the emergence of new political groups in the subcontinent during the first half of the eighteenth century roughly from when Aurangzeb died till the third battle of Panipat in The Crisis of the Empire and the Later Mughals In Chapter you saw how the Mughal Empire reached the height of its success and started facing a variety of crises towards the closing years of the seventeenth century These were caused by a number of factors Emperor Aurangzeb had depleted the military and financial resources of his empire by fighting a long war in the Deccan Under his successors the efficiency of the imperial administration broke down It became increasingly difficult for the later Mughal emperors to keep a check on their powerful mansabdars Nobles appointed as governors subadars often controlled the offices of revenue and military administration diwani and faujdari as well This gave them extraordinary political economic and military powers over vast regions of the Mughal Empire As the governors consolidated their control over the provinces the periodic remission of revenue to the capital declined Peasant and zamindari rebellions in many parts of northern and western India added to these problems These revolts were sometimes caused by the pressures of mounting taxes At other times they were attempts by powerful chieftains to consolidate their own positions Mughal authority had been challenged by rebellious groups in the past as well But these groups were now able to seize the economic resources of the region to consolidate their positions The Mughal emperors after Aurangzeb were unable to arrest the gradual shifting of political and economic authority into the hands of provincial governors local chieftains and other groups Rich harvests and empty coffers The following is a contemporary writer’s account of the financial bankruptcy of the empire The great lords are helpless and impoverished Their peasants raise two crops a year but their lords see nothing of either and their agents on the spot are virtual prisoners in the peasants’ hands like a peasant kept in his creditor’s house until he can pay his debt So complete is the collapse of all order and administration that though the peasant reaps a harvest of gold his lord does not see so much as a wisp of straw How then can the lord keep the armed force he should How can he pay the soldiers who should go before him when he goes out or the horsemen who should ride behind him In the midst of this economic and political crisis the ruler of Iran Nadir Shah sacked and plundered the city of Delhi in and took away immense amounts of wealth This invasion was followed by a series of plundering raids by the Afghan ruler Ahmad Shah Abdali who invaded north India five times between and Nadir Shah attacks Delhi The devastation of Delhi after Nadir Shah’s invasion was described by contemporary observers One described the wealth looted from the Mughal treasury as follows sixty lakhs of rupees and some thousand gold coins nearly one crore worth of gold-ware nearly fifty crores worth of jewels most of them unrivalled in the world and the above included the Peacock throne Another account described the invasion’s impact upon Delhi those who had been masters were now in dire straits and those who had been revered couldn’t even get water to quench their thirst The recluses were pulled out of their corners The wealthy were turned into beggars Those who once set the style in clothes now went naked and those who owned property were now homeless The New City Shahjahanabad was turned into rubble Nadir Shah then attacked the Old quarters of the city and destroyed a whole world that existed there Already under severe pressure from all sides the empire was further weakened by competition amongst different groups of nobles They were divided into two major groups or factions the Iranis and Turanis nobles of Turkish descent For a long time the later Mughal emperors were puppets in the hands of either one or the other of these two powerful groups The worst possible humiliation came when two Mughal emperors Farrukh Siyar and Alamgir were assassinated and two others Ahmad Shah and Shah Alam were blinded by their nobles With the decline in the authority of the Mughal emperors the governors of large provinces subadars and the great zamindars consolidated their authority in different parts of the subcontinent Through the eighteenth century the Mughal Empire gradually fragmented into a number of independent regional states Broadly speaking the states of the eighteenth century can be divided into three overlapping groups States that were old Mughal provinces like Awadh Bengal and Hyderabad Although extremely powerful and quite independent the rulers of these states did not break their formal ties with the Mughal emperor States that had enjoyed considerable independence under the Mughals as watan jagirs These included several Rajput principalities The last group included states under the control of Marathas Sikhs and others like the Jats These were of differing sizes and had seized their independence from the Mughals after a long-drawn armed struggle The Old Mughal Provinces Amongst the states that were carved out of the old Mughal provinces in the eighteenth century three stand out very prominently These were Awadh Bengal and Hyderabad All three states were founded by members of the high Mughal nobility who had been governors of large provinces Sa‘adat Khan Awadh Murshid Quli Khan Bengal and Asaf Jah Hyderabad All three had occupied high mansabdari positions and enjoyed the trust and confidence of the emperors Both Asaf Jah and Murshid Quli Khan held a zat rank of each while Sa‘adat Khan’s zat was Hyderabad Nizam-ul-Mulk Asaf Jah the founder of Hyderabad state was one of the most powerful members at the court of the Mughal Emperor Farrukh Siyar He was entrusted first with the governorship of Awadh and later given charge of the Deccan As the Mughal governor of the Deccan provinces during Asaf Jah had already gained control over its political and financial administration Taking subsequent advantage of the turmoil in the Deccan and the competition amongst the court nobility he gathered power in his hands and became the actual ruler of that region Asaf Jah brought skilled soldiers and administrators from northern India who welcomed the new opportunities in the south He appointed mansabdars and granted jagirs Although he was still a servant of the Mughal emperor he ruled quite independently without seeking any direction from Delhi or facing any interference The Mughal emperor merely confirmed the decisions already taken by the Nizam-ul-Mulk Asaf Jah The state of Hyderabad was constantly engaged in a struggle against the Marathas to the west and with independent Telugu warrior chiefs nayakas of the plateau The ambitions of the Nizam-ul-Mulk Asaf Jah to control the rich textile-producing areas of the Coromandel coast in the east were checked by the British who were becoming increasingly powerful in that region see Map The Nizam’s army A description of the Nizam of Hyderabad’s personal troopers in The Nizam has a swaree sawari of elephants several thousand of horsemen near his person who receive upwards R upees s nominal pay and are extremely well mounted and richly caparisoned In trying to consolidate their rule why did Mughal subadars also want to control the office of diwan Burhan-ul-Mulk Sa‘adat Khan was appointed subadar of Awadh in and founded a state which was one of the most important to emerge out of the break-up of the Mughal Empire Awadh was a prosperous region controlling the rich alluvial Ganga plain and the main trade route between north India and Bengal Burhan-ul-Mulk also held the combined offices of subadari diwani and faujdari In other words he was responsible for managing the political financial and military affairs of the province of Awadh Burhan-ul-Mulk tried to decrease Mughal influence in the Awadh region by reducing the number of office holders jagirdars appointed by the Mughals He also reduced the size of jagirs and appointed his own loyal servants to vacant positions The accounts of jagirdars were checked to prevent cheating and the revenues of all districts were reassessed by officials appointed by the Nawab’s court He seized a number of Rajput zamindaris and the agriculturally fertile lands of the Afghans of Rohilkhand The state depended on local bankers and mahajans for loans It sold the right to collect tax to the highest bidders These revenue farmers ijaradars agreed to pay the state a fixed sum of money Local bankers guaranteed the payment of this contracted amount to the state In turn the revenue-farmers were given considerable freedom in the assessment and collection of taxes These developments allowed new social groups like moneylenders and bankers to influence the management of the state’s revenue system something which had not occurred in the past Bengal Bengal gradually broke away from Mughal control under Murshid Quli Khan who was appointed as the naib deputy to the governor of the province Although never a formal subadar Murshid Quli Khan very quickly seized all the power that went with that office Like the rulers of Hyderabad and Awadh he also commanded the revenue administration of the state In an effort to reduce Mughal influence in Bengal he transferred all Mughal jagirdars to Orissa and ordered a major reassessment of the revenues of Bengal Revenue was collected in cash with great strictness from all zamindars As a result many zamindars had to borrow money from bankers and moneylenders Those unable to pay were forced to sell their lands to larger zamindars The formation of a regional state in eighteenthcentury Bengal therefore led to considerable change amongst the zamindars The close connection between the state and bankers noticeable in Hyderabad and Awadh as well was evident in Bengal under the rule of Alivardi Khan r During his reign the banking house of Jagat Seth became extremely prosperous Many Rajput rulers had accepted the suzerainty of the Mughals but Mewar was the only Rajput state which defied Mughal authority Rana Pratap ascended the throne at Mewar in with Udaipur and large part of Mewar under his control A series of envoys were sent to the Rana to persuade him to accept Mughal suzerainty but he stood his ground If we take a bird’s eye view we can detect three common features amongst these states First though many of the larger states were established by erstwhile Mughal nobles they were highly suspicious of some of the administrative systems that they had inherited in particular the jagirdari system Second their method of tax collection differed Rather than relying upon the officers of the state all three regimes contracted with revenue-farmers for the collection of revenue The practice of ijaradari thoroughly disapproved of by the Mughals spread all over India in the eighteenth century Their impact on the countryside differed considerably The third common feature in all these regional states was their emerging relationship with rich bankers and merchants These people lent money to revenue farmers received land as security and collected taxes from these lands through their own agents Throughout India the richest merchants and bankers were gaining a stake in the new political order The Watan Jagirs of the Rajputs Many Rajput kings particularly those belonging to Amber and Jodhpur had served under the Mughals with distinction In exchange they were permitted to enjoy considerable autonomy in their watan jagirs In the eighteenth century these rulers now attempted to extend their control over adjacent regions Ajit Singh the ruler of Jodhpur was also involved in the factional politics at the Mughal court These influential Rajput families claimed the subadari of the rich provinces of Gujarat and Malwa Raja Ajit Singh of Jodhpur held the governorship of Gujarat and Sawai Raja Jai Singh of Amber was governor of Malwa These offices were renewed by Emperor Jahandar Shah in They also tried to extend their territories by Many Rajput chieftains seizing portions of imperial built a number of forts territories neighbouring on hill tops which their watans Nagaur was became centres of power With extensive conquered and annexed to fortifications these the house of Jodhpur majestic structures Fig while Amber seized large housed urban centres Chittorgarh Fort Rajasthan portions of Bundi Sawai palaces temples trading centres water Raja Jai Singh founded his harvesting structures and other buildings The new capital at Jaipur and Chittorgarh fort contained many water bodies was given the subadari of varying from talabs ponds to kundis wells Agra in Maratha baolis stepwells etc campaigns into Rajasthan from the s put severe pressure on these principalities and checked their further expansion Raja Jai Singh of Jaipur A description of Raja Jai Singh in a Persian account of Raja Jai Singh was at the height of his power He was the governor of Agra for years and of Malwa for or years He possessed a large army artillery and great wealth His sway extended from Delhi to the banks of the Narmada Sawai Jai Singh the ruler of Amber constructed five astronomical observatories one each in Delhi Jaipur Ujjain Mathura and Varanasi Commonly known as Jantar Mantar these observatories had various instruments to study heavenly bodies The Sikhs What is the Khalsa Do you recall reading about it in Chapter The organisation of the Sikhs into a political community during the seventeenth century see Chapter helped in regional state-building in the Punjab Several battles were fought by Guru Gobind Singh against the Rajput and Mughal rulers both before and after the institution of the Khalsa in After his death in the Khalsa rose in revolt against the Mughal authority under Banda Bahadur’s leadership declared their sovereign rule by striking coins in the name of Guru Nanak and Guru Gobind Singh and established their own administration between the Sutlej and the Jamuna Banda Bahadur was captured in and executed in Under a number of able leaders in the eighteenth century the Sikhs organized themselves into a number of bands called jathas and later on misls Their combined forces were known as the grand army dal khalsa The entire body used to meet at Amritsar at the time of Baisakhi and Diwali to take collective decisions known as resolutions of the Guru gurmatas A system called rakhi was introduced offering protection to cultivators on the payment of a tax of per cent of the produce Guru Gobind Singh had inspired the Khalsa with the belief that their destiny was to rule raj karega khalsa Their well-knit organization enabled them to put up a successful resistance to the Mughal governors first and then to Ahmad Shah Abdali who had seized the rich province of the Punjab and the Sarkar of Sirhind from the Mughals The Khalsa declared their sovereign rule by striking their own coin again in Significantly this coin bore the same inscription as the one on the orders issued by the Khalsa in the time of Banda Bahadur The Sikh territories in the late eighteenth century extended from the Indus to the Jamuna but they were divided under different rulers One of them Maharaja Ranjit Singh reunited these groups and established his capital at Lahore in The Marathas The Maratha kingdom was another powerful regional kingdom to arise out of a sustained opposition to Mughal rule Shivaji carved out a stable kingdom with the support of powerful warrior families deshmukhs Groups of highly mobile peasantpastoralists kunbis provided the backbone of the Maratha army Shivaji used these forces to challenge the Mughals in the peninsula After Shivaji’s death effective power in the Maratha state was wielded by a family of Chitpavan Brahmanas who served Shivaji’s successors as Peshwa or principal minister Poona became the capital of the Maratha kingdom Towards the end of the th century a powerful state started emerging in the Deccan under the leadership of Shivaji which finally led to the establishment of the Maratha state Shivaji was born to Shahji and Jija Bai at Shivneri in Under the guidance of his mother and his guardian Dada Konddev Shivaji embarked on a career of conquest at a young age The occupation of Javli made him the undisputed leader of the Mavala highlands which paved the way for further expansion His exploits against the forces of Bijapur and the Mughals made him a legendary figure He often resorted to guerrilla warfare against his opponents By introducing an efficient administrative system supported by a revenue collection method based on chauth and sardeshmukhi he laid the foundations of a strong Maratha state EIGHTEENTH-CENTURY POLITICAL FORMATIONS Baji Rao I also known as Baji Rao Ballal was the son of Peshwa Balaji Vishwanath He was a great Maratha general who is credited to have expanded the Maratha kingdom beyond the Vindhyas and is known for his military campaigns against Malwa Bundelkhand Gujarat and the Portugese Chauth per cent of the land revenue claimed by zamindars In the Deccan this was collected by the Marathas Sardeshmukhi per cent of the land revenue paid to the head revenue collector in the Deccan Under the Peshwas the Marathas developed a very successful military organisation Their success lay in bypassing the fortified areas of the Mughals by raiding cities and by engaging Mughal armies in areas where their supply lines and reinforcements could be easily disturbed Between and the Maratha empire expanded It gradually chipped away at the authority of the Mughal Empire Malwa and Gujarat were seized from the Mughals by the s By the s the Maratha king was recognised as the overlord of the entire Deccan peninsula He possessed the right to levy chauth and sardeshmukhi in the entire region After raiding Delhi in the frontiers of Maratha domination expanded rapidly into Rajasthan and the Punjab in the north into Bengal and Orissa in the east and into Karnataka and the Tamil and Telugu countries in the south see Map These were not formally included in the Maratha empire but were made to pay tribute as a way of accepting Maratha sovereignty Expansion brought enormous resources but it came at a price These military campaigns also made other rulers hostile towards the Marathas As a result they were not inclined to support the Marathas during the third battle of Panipat in Alongside endless military campaigns the Marathas developed an effective administrative system as well Once conquest had been completed and Maratha rule was secure revenue demands were gradually introduced taking local conditions into account Agriculture was encouraged and trade revived This allowed Maratha chiefs sardars like Sindhia of Gwalior Gaekwad of Baroda and Bhonsle of Nagpur the resources to raise powerful armies Maratha campaigns into Malwa in the s did not challenge the growth and prosperity of the cities in the region Ujjain expanded under Sindhia’s patronage and Indore under Holkar’s By all accounts these cities were large and prosperous and functioned as important commercial and cultural centres New trade routes emerged within the areas controlled by the Marathas The silk produced in the Chanderi region now found a new outlet in Poona the Maratha capital Burhanpur which had earlier participated in the trade between Agra and Surat now expanded its hinterland to include Poona and Nagpur in the south and Lucknow and Allahabad in the east The Jats Like the other states the Jats consolidated their power during the late seventeenth and eighteenth-centuries Under their leader Churaman they acquired control over territories situated to the west of the city of Delhi and by the s they had begun dominating the region between the two imperial cities of Delhi and Agra For a while they became the virtual custodians of the city of Agra The Jats were prosperous agriculturists and towns like Panipat and Ballabhgarh became important trading centres in the areas dominated by them Under Suraj Mal the kingdom of Bharatpur emerged as a strong state When Nadir Shah sacked Delhi in many of the city’s notables took refuge there His son Jawahir Shah had troops of his own and hired another Maratha and Sikh troops to fight the Mughals While the Bharatpur fort was built in a fairly traditional style at Dig the Jats built an elaborate garden palace combining styles seen at Amber and Agra Its buildings were modelled on architectural forms first associated with royalty under Shah Jahan see Figure in Chapter and Figure in Chapter The power of the Jats reached its zenith under Suraj Mal who consolidated the Jat state at Bharatpur in present day Rajasthan during The areas under the political control of Suraj Mal broadly included parts of modern eastern Rajasthan southern Haryana western Uttar Pradesh and Delhi Suraj Mal built a number of forts and palaces and the famous Lohagarh fort in Bharatpur is regarded as one of the strongest forts built in this region Fig Eighteenth-century palace complex at Dig Note the Bangla dome on the assembly hall on the roof of the building The French Revolution In the various state systems of eighteenth-century India the common people did not enjoy the right to participate in the affairs of their governments In the Western world this was the situation until the late eighteenth century The American and French Revolutions challenged the social and political privileges enjoyed by the aristocrats During the French Revolution the middle classes peasants and artisans fought against the special rights enjoyed by the clergy and the nobility They believed that no group in society should have privileges based on birth Rather people’s social position must depend on merit The philosophers of the French Revolution suggested that there be equal laws and opportunities for all They also held that the authority of the government should come from the people who must possess the right to participate in its affairs Movements such as the French and American Revolutions gradually transformed subjects into citizens The ideas of citizenship nation-state and democratic rights took root in India from the late nineteenth century Imagine You are a ruler of an eighteenthcentury kingdom Tell us about the steps you would take to make your position strong in your province and what opposition or problems you might face while doing so Equality in Indian Democracy On election day Kanta and her friend Sujata are waiting to cast their votes Isn’t it good Suja that we can all vote as equal citizens of our country Even Jain Saheb is standing in the line with us Yes On Equality India is a democracy In the Class book we looked at the key elements of a democratic government These include people’s participation the resolution of conflict and equality and justice Equality is a key feature of democracy and influences all aspects of its functioning In this chapter you will read more about equality what it is why it is important in a democracy and whether or not everyone is equal in India Let’s begin by looking at Kanta’s story Go on Kanta It’s your turn now I will vote for the candidate who has promised to bring pipe water to our area Sujata Kumari Domestic worker Abdul Rehman Artisan Shabnam Bano Housewife Gracy Laleng Isaac Laleng Consultant Government officer Ruksana Mirza Media person Yog Raj Unemployed Ashok Jain Industrialist Afterwards Gudia has been running fever and I have to take her to the hospital but I will have to finish the work at Saheb’s house first and ask for some advance We’ll see you later Kanta Yes Namaste Saheb At home It’s no wonder that Gudia falls ill often the basti is never cleaned Here have some of this you’ll feel better And when I get back in the evening we’ll go to the hospital okay Make sure to do the corners properly Equal right to vote The story above begins with Kanta standing in line to cast her vote Look again at the various people who are standing in line with her Kanta recognises her employer Ashok Jain and Chotte Lal her neighbour In a democratic country like India all adults irrespective of what religion they belong to how much education they have had what caste they are or whether they are rich or poor are allowed to vote This as you have already read in the Class book is called universal adult franchise and is an essential aspect of all democracies The idea of universal adult franchise is based on the idea of equality because it states that every adult in a country irrespective of their wealth and the communities she he belongs to has one vote Kanta is excited to vote and happy that she is equal to all of the others because each of them has one vote Here’s your advance Kanta but don’t make a habit of it No Madam That evening Just few more minutes Beti But as her day goes on Kanta becomes less certain about what this equality really means What is it that makes Kanta unsure Let’s take a look at a day in her life She lives in a slum and has a drain behind her house Her daughter is sick but she cannot take the day off from work because she needs to borrow money from her employers to take her child to the doctor Her job as a domestic help tires her out and finally she ends her day by again standing in a long line This line in front of the government hospital is unlike the one in the morning because most of the people standing in it are poor Jain Madam and Jain Saheb may stand in line to vote but they never have to do it when their children are sick Do you think Kanta has enough reason to doubt whether she really is equal List three reasons from the story above that might make her feel like this Other kinds of equality Kanta is one of many people who live in democratic India and who have the right to vote but whose daily living and working conditions are far from equal Apart from being poor people in India experience inequality in different ways Let us see what this means by reading the two stories given below Each of these is based on real incidents in people’s lives and reflects the different kinds of inequalities that exist in India One of the more common forms of inequality in India is the caste system If you live in rural India your caste identity is something that you probably learned or experienced very young If you live in urban India some of you might think that people no longer believe in caste But just look at these matrimonials shown from a leading English newspaper and you will see how important the issue of caste continues to be in the minds of highly educated urban Indians Circle the reference to caste in the matrimonial advertisements given above Now let us read a story about the experiences of a Dalit child attending school You have already read about Dalits in the Class book Dalit is a term that the so-called lower castes use to address themselves Dalit means ‘broken’ and by using this word lower castes are pointing to how they were and continue to be seriously discriminated against Omprakash Valmiki is a famous Dalit writer In his autobiography Joothan he writes I had to sit away from the others in the class and that too on the floor The mat ran out before reaching the spot I sat on Sometimes I would have to sit way behind everybody right near the door sometimes they would beat me without any reason When he was in Class IV the headmaster asked Omprakash to sweep the school and the playground He writes The playground was way larger than my small physique could handle and in cleaning it my back began to ache My face was covered with dust Dust had gone inside my mouth The other children in my class were studying and I was sweeping Headmaster was sitting in his room and watching me I was not even allowed to get a drink of water I swept the whole day From the doors and windows of the school rooms the eyes of the teachers and the boys saw this spectacle Omprakash was made to sweep the school and the playground for the next couple of days and this only came to an end when his father who happened to be passing by saw his son sweeping He confronted the teachers and then walking away from the school holding Omprakash’s hand he said loudly for all of them to hear You are a teacher So I am leaving now But remember this much Master He will study right here in this school And not just him but there will be more coming after him Cover of Omprakash Valmiki’s book Joothan which talks about his experiences of growing up as a Dalit boy Why do you think Omprakash Valmiki was being treated unequally by his teacher and his classmates Imagine yourself as Omprakash Valmiki and write four lines about how you would feel if you were in the same situation as him Why do you think the Ansaris were being treated unequally What would you do if you were in the Ansaris’ position and could not find a place to live because some people did not want to live next to you because of the religion you practice The second story is based on an incident that took place in one of India’s larger cities and is common practice in most parts of the country It is a story about Mr and Mrs Ansari who were looking to rent an apartment in the city They had the money and so paying the rent was no problem They went to a property dealer for help to find a place The dealer informed them that he knew about quite a few apartments that were available for rent They visited the first apartment and the Ansaris liked it very much and decided to take it However when the landlady found out their names she made an excuse about how she could not rent the house to someone who ate meat because the building did not have any non-vegetarian residents Both the Ansaris and the property dealer were surprised to hear this because they could smell fish being cooked in the neighbour’s house The same excuse was repeated in the second and the third apartments Finally the property dealer told them that they might want to change their names and call themselves Mr and Mrs Kumar The Ansaris were reluctant to do this and decided to look some more In the end it took a whole month of looking at apartments before they found a landlady who was willing to give them a place on rent You have understood by now that the caste we are born into the religion we practice the class background we come from whether we are male or female these are often the things that determine why some people are treated unequally Omprakash Valmiki and the Ansaris are being treated unequally on the basis of differences of caste and religion When persons are treated unequally their dignity is violated The dignity of both Omprakash Valmiki and the Ansaris was violated because of the way in which they were treated By picking on him and making him sweep the school because of his caste Omprakash Valmiki’s schoolmates and teachers hurt his dignity badly and made him feel as if he was less than equal to all other students in the school Being a child Omprakash Valmiki could do very little about the situation that he was in It was his father who on seeing his son sweep felt angry by this unequal treatment and confronted the teachers The Ansaris’ dignity was also hurt when persons refused to lease their apartments to them However when the property dealer suggested that they change their name it was their dignity or self-respect that made them refuse this suggestion Omprakash and the Ansaris do not deserve to be treated like this They deserve the same respect and dignity as anyone else Equality in Indian democracy The Indian Constitution recognises every person as equal This means that every individual in the country including male and female persons from all castes religions tribes educational and economic backgrounds are recognised as equal This is not to say that inequality ceases to exist It doesn’t But atleast in democratic India the principle of the equality of all persons is recognised While earlier no law existed to protect people from discrimination and ill-treatment now there are several that work to see that people are treated with dignity and as equals This recognition of equality includes some of the following provisions in the Constitution first that every person is equal before the law What this means is that every person from the President of the country to Kanta a domestic worker has to obey the same laws Second no person can be discriminated against on the basis of their religion race caste place of birth or whether they are female or male Third every person has access to all public places including playgrounds hotels shops and markets All persons can use publicly available wells roads and bathing ghats Fourth untouchability has been abolished In the film Deewar a boy who works as a shoeshine refuses to pick up a coin thrown at him He feels that there is dignity in the work that he does and insists that his fee be given respectfully The Parliament is the cornerstone of our democracy and we are represented in it through our elected representatives The two ways in which the government has tried to implement the equality that is guaranteed in the Constitution is first through laws and second through government programmes or schemes to help disadvantaged communities There are several laws in India that protect every person’s right to be treated equally In addition to laws the government has also set up several schemes to improve the lives of communities and individuals who have been treated unequally for several centuries These schemes are to ensure greater opportunity for people who have not had this in the past One of the steps taken by the government includes the midday meal scheme This refers to the programme introduced in all government elementary schools to provide children with cooked lunch Tamil Nadu was the first state in India to introduce this scheme and in the Supreme Court asked all state governments to begin this programme in their schools within six months This programme has had many positive effects These include the fact that more poor children have begun enrolling and regularly attending school Teachers reported that earlier children would often go home for lunch and then not return to school but now with the midday meal being provided in school their attendance has improved Their mothers who earlier had to interrupt their work to feed their children at home during the day now no longer need to do so This programme has also helped reduce caste prejudices because both lower and upper caste children in the school eat this meal together and in quite a few places Dalit women have been employed to cook the meal The midday meal programme also helps reduce the hunger of poor students who often come to school and cannot concentrate because their stomachs are empty While government programmes play an important role in increasing equality of opportunity there is much that still needs to be done While the midday meal programme has helped increase the enrolment and attendance of poor children in school there continues to be big differences in our country between schools that the rich attend and those that the poor attend Even today there are several schools in the country in which Dalit children like Omprakash Valmiki are discriminated against and treated unequally These children are forced into unequal situations in which their dignity is not respected This is because people refuse to think of them as equal even though the law requires it Children being served their midday meal at a government school in Uttarakhand What is the midday meal programme Can you list three benefits of the programme How do you think this programme might help promote greater equality Find out about one government scheme in your area What does this scheme do Whom is this scheme set up to benefit It is disgraceful to live at the cost of one's self-respect Self-respect is the most vital factor in life Without it man is a cipher To live worthily with self-respect one has to overcome difficulties It is out of hard and ceaseless struggle alone that one derives strength confidence and recognition Man is mortal Everyone has to die some day or the other But one must resolve to lay down one's life in enriching the noble ideals of self-respect and in bettering one's human life Nothing is more disgraceful for a brave man than to live life devoid of self-respect R Ambedkar One of the main reasons for this is that attitudes change very slowly Even though persons are aware that discrimination is against the law they continue to treat people unequally on the basis of their caste religion disability economic status and because they are women It is only when people begin to believe that no one is inferior and that every person deserves to be treated with dignity that present attitudes can change Establishing equality in a democratic society is a continuous struggle and one in which individuals as well as various communities in India contribute to and you will read more about this in this book Issues of equality in other democracies You are probably wondering whether India is the only democratic country in which there is inequality and where the struggle for equality continues to exist The truth is that in many democratic countries around the world the issue of equality continues to be the key issue around which communities struggle So for example in the United States of America the African Americans whose ancestors were the slaves who were brought over from Africa continue to describe their lives today as largely unequal This despite the fact that there was a movement in the late s to push for equal rights for African Americans Prior to this African Americans were treated extremely unequally in the United States and denied equality through law For example when travelling by bus they either had to sit at the back of the bus or get up from their seat whenever a white person wished to sit Rosa Parks was an African American woman Tired from a long day at work she refused to give up her seat on a bus to a white man on December Her refusal that day started a huge agitation against the unequal ways in which African Americans were treated and which came to be known as the Civil Rights Movement The Civil Rights Act of prohibited discrimination on the basis of race religion or national origin It also stated that all schools would be open to African American children and that they would no longer have to attend separate schools specially set up for them However despite this a majority of African Americans continue to be among the poorest in the country Most AfricanAmerican children can only afford to attend government schools that have fewer facilities and poorly qualified teachers as compared to white students who either go to private schools or live in areas where the government schools are as highly rated as private schools Excerpt from Article of the Indian Constitution Prohibition of discrimination on grounds of religion race caste sex or place of birth The State shall not discriminate against any citizen on grounds only of religion race caste sex place of birth or any of them No citizen shall on grounds only of religion race caste sex place of birth or any of them be subject to any disability liability restriction or condition with regard to a access to shops public restaurants hotels and places of public entertainment or the use of wells tanks bathing ghats roads and places of public resort maintained wholly or partly out of State funds or dedicated to the use of the general public Challenge of democracy No country can be described as being completely democratic There are always communities and individuals trying to expand the idea of democracy and push for a greater recognition of equality on existing as well as new issues Central to this is the struggle for the recognition of all persons as equal and for their dignity to be maintained In this book you will read about how this issue of equality affects various aspects of our daily lives in democratic India As you read these chapters think about whether the equality of all persons and their being able to maintain their dignity is upheld CHAPTER Role of the Government in Health In a democracy people expect the government to work for their welfare This could be through the provision of education health employment housing or the development of roads electricity etc In this chapter we shall examine the meanings and problems related to health Look at the sub-headings of this chapter In what ways do you think this topic is related to the work of government Social and Political Life What is health We can think of health in many ways Health means our ability to remain free of illness and injuries But health isn’t only about disease You may have associated only some of the situations in the above collage with health What we often ignore is the fact that each of the above situations is related to health Apart from disease we need to think of other factors that affect our health For example if people get clean drinking water or a pollution free environment they are likely to be healthy On the other hand if people do not get adequate food to eat or have to live in cramped conditions they will be prone to illness All of us would like to be active and in good spirits in whatever we may be doing It isn’t healthy to be dull inactive anxious or scared for long stretches of time We all need to be without mental strain All of these various aspects of our lives are a part of health Would you associate all or some of these pictures with ‘health’ In what ways Discuss in groups Pick two situations from the above collage that are not related to illness and write two sentences on how they are related to health Chapter Role of the Government in Health Healthcare in India Can you provide a title to these columns India has the largest number of medical colleges in the world and is among the largest producers of doctors Approximately new doctors qualify every year Most doctors settle in urban areas People in rural areas have to travel long distances to reach a doctor The number of doctors with respect to the population is much less in rural areas Healthcare facilities have grown substantially over the years In there were only hospitals in India In there were hospitals In the number grew to About five lakh people die from tuberculosis every year This number is almost unchanged since Independence Almost two million cases of malaria are reported every year and this number isn’t decreasing India gets a large number of medical tourists from many countries They come for treatment in some of the hospitals in India that compare with the best in the world We are not able to provide clean drinking water to all per cent of all communicable diseases are water borne For example diarrhoea worms hepatitis etc India is the third largest producer of medicines in the world and is also a large exporter of medicines Half of all children in India do not get adequate food to eat and are undernourished In India it is often said that we are unable to provide health services for all because the government does not have enough money and facilities After reading the above left hand column do you think this is true Discuss Let us examine some of the aspects of healthcare in India Compare and contrast the situation expressed in the first and second columns In order to prevent and treat illnesses we need appropriate healthcare facilities such as health centres hospitals laboratories for testing ambulance services blood banks etc that can provide the required care and services that patients need In order to run such facilities we need health workers nurses qualified doctors and other health professionals who can advice diagnose and treat illnesses We also need the medicines and equipment that are necessary for treating patients These facilities are required to take care of us India has a large number of doctors clinics and hospitals The country also has considerable experience and knowledge in running a public healthcare system This is a system of hospitals and health centres run by the government It has the ability to look after the health of a large section of its population scattered over hundreds of thousands of villages We will go into more detail on this later Moreover there has been a phenomenal advancement in medical sciences whereby many new technologies and treatment procedures are available in the country However the second column points out how poor the health situation in our country is With all the above positive developments we are not able to provide proper healthcare facilities to people This is the paradox something that is contrary to what we would expect Our country has the money knowledge and people with experience but cannot make the necessary healthcare available to all In this chapter we will look at some of the reasons for this Patients usually have to wait in long queues in government hospitals like this one The story of Hakim Seikh Hakim Seikh was a member of the Paschim Banga Khet Mazdoor Samity PBKMS an organisation of agricultural labourers in West Bengal One evening in he accidentally fell off a running train and suffered head injuries He was in a very serious condition and needed immediate treatment He was taken to a government hospital in Kolkata but they refused to admit him because they did not have a spare bed Another hospital did not have the facility or the specialised doctors necessary for his treatment In this way he spent hours in a critical state and was taken to eight different government hospitals but none of them admitted him Finally he was admitted in a private hospital where he received treatment He spent a lot of money on his treatment Angry and upset over the indifferent attitude of all the hospitals that refused to admit him Hakim Seikh and PBKMS filed a case in the court Read the story given above Then imagine that you are a Judge in the court What would you say to Hakim Seikh THE COST OF A CURE I had viral fever and had to go to the hospital Aman and Ranjan are good friends While Ranjan comes from a well-to-do family Aman’s parents have to struggle to make ends meet Hi Aman Good to see you back How have you been The building looked so posh I thought it was a five star hotel Daddy said that was because it was a private hospital with the best of facilities The doctor asked for many tests but everyone was so friendly The lady who took my blood for testing told me so many jokes that I forgot to feel the pain and have you heard the one about Batman on Reality TV Oh Me too I just got back to school on Monday My Daddy took me to see the doctor at the new hospital in Kingsway It was very exciting Daddy had to pay Rs at the reception counter itself before we even met the doctor There was nice music playing and everything was really clean and shiny After the test results came we went back to the doctor He looked through them and said everything was fine and I only had viral fever He prescribed some medicines and rest and so young man this pink pill should be taken three times a day and the white tablet once before bed time that’s for the bodyache This one is a syrup don’t worry it’s tasty Thank you Doctor I feel better already and it really did We went to a big Government Hospital We had to wait in a long queue at the OPD counter I was feeling so sick that I had to lean on Abba all the time You see I’ve been dying to tell you all about it But what about you Which hospital did you go to Um it wasn’t as nice as your’s at all At first Abba didn’t want to take me because he said it would take too much time When our turn came the doctor examined me and asked for a blood test Then we had to go and stand in another long queue People were crowding around in the testing room too He seems to be suffering from a bout of viral fever nothing to worry about All he needs is this one fever-reducing medicine We got the test results after three days and went back to the hospital There was a different doctor that day Show me his OPD card and the test results quickly please My hospital was nice but they gave me many medicines and the whole thing cost quite a lot Oh My treatment did not cost much Where do you go when you are ill Are there any problems that you face Write a paragraph based on your experience What problems did Aman face in the government hospital How do you think the hospital can work in a better manner Discuss Why did Ranjan have to spend so much money Give reasons What problems do we face in private hospitals Discuss Why pay taxes to the government Government uses tax money for providing many public services for the benefit of all citizens Some services such as defence police judicial system highways etc benefit all citizens Otherwise the citizens cannot organise these services for themselves Taxes fund developmental programmes and services such as education health care employment social welfare vocational training etc required for needy citizens Tax money is utilised for relief and rehabilitation in case of natural disasters such as floods earthquakes tsunami etc Space nuclear and missile programmes are also funded from the revenues collected as taxes Government provides some services especially for the poor who cannot afford to purchase them from the market One example is health care Can you give other examples Public and private health care services From the above story you must have understood that we can roughly divide up various health care facilities in two categories a Public health services and Private health facilities Public health services The public health service is a chain of health centres and hospitals run by the government They are linked together so that they cover both rural and urban areas and can also provide treatment to all kinds of problems from common illnesses to special services At the village level there are health centres where there is usually a nurse and a village health worker They are trained in dealing with common illnesses and work under the supervision of doctors at the Primary Health Centre PHC Such a centre covers many villages in a rural area At the district level is the District Hospital that also supervises all the health centres Large cities have many government hospitals such as the one where Aman was taken and also specialised government hospitals such as the ones in Hakim Seikh’s story The health service is called ‘public’ for many reasons In order to fulfil its commitment of providing health care to all citizens the government has established these hospitals and health centres Also the resources needed to run these services are obtained from the money that we the public pay to the government as taxes Hence such facilities are meant for everyone One of the most important aspects of the public health system is that it is meant to provide quality health care services either free or at a low cost so that even the poor can seek treatment Another important function of public health is to take action to prevent the spread of diseases such as TB malaria jaundice cholera diarrhoea chikungunya etc This has to be organised by the government with the participation of people otherwise it is not effective For example when taking up a campaign to see that mosquitoes do not breed in water coolers rooftops etc this has to be done for all houses in the area Recall the case of Hakim Seikh Would you like to know what the court said in this case According to our Constitution it is the primary duty of the government to ensure the welfare of the people and provide health care facilities to all A doctor in a rural health care centre giving medicines to a patient The government must safeguard the Right to Life of every person The Court said that the difficulty that Hakim Seikh had to face could have cost him his life If a hospital cannot provide timely medical treatment to a person it means that this protection of life is not being given The Court also said that it was the duty of the government to provide the necessary health services including treatment in emergency situations Hospitals and medical staff must fulfil their duty of providing the necessary treatment Hakim Seikh was denied treatment at various government hospitals Therefore the Court asked the State Government to give him the money that he had spent on his treatment Private health facilities There is a wide range of private health facilities that exist in our country A large number of doctors run their own private clinics In the rural areas one finds Registered Medical Practitioners RMPs Urban areas have a large number of doctors many of them providing specialised services There are hospitals and nursing homes that are privately owned There are many laboratories that do tests and offer special facilities such as X-ray ultrasound etc There are also shops from where we buy medicines A woman and her sick child at a government hospital According to UNICEF more than a million children die every year in India from preventable infections In what ways is the public health system meant for everyone List some Primary Health Centres PHCs or hospitals near your place From your experience or by visiting any one of them find out the facilities provided and people who run the centre As the name suggests private health facilities are not owned or controlled by the government Unlike the public health services in private facilities patients have to pay a lot of money for every service that they use A post-operative room in a leading private hospital in Delhi Today the presence of private facilities can be seen all around In fact now there are large companies that run hospitals and some are engaged in manufacturing and selling medicines Medical shops are found in every corner of the country Healthcare and equality Is adequate healthcare available to all Private health facilities can mean many things Explain with the help of some examples from your area The Medical Council of India’s Code of Medical Ethics states Every physician should as far as possible prescribe drugs with generic names and he she shall In India we face a situation where private services are increasing but public services are not What is then available to people are mainly private services These are concentrated in urban areas The cost of these services is rather high Medicines are expensive Many people cannot afford them or have to borrow money when there is an illness in the family Some private services encourage incorrect practices to earn more At times inexpensive alternatives though available may not be used For example some medical practitioners are found to prescribe superfluous medicines injections or saline when simple medication may suffice ensure that there is a rational prescription and use of drugs In fact barely per cent of the population can afford all the medicines that they require during an illness Hence even for those whom one might not think as being poor medical expenses cause hardship It was reported in a study that per cent of people who are admitted to a hospital for some illness or injury have to borrow money or sell some of their possessions to pay for the expenses For those who are poor every illness in the family is a cause of great anxiety and distress What is worse is that this situation tends to happen again and again Those who are poor are in the first place undernourished These families are not eating as much as they should They are not provided basic necessities like drinking water adequate housing clean surroundings etc and therefore are more likely to fall ill The expenses on illness make their situation even worse Sometimes it is not only the lack of money that prevents people from getting proper medical treatment Women for example are not taken to a doctor in a prompt manner Women’s health concerns are considered to be less important than the health of men in the family Many tribal areas have few health centres and they do not run properly Even private health services are not available In rural areas a jeep is often used to serve as a mobile clinic for patients This pregnant lady has to travel many kilometres to see a qualified doctor What can be done There is little doubt that the health situation of most people in our country is not good It is the responsibility of the government to provide quality healthcare services to all its citizens especially the poor and the disadvantaged However health is as much dependent on basic amenities and social conditions of the people as it is on healthcare services Hence it is important to work on both in order to improve the health situation of our people And this can be done Look at the following example The Kerala experience In the Kerala government made some major changes in the state Forty per cent of the entire state budget was given to panchayats They could plan and provide for their requirements This made it possible for a village to make sure that proper planning was done for water food women’s development and education This meant that water supply schemes were checked the working of schools and anganwadis was ensured and specific problems of the village were taken up Health centres were also improved All of this helped to improve the situation Despite these efforts however some problems such as shortage of medicines insufficient hospital beds not enough doctors remained and these needed to be addressed For more details visit http lsgkerala gov in en The above map of India shows the state of Kerala in pink Page of this book has a map of India Using your pencil outline the state of Kerala on this map Let us look at an example of another country and its approach to issues of health The Costa Rican approach Costa Rica is considered to be one of the healthiest countries in Central America The main reason for this can be found in the Costa Rican Constitution Several years ago Costa Rica took a very important decision and decided not to have an army This helped the Costa Rican government to spend the money that the army would have used on health education and other basic needs of the people The Costa Rican government believes that a country has to be healthy for its development and pays a lot of attention to the health of its people The Costa Rican government provides basic services and amenities to all Costa Ricans For example it provides safe drinking water sanitation nutrition and housing Health education is also considered very important and knowledge about health is an essential part of education at all levels WHOSE RESPONSIBILITY How the State Government Works Last year we discussed the fact that government works at three levels local state and national and looked at the work of local government in some detail In this chapter we examine the work of the government at the state level How does this take place in a democracy What is the role of a Member of the Legislative Assembly MLA and Ministers How do people express their views or demand action from government We look at these questions through the example of health Hey look at this it says that there is a water shortage in our state and people are falling sick In many villages people were found to be drinking unclean water Streams have dried up and so have tanks In the worst-affected areas villagers have been carrying water across great distances People at the district HQ Patalpuram receive water supply once in three days The District Hospital here is overflowing with patients a large number of whom are children with acute diarrhoea On the TV news they said ten people have died from diarrhoea Is that possible Can one really die from it Who knows Just hope I don’t get it This road is blocked due to the rally They have gheraoed the MLA’s residence Really Why Has he done something Ha ha they seem more angry about what he hasn’t done That afternoon Suddenly My mother said not to have any iced drinks from the market She gave one of her lectures this morning You have to be responsible for your health Shirin Ha ha and we demand that the authorities take immediate action to bring the public health situation under control Our MLA must take the responsibility for this STOP What a loud voice he has he must be a leader or something Shh I saw him on TV too He is a member of the Opposition Who is an MLA In the above section you have read about some events in Patalpuram You may be familiar with some official names such as Collector Medical Officer etc But have you heard of an MLA and the Legislative Assembly Do you know the MLA of your area Can you identify which party she or he belongs to Members of the Legislative Assembly MLAs are elected by the people They then become members of the legislative assembly and also form the government In this way we say that the MLAs represent people The example below will help us understand this better Every state in India has a Legislative Assembly Each state is divided into different areas or constituencies For example look at the map below It shows that the state of Himachal Pradesh is divided into assembly constituencies From each constituency the people elect one representative who then becomes a Member of the Legislative Assembly MLA You would have noticed that people stand for elections in the name of different parties These MLAs therefore belong to different political parties How do people who are MLAs become ministers or chief minister A political party whose MLAs have won more than half the number of constituencies in a state can be said to be in a majority The political party that has the majority is called the ruling party and all other members are called the opposition For example the Legislative Assembly of the state of Himachal Pradesh has MLA constituencies Jammu and Kashmir The state of Himachal Pradesh is coloured in purple in the above thumbnail map of India Using a pencil outline the following on the map given on page i the state that you live in the state of Himachal Pradesh Candidates from various political parties won the assembly elections and became MLAs Since the total number of MLAs in the Legislative Assembly is a political party would have needed to have more than MLAs in order to gain a majority The Bharatiya Janata Party BJP with MLAs had the majority and it became the ruling party All other MLAs became the opposition In this case the Indian National Congress INC was the major opposition party since it had the largest number of MLAs after the BJP Among the opposition were other parties including those who had been elected as independent candidates After the elections the MLAs belonging to the ruling party will elect their leader who will become the chief minister In this case the BJP MLAs chose Shri Jairam Thakur as their leader and he became the chief minister The chief minister then selects other people as ministers After the elections it is the Governor of the state who appoints the chief minister and other ministers Construct a table similar to the one given for Himachal Pradesh for your state The Head of the State is the Governor She He is appointed by the Central Government to ensure that the State Government works within the rules and regulations of the Constitution Find out the name of Governor of your State At times the ruling party may not be a single party but a group of parties working together This is called a coalition Discuss with your teacher The chief minister and other ministers have the responsibility of running various government departments or ministries They have separate offices A Legislative Assembly is a place where all the MLAs whether from the ruling party or from the opposition meet to discuss various things Hence some MLAs have dual responsibilities one as an MLA and the other as a minister We will read about this further A debate in the Legislative Assembly Afreen Sujata and many other students from their school travelled to the state capital to visit the Legislative Assembly which was housed in an impressive building The children were excited After security checks they were taken upstairs There was a gallery from where they could see the large hall below There were rows and rows of desks This Assembly was going to have a debate on a current problem During this time MLAs can express their opinions and ask questions related to the issue or give suggestions about what should be done by the government Those who wish to can respond to this The minister then replies to the questions and tries to assure the Assembly that adequate steps are being taken The chief minister and other ministers have to take decisions and run the government We usually hear about them or see them in the news channels or in the papers However whatever decisions are being taken have to be approved by the members of the legislative assembly In a democracy these members can ask questions debate an important issue decide where money should be spent etc They have the main authority MLA In my constituency of Akhandagaon during the last three weeks there were deaths because of diarrhoea I think it is a shame that this government has not been able to check the situation of a simple problem like diarrhoea while proclaiming itself to be a champion of technology I would call the attention of the minister in charge of health to take immediate measures to control the situation MLA My question is why are government hospitals in such a bad situation Why is the government not appointing proper doctors and other medical staff in the district I would also like to know how the government plans to deal with this situation which is affecting a large number of people and is also spreading This is an epidemic MLA My constituency of Tolpatti too has a serious shortage of water Women travel up to or kilometres to collect water How many tankers have been put into service to supply water How many wells and ponds have been cleaned and disinfected MLA I think my colleagues are exaggerating the problem The government has taken steps to control the situation Water tankers have been put into service ORS packets are being distributed The government is doing everything possible to help people MLA We have very poor facilities in our hospitals There are hospitals that do not have a doctor and no medical staff has been appointed for the last few years In another hospital the doctor has gone on a long leave This is a shame I think the situation is going from bad to worse How are we going to ensure that ORS packets reach all families in the affected areas MLA The opposition members are unnecessarily blaming the government The previous government did not pay any attention to sanitation We have now taken up a drive to clear the garbage that has been lying around for years Can you identify the MLAs of the ruling party and the opposition in the illustration Colour the ruling party in one colour and the opposition in another What were the main arguments put forward by different MLAs who thought that the government was not taking the situation in a serious manner If you were the health minister how would you respond to the above discussion Do you think the above debate would have been useful in some ways How Discuss In the working of the government explain the difference between being an MLA and an MLA who is also a minister In the earlier section you have read about a debate in the Legislative Assembly The members were debating the action taken or not taken by the government This is because the MLAs are together responsible for the work of the government In common usage the word ‘government’ refers to government departments and various ministers who head them The overall head is the chief minister More correctly this is called the executive part of the government All the MLAs who gather together assemble in the legislative assembly are called the Legislature They are the ones who authorise and supervise their work As we saw in the earlier section it is from among them that the head of the executive or the chief minister is formed Working of the government The Legislative Assembly is not the only place where opinions are expressed about the work of the government and action is demanded You will find newspapers TV channels and other organisations regularly talking about the government In a democracy there are various ways through which people express their views and also take action Let us look at one such way Soon after the discussion in the assembly there was a press conference organised by the health minister Large numbers of people from different newspapers were present The minister and some government officials were also present The minister explained the steps the government had taken Reporters asked many questions at this meeting These discussions were then reported in different newspapers The following page has one such report During the next week the chief minister and the minister for health visited Patalpuram district They went to visit the families who had lost their relatives and also visited people in the hospitals The government announced a compensation for these families The chief minister also said that he thought the problem was not only one of sanitation but also of a lack of clean drinking water He said that a highlevel enquiry committee will be asked to look into the needs of the district to provide sanitation facilities and would request the minister for Public Works to take care of the needs of proper water supply in the region As you saw above the people in power like the chief minister and the minister have to take action They do so through various departments like the Public Works Department the Agriculture Department the Health Department the Education Department and so on They also have to answer questions that are asked in the Legislative Assembly and convince people asking the questions that proper steps are being taken At the same time newspapers and the media widely discuss the issue and the government has to respond for example by holding the press conferences During the last few weeks there have been many deaths in some districts of our state There has been a strong reaction that the government has not taken this seriously The health minister explained today at a press conference that his government has asked all the collectors and the chief medical officers to take urgent measures The most important problem is that of drinking water The minister said that they intend to supply drinking water to every village through tanker trucks The chief minister has promised funds for this work They also plan to start a campaign to inform people about the steps that can be taken to prevent diarrhoea When a reporter asked him as to what steps are being taken to see that garbage that has been lying around for months is quickly collected the chief minister said that he would look into this Write two measures that the goverment undertook for controlling diarrhoea What is the purpose of a press conference How does the press conference help you get information on what the goverment is doing The government can also decide to make new laws for the state regarding sanitation and health facilities For example it may make it compulsory for municipal corporations to ensure that there are adequate toilets in every urban area It may also ensure that a health worker is appointed in every village This act of making laws on certain issues is done in the Legislative Assembly of each state The various government departments then implement these laws Laws for the entire country are made in the Parliament You will read more about the Parliament next year In a democracy people organise meetings to voice their opinions and protest against the government In a democracy it is the people who elect their representatives as Members of the Legislative Assembly MLAs and thus it is the people who have the main authority The ruling party members then form the government and some members are appointed ministers These ministers are in charge of various departments of the government such as health in the above example Whatever work is done by these departments has to be approved by the members of the legislative assembly After introducing the topic and having a brief discussion with the whole class the teacher divides the class into groups The group discusses the issue and decides what it would like to include in the wall-paper Children then work individually or in pairs to read the collected material and write their observations or experiences They can do this through creating stories poems case studies interviews etc The group looks at the material that they have selected drawn or written They read each other’s writing and provide feedback to each other They make decisions on what should be included and finalise the layout for the wallpaper Each group then presents the wallpaper to the entire class It is important that more than one member of the group is asked to present and that each group is allotted the same amount of time to discuss their work After each group has presented it would be a good idea to have a feedback session on the following What more could they do on their own How could their work be organised better How could writing and presentation be improved upon This wallpaper about the dengue epidemic was prepared by children of Class of Kendriya Vidyalaya II Hindon Ghaziabad Uttar Pradesh Do a similar wallpaper project about any issue connected with the working of your State Government like an education programme any law and order issue midday meal scheme etc Gender Growing up as Boys and Girls Being a boy or a girl is an important part of one’s identity The society we grow up in teaches us what kind of behaviour is acceptable for girls and boys what boys and girls can or cannot do We often grow up thinking that these things are exactly the same everywhere But do all societies look at boys and girls in the same way We will try and answer this question in this chapter We will also look at how the different roles assigned to boys and girls prepare them for their future roles as men and women We will learn that most societies value men and women differently The roles women play and the work they do are usually valued less than the roles men play and the work they do This chapter will also examine how inequalities between men and women emerge in the area of work Growing up in Samoa in the s The Samoan Islands are part of a large group of small islands in the southern part of the Pacific Ocean In the s according to research reports on Samoan society children did not go to school They learnt many things such as how to take care of children or do household work from older children and from adults Fishing was a very important activity on the islands Young people therefore learnt to undertake long fishing expeditions But they learnt these things at different points in their childhood As soon as babies could walk their mothers or other adults no longer looked after them Older children often as young as five years old took over this responsibility Both boys and girls looked after their younger siblings But by the time a boy was about nine years old he joined the older boys in learning outdoor jobs like fishing and planting coconuts Girls had to continue looking after small children or do errands for adults till they were teenagers But once they became teenagers they had much more freedom After the age of fourteen or so girls also went on fishing trips worked in the plantations learnt how to weave baskets Cooking was done in special cooking-houses where boys were supposed to do most of the work while girls helped with the preparations A Class Samoan child in his school uniform In what ways do the experiences of Samoan children and teenagers differ from your own experiences of growing up Is there anything in this experience that you wish was part of your growing up Growing up male in Madhya Pradesh in the s The following is adapted from an account of experiences of being in a small town in Madhya Pradesh in the s From Class onwards boys and girls went to separate schools The girls’ school was designed very differently from the boys’ school They had a central courtyard where they played in total seclusion and safety from the outside world The boys’ school had no such courtyard and our playground was just a big space attached to the school Every evening once school was over the boys watched as hundreds of school girls crowded the narrow streets As these girls walked on the streets they looked so purposeful This was unlike the boys who used the streets as a place to stand around idling to play to try out tricks with their bicycles For the girls the street was simply a place to get straight home The girls always went in groups perhaps because they also carried fears of being teased or attacked After reading the two examples above we realise that there are many different ways of growing up Often we think that there is only one way in which children grow up This is because we are most familiar with our own experiences If we talk to elders in our family we will see that their childhoods were probably very different from ours We also realise that societies make clear distinctions between boys and girls This begins from a very young age We are for example given different toys to play with Boys are usually given cars to play with and girls dolls Both toys can be a lot of fun to play with Why are girls then given dolls and boys cars Toys become a way of telling children that they will have different futures when they become men and women If we think about it this difference is created in the smallest and most everyday things How girls must dress what games boys should play how girls need to talk softly or boys need to be tough All these are ways of telling children that they have specific roles to play when they grow up to be men and women Later in life this affects the subjects we can study or the careers we can choose In most societies including our own the roles men and women play or the work they do are not valued equally Men and women do not have the same status Let us look at how this difference exists in the work done by men and women Why do girls like to go to school together in groups Growing up as Boys and Girls Make a drawing of a street or a park in your neighbourhood Show the different kinds of activities young boys and girls may be engaged in You could do this individually or in groups Are there as many girls as boys in your drawing Most probably you would have drawn fewer girls Can you think of reasons why there are fewer women and girls in your neighbourhood streets parks and markets in the late evenings or at night Are girls and boys doing different activities Can you think of reasons why this might be so What would happen if you replaced the girls with the boys and vice-versa ‘MY MOTHER DOES NOT WORK’ Ma we are going on a school excursion Rosie Ma’am needs volunteers Can’t you take a holiday from office and volunteer At the Singh’s house But isn’t that correct aunty My mother is a housewife she does not work Harsharan Shonali thinks that your wife is not a working person Shonali how can you say that You know that Jaspreet aunty is up at a m everyday doing all the housework Harmeet’s mother always comes for excursions beause she doesn’t work Then Jaspreet why don’t you just relax and let them manage everything for a change Yes but that’s not real work it’s just house work Oh That’s what you think do you Let’s go over to their house and ask Jaspreet what she thinks What fun We’ll take care of everything tomorrow with Papa Great idea OK I’ll go on strike tomorrow Ha ha Next morning a m Oh God Look at the time Where’s my breakfast Why aren’t the children ready Hurry hurry And ask Harmeet to switch on the pump Oh-ho That’s the school bus I’ll have to drop them in the car How would I know I’m on strike remember Besides Mangala has also taken leave today But what about the kids’ lunch boxes Oh no Forgot about that I’ll give you some money Just buy something from the canteen today Ma already gave us money for that DING DING I’m exhausted How about some tea Oh I forgot your strike I’ll make some myself The house looks like it was hit by a hurricane Harmeet where on earth are the tea leaves Did you expect it to remain in exactly the same condition in which you left it this morning dear Hee hee I wonder if they still believe I don’t work and now I have to remind them that Chachaji and Chachiji are coming for dinner Valuing housework Harmeet’s family did not think that the work Jaspreet did within the house was real work This feeling is not unique to their families Across the world the main responsibility for housework and care-giving tasks like looking after the family especially children the elderly and sick members lies with women Yet as we have seen the work that women do within the home is not recognised as work It is also assumed that this is something that comes naturally to women It therefore does not have to be paid for And society devalues this work Lives of domestic workers In the story above Harmeet’s mother was not the only one who did the housework A lot of the work was done by Mangala their domestic helper Many homes particularly in towns and cities employ domestic workers They do a lot of work sweeping and cleaning washing clothes and dishes cooking looking after young children or the elderly Most domestic workers are women Sometimes even young boys or girls are employed to do this work Wages are low as domestic work does not have much value A domestic worker’s day can begin as early as five in the morning and end as late as twelve at night Despite the hard work they do their employers often do not show them much respect This is what Melani a domestic worker had to say about her experience of working in Delhi My first job was with a rich family that lived in a three-storeyed house The memsahib was very strange as she would shout to get any work done My work was in the kitchen There were two other girls who did the cleaning Our day would begin at o’clock For breakfast we would get a cup of tea and two dry rotis We could never get a third roti In the evening when I cooked the food the two other girls would beg me to give them an extra roti I would secretly give it to them and make an extra one for myself We were so hungry after working through the day We could not wear chappals in the house In the winter our feet would swell up with the cold I used to feel scared of the memsahib but also felt angry and humiliated Did we not work all day Did we not deserve to be treated with some respect Melani with her daughter Were Harmeet and Shonali correct in saying that Harmeet’s mother did not work What do you think would happen if your mother or those involved in doing the work at home went on a strike for a day Why do you think that men and boys generally do not do housework Do you think they should In fact what we commonly term as housework actually involves many different tasks A number of these tasks require heavy physical work In both rural and urban areas women and girls have to fetch water In rural areas women and girls carry heavy headloads of firewood Tasks like washing clothes cleaning sweeping and picking up loads require bending lifting and carrying Many chores like cooking involve standing for long hours in front of hot stoves The work women do is strenuous and physically demanding words that we normally associate with men Another aspect of housework and care-giving that we do not recognise is that it is very time consuming In fact if we add up the housework and the work women do outside the home we find that women spend much more time working than men and have much less time for leisure Below is some data from a special study done by the Central Statistical Organization of India See if you can fill in the blanks What are the total number of work hours spent by women in Haryana and Tamil Nadu each week Women’s work and equality As we have seen the low value attached to women’s household and care-giving work is not an individual or family matter It is part of a larger system of inequality between men and women It therefore has to be dealt with through actions not just at the level of the individual or the family but also by the government As we now know equality is an important principle of our Constitution The Constitution says that being male or female should not become a reason for discrimination In reality inequality between the sexes exists The government is therefore committed to understanding the reasons for this and taking positive steps to remedy the situation For example it recognises that burden of child-care and housework falls on women and girls How does this compare with the total number of work hours spent by men Many women like Shonali’s mother in the story and the women in Tamil Nadu and Haryana who were surveyed work both inside and outside the home This is often referred to as the double burden of women’s work This naturally has an impact on whether girls can attend school It determines whether women can work outside the house and what kind of jobs and careers they can have The government has set up anganwadis or child-care centres in several villages in the country The government has passed laws that make it mandatory for organisations that have more than women employees to provide crèche facilities The provision of crèches helps many women to take up employment outside the home It also makes it possible for more girls to attend schools Children at an Anganwadi centre in a village in Madhya Pradesh What do you think this poster is trying to say This poster was created by a women’s group in Bengal Can you write an interesting slogan for the poster Women Change the World In the previous chapter we saw how women’s work in the home is not recognised as work We also read how doing household work and taking care of family members is a full time job and there are no specific hours at which it begins or ends In this chapter we will look at work outside the home and understand how some occupations are seen to be more suitable for men than for women We will also learn about how women struggle for equality Getting an education was and still is one way in which new opportunities were created for women This chapter will also briefly trace the different types of efforts made by the women’s movement to challenge discrimination in more recent years See what images your class drew by filling in the table below Add up the number of male and female images separately for each occupation Category Male image Female image Are there more images of men than women Teacher In what kinds of jobs were there more images of men than women Farmer Factory worker Have all the nurses been drawn as Nurse females Why Scientist Are there fewer images of female farmers If so why per cent of working women in India are engaged in agricultural work Their work includes planting weeding harvesting and threshing Yet when we think of a farmer we only think of a man Fewer opportunities and rigid expectations A lot of the children in Rosie Ma’am’s class drew women as nurses and men as army officers The reason they did this is because they feel that outside the home too women are good at only certain jobs For example many people believe that women make better nurses because they are more patient and gentle This is linked to women’s roles within the family Similarly it is believed that science requires a technical mind and girls and women are not capable of dealing with technical things Because so many people believe in these stereotypes many girls do not get the same support that boys do to study and train to become doctors and engineers In most families once girls finish school they are encouraged by their families to see marriage as their main aim in life Breaking stereotypes Engine drivers are men But -year-old Laxmi Lakra from a poor tribal family in Jharkhand has begun to change things She is the first woman engine driver for Northern Railways Laxmi’s parents are not literate but they struggled and overcame many hardships to make sure their children got an education Laxmi studied in a government school Even in school Laxmi helped with the housework and did odd jobs She studied hard and did well and then went on to get a diploma in electronics She then took the railway board exam and passed it on her first attempt Laxmi says I love challenges and the moment somebody says it is not for girls I make sure I go ahead and do it Laxmi has had to do this several times in her life when she wanted to take electronics when she rode motorcycles at the polytechnic and when she decided to become an engine driver Her philosophy is simple As long as I am having fun without harming anyone as long as I am doing well and helping my parents why should I not lead a lifestyle of my choice Adapted from Driving Her Train by Neeta Lal Women’s Features Service Read the story below and answer the questions If you were Xavier what subject would you choose and why In your experience what are some of the other pressures that boys experience It is important to understand that we live in a society in which all children face pressures from the world around them Sometimes these come in the form of demands from adults At other times they can just be because of unfair teasing by our own friends Boys are pressurised to think about getting a job that will pay a good salary They are also teased and bullied if they do not behave like other boys You may remember that in your Class book you read about how boys at an early age are encouraged not to cry in front of others Xavier was happy with the results of his Class board exams Though his marks in Science and Maths were not high he had done well in his favourite subjects History and Languages When his parents saw his report card however they did not look pleased at all Why do you want to take History Think about your future You have to get a good job History will not help It has no scope But but I don’t like Maths or Science My Goodness Xavier you have managed only in Maths Your marks in Physics are low too I know Mama but it’s okay because I don’t want to take Maths or Science I want to study History Be sensible son Take Maths and you can study computers side by side The job market for computers is very good Learning for change Going to school is an extremely important part of your life As more and more children enter school every year we begin to think that it is normal for all children to go to school Today it is difficult for us to imagine that school and learning could be seen as out of bounds or not appropriate for some children But in the past the skill of reading and writing was known to only a few Most children learnt the work their families or elders did For girls the situation was worse In communities that taught sons to read and write daughters were not allowed to learn the alphabet Even in families where skills like pottery weaving and craft were taught the contribution of daughters and women was only seen as supportive For example in the pottery trade women collected the mud and prepared the earth for the pots But since they did not operate the wheel they were not seen as potters In the nineteenth century many new ideas about education and learning emerged Schools became more common and communities that had never learnt reading and writing started sending their children to school But there was a lot of opposition to educating girls even then Yet many women and men made efforts to open schools for girls Women struggled to learn to read and write Ramabai shown above with her daughter championed the cause of women’s education She never went to school but learnt to read and write from her parents She was given the title ‘Pandita’ because she could read and write Sanskrit a remarkable achievement as women then were not allowed such knowledge She went on to set up a Mission in Khedgaon near Pune in where widows and poor women were encouraged not only to become literate but to be independent They were taught a variety of skills from carpentry to running a printing press skills that are not usually taught to girls even today The printing press can be seen in the picture on the top left corner Ramabai’s Mission is still active today Learning to read and write led some women to question the situation of women in society They wrote stories letters and autobiographies describing their own experiences of inequality In their writings they also imagined new ways of thinking and living for both men and women Let us read about the experience of Rashsundari Devi who was born in West Bengal some years ago At the age of she wrote her autobiography in Bangla Her book titled Amar Jiban is the first known autobiography written by an Indian woman Rashsundari Devi was a housewife from a rich landlord’s family At that time it was believed that if a woman learnt to read and write she would bring bad luck to her husband and become a widow Despite this she taught herself how to read and write in secret well after her marriage I would start working at dawn and I would still be at it until well beyond midnight I had no rest in between I was only fourteen years old at the time I came to nurture a great longing I would learn to read and I would read a religious manuscript I was unlucky in those days women were not educated Later I began to resent my own thoughts What is wrong with me Women do not read how will I do it Then I had a dream I was reading the manuscript of Chaitanya Bhagabat the life of a saint Later in the day as I sat cooking in the kitchen I heard my husband say to my eldest son Bepin I have left my Chaitanya Bhagabat here When I ask for it bring it in He left the book there and went away When the book had been taken inside I secretly took out a page and hid it carefully It was a job hiding it for nobody must find it in my hands My eldest son was practising his alphabets at that time I hid one of them as well At times I went over that trying to match letters from that page with the letters that I remembered I also tried to match the words with those that I would hear in the course of my days With tremendous care and effort and over a long period of time I learnt how to read After learning the alphabet Rashsundari Devi was able to read the Chaitanya Bhagabat Through her own writing she also gave the world an opportunity to read about women’s lives in those days Rashsundari Devi wrote about her everyday life experiences in details There were days when she did not have a moment’s rest no time even to sit down and eat Rokeya Sakhawat Hossain and her dreams about ‘Ladyland’ Rokeya Sakhawat Hossain was born into a rich family who owned a lot of land Though she knew how to read and write Urdu she was stopped from learning Bangla and English In those days English was seen as a language that would expose girls to new ideas which people thought were not correct for them Therefore it was mostly boys who were taught English Rokeya learnt to read and write Bangla and English with the support of her elder brother and an elder sister She went on to become a writer She wrote a remarkable story titled Sultana’s Dream in to practise her English skills when she was merely years old This story imagined a woman called Sultana who reaches a place called Ladyland Ladyland is a place where women had the freedom to study work and create inventions like controlling rain from the clouds and flying air cars In this Ladyland the men had been sent into seclusion their aggressive guns and other weapons of war defeated by the brainpower of women As Sultana travels in Ladyland with Sister Sarah she awakes to realise that she was only dreaming As you can see Rokeya Sakhawat Hossain was dreaming of women flying planes and cars even before girls were being allowed to go to school This was the way in which education and learning had changed Rokeya’s own life Rokeya did not stop at getting education just for herself Her education gave her the power not only to dream and write but also to do more to help other girls go to school and to build their own dreams In she started a school for girls in Kolkata and to this day the school is still functioning Unlike Rashsundari Devi and Rokeya Hossain who were not allowed to learn to read and write large numbers of girls attend school in India today Despite this there continue to be many girls who leave school for reasons of poverty inadequate schooling facilities and discrimination Providing equal schooling facilities to children from all communities and class backgrounds and particularly girls continues to be a challenge in India Schooling and education today Today both boys and girls attend school in large numbers Yet as we will see there still remain differences between the education of boys and girls India has a census every years which counts the whole population of the country It also gathers detailed information about the people living in India their age schooling what work they do and so on We use this information to measure many things like the number of literate people and the ratio of men and women According to the census about per cent of all boys and men years old and above were literate that is they could at least write their names compared to just per cent of all girls and women In the most recent census of these figures have grown to per cent for boys and men and per cent for girls and women This means that the proportion of both men and women who are now able to read and have at least some amount of schooling has increased But as you can also see the percentage of the male group is still higher than the female group The gap has not gone away Here is a table that shows the percentage of girls and boys who leave schools from different social groups including Scheduled Caste SC and Scheduled Tribe ST What percentage of children leave school at the upper primary level At which level of education do you see the highest percentage of children leaving Why do you think that the percentage of Adivasi girls and boys leaving school is higher than that of any other group You have probably noticed in the above table that SC and ST girls leave school at a rate that is higher than the category ‘All Girls’ This means that girls who are from Dalit SC and Adivasi ST backgrounds are less likely to remain in school The census also found that Muslim girls are less likely than SC and ST girls to complete primary school While a Muslim girl is likely to stay in school for around three years girls from other communities spend around four years in school There are several reasons why children from Dalit Adivasi and Muslim communities leave school In many parts of the country especially in rural and poor areas there may not even be proper schools nor teachers who teach on a regular basis If a school is not close to people’s homes and there is no transport like buses or vans parents may not be willing to send their girls to school Many families are too poor and unable to bear the cost of educating all their children Boys may get preference in this situation Many children also leave school because they are discriminated against by their teacher and classmates just like Omprakash Valmiki was Find out about the ‘Beti Bachao Beti Padhao’ campaign launched in Women’s movement Women and girls now have the right to study and go to school There are other spheres like legal reform violence and health where the situation of women and girls has improved These changes have not happened automatically Women individually and collectively have struggled to bring about these changes This struggle is known as the Women’s Movement Individual women and women’s organisations from different parts of the country are part of the movement Many men support the women’s movement as well The diversity passion and efforts of those involved makes it a very vibrant movement Different strategies have been used to spread awareness fight discrimination and seek justice Here are some glimpses of this struggle Campaigning Campaigns to fight discrimination and violence against women are an important part of the women’s movement Campaigns have also led to new laws being passed A law was made in to give women who face physical and mental violence within their homes also called domestic violence some legal protection Similarly efforts made by the women’s movement led the Supreme Court to formulate guidelines in to protect women against sexual harassment at the workplace and within educational institutions In the s for example women’s groups across the country spoke out against ‘dowry deaths’ cases of young brides being murdered by their in-laws or husbands greedy for more dowry Women’s groups spoke out against the failure to bring these cases to justice They did so by coming on to the streets approaching the courts and by sharing information Eventually this became a public issue in the newspapers and society and the dowry laws were changed to punish families who seek dowry Satyarani an active member of the women’s movement sitting on the steps of the Supreme Court surrounded by legal files gathered during the course of a long legal battle to seek justice for her daughter who was murdered for dowry Raising Awareness An important part of the women’s movements’ work is to raise public awareness on women’s rights issues Their message has been spread through street plays songs and public meetings Protesting The women’s movement raises its voice when violations against women take place or for example when a law or policy acts against their interests Public rallies and demonstrations are a very powerful way of drawing attention to injustices Showing Solidarity The women’s movement is also about showing solidarity with other women and causes Below On March International Women’s Day women all over the world come together to celebrate and renew their struggles Above Women are holding up candles to demonstrate the solidarity between the people of India and Pakistan Every year on August several thousand people gather at Wagah on the border of India and Pakistan and hold a cultural programme Markets Markets Around Us We go to the market to buy many things vegetables soap toothpaste masala bread rice dal clothes notebooks biscuits etc If we make a list of the goods that we purchase it would be really long There are many kinds of markets that we may visit for our everyday needs these can include shops hawker’s stalls in our neighbourhood a weekly market a large shopping complex perhaps even a mall In this chapter we look at some of these markets and try to understand how the goods that are sold there reach buyers who these buyers are who these sellers are and the sorts of problems they face Why do people go to a weekly market Give three reasons Who are the sellers in a weekly market Why don’t we find big business persons in these markets Why are things cheap in the weekly market Explain with an example how people bargain in the market Can you think of a situation where the bargain would be unfair Weekly market A weekly market is so called because it is held on a specific day of the week Weekly markets do not have permanent shops Traders set up shops for the day and then close them up in the evening Then they may set up at a different place the next day There are thousands of such markets in India People come here for their everyday requirements Many things in weekly markets are available at cheaper rates This is because when shops are in permanent buildings they incur a lot of expenditure they have to pay rent electricity fees to the government They also have to pay wages to their workers In weekly markets these shop owners store the things they sell at home Most of them are helped by their family members and hence do not need to hire workers Weekly markets also have a large number of shops selling the same goods which means there is competition among them If some trader were to charge a high price people would move to another shop where the same thing may be available more cheaply or where the buyer can bargain and bring the price down One of the advantages of weekly markets is that most things you need are available at one place Whether you want vegetables groceries or cloth items utensils all of them can be found here You do not have to go to different areas to buy different things People also prefer going to a market where they have a choice and a variety of goods Sameer is a small trader in the weekly market He buys clothes from a large trader in the town and sells them in six different markets in a week He and other cloth sellers move in groups They hire a mini van for this His customers are from villages that are near the marketplace At festival times such as during Deepavali or Pongal he does good business Shops in the neighbourhood We have seen that the weekly markets offer a variety of goods However we also buy things from other kinds of markets There are many shops that sell goods and services in our neighbourhoods We may buy milk from the dairy groceries from departmental stores stationery eatables or medicines from other shops Many of these are permanent shops while others are roadside stalls such as that of the vegetable hawker the fruit vendor the mechanic etc Shops in the neighbourhood are useful in many ways They are near our home and we can go there on any day of the week Usually the buyer and seller know each other and these shops also provide goods on credit This means that you can pay for the purchases later as we saw in Sujata’s case for example Sujata and Kavita were sent to buy groceries from their neighbourhood shop This was the shop they usually went to It was crowded today The shop owner managed the shop herself with two helpers When they managed to get into the shop Sujata dictated a list to her She in turn began asking her helpers to weigh and pack the items Meanwhile Kavita looked around On the top left shelf there were different brands of detergent cakes Another shelf had toothpastes talcum powder shampoo hair oil The different brands and different colours looked so attractive On the floor lay a few sacks It took almost minutes to weigh and pack all the groceries Then Sujata showed her notebook The woman noted the amount of in the notebook and gave it back She also noted the amount in her big register Then Sujata took the heavy bags out of the shop Her family will pay for the purchases in the first week of next month Why did Sujata carry a notebook Do you think this system is useful Can there be problems What are the different kinds of shops that you find in your neighbourhood What do you purchase from them Why are goods sold in permanent shops costlier than those sold in the weekly markets or by roadside hawkers You might have noticed that there are different kinds of sellers even in the neighbourhood markets Some of them have permanent shops and others sell their goods on the roadside Anzal Mall is a five-floor shopping complex Kavita and Sujata were enjoying going up and down in the lift It seemed as if it was made of glass and they were able to see outside as they went up It was fascinating to see so many different kinds of shops such as the ice-cream burger pizza and other food shops shops full of home appliances footwear and leather items as well as bookshops While wandering about on the third floor they entered a shop that was selling branded readymade clothes The security guard looked at them as if he wanted to stop them but he did not say anything They looked at some dresses and then looked at the price tag None of them was less than almost five times the weekly market price Sujata whispered to Kavita I’ll take you to another shop which has good quality ready-made clothes at more reasonable prices Why do you think the guard wanted to stop Kavita and Sujata from entering the shop What would you say if someone stops you from entering a shop in a market Shopping complexes and malls So far we have seen two kinds of marketplaces weekly markets and markets in our neighbourhood There are other markets in the urban area that have many shops popularly called shopping complexes These days in many urban areas you also have large multi-storeyed air-conditioned buildings with shops on different floors known as malls In these urban markets you get both branded and non-branded goods As you have read in the chapter on advertising branded goods are expensive often promoted by advertising and claims of better quality The companies producing these products sell them through shops in large urban markets and at times through special showrooms As compared to nonbranded goods fewer people can afford to buy branded ones Why do people not bargain in shops located in malls whereas they bargain in weekly markets Chain of markets In the previous sections you have read about different markets from where we buy goods From where do you think shop-owners procure their goods Goods are produced in factories on farms and in homes However we don’t buy directly from the factory or from the farm Nor would the producers be interested in selling us small quantities such as one kilo of vegetables or one plastic mug The people in between the producer and the final consumer are the traders The wholesale trader first buys goods in large quantities For example the vegetable wholesale trader will not buy a few kilos of vegetables but will buy in large lots of to kilos These will then be sold to other traders In these markets buying and selling takes place between traders It is through these links of traders that goods reach faraway places The trader who finally sells this to the consumer is the retailer This could be a trader in a weekly market a hawker in the neighbourhood or a shop in a shopping complex We can understand this with the help of the following examples Every city has areas for wholesale markets This is where goods first reach and are then supplied to other traders The roadside hawker whom you read about earlier would have purchased a large quantity of plastic items from a wholesale trader in the town He in turn might have bought these from another even bigger wholesale trader in the city The city wholesale trader would have bought a large quantity of plastic items from the factory and stored them in a godown In this way a chain of markets is set up When we purchase we may not be aware of the chain of markets through which these goods travel before they reach us How do you think your neighbourhood shop gets its goods Find out and explain with some examples Why is a wholesale trader necessary Aftab The wholesaler in the city Aftab is one of the wholesale traders who purchases in bulk His business starts around o’clock in the morning when vegetables reach the market This is the time when the vegetable market or mandi starts buzzing with activity The vegetables come in trucks matadors tractor trolleys from farms both near and far Soon the process of auctions begins Aftab participates in this auction and decides what he will buy Today for example he bought quintals of cauliflower quintals of onions He has a shop in the market where he stores the vegetables that he has bought From here he sells to hawkers and shopkeepers who start coming to the market around six in the morning They have to organise their purchases so that they can start their shop for the day around ten in the morning Markets everywhere So far we have seen different marketplaces where people buy and sell a variety of goods and services All these markets are in a specific locality and work in a particular manner and time However it is not always necessary that one has to go to the market to purchase goods You can place orders for a variety of things through the phone and these days through the Internet and the goods are delivered at your home In clinics and nursing homes you may have noticed sales representatives waiting for doctors Such persons are also engaged in the selling of goods Thus buying and selling takes place in different ways not necessarily through shops in the market The markets that we looked at above are the ones that we recognise easily However there are markets that we may not be so aware of This is because a large number of goods are bought and sold that we don’t use directly For example a farmer uses fertilisers to grow crops that he purchases from special shops in the city and they in turn get them from factories A car factory purchases engine gears petrol tanks axles wheels etc from various other factories We don’t usually see all the buying and selling but only the final product the car in the showroom The story is similar for any other good People in urban areas can enter markets without stepping out of their homes via the Internet They use their credit cards to make ‘online purchases’ Markets and equality In this chapter we have looked at shop owners in a weekly market and those in a shopping complex They are very different people One is a small trader with little money to run the shop whereas the other is able to spend a lot of money to set up the shop They also earn unequal amounts The weekly market trader earns little compared to the profit of a regular shop owner in a shopping complex Similarly buyers are differently placed There are many who are not able to afford the cheapest of goods while others are busy shopping in malls Thus whether we can be buyers or sellers in these different markets depends among other things on the money that we have Malls like the one above sell expensive and branded goods A Shirt in the Market This chapter tells us the story of a shirt It begins with the production of cotton and ends with the sale of the shirt We shall see that a chain of markets links the producer of cotton to the buyer of the shirt in the supermarket Buying and selling takes place at every step in the chain Does everyone benefit equally from this Or do some people benefit more than others We shall find out A cotton farmer in Kurnool Did Swapna get a fair price on the cotton Swapna a small farmer in Kurnool Andhra Pradesh grows cotton on her small piece of land The bolls of the cotton plant are ripe and some have already burst so Swapna is busy picking cotton The bolls which carry the cotton in them do not burst open all at once so it takes several days to harvest the cotton Once the cotton is collected instead of selling it at Kurnool cotton market Swapna and her husband take the harvest to the local trader At the beginning of the cropping season Swapna had borrowed from the trader at a very high interest rate to buy seeds fertilisers pesticides for cultivation At that time the local trader made Swapna agree to another condition He made her promise to sell all her cotton to him Cultivation of cotton requires high levels of inputs such as fertilisers and pesticides and the farmers have to incur heavy expenses on account of these Most often the small farmers need to borrow money to meet these expenses At the trader’s yard two of his men weigh the bags of cotton At a price of per quintal the cotton fetches The trader deducts for repayment of loan and interest and pays Swapna Swapna only Why did the trader pay Swapna a low price Where do you think large farmers would sell their cotton How is their situation different from Swapna Trader sells the cotton at the Kurnool cotton market Ginning mill buys the cotton Ginning mill removes the seeds and presses the cotton into bales Spinning mill buys the bales Spinning mill spins the cotton into yarn Spinning mill sells the yarn to yarn dealers Trader Cotton is selling cheap There is a lot of cotton in the market Swapna I have toiled so hard for four months to grow this cotton You can see how fine and clean the cotton is this time I had hoped to get a much better price Trader Amma I am giving you a good price Other traders are not even paying this much You can check at the Kurnool market if you do not believe me Swapna Don’t be angry How can I doubt you I had only hoped that we would earn enough from the cotton crop to last us a few months Though Swapna knows that cotton will sell for at least per quintal she doesn’t argue further The trader is a powerful man in the village and the farmers have to depend on him for loans not only for cultivation but also to meet other exigencies such as illnesses children’s school fees Also there are times in the year when there is no work and no income for the farmers so borrowing money is the only means of survival Swapna’s earning from cotton cultivation is barely more than what she might have earned as a wage labourer The cloth market of Erode Erode’s bi-weekly cloth market in Tamil Nadu is one of the largest cloth markets in the world A large variety of cloth is sold in this market Cloth that is made by weavers in the villages around is also brought here for sale Around the market are offices of cloth merchants who buy this cloth Other traders from many south Indian towns also come and purchase cloth in this market On market days you would also find weavers bringing cloth that has been made on order from the merchant These merchants supply cloth on order to garment manufacturers and exporters around the country They purchase the yarn and give instructions to the weavers about the kind of cloth that is to be made In the following example we can see how this is done Putting-out system weavers producing cloth at home The merchant distributes work among the weavers based on the orders he has received for cloth The weavers get the yarn from the merchant and supply him the cloth For the weavers this arrangement seemingly has two advantages The weavers do not have to spend their money on purchase of yarn Also the problem of selling the finished cloth is taken care of Weavers know from the outset what cloth they should make and how much of it is to be woven However this dependence on the merchants both for raw materials and markets means that the merchants have a lot of power They give orders for what is to be made and they pay a very low price for making the cloth The weavers have no way of knowing who they are making the cloth for or at what price it will be sold At the cloth market the merchants sell the cloth to the garment factories In this way the market works more in favour of the merchants Weavers invest all their savings or borrow money at high interest rates to buy looms Each loom costs so a small weaver with two looms has to invest The work on these looms cannot be done alone The weaver and another adult member of his family work upto hours a day to produce cloth For all this work they earn about per month The arrangement between the merchant and the weavers is an example of putting-out system whereby the merchant supplies the raw material and receives the finished product It is prevalent in the weaving industry in most regions of India This is a merchant’s shop in the bazaar Over the years these traders have developed extensive contacts with garment firms around the country from whom they get orders These traders purchase the yarn thread from others The weavers live in villages around and take the yarn supplied by these traders to their homes where the looms are located in sheds adjacent to their houses This photograph shows a powerloom in one such home The weavers and their families spend long hours working on these looms Most weaving units have about powerlooms on which the yarn is woven into cloth A variety of sarees towels shirting ladies dress material and bedsheets are produced in these looms They then bring back the finished cloth to the traders Here they can be seen getting ready to go to the merchant in the town The trader keeps an account of the yarn given and pays them money for weaving this into cloth If the weavers were to buy yarn on their own and sell cloth they would probably earn three times more Do you think this is possible How Discuss Do you find similar ‘putting-out’ arrangements in making papads masalas beedis Find out about this in your area and discuss in class You might have heard of cooperatives in your area It could be in milk provisions paddy etc Find out for whose benefit they were set up Weaver’s cooperative We have seen that the weavers are paid very little by the merchant under the putting out system Weaver’s cooperatives are one way to reduce the dependence on the merchant and to earn a higher income for the weavers In a cooperative people with common interests come together and work for their mutual benefit In a weaver’s cooperative the weavers form a group and take up certain activities collectively They procure yarn from the yarn dealer and distribute it among the weavers The cooperative also does the marketing So the role of the merchant is reduced and weavers get a fair price on the cloth At times the government helps the cooperatives by buying cloth from them at a reasonable price For instance the Tamil Nadu government runs a Free School Uniform programme in the state The government procures the cloth for this programme from the powerloom weaver’s cooperatives Similarly the government buys cloth from the handloom weaver’s cooperatives and sells it through stores known as Co-optex You might have come across one of these stores in your town The garment exporting factory near Delhi The Erode merchant supplies the cotton cloth produced by the weavers to a garment exporting factory near Delhi The garment exporting factory will use the cloth to make shirts The shirts will be exported to foreign buyers Among the foreign buyers are businesspersons from the US and Europe who run a chain of stores These large stores do business strictly on their own terms They demand the lowest prices from the supplier In addition they set high standards for quality of production and timely delivery Any defects or delay in delivery is dealt with strictly So the exporter tries his best to meet the conditions set by these powerful buyers Faced with such pressures from the buyers the garment exporting factories in turn try to cut costs They get the maximum work out of the workers at the lowest possible wages This way they can maximise their own profits and also supply the garments to foreign buyers at a cheap price What are the demands foreign buyers make on the garment exporters Why do the garment exporters agree to these demands How do the garment exporters meet the conditions set by the foreign buyers Why do you think more women are employed in the Impex garment factory Discuss The Impex garment factory has workers Most of them are women Most of these workers are employed on a temporary basis This means that whenever the employer feels that a worker is not needed the worker can be asked to leave Workers’ wages are fixed according to their skills The highest paid among the workers are the tailors who get about per month Women are employed as helpers for thread cutting buttoning ironing and packaging These jobs have the lowest wages The businessperson purchased the shirts from the garment exporter in Delhi for per shirt He then spent for advertising in the media and another per shirt on storage display and all other charges Thus the cost to this person is while he sells the shirt for is his profit on one shirt If he is able to sell a large number of shirts his profit will be higher The garment exporter sold the shirt at per piece The cloth and other raw materials cost him per shirt The workers’ wages cost another per shirt The cost of running his office came to per shirt Can you calculate the profit per shirt for the garment exporter Compare the earnings per shirt of the worker in the garment factory Who are the gainers in the market abroad What do you find A chain of markets links the producer of cotton to the buyer at the supermarket Buying and selling takes place at every step in the chain Let us recall who were the people who were involved in this process of buying and selling Did they all gain as much There were people who made profits in the market and there were some who did not gain as much from this buying and selling Despite their having toiled very hard they earned little Can you place them in the table shown here What are the reasons that the businessperson is able to make a the garment exporter and the businessperson in the market huge profit in the market You have read the chapter on advertising Why does the businessperson spend Rs per shirt on advertising Discuss People who gained in the market Market and equality The foreign businessperson made huge profits in the market Compared to this the garment exporter made only moderate profits On the other hand the earnings of the workers at the garment export factory are barely enough to cover their day-to-day needs Similarly we saw the small cotton farmer and the weaver at Erode put in long hours of hard work But they did not get a fair price in the market for what they produced The merchants or traders are somewhere in between Compared to the weavers they have earned more but it is still much less than the exporter Thus not everyone gains equally in the market Democracy is also about getting a fair wage in the market Whether it is Kanta or Swapna if families don’t earn enough how would they think of themselves as equal to others On one hand the market offers people opportunities for work and to be able to sell things that they grow or produce It could be the farmer selling cotton or the weaver producing cloth On the other hand it is usually the rich and the powerful that get the maximum earnings from the market These are the people who have money and own the factories the large shops large land holdings etc The poor have to depend on the rich and the powerful for various things They have to depend for loans as in the case of Swapna the small farmer for raw materials and marketing of their goods weavers in the putting out system and most often for employment workers at the garment factory Because of this dependence the poor are exploited in the market There are ways to overcome these such as forming cooperatives of producers and ensuring that laws are followed strictly In the last chapter we will read about how one such fish-workers’ cooperative was started on the Tawa river Struggles for Equality In this book you have read about people like Kanta the Ansaris Melani and Swapna The thread that connects all of these lives is that they have been treated unequally What do people do when they face such inequalities History is full of examples of persons who have come together to fight against inequality and for issues of justice Do you recall the story of Rosa Parks in Chapter Do you remember the photo-essay on the women’s movement in Chapter In this chapter you will learn about some of the ways in which people have struggled against inequality As you have already read in this book the Indian Constitution recognises all Indians as equal before the law and states that no person can be discriminated against because of their religion sex caste or whether they are rich or poor All adults in India have the equal right to vote during elections and this ‘power over the ballot box’ has been used by people to elect or replace their representatives What do you think is meant by the expression ‘power over the ballot box’ Discuss But this feeling of equality that the ballot box provides because the vote of one person is as good as that of another does not extend to most people’s lives As you have read the increasing privatisation of health services and the neglect of government hospitals have made it difficult for most poor people like Kanta Hakim Sheik and Aman to get good quality health care These people do not have the resources to afford expensive private health services Similarly the man who sells juice does not have the resources to compete with all of the major companies who sell branded drinks through expensive advertising Swapna does not have sufficient resources to grow cotton and so has to take a loan from the trader to grow her crop This forces her to sell her cotton at a lower price Melani like the millions of domestic workers across the country is forced to endure the insults and hardship of working as a domestic help because she has no resources to set up something on her own Poverty and the lack of resources continue to be a key reason why so many people’s lives in India are highly unequal On the other hand the Ansaris were discriminated against not because they did not have the resources In fact despite having the money to pay the required rent they were not able to find an apartment for over a month People were reluctant to lease them an apartment because of their religion Similarly the main reason that the teachers forced Omprakash Valmiki to sweep the school yard was because he was Dalit You’ve also read that the work women do is often considered of less value than that done by the men All of these persons are discriminated against primarily because of their social and cultural background as well as because they are women Discrimination on the basis of a person’s religion caste and sex is another significant factor for why people are treated unequally in India Often poverty and lack of dignity and respect for certain communities and groups come together in such powerful ways that it is difficult to identify where one aspect of inequality ends and the other begins As you have read Dalit Adivasi and Muslim girls drop out of school in large numbers This is a combined outcome of poverty social discrimination and the lack of good quality school facilities for these communities In India it is the case that the poor consist of a majority of members of Dalit Adivasi and Muslim communities and are often women According to the Census data women form per cent of the population Muslims form per cent of the population SCs form per cent and STs per cent Struggles for equality Throughout the world in every community village city and town you will find that there are some people who are known and respected because of their fight for equality These people may have stood up against an act of discrimination that they faced or which they witnessed Or they may be well-respected because they treat all persons with dignity and are therefore trusted and called upon to resolve issues in the community Can you think of one person in your family community village town or city whom you respect because of their fight for equality and justice Often some of these persons become more widely recognised because they have the support or represent large numbers of people who have united to address a particular issue of inequality In India there are several struggles in which people have come together to fight for issues that they believe are important In Chapter you read about the methods used by the women’s movement to raise issues of equality The Tawa Matsya Sangh in Madhya Pradesh is another example of people coming together to fight for an issue There are many such struggles such as those among beedi workers fisherfolk agricultural labourers slum dwellers and each group is struggling for justice in its own way There are also many attempts to form cooperatives or other collective ways by which people can have more control over resources Tawa Matsya Sangh When dams are built or forest areas declared sanctuaries for animals thousands of people are displaced Whole villages are uprooted and people are forced to go and build new homes start new lives elsewhere Most of these people are poor In urban areas too bastis in which poor people live are often uprooted Some of them are relocated to areas outside the city Their work as well as their children’s schooling is severely disrupted because of the distance from the outskirts of the city to these locations This displacement of people and communities is a problem that has become quite widespread in our country People usually come together to fight against this There are several organisations across the country fighting for the rights of the displaced In this chapter we will read about the Tawa Matsya Sangh a federation of Fisherworker’s cooperatives an organisation fighting for the rights of the displaced forest dwellers of the Satpura forest in Madhya Pradesh Originating in the Mahadeo hills of Chindwara district the Tawa flows through Betul before joining the Narmada in Hoshangabad The Tawa dam began to be built in and was completed in It submerged large areas of forest and agricultural land The forest dwellers were left with nothing Some of the displaced people settled around the reservoir and apart from their meagre farms found a livelihood in fishing They earned very little A dam is built across a river at sites where one can collect a lot of water This forms a reservoir and as the water collects it submerges vast areas of land This is because the wall of the dam across the river is high and the water spreads over a large area This is a photo of the submergence caused by the Tehri dam in Uttarakhand The old Tehri town and villages some totally and some partially were submerged by this dam Nearly one lakh people were displaced What issue is the Tawa Matsya Sangh TMS fighting for Why did the villagers set up this organisation Do you think that the large-scale participation of villagers has contributed to the success of the TMS Write two lines on why you think so In the government gave the rights for fishing in the Tawa reservoir to private contractors These contractors drove the local people away and got cheap labour from outside The contractors began to threaten the villagers who did not want to leave by bringing in hoodlums The villagers stood united and decided that it was time to set up an organisation and do something to protect their rights The newly formed Tawa Matsya Sangh TMS organised rallies and a chakka jam road blockade demanding their right to continue fishing for their livelihood In response to their protests the government created a committee to assess the issue The committee recommended that fishing rights be granted to the villagers for their livelihood In the Madhya Pradesh government decided to give to the people displaced by the Tawa dam the fishing rights for the reservoir A five-year lease agreement was signed two months later On January people from villages of Tawa started the new year with the first catch With the TMS taking over the fishworkers were able to increase their earnings substantially This was because they set up the cooperative which would buy the catch from them at a fair price The cooperative would then arrange to transport and sell this in markets where they would get a good price They have now begun to earn three times more than they earned earlier The TMS has also begun giving the fishworkers loans for repair and the buying of new nets By managing to earn a higher wage as well as preserving the fish in the reservoir the TMS has shown that when people’s organisations get their rights to livelihood they can be good managers Top Members of the TMS protesting at a rally Above A member of the cooperative weighing the fish Can you think of an incident in your life in which one person or a group of people came together to change an unequal situation Adaptation of a song written as part of the Right to Information campaign by Vinay Mahajan Creative expression against inequality The Right To Know My dreams have the right to know Why for centuries they have been breaking Why don’t they ever come true My hands have the right to know Why do they remain without work all along Why do they have nothing to do My feet have the right to know Why from village to village they walk on their own Why are there no signs of a bus yet My hunger has the right to know Why grain rots in godowns While I don’t even get a fistful of rice While some join protest movements to fight inequality others might use their pen or their voice or their ability to dance to draw attention to issues of inequality Writers singers dancers and artists have also been very active in the fight against inequality Often poems songs and stories can also inspire us and make us believe strongly in an issue and influence our efforts to correct the situation The Indian Constitution as a living document My old mother has the right to know Why are there no medicines Needles dispensaries or bandages My children have the right to know Why do they labour day and night Why is there no school in sight What is your favourite line in the above song What does the poet mean when he says My hunger has the right to know Can you share with your class a local song or a poem on dignity that is from your area The foundation of all movements for justice and the inspiration for all the poetry and songs on equality is the recognition that all people are equal As you know the Indian Constitution recognises the equality of all persons Movements and struggles for equality in India continuously refer to the Indian Constitution to make their point about equality and justice for all The fishworkers in the Tawa Matsya Sangh hope that the provisions of the Constitution will become a reality through their participation in this movement By constantly referring to the Constitution they use it as a ‘living document’ i e something that has real meaning in our lives In a democracy there are always communities and individuals trying to expand the idea of democracy and push for a greater recognition of equality on existing as well as new issues Over persons attended a public hearing in Lucknow in to protest violence against women Over cases of violence against women were heard by a jury of eminent women who played the role of judges This people's jury helped highlight the lack of support in the legal system for women who seek justice in such cases Issues of equality are central to a democracy In this book we have tried to highlight issues that pose a challenge to this idea of equality in a democracy These as you have read include the privatisation of health services in the country the increasing control that business houses exert on the media the low value given to women and their work and the low earnings made by small farmers who grow cotton These issues substantially affect poor and marginalised communities and therefore concern economic and social equality in the country This is the core of the struggle for equality in a democracy The dignity and self-respect of each person and their community can only be realised if they have adequate resources to support and nurture their families and if they are not discriminated against What role does the Constitution play in people’s struggles for equality Can you make up a social advertisement on equality You can do this in small groups Media Understanding Media What is your favourite TV programme What do you like listening to on the radio Which newspaper or magazine do you usually read Do you surf the internet and what have you found most useful about it Did you know that there is one word that is often used to collectively refer to the radio TV newspapers Internet and several other forms of communication This word is ‘media’ In this chapter you will read more about the media You will find out what is required to make it work as well as the ways in which the media affects our daily lives Can you think of one thing that you have learnt from the media this week Everything ranging from the stall at the local fair to the programme that you see on TV can be called media Media is the plural form of the word ‘medium’ and it describes the various ways through which we communicate in society Because media refers to all means of communication everything ranging from a phone call to the evening news on TV can be called media TV radio and newspapers are a form of media that reaches millions of people or the masses across the country and the world and thus they are called mass media Look at the collage on the left and list six various kinds of media that you see Media and technology It would probably be difficult for you to imagine your life without the media But cable television and the widespread use of the Internet is a recent phenomenon These have been around for less than twenty years The technology that mass media uses keeps changing Newspapers television and radio can reach millions of people because they use certain technologies We also tend to discuss newspapers and magazines as the print media and TV and radio as the electronic media Why do you think newspapers are called print media As you read further you will find that this naming is related to the different technologies that these media use The following photographs will give you a sense of the ways in which technology that mass media uses has changed over the years and continues to change Changing technology or machines and making technology more modern helps media to reach more people It also improves the quality of sound and the images that you see But technology does more than this It also changes the ways in which we think about our lives For example today it is quite difficult for us to think of our lives without television Television has enabled us to think of ourselves as members of a larger global world Television images travel huge distances through satellites and cables This allows us to view news and entertainment channels from other parts of the world Most of the cartoons that you see on television are mostly from Japan or the United States We can now be sitting in Chennai or Jammu and can see images of a storm that has hit the coast of Florida in the United States Television has brought the world closer to us With electronic typerwriters journalism underwent a sea-change in the s An artist’s impression of Gutenberg printing the first sheet of the Bible Ask older members of your family about what they used to listen to on the radio when there was no TV around Find out from them when the first TV came to your area When was cable TV introduced How many people in your neighbourhood use the Internet List three things that you know about some other part of the world from watching television Media and money The different technologies that mass media use are expensive Just think about the TV studio in which the newsreader sits it has lights cameras sound recorders transmission satellites etc all of which cost a lot of money In a news studio it is not only the newsreader who needs to be paid but also a number of other people who help put the broadcast together This includes those who look after the cameras and lights Also as you read earlier the technologies that mass media use keep changing and so a lot of money is spent on getting the latest technology Due to these costs the mass media needs a great deal of money to do its work As a result most television channels and newspapers are part of big business houses John L Baird sits in front of the apparatus with which he demonstrated to the Royal Institute his invention the ‘televisor’ an early television Can you list three different products that are advertised during your favourite TV programme Take a newspaper and count the number of advertisements in it Some people say that newspapers have too many advertisements Mass media is constantly thinking of ways to make money One way in which the mass media earns money is by advertising different things like cars chocolates clothes mobile phones etc You must have noticed the number of advertisements that you have to see while watching your favourite television show While watching a cricket match on TV the same advertisements are shown repeatedly between each over and so you are often watching the same image over and over again As you will read in the following chapter advertisements are repeated in the hope that you will go out and buy what is advertised Media and democracy In a democracy the media plays a very important role in providing news and discussing events taking place in the country and the world It is on the basis of this information that citizens can for example learn how government works And often if they wish to they can take action on the basis of these news stories Some of the ways in which they can do this is by writing letters to the concerned minister organising a public protest starting a signature campaign asking the government to rethink its programme etc Given the role that the media plays in providing information it is important that the information be balanced Let us understand what we mean by a balanced media report by reading two versions of the same news event given on the next page The cost to advertise on a TV channel varies from to per seconds depending on the popularity of the channel and time The print media offers a large variety of information to suit the tastes of different readers Are the above stories in the two newspapers similar And if not why not What in your view are the similarities and the differences If you read the story in the News of India what would you think about the issue They say that the fault lies with the municipal corporation because it continued to issue license s for new factories to be set up in residential are as They also say that there were no adequate relocation efforts The owners and workers pla n a one-day city bandh to protest against this clo sure Mr Sharma one of the factory owners said The government says that it has done a lot to rel ocate us But the areas they have sent us to have no facilities and have not been developed for the last five years The fact is that if you had read either newspaper you would only know one side of the story If you had read the News of India you would most likely think of the protestors as a nuisance Their disrupting traffic and continually polluting the city with their factories leaves you with a bad impression about them But on the other hand if you had read the story in the India Daily you would know that the protests are because a lot of livelihoods will be lost if the factories close because the relocation efforts have not been adequate Neither of these stories is a balanced report A balanced report is one that discusses all points of view of a particular story and then leaves it to the readers to make up their minds Writing a balanced report however depends on the media being independent An independent media means that no one should control and influence its coverage of news No one should tell the media what can be included and what should not be included in a news story An independent media is important in a democracy As you read above it is on the basis of the information that the media provides that we take action as citizens so it is important that this information is reliable and not biased However the reality is that media is far from independent This is mainly because of two reasons The first is the control that the government has on the media When the government prevents either a news item or scenes from a movie or the lyrics of a song from being shared with the larger public this is referred to as censorship There have been periods in Indian history when the government censored the media The worst of these was the Emergency between Do you think it is important to know both sides of the story Why Pretend that you are a journalist for a newspaper and write a balanced story from the two news reports What does TV do to us and what can we do with TV In many of our homes TV is on a lot of the time In many ways a lot of our impressions about the world around us are formed by what we see on TV it is like a ‘window on the world’ How do you think it influences us TV has different types of programmes soap operas like Saas Bhi Kabhi Bahu Thi game shows like Kaun Banega Crorepati reality TV shows like Big Boss news sports and cartoons Before in between and after each programme are advertisements Since TV time costs so much money only those programmes that can attract the maximum number of viewers are shown Can you think of what such programmes might be Think of what are the kinds of things that TV shows and what it does not Does it show us more about the lives of the rich or the poor We need to think about what TV does to us how it shapes our views of the world our beliefs attitudes and values We need to realise that it gives us a partial view of the world While we enjoy our favourite programmes we should always be aware of the large exciting world beyond our TV screens There is so much happening out there that TV ignores A world beyond film stars celebrities and rich lifestyles a world that all of us need to reach out to and respond to in various ways We need to be active viewers who question whatever we see and hear while we may enjoy it too While the government does continue to censor films it does not really censor the media’s coverage of news Despite the absence of censorship by the government most newspapers nowadays still fail to provide a balanced story The reasons for this are complicated Persons who research the media have said that this happens because business houses control the media At times it is in the interest of these businesses to focus on only one side of the story Media’s continual need for money and its links to advertising means that it becomes difficult for media to be reporting against people who give them advertisements Media is thus no longer considered independent because of its close links to business Besides the above the media also tends to focus on a particular aspect of a story because they believe this makes the story interesting Also if they want to increase public support for an issue they often do this by focusing on one side of a story Setting agendas The media also plays an important role in deciding what stories to focus on and therefore decides on what is newsworthy For example the annual function at your school is unlikely to make the news But if a famous actor is invited as the Chief Guest then the media might be interested in covering it By focusing on particular issues the media influences our thoughts feelings and actions and brings those issues to our attention Due to the significant influence it plays in our lives and in shaping our thoughts it is commonly said that the media ‘sets the agenda’ Very recently the media drew our attention to alarming levels of pesticides in cola drinks They published reports that indicated the high level of pesticides and thus made us aware of the need to regularly monitor these colas according to international quality and safety standards They did this despite the government’s resistance by boldly declaring that colas were unsafe In covering this story the media positively helped us focus on an issue that affects our lives and one that we might not even have been aware of it had it not been for media reporting There are several instances when the media fails to focus on issues that are significant in our lives For example drinking water is a major problem in the country Every year thousands of people suffer and die because they do not get safe drinking water However we seldom find the media discussing this issue A well-known Indian journalist wrote of how the Fashion Week in which clothes designers show their new creations to rich people formed the front page headlines of all the newspapers while several slums were being demolished in Mumbai the very same week and this was not even noticed Fashion shows are very popular with the media What is the consequence of the media setting the agenda by reporting on the Fashion Week rather than the slum demolitions Can you think of an issue that to the working of the government The media decides what to focus on and in this way it sets the agenda The government can at times prevent the media from publishing a story and this is called censorship Nowadays media’s close relationship with business often means that a balanced report is difficult to come by Given this it is important for us to be aware that the ‘factual information’ that a news report provides is often not complete and can be one-sided We therefore need to analyse the news by asking the following questions what is the information I am learning from this report What information is not being provided From whose point of view is the article being written Whose point of view is being left out and why As citizens of a democracy the media has a very important role to play in our lives because it is through the media that we hear about issues related does not seem important to you because it is never featured in the media Local media Recognising that the media will not be interested in covering ‘small’ issues that involve ordinary people and their daily lives several local groups have come forward to start their own media Several people use community radio to tell farmers about the prices of different crops and advise them on the use of seeds and fertilisers Others make documentary films with fairly cheap and easily available video cameras on real-life conditions faced by different poor communities and at times have even given the poor these video cameras to make films on their own lives Another example is a newspaper called Khabar Lahriya which is a fortnightly that is run by eight Dalit women in Chitrakoot district in Uttar Pradesh Written in the local language Bundeli this eight-page newspaper reports on Dalit issues and cases of violence against women and political corruption The newspaper reaches farmers shopkeepers panchayat members school teachers and women who have recently learnt to read and write Social advertising Social advertisements refer to advertisements made by the Government or private agencies that have a larger message for society The following is a social advertisement regarding crossing of manned unmanned level crossings Let us Listen Note to the Teacher Listening text is given at the end of the unit on page Your teacher will sing a song Listen to the song Listen again and Perform the actions while your teacher sings Now let one group sing and the other group act out the song Let one child sing and others act Now everyone will sing and act together Your teacher will show a few actions Guess the actions e g brushing eating walking skipping combing cycling bathing Now you too can Perform some actions Your friends will guess them Let us Read One day Manoj returned home sadly after school My friend Ankitha did not come to school today Manoj said to his sister Sharadhi Why Sharadhi asked She’s not well Manoj replied Our health is important We need three things to keep us healthy Sharadhi started explaining to Manoj Eating well exercising and getting enough sleep Sharadhi said Eating well What does it mean Manoj asked Food plays a large part in health Healthy food includes fresh fruits and vegetables but not junk food Sharadhi explained We get food and sleep at home but where can we get exercise Manoj asked Playing is a very good form of exercise Yoga is another excellent activity Don’t worry about that Whenever you get time go out and play with friends Saying this Sharadhi pushed Manoj out to play with his friends Let us Understand Answer the following questions orally Name the three things which are good for our health What does healthy food include Which is a good form of exercise as mentioned in the lesson Let us Speak Circle the word that does not belong to the group i pencil pen ball paper ii flower nose hand leg carrot potato tomato ice-cream iv soap paste shampoo spoon v chess ludo carrom cricket Let us Do Can you make vegetable salad at home and bring it to the next class Tell the class what vegetables you have used to make the salad OR Paste a paper plate onto a sheet Cut out pictures of good food items from newspers magazines Paste them onto the plate to show a healthy nourishing meal I woke up one morning feeling hot and sick Mummy called the doctor he came very quick He washed his hands took off his coat He looked at my eyes and down my throat He touched my hand and said Dear dear I won’t hurt you so do not fear Here take these pills He smiled and said In a few days you’ll be out of bed Take different roles such as Father Hen Mother Hen and other birds Your teacher will narrate the story again Try to perform the actions Make appropriate sounds ac cording to the roles Siri is six years old She lives with her parents Her mother’s name is Uma and her father’s name is Venu Siri has one brother and one sister Her brother Kiran is older than her He is nine years old Her sister Anu is younger to her She is four Siri also has a grandmother She is She tells stories to her grandchildren everyday Siri plays with her brother and sister after school They have great fun Mother Hen and Father Hen lived in the thick of a jungle Once Mother Hen laid nine eggs in her nest dum dum dum dum dum dum dum dum dum She sat on the eggs for them to crack while Father Hen collected food for Mother Hen One fine day Mother Hen told Father Hen to take care of the eggs and went to the nearby pond to drink some water Just then a strong gust of wind blew shoo shoo shoo And the nest was broken Eight of the nine eggs rolled down and cracked Only one egg remained Father Hen became sad When Mother Hen returns what will I say he thought Suddenly an idea struck him He went to the jungle He collected eight eggs Eight eggs different in colours and shapes He quietly placed them in the nest Days passed by Then babies began to emerge from the eggs Each one different in size and appearance Their voices also sounded different Mother and father decided to take their family out to feed one day As they neared a pond Quack quack uttered two of the nine babies and jumped into the pond They were Duck’s babies Seeing this some crows began to caw Another black baby with a long pointed beak flew away It was a crow’s baby Just then a pack of parrots flew over them in search of food One more baby green in colour with a red beak flew to join the pack It was a parrot’s baby In front of them was a big tree with a flock of pigeons sitting idly Another baby let out a gutter goon sound and headed in that direction It was a pigeon’s baby As Mother and Father Hen moved further some kingfishers could be seen swimming on the other end of the pond Flep flep The blue bird with a long beak yelped and ducked into the pond just like the other birds It was a kingfisher’s baby Then clouds overshadowed everything Yet another baby spread its wings gleefully and started dancing taa thiii thim taa thiii thim It was a peacock’s baby It became dark Now the Mother and Father were left with two babies They heard a weird sound uuunn uuunn The eighth baby with big round eyes also flew into darkness It was an owl’s baby Now only one child remained It was the only chick The parents sighed with relief kukrooh kurh kukrooh kurh Chick also answered -kukrooh kurh kukrooh kurh Ammu was six years old She was very selfish That is why she had no friends One day a new girl Priya came to Class Poor Priya she found Maths and Kannada difficult She used to cry sometimes Help her to learn Ammu said Ammu’s mother No I won’t said Ammu Priya is a cry-baby Ammu’s mother said All right no swimming for you Ammu loved to go to the swimming pool so she had to teach Maths to Priya Soon Priya could do her homework easily One day Ammu got angry and pushed a boy The teacher was not happy with her Ammu had to stay back after school She had to clean the board and make the class tidy All alone she cried and cried That is how Priya saw her She helped Ammu and the class was soon neat and clean Thanks Priya said Ammu Priya taught Ammu how to be kind The two girls became the best of friends My best friend is Ammu She is six years old She has long black hair She ties it in a pony-tail She has black eyes It is cold today So she is wearing a sweater We say Thank you We say Please We don’t call names or tease We don’t shout We don’t fuss We listen when others talk to us We share our toys and take our turn Good manners aren’t too hard to learn It’s really easy when you find Good manners means Just being kind Let us Begin Sing the following songs with the help of your teacher As I was walking down the street down the street down the street A very good friend I chanced to meet Note to the teacher Put children in pairs Let them dance to the rhythm of the poem Let us be Friends Let us be friends with one another repeat times Let us be friends today You can smile at a friend Repeat You can wave to a friend Repeat You can wink at a friend Repeat Let us be friends today The More We Get Together The more we get together Together together The more we get together The happier we’ll be For your friends are my friends And my friends are your friends The more we get together The happier we’ ll be Boys and Girls Boys and girls come out to play The moon doth shine as bright as day Leave your supper and leave your sleep And join your play fellows in the street Come with a whoop and come with a call Come with a good will or not at all Up the ladder and down the wall A loaf of bread will serve us all You bring milk and I’ll bring flour And we’ll have a pudding in half an hour Let us Read As young boys Krishna and Sudama were students in Sandipani’s ashram The guru said Sudama you are saying the shlokas so well Many years passed Sudama remained a poor man Krishna became the Lord of Dwaraka Once Sudama’s wife begged him to go to Dwaraka and ask his friend to help him All right but I can’t ask him for anything Sudama set out on his journey to Dwaraka carrying a small gift for his friend The gift was ‘poha’ which Krishna used to love In Dwaraka Sudama met his friend Krishna Come dear friend I have told my wife Rukmini all about you Sudama also was happy to see his dear childhood friend Krishna saw that his friend had brought him a gift What is this he asked Sudama replied You have everything This is some ‘poha’ that my wife made for you Krishna was so happy that his friend had remembered his favourite poha He began to eat but Rukmini stopped She said Don’t finish everything Leave some for us Krishna and Sudama sat for a while and remembered their younger days Sudama stayed with his friend for a few days He was ready to start back home Don’t forget us Sudama said Krishna Sudama left without asking Krishna for his help He felt he was lucky to have a friend like Krishna Sudama reached home after a long journey He had a surprise His small home was now a palace His wife and children rushed out to greet him joyfully All this is because of your friend thanks to Lord Krishna said Sudama’s wife Listening Text Note to the teacher This is to introduce picture reading along with story-telling Read the text with expression make sure by asking questions that your students are following the sequence and are numbering the pictures The story you will now hear is from the Ramayana Ravana the king of Lanka is sad as he has lost his brothers sons and friends in the battle with Rama His son says that he will fight Rama’s army There is a battle Now look at the pictures and listen The Power of Sanjeevini Ravana was depressed He had lost his friends brothers and sons in the battle His son Indrajith said I will fight our enemies father A fierce battle took place Indrajith and his army killed many soldiers of the vanara sena army of monkeys that helped Rama Indrajith struck Lakshmana with a powerful weapon He fell unconscious The others wept They did not know what to do Wise chief Jambavantha suggested that the Sanjeevani plant could help Lakshmana This had to be brought from the Oushada Parvat in the Himalayas Hanuman agreed to bring the Sanjeevini plant He flew from Lanka to the Himalayas As he did not recognise the plant he brought back the entire mountain to Lanka The Physician doctor Sushena plucked the plant and made Lakshmana smell it Lakshmana and others came back to life Rama embraced his brother Lakshmana Hanuman took back the mountain to the Himalayas following Jambavantha’s orders Urvi was very happy The sun and clouds were out in the sky Flowers filled her garden There were white jasmines red roses and orange marigolds in Urvi’s garden They would dance and nod at each other But one day Urvi saw that they were sad They said that they would soon fade away Then people would forget them Urvi was sad too She called her friends the sun and rain to help the flowers The sun and rain made up a plan They said that when the flowers faded they would take them up to the sky And so they did Even now sometimes the rain and the sun come down together to the earth A colourful rainbow comes with them People see the rainbow and remember that it is the home of all the flowers that faded away Note to the Teacher Give the following instructions to the children and help them in the process of drying flowers and making beautiful cards You need fresh delicate flowers phone book or any other thick book hand tissues paper napkins good quality paper to make the card scissors glue gum tweezers a brush Pick some delicate flowers and leaves they dry quite quickly Some plants that work well are ferns and thin-petalled blooms Press each bloom leaf in a thick telephone book Some flowers will leave a bit of colour on the pages when you’re done so ask your parent’s permission before using a book of theirs Keep the blooms or leaves between two paper tissues napkins before you press It takes at least a week or two to completely dry out and press a flower bigger blooms take longer When the pressed plants are dry carefully remove them from the book Arrange them on your card or paper in an artistic manner You may have to trim some stems with a pair of scissors Now remove the plants from the card or paper Remember how you had arranged them Brush a thin layer of glue on the paper where the dried plants were Carefully put the plants back in place This can be difficult and using tweezers to place them on the glue gum can be helpful You can take help from your parents or teacher Make sure all the plant material touch the glue and is lying flat on the paper Let the glue dry completely You now have beautiful stationary or cards Listening Text Sing the Sunflowers sing the sunflowers ring out the red roses giggle the gulmohars Ma murmur the marigolds Pa pop the pretty poppies I am a cute little sparrow I live with my parents One day my parents told me You are a big bird Find your own food I was happy Soon I decided to fly out I flew down to pick a few breadcrumbs on the footpath Suddenly I saw two hungry dogs running towards me After that I was chased by an eagle and many crows A fat woman frightened me with a stick I was alone Soon it started to rain heavily I sat on an apple tree I was feeling very hungry and sad The apple tree took pity on me and asked Why are you sad my little bird I cried and said I had a bad day out without a home and food I am starving The kind tree said Don’t worry I can give you shelter and food in my branches Many birds live here Thank you I said wiping my tears Soon the rain stopped I saw an old lady feeding birds with grains I ate the grains and flew back to my new home I learnt the first lesson of my life Never lose hope Note to the teacher This is a traditional shadow play Get the child to hold the flash light and shine at you With your hands between the wall and the light source make different shapes with your hands to form animals and other fun objects on the wall The little girl put on her coat She picked up her heavy basket She went out of the cottage And walked along the path She looked up at the green trees She listened to the birds singing She whistled happily Suddenly she saw a beautiful flower She smiled and knelt down Then she picked up the flower She looked up And saw a big bad wolf with long ears and long teeth She screamed and ran away On a lovely mountain slope There’s a forest green It’s full of green green trees The kind you’ve never seen Tigers birds and bears Play among the trees They lived together here As and how they please monkeys donkeys rabbits And gentle spotted deer peacocks doves and parrots All live here without fear A river running by Has water pure and sweet Which they come and drink And give themselves a treat When Rahim was a child he lived in a quiet village There was very little traffic and his family knew everybody He walked to school with his sister After school he played outside with his friends In the evening he sat and prayed with his parents People enjoyed helping each other Now Rahim has grown up He lives in a big city There is a lot of traffic and he knows only a few people Rahim’s children go to school by car After school they watch television In the evening they do their homework and study for the examination Rahim walked to school with his sister Why do cars have wheels Cars and most other motor vehicles have wheels because they make it easier to move Wheels help because they turn easily and only a small part of them touches the ground Why do we need good roads We need good roads because wheels move on flat ground Wheels get stuck in deep mud and loose sand Autos and trucks have rubber tires and they need smooth flat surfaces on which to travel Good roads help us travel fast How do cars move The car moves because of the engine The engine is generally placed in front of the vehicle The engine gets its energy from petrol How do planes fly Just like the birds wings help the planes to fly Plane wings have a special shape They are curved more on top than underneath This makes air flow faster above them than below The faster air above the wings pulls them upwards Trains have metal wheels They run on narrow metal rails The wheels on the bus go round and round Round and round Round and round The wheels on the bus go round and round All through the town The people on the bus go up and down Up and down Up and down The people on the bus go up and down All through the town The horn on the bus goes beep beep beep beep beep beep beep beep beep The horn on the bus goes beep beep beep All through the town The wipers on the bus go swish swish swish swish swish swish swish swish swish The wipers on the bus go swish swish swish All through the town The babies on the bus say Wah wah wah Wah wah wah Wah wah wah The babies on the bus say Wah wah wah all through the town The mummies on the bus say Shush shush shush Shush shush shush Shush shush shush The mummies on the bus say Shush shush shush all through the town The daddies on the bus say Stop that noise Stop that noise Stop that noise The daddies on the bus say Stop that noise all through the town In a village far far away lived a girl named Anju Her father was a farmer and her mother was a teacher It was her sixth birthday and her parents wanted to do something special for her They called all their friends together to plan a surprise Ramu the carpenter made her a small wooden doll’s house with furniture Kiran the potter made her little kitchen vessels to play with and Renu the tailor made her small cloth-dolls When Anju woke up on her birthday she was surprised to see a beautiful doll’s house near her bed She thought she was dreaming till she felt her mother’s loving arms around her and heard her father wish her a happy birthday Row row row your boat Row row row your boat Gently down the stream Merrily merrily merrily merrily Life is but a dream A wise old owl A wise old owl lived in an oak The more he saw the less he spoke The less he spoke the more he heard Why can’t we all be like that wise old bird Ding dong bell Ding dong bell Pussy’s in the well Who put her in Little Johnny Flynn Who pulled her out Little Tommy Stout What a naughty boy was that Try to drown poor Pussy cat Who ne’er did any harm But killed all the mice In the Farmer’s barn Goosey Goosey Gander where shall I wander Goosey Goosey Gander where shall I wander Upstairs downstairs and in my lady’s chamber There I met an old man who wouldn’t say his prayers I took him by the left leg and threw him down the stairs Hickory dickory dock Hickory dickory dock The mouse ran up the clock The clock struck one The mouse ran down Hickory dickory dock Hush a bye baby on the tree top Hush a bye baby on the tree top When the wind blows the cradle will rock When the bow breaks the cradle will fall And down will come baby cradle and all Itsy Bitsy spider climbing up the spout Itsy Bitsy spider climbing up the spout Down came the rain and washed the spider out Out came the sun and dried up all the rain Now Itsy Bitsy spider went up the spout again Mary had a little lamb Mary had a little lamb its fleece was white as snow And everywhere that Mary went the lamb was sure to go It followed her to school one day which was against the rule It made the children laugh and play to see a lamb at school And so the teacher turned it out but still it lingered near And waited patiently about till Mary did appear Why does the lamb love Mary so the eager children cry Why Mary loves the lamb you know the teacher did reply Monday’s child Monday’s child is fair of face Tuesday’s child is full of grace Wednesday’s child is full of woe Thursday’s child has far to go Friday’s child is loving and giving Saturday’s child works hard for his living And the child that is born on the Sabbath day Is bonny and blithe and good and gay One two buckle my shoe One two buckle my shoe Three four shut the door Five six pick up sticks Seven eight lay them straight Nine ten a big fat hen Eleven twelve dig and delve Thirteen fourteen maids a-courting Fifteen sixteen maids in the kitchen Seventeen eighteen maids in waiting Nineteen twenty my plate’s empty One two three four five One two three four five Once I caught a fish alive Six seven eight nine ten Then I let it go again Why did you let it go Because it bit my finger so Which finger did it bite This little finger on the right Pat a cake pat a cake Pat a cake pat a cake baker’s man Bake me a cake as fast as you can Pat it and prick it and mark it with a And put it in the oven for Baby and me Red sky at night Red sky at night Sailor’s delight Red sky at morning Sailor’s warning Simple Simon Simple Simon met a pieman going to the fair Said Simple Simon to the pieman Let me taste your ware Said the pieman to Simple Simon Show me first your penny Said Simple Simon to the pieman Sir I have not any Simple Simon went a-fishing for to catch a whale All the water he had got was in his mother’s pail Simple Simon went to look if plums grew on a thistle He pricked his fingers very much which made poor Simon whistle He went for water in a sieve but soon it all fell through And now poor Simple Simon bids you all Adieu Star light star bright Star Light Star bright The first star I see tonight I wish I may I wish I might Have the wish I wish tonight Three blind mice Three blind mice three blind mice See how they run see how they run They all ran after the farmer’s wife Who cut off their tails with a carving knife Did you ever see such a thing in your life As three blind mice What are Little Boys made of What are little boys made of Snips and snails and puppy dogs tails That’s what little boys are made of What are little girls made of Sugar and spice and all things nice That’s what little girls are made of This Little Piggy This little piggy went to market This little piggy stayed at home This little piggy had roast beef This little piggy had none And this little piggy went Wee wee wee all the way home This is the House that Jack built This is the house that Jack built This is the malt that lay in the house that Jack built This is the rat that ate the malt That lay in the house that Jack built This is the cat that killed the rat That ate the malt that lay in the house that Jack built This is the dog that worried the cat That killed the rat that ate the malt That lay in the house that Jack built This is the cow with the crumpled horn That tossed the dog that worried the cat That killed the rat that ate the malt That lay in the house that Jack built Thirty Days hath September Thirty days hath September April June and November February has twenty-eight alone All the rest have thirty-one Except in Leap Year that’s the time When February’s Days are twenty-nine Bow Bow says the dog Meow Meow says the cat Cock-a-doodle-do says the cock Croak Croak says the frog The sheep bleets Quack Quack says the duck The lion roars The elephant trumpets The snake hisses The cow moos The sparrow says chirp chirp Naughty little monkey Jumping up and down Meow Meow says the pussy He wants to boss around Bow Bow doggie Fit to guard the house Caw Caw screaming crow Fly Fly Fly away Imitate the movement of the animals given below cow crow frog snake rabbit Play the game Play this game with your friends Make two groups Let one group make the sound of an animal and the other group name the animal Let the game continue in the same manner I need water I need water For drinking cooking and bathing too I need water I need water For building farming and sailing too I need water I need water For plants and animals me and you Mime these actions drinking bathing washing face washing clothes rowing the boat dog drinking water flowing river watering the plants Play the game Play the game ‘In the pond and on the bank’ with your friends All should stand in a circle One participant should name a work we do everyday If water is used to do that work the children should jump inside the circle If water is not used to do that work then the children should jump out of the circle Play the game Stand in a circle with your friends Now one of you tell the name of your favourite dish and another will tell the ingredients required to prepare it Let the game continue in this manner If you do not know the ingredients ask your friends or elders at home and know Name the different dishes prepared in your house Ask elders at home and know the ingredients things used to prepare them Identify the food grains your teacher shows Teacher should show rice dal groundnut etc Veggies Veggies Veggies Types and Types of Veggies Like a finger is lady’s finger Like a stick is drumstick Like a snake is snakegourd Tasting bitter is bittergourd Types and Types of Veggies Tomatoes make your cheek go red Carrots make your jump ahead Greens make you very strong Peas make you sing along Veggies Veggies Veggies Types and types of veggies Sing and enact this song and continue the song adding the vegetables that you know I found him sitting on the couch before I went to bed He seemed so tired without food And this is what I said Go friend eat your dinner right And see you’ll sure feel bright He then ate rice and dal and grains Which made him bright and strong Fruits veggies milk and cheese Eat them everyday It’s good for health And makes you fit My house is white a lovely house with doors and windows green Lots of trees big and small To shade me from the sun I laugh and play the whole day long A happy child I am The horn of the bus goes beep beep beep The bell of the cycle goes trin trin trin The sound of the auto goes pom pom pom The engine of the train says puff puff puff The wings of the plane files swish swish The bells of the cart sings jingle jingle jingle The row of the boat goes splash splash splash The wheels of the scooter goes zoom zoom zoom Father mother brother and sister I love you all and I need you too All together we sit to eat We sit to talk and play the ball Father’s father is my grandpa Mother’s father too my grandpa Father’s mother is my grandma Mother’s mother too my grandma We are young We are friends We go to school together We learn together We play together We work together And love one another Seven days is a week And Sunday is a holiday On a Monday I catch a ball On a Tuesday I hit a goal I swing up high on a Wednesday I scream Lagori on a Thrusday On a Friday I basket the ball On a saturday I play kabaddi Only seven days is a week Not enough for me to play Tell your friends the things you see in the sky during the day and during the night Look at the picture and say Draw a circle in the classroom and draw the sun moon and starts as shown in the pictures Stand around the circle with your friends Start moving around the circle Let one blow the whistle When the sound of the whistle is heard let them stop moving Let them see where they are standing and name the heavenly friend Sing and enjoy Do this Count the stars in the sky during night with your friends With the help of your teacher or elders know the different names of the sun the moon and the stars Here comes the sun With him he brings some fun The day now looks so bright and gay We only want to sing and play I simply love to count the stars And chant a song for long long hours Twinkle twinkle little star How I wonder what you are Up above the world so high like a diamond in the sky Come dear brothers Come dear sisters Let us sing and play The world around is so lovely Let us see and learn Tell me what you see around Cycle auto bus that sounds Picking me and picking you To take us off to school I know I can hear the sounds of frogs and ducks And see a lot of fish and plants I also see some people Swimming in the pond nearby When I look around the place I see lakes hills and trees surround And the forests with the trees Chirping birds and lovely green The world around me world around me Is so lovely Is so lovely Visit the place around your locality with your teacher or elders Tell your friends the things you saw there Let us begin My Sister and Me We laugh we cry we make time fly Best friends are we my sister and me Speak about the need of a sister brother Let us listen Raksha Bandhan Raksha Bandhan is a festival observed in North India It celebrates warm feelings of love and affection between brothers and sisters In the epic Mahabharath this kind of affection is seen between Krishna and Draupadi When Krishna’s wrist bled from a wound Draupadi tore a strip off her silk sari and tied it round his wrist He was so touched by her act that he vowed to protect her as he took her to be his sister from that moment The festival is celebrated on the full moon day of the month of Shravana Let us read Two girls meet on the street while going to the market Let us know what they talk Let us listen and recite Repeat after the teacher Slice slice the bread looks nice Spread spread butter on the bread On the top put the jam so sweet Now it’s nice for me to eat Rakhi Day is Righteous Day Adapted from the poem by Kalam This full moon day our hearts are in brim We light the lamps and our hearts glow Sisters will tie the thread on the brothers Abiding them to do only what is right and clean Put the Kumkum and blessed rice on the head Where will dwell right thoughts and noble action The Cock and the Sun Once the sun wanted to meet all the animals and birds in the forest to know them personally He asked them to gather near the big rock in the forest at O' clock the next morning The leaves were happy to hear that sun would be out But the animals had their own views They started expressing their ideas In the morning it was the turn of the beautiful peacock to start a discussion When the Sun rose in the sky only a cock was waiting for him The cock who was not interested in such talk had arrived in time He was habituated to rising early and waiting for the sun He did the same that day too Slowly all the other animals and birds gathered after an hour The Sun was very happy and praised the cock for its punctuality All the animals and birds felt ashamed They had not expected the turn of events in this way The Sun also announced a reward The cocks crow in the morn To tell us to rise And he who lies will Never be wise For early to bed and Early to rise Is the way to be Healthy and wise Go to bed early Wake up with joy Going to bed late makes Jack a dull boy I am a worm I live on a farm I am the friend of a farmer I make the soil fertile Who am I Let us read TWO FRIENDS Two friends Rohan and Sohan were passing through a forest to reach Mohan’s house on the other side of the forest Talking to each other they slowed down and did not realize that they had to leave the forest as quickly as they could Going under the trees they suddenly heard thumping steps behind them Though both of them felt there was some one behind them they could not see anything Soon they saw a bear chasing them Both of them were afraid Rohan who was the leaner of the two ran fast and climbed a tree There were not many trees of the type this hefty Sohan could climb Moreover he didn’t know how to climb a tree As Rohan had already climbed the tree there was no help from his side either Realizing that he had to help himself Sohan stood and thought for a moment He remembered that he was earlier told that if he was still and made the animal think that no living being was before him bears would go away He lay down and pretended as if he was dead His parents had told him that bears do not attack dead creatures The bear came up to him sniffed Sohan’s still face and thinking him to be dead went away When Rohan saw the bear going away he climbed down the tree and asked Sohan What did the bear whisper in your ear He said to me 'never travel with a person who leaves you behind in the hour of need' Isn’t it good replied Sohan It was Sunday Mary’s parents took her to the zoo She was happy to see different animals there She saw an ostrich running very fast and a monkey climbing up a tree When she went near the bear’s cage it hid behind a rock She was amazed when she saw colourful fish in the aquarium She returned home in the evening happily What is fun for friends to do Sharing Caring Who am I and who are you Sharing caring friends I like you and you like me It’s the nicest thing to be Sharing caring friends Share your dog I’ll share my cat Share your ball I’ll share my bat Share your orange I’ll share my plum Share your horn I’ll share my drum Sharing caring friends Freedom without love or charity or duty or patriotism are unworthy of our founding ideals -Barack Obama Let us read A Real Patriot Three men were cutting stones at a factory site A wise man who was observing them for a long time felt that all of them were committed workers He wanted to know if all the three had the same ideas He went to the first worker and asked him What are you doing my friend The disturbed worker answered Can’t you see said the man I am cutting stones Why are you doing it The man patiently said The contractor asked me to do so I get money for this I see you work for the wages Later the wise man went to the second man and asked him Why are you cutting the stones friend To earn a living If I earn I can look after my family well I have a big family to care for And my wife is sick There was no enthusiasm in what he said You mean you do this for the sake of your family Finally expecting a similar reaction he went to third man and asked him Hello friend What are you doing The man replied with a smile Sir I am working for my country For your country How can it be Our government is building a factory here Many people get jobs It means that their children will be educated The younger minds build a better society Thus our nation will develop The wise man was surprised to notice that a simple man was able to think so high He said You are a real patriot My eyes are full stops My nose is an exclamation My ears are question marks And these are my punctuation marks Go not to the temple to put flowers upon the feet of God First fill your own house with the fragrance of love Go not to the temple to bow down your head in prayer First learn to bow in humility before your fellowmen Go not to the temple to pray on bended knees First bend down to lift someone who is down-trodden Go not to the temple to ask for forgiveness for your sins First forgive from your heart those who have sinned against you Adapted from Rabindranath Tagore’s poem Let us listen to the teacher and recite the poem Can you believe a cat can respond emotionally to human sorrow This story appeared in the English magazine TOMORROW Bill the cat was at home while his master was away on a trip The man was seriously injured in a railway accident during this trip He died a few days later in a hospital At the burial the man’s brother was shocked to see Bill at the burial site The faithful cat had traveled to the far away hospital grave site looked at the coffin with tears in its eyes and then had returned home Is this not an example of animal love towards humans ADOPT A PET Mona likes the local zoo very much She enjoys visiting it It has different kinds of animals in it The animals do not live in cages but in the places they are used to The zoo makes these places for them For example an ice machine makes the penguins’ swimming pool very cold making it suitable for them Mona enjoys watching the chimpanzees They live in a cage with trees caves rocks and a small lake There are about fifteen chimps including four babies Their babies are carried everywhere by their mothers They feel secure because they have a similar atmosphere as in the forest Mona also likes watching birds in the aviary An aviary is a small forest with a wire net over and around it The birds can fly about and build their nests in the trees Many of the birds are very beautiful Some like the pelicans are very large birds An aviary can accommodate bigger birds also A variety of birds are seen here It is interesting to observe their movements in it The zoo needs money to feed the animals Some people adopt animals and pay for their food Mona has adopted a small monkey She sends Rs every month to the zoo to pay for the monkey’s food She wanted to adopt a tiger Tigers need meat every day To provide food for them would be very expensive Monkeys eat nuts and fruits which are cheaper So Mona adopted a monkey Adapted from Hello English Pupil’s Hand Book Orient Longman If I were a mouse And wanted a house I think I would choose My new red shoes Furry edges Fur inside What a lovely Place to hide I would not travel I would not roam Just sit in My furry home Fold a piece of paper in half Draw the outline of a cat on the folded paper Make sure that the tail and both ears extend to the fold and go along it for at least a quarter of an inch this is where the front and back will be attached to each other Cut out the cat make sure that there are areas of the fold that you do not cut so that the front and back of the card are attached to each other Put a face on your cat Gluing on googly eyes gives the cat a cute look Write a message on the inside of your new card Let us begin Listen to this A grandma is someone Who’s dear in every way Her smile is like sunshine That brightens each day Answer the following Share your experiences with your grand parents in your group How would you like to help elders at home Let us read A PRESENT FOR GRANDMOTHER Sahil and Mina his younger sister live in a big town Their grandmother lives in a house on the hills Sahil and Mina visit their grandmother every summer Read about their trip to the market one day Grandmother Children will you go to Mohan Lal’s shop for me Mina and Sahil together Of course we will Grandmother You can walk to the shop It’s not far Be careful when you cross the road She gives Sahil the money and the list They walk down the hill and reach the main road As they cross it they see Mohan Lal’s shop He is seated behind the counter Sahil takes out grandmother’s list from his pocket The list sugar kg bread loaf candles packet Toothbrushes Glow worms glow worms Where do you go And what do you do You always move In a group Or in one or two Glow worms glow worms Where do you go And what do you do The light You emit From your back Is for others And not for you Glow worms glow worms Where do you go And what do you do BUTTERFLY CARD A colorful butterfly card made from KG cardboard This card is great for birthdays Mother's Day or other occasions Supplies needed KG cardboard Pencil Scissors Hole punch Glue stick Markers or crayons Optional Glitter glue or glitter Fold two pieces of KG cardboard in half making two card shapes Put the two folded cards together one inside the other Along the fold of one of them draw half a butterfly KTBS Not to be republished Keeping the two cards together cut along the line you just drew You will now have two butterflies With one of the butterflies fold it in half again and draw a smaller butterfly inside Cut along the line you have just drawn Using the hole punch make a series of holes along the edges of the two pieces you have just cut Glue one of these pieces onto the larger uncut butterfly Flip the large butterfly over and glue on the other cut piece Cut a black or brown body for your butterfly Glue it onto the inside of your butterfly You now have a nice butterfly card Write a message on your card Optional Decorate your butterfly using crayons markers glitter glue or glitter Let us begin Karna became a student of Parashurama He was known for his patience and devotion to his teacher This is a story which shows Karna's devotion to the guru Once the guru fell asleep on the lap of Karna A bee came close to Karna He could not change his position as it would disturb the guru The bee not only moved towards Karna but also sat on his lap In no time it started to bite the thigh The blood ran down to the guru's body He woke up from his sleep and saw what had happened The guru was wonder-struck to see the endurance Karna had Displayed This story from the Mahabharatha shows the special relationship that is there between the teacher and the student Aruni was a dedicated student of the great sage Dhoumya In those days a student had to stay with the teacher and help in the teacher’s daily work in order to gain knowledge On one cold winter morning Aruni was carrying firewood he had collected to the sage’s household As he was passing by a field that belonged to the sage he noticed a damage in the embankment It allowed the water that had been held to flow out He realized that if the water flow was not stopped immediately the crops in the field would die due to shortage of water What should I do thought Aruni I better leave the firewood at the Gurukula school and come back to take care of the damage As Aruni came and told his master about the damage the sage was very proud of the student He permitted Aruni to go to the field without any delay Aruni’s effort to stop the water flow was not successful He became helpless After a moment’s thought he lay across the damaged part The water did stop When it became dark and Aruni did not return the sage became worried He came with his students in search of Aruni and called out aloud for him In a feeble voice Aruni answered They quickly removed him from where he was The other children assured Aruni that they now would take care of the situation and wrapping him with a blanket took him back to the gurukula Sage Dhoumya blessed him and said You will forever be remembered for your devotion and obedience to your guru Thus Aruni stands as an example for a good student he head of the table was a large pile of apples The teacher had made a note and pasted it on the apple trayTake only ONE God is watching Moving further along the lunch line at the other side of the table was a large pile of chocolate chip cookies A child had written a note Take all you want God is busy watching apples Let us read WHO ATE OUR LUNCH It was a Sunday Arun and Rohit spent the day by the Vasanth Nagar swimming pool They took their lunch with them What have you brought for lunch Rohit asked his friend Chutney and vegetable sandwiches and two samosas Arun said What have you brought Rohit opened his lunch box I have brought sandwiches too he said And some biscuits What’s in your sandwiches Arun asked Let me see said Rohit and bit into his sandwich It was his favourite So he smiled happily It’s chicken he said Can I have one of your chicken sandwiches Arun asked ‘I’ll give you one of my vegetable and chutney sandwiches All right Rohit said that’s a good idea Can I have one of your samosas I’ll give you some of my biscuits That’s good Arun said but let’s go swimming first They made the arrangement for their after-swimming grub and went away to swim The pool was not very deep so the two boys not only swam but also played happily till they could no more control their hunger The pool manager sat in his office and watched them from there He too had brought his children All of them came out of the pool at almost the same time The manager and his children went into the changing room Rohit and Arun came to the place where they had left their food and other items They were shocked to see that a goat was eating their lunch It was hungry too Once Akbar and his minister Birbal were walking in the palace garden The king saw a huge flock of crows flying around He wondered who could ever count the number of crows in the city He immediately ordered his men to count the crows The king's men went to all parts of the city to count the crows They counted the crows on the rooftops They counted the crows in the trees They counted the crows near the riverbanks But still they were not sure about the number of crows in the city They discussed among themselves Five old crows were on a brick wall Four were tall and the other was small One old crow cried Caw caw caw He went to visit his mother-in-law Four old crows were on a brick wall Three were tall and the other was small One old crow went to get some food He never came back to the other brood Three old crows were on a brick wall Two were tall and the other was small The small one grew and grew and grew He flew away and that left two Two old crows were on a brick wall Both were old and both of them tall One crow said miss my son He flew away and that left one One old crow was on a brick wall He flew away and there was the wall One brick wall was alone in the rain Wishing for the crows to come back Again Srinivasa Nayaka was a rich but miserly moneylender His wife Saraswathi Bai was very kind She always gave money to the poor thinking that it was a service to god Her husband Srinivasa did not like this One day Lord Vishnu dressed as a priest came to Srinivasa Nayaka asking for some money He wanted it for some religious purpose Srinivasa did not want to give any money He asked the man to come back the next day After several days he gave a fake coin to the priest to get rid of him Thepriest felt bad and went to Saraswathi and told her his story Saraswathi’s heart melted She wanted to help him She gave the priest Lord Vishnu her nose ring and asked him to sell it She thought that her husband would not object to this because it was a gift from her mother’s house The priest took it to the moneylender’s shop to take a loan on it Srinivasa recognized it He safely locked the ring in a box Asking the priest to come the next day for the money he went home He saw that Saraswathi was not wearing the nose ring He was very angry Saraswathi realized that he would ask her to show the ring She started praying to God Srinivasa Show me the nose ring immediately Saraswathi Lord Help me and save me from my husband’s anger Suddenly there appeared the ring in her hand In her fear and surprise she showed it to her husband Srinivasa was shocked to see the miracle of God He understood the message of God From that moment onwards he became a devotee of Lord Vittala He wandered from place to place On one of his travels he met Vyasathirtha the sage He composed songs and sang them in praise of the Lord He is called the Father of Carnatic music It was he who introduced many ragas His kereya neeranu kerege chelli is seen as the beginning of Carnatic Music Later he came to be known as Purandara Dasa miser a man who does not spendgive money compose write fake not real kind sympathetic devotee a person who worships god strength power Take a sheet of paper or a note book Dip your thumb in red yellow or blue paint Create an impression of your thumb Then draw the picture of any animal you like Wash your hand neatly Take different colours Dip your thumb in the colours Create finger prints on a sheet of paper Draw the picture from the finger print of the thumb Wash your hand neatly after drawing the diagram Have you seen crawling animals Tell the name of two such animals These are crawling animals Write their names in the given box Black body and a long tail I make a hole to creep away I fool the cat with my lightening speed Who am I A long body and a long tail I crawl and crawl up a wall I eat all insects very small And keep your house spick and span Who am I Swishing my long whiskers I run around your house I get into corners Hiding from you Who am I I catch insects by weaving webs You can see my kingdom In the corners of your house Who am I Kamala is fond of rabbits Her mother has given a rabbit to her to rear Kamala feeds the rabbit everyday with grass and pats it Salim has found a pigeon He looks after it very carefully He gives grains water and takes care of it Pintu is Lara's pet cat She gives him milk everyday Pintu rubs against Lara's leg as soon as she comes from school Why have Kamala Salim and Lara reared the animals What is the use of rearing them Observe carefully the plants of bitter gourd grapes and snake gourd Do they look like trees or herbs If no then what do you call them You might have listened to elders at home talking about bitter gourd creeper grape vine and pumpkin creeper Don't these have thin and long stem Creepers need support to grow Creepers grow on land Climbers climb up with some support on to trees houses roofs etc Observe the shape of the trunks of the plants and trees in the given pictures Are they the same Plants trees and creepers Are the different type of plants Stem leaf and flower Are different parts of the plants Mango Neem and Coconut trees Have creepers spread around their trunks The rain and wind bow down the trees But cannot dent their majesty Tall and short thick and thin Many trunks are there around With big and small greeny leaves Spread around all of them Jasmine Champa Sampige Spread their fragrance here and there Red and orange pink and white Fill us all with joy so bright My fruit is very tasty My tenderwater so sweet Dry leaves can light a fire The sticks of leaves make a broom My husk can make a mat And the rest can make a rope Who am I Tasty tasty fruit The raw is cooked Leaves used for meals And fibre for clothes Who am I Here comes the vegetable seller I always look at her with wonder The many colours of fruits And many types of vegetables Bring a glint to my eyes And make my mouth water I buy all at them To eat and grow stronger Here we have a lovely garden Full of jasmine rose and lily Spreading fragrance all over While the bees and flowers play cough cough cough I am suffering from cough With a pain in the chest Ah What a relief As soon as I had some Tulasi You have already identified the sources of drinking water in your house and your friend's house Likewise you have also seen the source of water which is used in your school Why is only this source of water used in your house or school Try to know Drinking water should be clean The utensils used to store drinking water and the tumblers used to drink water should be kept clean Do not dip hands into the container which contains drinking water Use a cup with a long handle The utensil that contains drinking water should be covered with a lid Drinking boiled and cooled water is better Develop these habits and protect your health If you have reared animals in your house which water do you give them to drink Do you water the plants in your house What happens if you do not water them Plants and animals too need water don't they Some plants and animals live in water Human beings animals and plants need water They cannot live without water We should save water without wasting We should keep the water clean VARIETIES OF FOOD After studying this lesson you identify the food items available through plants and animals identify the different food habits at home name the food that we eat raw and cooked name the utensils used for cooking recognize the food of the animals You know that food is very essential for us You eat food everyday Tell what happens if you do not eat food To be healthy it is eaten raw It is very tasty if it is eaten raw It is a little hot But people like to eat it raw Do you also eat it raw If you eat it daily you will be healthy Do you know this You will be happy if it is in your meal won't you Everybody likes it it is very tasty Name the food item you eat raw Kamala and Raju have their breakfast before coming to school They have lunch in the afternoon along with their friends They eat fruits after going home from school Then they engage themselves in studies All the members of their family sit together and have dinner Some animals eat only food that they get from plants Example deer rabbit sheep parrot etc Some other animals eat other animals as their food Example tiger lion vulture Salim has reared a cat at home The cat comes near him mewing when Salim has his dinner Salim gives milk to the cat He knows that the cat is hungry recognize the need for a house and understand the need for living together understand the different portions of a house recognize the different types of wastesgarbage produced at home and know the correct way of disposing them identify the situation around the house using words phrases like behind infront of left and right Put the peels of vegetables fruits flowers leaves and greens into a dustbin Put all the dry wastes like paper pieces plastics chocolate covers etc into an another dustbin Put all the peels of fresh vegetables and fruits into a dustbin Prepare manure and put it to the plants Keep your house neat and clean Don't throw the waste on the street Give dried waste to the person who collects waste things Home sweet home Where colourful flowers bloom Home sweet home Beautiful and cool is my home Wonderful and clean too Home sweet home Divide yourselves into two groups Let the members of one group show a part of the body Let the other group say the name of that part of the body Let the game continue in the same way Here are some pictures Parts of a body are also mentioned Which part of your body do you use to perform the activity that is in the picture Put mark Solve this riddle with the help of teachers or elders Write the answer in the given box I am black but not a crow I am white but not butter I have water but not a well I have lids but not a vessel Who am I Eyes help us to see Avoid dust from getting into your eyes Don't rub eyes when dust falls into it Show it to your elders have two holes I help you smell Without me you cannot breathe Who am I Dust enters our nose when we walk outside Hence clean your nose every day Don’t put sticks or pencils into the nose You need me to talk You need me to eat Without me you cannot even laugh Who am I Clean the mouth with water as soon as you get up in the morning before and after every meal In a little crooked well Without any water though I am always there to help you Listen to a lesson or a song Inserting sticks or chalkpieces Will only hurt you definitely Who am I Don’t put sticks crayons pencils sharp things etc into the ear Why do you close your ears when there is a loud sound while bursting crackers To write hold show and give You need my help and ever will You cannot take a morsel though to your mouth without my will Who am I There are fingers in a hand Observe their shape Know the names of five fingers Cut your nails once a week Wash your hands before and after eating Jumping skipping running and hopping I take you to the school for sure I help you work and also play You dance and learn because I'm here Who am I There are toes in our legs Observe that the shape of fingers and toes are different Is it possible to walk with one leg Try We should not use a knife a pair of scissors and a saw without the help of elders If we follow the advice of elders we will never be in danger Learn to use these things carefully with the help of elders Don’t throw pieces of bangle blade glass pieces in the playground or in your classroom Take the guidance of the teachers in the school when you are using a knife or a switch Make sure that there are no sharp things like pieces of glass and waste things on the playground while you play There will be students who are younger to you Be cautious and see that they are not in danger You may come across some danger even when you are out of your house Learn to be careful Look at the picture Observe where Sujatha is standing This is Sujatha's house The school is far away for her house Everyday Sujatha goes to school with her friends What places does Sujatha come across while going to school Go with Sujatha and find out Sujatha will tell you about them Start from the arrow mark When I leave my house to school first I see a post office We send letters to friends and relatives who are in different places Visit the post office in your town village to know the work of a post office Here is a street light Don't people need light to walk during night That's why they have erected street lights at short distances This is a public tap Anybody can collect water from here Don't damage the taps Don't spill water unnecessarily A bus station is the place where buses move from one place to the other come and halt Visit the bus station of your villagetownlocality and know about cleanliness Toilet This is a toilet It is for the use of the public Toilets are built in public places in towns cities Try to understand why we need these Do not urinate in public places Develop the habit of using toilets Fair Price Shop This is the fair price shop of a town Rice wheat sugar and oil are available at a low price in this shop This is a hospital Hospitals are required to take care of sick people Tell when you have been to a hospital We have to pass through the park to reach my school There are variety of plants trees and creepers in the park We can see birds and butterflies flying There are stone benches to sit It is a beautiful park This is my school It is big There are eight rooms There is a play ground to the right side of my school My friends and I clean this I like my school very much Say two sentences about your school can fly though not a bird I do shine but I'm not a star Though I have wheels I'm not a car I'm very fast but not a cheetah Who am I I cannot run on the road I cannot fly in the air I run at lightening speed And make a Chuku Buku sound Who am I Look one and all how I play And sail on water everyday No wings to trouble And no problems I have Who am I They all look different They all come to school together They wear school uniform All study together and enjoy They are friends They love and help one another Don't you and your friends look different Don't you play and study with your friends Don't you help others and live together with love and affection Sing and Enjoy Though I am tall and you are short And of different colours we are We sure are friends And study together in school Black and brown are our eyes Long and short is our hair Nose and ears are different too But still we are friends We may be different For others to see But we'll still love to play Together for ever and ever to be The festival of lights is Diwali Hindus celebrate this festival with pomp and show All the members of the family wear new clothes They prepare variety of sweets and eat Lamps are lit at home and crackers are burst Id-ul-Fither celebrated at the end of Ramzan month is an important festival of the Muslims This festival is celebrated after one month of fasting All the members of the family distribute sweets and greet each other Christmas is the birthday of Jesus Christ Christmas is celebrated on December It is celebrated with joy and happiness They wear new dresses distribute cakes and wish every one Merry Christmas While elders need our help and love The sick need our care You must learn to help and care Always be compassionate and fair We should respect elders We should look after aged people and patients with love and care My home is my temple too And what a lovely house it is Let us all work together To have a garden full of flowers Save some time to be real happy For we love each other dear A hundred types of games to play Indoor and outdoor variety of games Lagori and cricket are outdoor games which need a playground to be played Carroms and chess are indoor games And snake and ladder too for sure For cricket and football rush to the grounds And for games of squares sit on the floor Colourful marbles and spinning tops Round and round goes big small balls I will play with friends together Enjoying and loving every minute Come and join our school today If you want to learn and play Get on to the pom pom bus If you want to go a far A treat to our eyes Fruits and nuts Colourful vegetables and tasty fruits We always buy buns in a shop And go to a hospital to treat our wounds All is ours All this is ours Nothing will be left if harm is done To safe gaurd property is our duty Then all this will be for our safety Rising up in the east is the sun Giving out his heat to all The birds started flying from their nest All are working at their best Pretty moon Pretty moon Shining so bright Join with the stars And play the whole night Twinkling little stars Come to me dear ones Let us shine in your light And play with you all night I am broad and deep My water is used for washing clothes cleaning vehicles washing cattle agricultural and other works Who am I If there is a river in your locality visit it with your elders Observe the work that is done there Observe whether the water in the pondtank of your locality is clean Tell what you will do to keep the water clean I am green in colour I have variety oftreesplantsanimals and birds I give cool air Who am I If there is a forest near your locality town try to know about the birds and animals which live there from your elders Discuss with your friends the consequence of cutting plants and trees in the forest You can see water everywhere but my water is salty My shore is covered with sand Ships move on me Fishermen catch fish Who am I If there is a seashore near your locality visit with your elders and observe the work there I am tall Sometimes I have rocks on me Trees and plants grow on me Who am I If there are hills near your locality town go for an outing with your friends and elders Observe its shape List out the things you see there I flow My water is needed for drinking and other purposes A few plants grow in me A few animals also live in me Who am I Come brothers and sisters come to me My town is lovely come and see let's wander here let's wander there Ask around and know the town Hills and mountains Forests all Surrounds my little town one and all Trees and plants birds and animals Have made their home there my dear friends Lakes and ponds rivers too You can come and see them too Though the Sea is their big brother We all will see and know them though LESSON A DAY IN THE GARDEN A group of children are talking as they go home in the evening VanajaAh look at that flock of cranes LikhithaAh they are flying towards our garden Now they are settling on the tree near the pond ArunaShall we go there and have a look at them children move towards the pond in the garden TheresaCome without making a noise There are not only cranes on the tree but also squirrels ants spiders bats mynah oh so many animals They may run away Likhitha Oh look at the fish and the frogs in the pond A tortoise is swimming in the pond Aruna The chirping of the birds is very melodious to listen to isn t it Ali Shall we mimic the birds Seema Stop stop It s enough Our mimicry will make these birds fly away Likhitha Oh Rangappa the gardener is coming this way He loves birds he gets angry if you make the birds fly away Stop making noise Rangappa Likhitha what brings you here Likhitha Rangappa we have come here to see the cranes Rangappa Do you know about birds Anand Oh we know many things Rangappa Then I ll ask you a few questions Will you answer them All Oh yes we will Rangappa Tell me the names of the birds I describe Rangappa Good you know something about birds Now I ll show you a few nests You have to identify them Will you Ali Oh Lookatthenest of the weaver bird It builds the nest better than a man Who has taught this bird to build such a beautiful nest Rangappa Yes It is true Ali Do you know what happened a few days ago Our friend Kalleshi was grazing sheep A car came and stopped A man got out of the car and tried to pluck the weaver bird s nest Kalleshi ran and stoppped that man from plucking the nest That man was surprised He asked Why do you stop me Kalleshi replied You will take the nest and go away When the weaver bird comes back it will not find its nest and it will be in trouble I can t bear to see that That man was surprised to see Kalleshi s love for birds He praised Kalleshi for teaching him a lesson He returned without touching the nest Likhitha Rangappa we also like to save the birds and their nests What should we do Rangappa Build small nests and hang them on the trees near the school or home Keep small cups of water here and there for the birds to drink Keep small plates of grains for them to eat Grow more trees and protect them It helps to increase the number of birds Vanaja Don t the birds harm our fields Rangappa No child on the other hand these birds are very helpful They eat the insects which harm the crops It helps the growth of the crops Seema Oh Look at the big spider It is in the tree These spiders also live in our houses don t they Aruna Yes they do There are lizards cockroaches houseflies rats cats mosquitos along with spiders Along with these there are domestic animals like cows buffalos sheep doves There are many animals Theresa Oh what leaped there Likhitha Don t be afraid It is a frog It leapt from the pond to the land Theresa What does the frog do on the land Ananda Don t you know Theresa the frog tortoise crocodile etc live both in water and on land Vanaja Then which are the animals that live only in water Ananda Fish prawn etc Vanaja My grandmother s house is near the seashore My grandmother tells me that there are prawns crabs tortoises starfishes corals and snails I have seen some crabs and starfishes there on the sand Next time when I go I shall get a few shells Rangappa Please don t bring the shells in which animals live They might die Leave them in the sea Vanaja All right I ll do so Rangappa You have seen many animals Do you think that the size colour and shape of these animals are the same Likhitha No they are different from each other Each animal has its own shape colour and size Rangappa Yes there are so many kinds of animals and it is difficult to keep count Vanaja Look there are many kinds of insects and birds in this tree and pond Rangappa Insects and birds are also animals Ali Some animals eat grass some eat grains while some eat small creatures and flesh Rangappa Yes the animals which eat grass grains fruits and vegetables are herbivorous animals The animals which eat insects fish and other animals are carnivorous animals Seema I eat both fruit and fish Rangappa You are omnivorous The animals like dog and cat are also omnivorous the animals which eat products obtained from both plants and animals are omnivorous animals Theresa Oh It is getting dark Shall we go home Rangappa Yes all of you go home Tomorrow is Sunday All of you wake up early and assemble in the garden Let us watch the birds LESSON GREEN WEALTH Herbs are small plants and their stems are very soft The stems of shurbs are a bit hard The branches spread out at the lower part of the plant Trees have hard stem and they grow tall Creepers have long stems but they are smaller in size The plants are classified into herbs small plants shrubs trees and creepers according to their height and hardness of their stem You know that plants provide food fodder manure firewood fruits and medicines etc These are obtained from different parts of the plants Sing and EnjoyI am green The life of a plant See our size So different our shape Though in colour We rarely differ And our smell You all will loveI grow on plants Fall on the soil Turned into manure Join the plants again When on plant I serve the plant When I fall I will dry And join the plant again You might have observed that some plants grow in water Can you name them The plants like lotus and lily grow in water Look at their leaves They appear to be floating Do you know about small plants growing on the branches of big trees Observe these plants in your locality These are called epiphytes Have you seen the cultivated fields What crops are grown by the farmers in these fields in your village Write the names of crops in the space given Take the help of your teacher LESSON JUDGEMENT OF THE OWL Once there was an argument between a mango tree and the soil about who was greater Their argument was very hot Hearing the noise the cat the monkey the snake and the owl gathered there Everyone requested the owl to decide the dispute O K The owl cleared its throat and asked both of them to present their arguments Soil Without me where will be the mango Without me it cannot take birth I give the mango its food and water So I am great Mango I give sweet fruits to everyone I give space to the birds to build their nests Moreover I am also a living being Owl Oh Mango how do you say that you are a living being Mango Look first of all I give birth to the same kind of trees Secondly my seeds germinate into saplings and grow into plants later into big trees like me Owl All right the soil cannot do the things you do But for your growth you need water and food Where do you get them from Mango I get them from the soil Owl See you need the soil for your growth Mango But I get food from the leaves shed by me Soil But it comes through me only Owl See we need both of you Here no one is more or less important Squirrel Dear Owl Mango said that it is a living being What about the soil then Owl Soil doesn t grow it doesn t need food So it is a non-living thing Monkey Why did you say that both are equal and we need both of them Owl Look around dear Monkey There is soil water and air They are non living things But you think a while can we live without air water and soil All No never Plants and animals are living beings Air water soil and such other things are non-living things Air water and soil are essential for the living beings to live The system in which the living beings and non-living things live together is environment LESSON THE STORY OF A DROP OF WATER Oh dear child I am a drop of water I am coming to the earth from the clouds drop by drop as rain I fall on you you get wet Go inside with your friends Oh Dear drop of water I love to get wet Where are you going My friends and I will come with you Dear drop will you take us I flow to different places It may be difficult for you to come with me No we would like to come with you All right Look at the picture to know the places that I flow through after I fall on the earth Oh we are ready Children Look at the picture and write their names in the space provided All right children you already know that the places where I get stored are called sources of water Dear drop of water do you know that there are many sources of water in our place also Is it so Children write the names of my sources found in your place in the space provided Did you write tap also It is also correct Drop Of water Is it not a source of water We store water from the tap itself Don’t you know But the tap is not my source I come in the tap from other sources Understand For example I may come from a pond or a river Children For what purposes do you use me Write them in the pictures of drops given here All right Now tell me where do you bring me from to your house Write here How far are they located from your house Children who brings me to your house Write the answer inside the drops given here Activity Read carefully the table given below Then Put mark in the column of the source of water used for various purposes uses of water drinking washing dishes washing clothes bathing cooking gardening washing domestic animals washing vehicles Dear children What is the source of drinking water in your school River Pond Well Hand pump Stream Sea Rivulet How do you store me in your house Look at the pictures and put mark in the box provided and also write which materials they are made of Apart from these if you store me in any other vessel draw their pictures and write their names Hm Children which materials are these containers made of Write here The vessels made of mud plastic steel copper etc are used to store me Activity How many containers are there in your house Count them and write here steel plastic mud brass copper others Draw the pictures of the smallest and the biggest container that you use to store water in your home Oh This is how you store me How do you store drinking water We store drinking water in a vessel and close it with a lid Yes children Drinking water should be kept clean The container should also be clean Listen here Boil the water cool it and store it in a vessel covered with a lid Drink only this water to keep good health It is better to store drinking water in a container having a tap So that we can avoid the water becoming dirty with the touch of our hands To take water from a big container use a ladle We should drink only pure water The lid of the water container should be closed always Hands should be washed before taking water from the pot Activity Children measure how much of water you need every day and write here O K dear drop we will measure Daily work No of glasses mugs pots buckets washing hands legs and face in the morning drinking bathing washing clothes washing dishes mopping the floor toilet cleaning others Total Do you know how much of water you use everyday at home How many of you are there in your home O K How much of water do you need in your house in a day Write here members of in in mugs in pots in the family glasses jugs buckets I my mother my father my brother sister grand father grand mother others Total See how much of water do your family members and you use everyday Dear children have you understood now how important I am Remember I am needed not only for you but also for the living beings living on this earth So don t waste me Use me carefully Just as much as you need All right drop of water we will always remember what you have told us Children It is time to go home Convey this to all others at home Let us meet tomorrow O K O K Drop of water Bye let us meet tomorrow Sing and Enjoy Oh drop of water falling from the cloud Please come and join the pond by flowing The oceans rivers and tanks too All are sources of water We want you to quench our thirst Come to our fields and save our crops Water for bathing and cooking The cow is thirsty without you We can t live without you We save to conserve you We won t waste you and dirty you All this calls for goodwill from one and all LESSON THE FAMILY OF WATER Drops of water falling It may rain Oh drop of water are you here Children look at these plants and trees enjoying If it rains they will be happy Yes look at them They are charming Drop of water today I had been to the river with my sister Did you The fish frogs and crabs in the river were also happy See when I come to the earth in the form of rain all the living beings feel happy don t they Yes drop of water Drop by drop in the form of rain I come to the earth I flow in the form of streams and join the rivers All the rivers flow into the sea There are different kinds of plants and animals in the rivers and seas See here is the picture of a sea Look at the animals that live in the sea Have you seen a pond a river or a sea Collect the pictures of the plants and animals that live there Paste them in a used note book and write their names Oh How many plants and animals are living in water See when it rains everything looks green The plants and trees grow and become beautiful The ponds and rivers flow full of water Oh How wonderful But it will not be the same in summer True ponds and streams will dry-up There will be less water in the rivers too Yes drop of water Sources of water River Lake Stream Others Rainy Winter Summer season season season High Average Low High Average Low High Average Low Children have you observed plants trees and animals in different seasons Yes Drop of water In summer the plants and trees lose their shine due to the shortage of water Even the birds and animals lose their liveliness During rainy season the ponds and rivers flow with a lot of water due to rains During summer the ponds and rivers become dry due to heat and absence of rain Yes drop of water You are essential for all animals and plants We also need you Yes I am essential for all Do you understand it Shall we sing a rain song Sing and Enjoy Rain Rain come come The gardens are dry Rain Rain come come No water for banana garden Rain Rain come come Help us grow crops The living beings are thirsty They are waiting for you Why are you so angry Come and make them happy Rain Rain come come Help us to grow crops The rain fall on the earth drop by drop The crops on the earth grow and grow There is happiness all around The earth is beautiful with greenery coconut tree frog banana plant fish grass cow pumpkin creeper tortoise paddy plant bird All right children I shall proceed forward Drop of water will you really go Yes I have to go Please collect small poems on rain with the help of elders Sing them melodiously LESSON VARIETY OF FOOD Food items that make us strong Rice ragi jowar wheat millets oil ghee sugar jaggery meat ec give us strength food items that help us to grow Pulses like toordhal cowgram and black gram milk egg help us grow Food items that help us stay to be healthy By eating more vegetables and fruits we can avoid diseases Know this Raw vegetables sprouted seeds and fresh fruits keep us healthy Drink sufficient quantity of water to maintain good health Roti ragi rice jowar wheat rice wheat vegetable milk toordal know this People eat according to their age and the nature of the work they do The quantity of food eaten by boys and girls of the same age differs Know this Animals which eat plants and their products are called herbivorous animals Animals which eat other animals and their products are called carnivorous animals Animals which eat both plants and animals and their products are called omnivorous animals LESSON OUR KITCHEN You have learnt in the previous lesson that all living beings need food There are different types of food People of different places have different food habits cup spoon water container steel vessel plate glass bowl water drum pot pot gas stove knife charcoal stove cooker ladle vegetable cutter stand firewood stove oven tongs kerosine stove chapathi roller stand flour stirrer chapathi roller Soak moong dhal in water Season it with oil mustard seeds and curry leaves Mix all these and put grated coconut Put salt for taste Eat with your friends Scrape carrot Cut chillis and coriander leaves into small pieces Mix everything for sometime Mix it and add lime juice LESSON LET US BUILD A HOUSE You know about your house You have seen different types of houses in your locality I am a tent I am not a permanent house like other houses You can stay inside me for some time To build me are enough It is also easy to shift me from one place to another I am a hut Too many materials are not needed to build me For my construction are enough I am very simple My roof is made of tiles The materials required to build me are My roof is thick It will be cold in summer and warm in winter Do you know why My roof is built with Look at my terrace How nice I can resist heat rain and wind walls doors windows roof floor Sing and Enjoy The tent is easy to carry A hut is easy to build House of red and brown tiles House with a thick roof Terraced house with cement All houses are beautiful All of us need a house to live in LESSON PRETTY HOUSE Once a man wanted to build a strong house He built a terraced house using bricks and steel Later he went inside the house It was very dark It had no ventilation To get light and air he took a big vessel and held it outside the house After sometime thinking that the vessel contained light and air he took the vessel in and poured the light and air in the house He did this several times but there was no light and air A wayfarer saw him and laughed He helped him get enough light What might the wayfarer have done to get light and air Know this How should a good house be There should be sufficient light and fresh air in the house So it should have large windows and doors There should be sufficient space around the house There should be a kitchen garden in this space There should be protection from thieves and robbers So the windows and doors should be strong To avoid the worms and insects the house should be cleaned everyday To protect it from rain and to avoid the entry of snakes and rats the roof should not have cracks or holes Wastes should not be put around the house It should be swept and the surroundings kept clean The wastes must be put in the dustbins The wastes in the dustbins should be kept far away from the house Care should be taken to avoid the stagnation of water around the house and in the drainage Dunghills and drainage stagnation around the house should be avoided Priya is studying in class Her house is very clean She puts different kinds of rangoli every day in front of her house On festivals she puts rangoli using different colours so it looks very attractive On holidays she keeps flowers in flower vases She decorates the doors with buntings of mango leaves on festivals She has kept the dolls also inside the house The things in the house are arranged properly Her house is very beautiful She likes to decorate the house LESSON OUR SENSE ORGANS The teacher of class was on leave Students were making a lot of noise One of the other teachers came to the class to stop the noise He asked the students to identity the parts of the body You have already identified the parts of the body in class You have identified the parts of the body haven t you Now sit down silently Write here what you have observed or experienced For example the fragrance of a flower the sound of a bus sight of a kitchen garden Eyes A few children were playing the blind fold game When Chitra was blind folded she suddenly screamed Oh I can’t see anything How can I search Why did Chitra not see anything Blind fold yourself Try to identify your friends or things Share your experiences with your friends Know this Eyes help us to see the surrounding environment They help us to identify the sizes shapes and colours of the things and their distance from us When Manju was coming to school some dust fell into his eye He rubbed it The eye became red and started shedding tears The teacher took him to the doctor The doctor treated him immediately He also gave him some information about the eyes Eye is a very sensitive part If dust insects etc enter the eyes you should not rub it It causes problem to the eye You should wash the eye with clean water and consult a doctor You should take care of your eyes Ears Blindfold the eyes of your friends Produce different sounds like ringing of the bell cry of a bird blowing of a whistle etc Ask your friends to recognise the sound In the same way ask them to identify the other sounds also They should also say the direction which the sound is coming from Know this Ears give us a sense of sound With the help of the ears we recognise various sounds Dhoom blasted the cracker Tommy frightened by this sound started to run in the direction of the sound A bursted particle fell on Tommy s ear and wounded it Tommy was Chandana s pet dog Chandana took Tommy to the Veterinary doctor immediately The doctor treated Tommy s ear and showed a poster to Chandana about the Protection of ears Nose Get a flower or a leaf that has good smell Rub it against your palm and keep it in your palm It is good to take jasmine flower tulasi curry or eucalyptus nilagiri leaves which have strong smell Ask your friends to identify what is in your palm Ask them to know how they identified it Know this The nose smells everything The nose is an essential organ of respiration Tongue Today there is something special in the midday meals in Ramesh s school There is payasa lemon rice chilly bonda bitter gourd gravy etc Which of these items do you like most Why Know this Tongue helps to taste food items Tongue pushes the food items towards the teeth to chew Tongue helps us to speak Try to speak without using your tongue Skin Mummy it is paining cried Tara Everyone around was surprised Tara pointed at Asha and said that she had pinched her Why did Tara experience pain when Asha pinched her How will you know that the food served to you is hot or cold Blindfold your eyes and start touching the things that you come across Will you be able to identify them How were you able to identify them Know this Our entire body is covered with skin We feel hot cold softness and hardness of things when they come in contact with the skin We also experience touch and pain Know this Eyes ears nose tongue and skin help us to see hear smell taste and touch Therefore these five organs are called as sense organs LESSON IMPORTANCE OF TEETH A rabbit and a dog were friends One day they were walking near a pond Rabbit Oh the grass has grown in plenty I will eat quickly Dog Oh see there a large piece of flesh I will bite it and eat The rabbit was surprised to see the dog tearing the flesh Rabbit Oh my friend how quickly you tear the flesh Dog Look at my teeth They are so sharp But I can t eat grass like you Rabbit Laughing Look at my incisors These help me cut the grass Dog It s true Just as my canines help me tear the flesh You have heard the conversation of the dog and the rabbit Now stand in front of a mirror and observe your teeth Look at your friend s teeth Count how many teeth are there Are all the teeth alike Observe the front teeth These are broad They have sharp edges These are incisors How many incisors do you have Observe the function of these teeth when your friends are eating fruits and vegetables Incisors help to cut the food items Observe the teeth next to the incisors in your friend s mouth These are a little long and sharp aren’t they These are canines Observe the function of these teeth when your friends are eating hard items like sugarcane Canines help to tear the food The canines in dogs tigers and other carnivorous animals are very long and sharp Why Think about it Chew a piece of coconut In which part of the mouth do you chew The teeth which are in the part of jaws are molars Observe the molars in your friends mouth They are big and flat Molars help to grind the food Know this The teeth that appear in children of year to years are milk teeth They start falling from the age around years New teeth will appear in their place These are permanent teeth If the permanent teeth fall they will not grow again So we have to protect the permanent teeth An adult person has totally teeth Among them are incisors are canines and are molars Small children have totally milk teeth Teeth help to increase beauty of the face Teeth help us to pronounce correctly Know this Eat hard food items such as raw carrot sugarcane dry coconut etc once a while The teeth and gums are exercised and remain healthy Drinking milk will also keep the teeth strong If you have any problem with teeth consult the dentist immediately If there is a dentist in your locality get information about the cleaning of teeth Sing and Enjoy Teeth Teeth the incisors To bite vegetables and fruits Sharp and long Canines To tear the sugarcane Just behind them are molars To grind the food really soft I know you help one and all To chew their food and eat it up LESSON DANGER ACCIDENT Know this Don t board a moving vehicle Follow the queue to board a bus Don’t put your head or hands outside the window while you are travelling in a vehicle Don’t play in the streets While going near the well tank pond or river you should be with your elders Make a list of precautionary measures that you have learnt from your experiences and the experiences of your friends If we are careful we can avoid accidents Sing and Enjoy Swinging and swinging Up and down Vyshali pushes it fast Shalini fell down Up and down the tree Playing the monkey prank Climbing and slipping He fell down Leg got fractured Can’t walk oh friend It has to be plastered Be careful my friend Bursting the cracker Enjoy with pleasure The cracker bursted With a great sound Dum Dum sui sui cracker Go round on the floor Trying to escape The cracker hit the eye Oh the eye got buring The doctor bandaged around I can’t see and can’t play No more crackers in future LESSON FACILITIES FOR OUR USE On one sunny day the children were supposed to visit various places in their locality All the children were happy All of them came to the school very early The bus arrived at the exact time They went in a queue and sat in the bus The bus started First it stopped at the library Children read the boards carefully They moved round the library silently They took a few books and read them for sometime They kept them back in their places and came out of the library They sat in the bus Make it a habit to visit libraries The bus stopped at the bus station Children got down the bus They went round the bus station The children boarded the bus and alighted near the hospital The children observed the different kinds of functions in the hospital They got into the bus appreciating the cleanliness of the hospital The bus stopped near the park The children were very happy This is your park Keep it clean They played in the park till evening They were tired They sat in the bus and returned to school LESSON MODES OF TRANSPORT Sing and enjoy Picnic picnic by bus Along with my friends Variety of vehicles Moving on the road Horse cart and bullock cart Cycle and motorbike Autorickshaw and car So many vehicles on the road Train on the rail Boat on the water Aeroplane in the air Flying in the sky Some are moving slow Some are moving fast Different modes of transport I like them very much There is a need of workers in bus and railway stations to do different works Their co-operation is needed for our comfortable travel LESSON COMMUNICATING THROUGH LETTERS A day in summer holidays some children had gathered in Sanjay s house to watch the cricket match on the T V It was a very exciting match Rahul Dravid was batting Harbhajan singh was bowling Dravid hit the ball The ball crossed the boundary line Children clapped their hands with joy Little Sanjay saw the sign given by the umpire Sanjay Brother Sunil why has the umpire raised both his hands up Sunil Oh the ball was hit out of the boundary line The umpire did this sign to indicate that it was a sixer six runs Sanjay He could have said by using words Uma Nothing can be heard in such a big and noisy ground It is easy to show by signs Every one can understand Lucy Yesterday we went to a hotel for dinner I saw people using signs for asking chapathi rice etc It was interesting to watch Salman Yes signs are very useful in places where the language is not known where it is very noisy and where the people are far away Sing and Enjoy No language No place know the signs There may be distance or noise use the signs Ramesh Oh What wonderful century by Dravid Karuna I like Dravid very much Sunil I too like Dravid Let us write a letter to congradulate him on hitting the century All Good idea Karuna I will write the letter tell me what is to be written Uma Well your handwriting is good Karuna Friends does anyone have a post card Rita Yes I have It is at home I ll bring it now Let us write the letter during lunch break Lunch time Break for cricket Sunil Karuna start writing the letter I ll tell what to write Sanjay Do you know the address of Dravid Salman Yes it is with my father I will bring it now Karuna Shall I write the address Uma Write our address here Rita Look here the letter is ready How to send this letter to Dravid Sunil Let us put the letter into a postbox Karuna Hey How will it reach Dravid Salman The post office is very near The postbox is also there We shall go to the post office and put the letter into the postbox Then we shall ask the postman how the letter reaches Dravid They went towards the post office making noise Uma Karuna put the letter into the postbox Karuna Yes I put it Sunil Hey See there someone is taking the letters from the letter box Will you please tell me why you are taking these letters We have written a letter to Dravid and put into this box If you take this it will not reach Dravid Postman Don t worry I am the postman People put letters into this box everyday I carry these letters to the post office Please come inside the post office and see the work going on there See this is your Dravid s letter It is going to be sealed now These letters have to be sent to Bangalore We send them by train In Bangalore these letters will be carried to the post office In the post office they are sorted out on the basis of their addressess The postmen will collect the letters related to their respective areas and distribute to the concerned houses Sunil Uncle When will it reach Dravid Postman It will take three days Sanjay Oh Won’t it reach him tomorrow Postman Look there We have speed post facility If you give the letter there It will be sent by an aeroplane It costs more but it reaches quickly Apart from post office some other organizations also provide speed service Have you not heard of courier service Rita Oh a few days ago my grandmother sent me money for my birthday by post The post man gave it to me Postman Oh that is a money order Just like we send letters we can also send money by postal service In the same way books and other things can also be sent It is called Parcel Sunil Uncle will it reach Dravid in three days Postman Yes children Don’t worry Karuna Now lunch break is over Let us go to watch the match Children ran out of the post office making noise and sat in front of the T V LESSON DEEPA’S GENERATION Raju and Deepa came to their grandparents house during the summer vacation Raju Deepa their mother and grandmother went to the neighbouring village to attend a naming cermony Many people had gathered there Deepa saw a small baby in the cradle Deepa Mother whose baby is this Mother Deepa it is the baby of Radha and Rajiv You too used to sleep in the cradle like this when you were a baby The baby in the cradle started crying Radha took the baby into her bosom and consoled it by singing a lullaby Aluva kandana tutiyu havalada kudihanga Kudihubbu bevinesalanga Kannota Shivana kaiyalagu holedanga Summary A crying child s lips look like a pearl Its tender brows appear like petals of a neem flower Its tearfilled eyes flash like sharp edge of Lord Shiva s sword In all these situations a mother fulfils all the needs of the child such as love nurture protecion food etc While returning from the naming cermony grand mother met her friends They looked at Raju and said He looks just like his grandfather His eyes broad forehead long nose resemble his grandfather Deepa said Everyone says that I resemble my mother See I have curly hair my mother too has curly hair Know this Children resemble their parents grandparents and other members of the family Generally the similarities can be seen in the hair colour of the skin eyes ears nose walking and laughing style etc They met Ramappa the grandfather on the way who was returning from the town He took the children to the farm Deepa Grandpa how many children do you have Grandfather then told them about his family Grandpa Deepa your grand mother is Puttamma We have two children They are your father Subbanna and your aunt Leela You and Raju are the two children of your father I your grandmother your father mother you and Raju thus belong to three generations Deepa Grandpa I could not understand what you said Raju Deepa I have learnt about the generations in school It can be shown by drawing a simple family tree I ll draw and show you what grandpa said Then you will understand it Deepa Raju You told me about the family tree Will you please draw it and show me Take this pencil and paper Raju OK Look here Deepa Hey It looks like a tree Raju It is called a family tree It is a simple family tree of Raju s family Deepa Grandpa you have shown me a big tree in the farm haven’t you Grandpa Hm I had planted that when I was young Now it is very big Raju There was another big tree beside that grandpa Grandpa Oh That was planted by your father when he was young That is a small tree It grew well Raju Grandpa tommorrow Deepa and I will plant a sapling beside those trees Grandpa Well Raju let it also grow like you LESSON MY HOBBY Know this Some people practise the activities in their free time which they like very much and are interested in These are hobbies For example reading books and newspapers collection of postal stamps singing gardening etc Know this When Salim was ten years old he saw a baby bird fall on the ground He thought it was a sparrow He took it in his hands But when he saw yellow colour on its chest he understood that it was not a sparrow He was curious to know which bird it was His uncle Amiruddin took him to Natural History Society in Mumbai which studies birds and animals The boy was influenced by the activities done there He developed the hobby of watching birds Later this boy became a great bird watcher and wrote many books on birds He is Padmashree Salim Ali The boy Jagadish was very interested in knowing about the life style of plants and animals that he had seen He grew many plants His parents encouraged this hobby of Jagadish He studied the life of plants and trees well and showed to the world that plants and trees also feel joy and sorrow He is the famous botanist Dr Jagadish Chandra Bose Many people who treated their hobbie Many people who treated their hobbies as their professions have gained name and fame It was possible for them to do so by their efforts interest co-operation and guidance of the family members In order to continue your favourite hobbies get the guidance of your family members elders and teachers Cultivate good habits along with this Know this Hug me Salkani is a small village in Sirsi taluk of our state It is surrounded by a big forest One day the people of the town came to cut the trees Hearing this news the villagers ran towards the forest Each one hugged one tree The people who came to cut the trees were astonished They could not cut the trees So they returned to the town Thus by hugging the trees the people of the village saved the forest Save forest Grow forest Use forest to a limited extent LESSON THESE PEOPLE ARE ALSO LIKE US Know this Braille One day a boy three years old was playing with a sharp tool used by his father The pointed tool pierced his eyes and he lost his eye sight The boy had keen interst in studies He was thinking of different possibilities to read and write Finally he arrived at a way to read and write by touching and feeling He developed it and made it helpful for those who have been facing the problem of sight He is Louis Braille The letters he used are called Braille script A row of raised dots are made on a thick paper This is Braille script The letters can be identified by touching the dots Without the help of the eyes one can recognize the letters with the help of the number of dots and their pattern See it is A and B in Braille script A and B are denoted in six dots In A out of six raised dots one is thicker than others In B two dots are thicker than others Thus they recognize the letters Geetha is a clever girl She plays with her friends in the school She cannot hear and cannot speak also All her friends understand Geetha s signs Observe around you You can see many people who are physically disabled They need certain facilities and help in their work Friends co-operation is essential for this A number of people with special needs have achieved a lot of their efforts and interest Know about such people from your elders Say lines on any one of them Know this Dr Puttaraja Gavayi Dr Puttaraja Gavayi was famous for art literature music and plays He lost both his eyes when he was a child He became a disciple of Panchakshari Gavayi He became a renowned singer He could play all musical instruments He learnt Braille script and wrote more than books More than thousand students have learnt music under his tutelages He died in the year His contribution to the society is invaluable LESSON FESTIVALS AND FAIRS I am Ramesh Deepavali is an important festival for us We celebrate the festival for three days First day is Naraka Chathurdashi Second day is Gopuje worshipping of cows and Lakshmi pooje worshipping the Goddess of wealth Third day is Balipadyami During these three days we light lamps eat sweets and share with neighbours We enjoy fire work and crackers We enjoy the festival very much I am Nageena Ramazan is an important festival for us In the month of Ramzan we fast during the day and on the last day we celebrate the festival We prepare special dishes and sweets on that day Friends and neighbours greet each other We eat sweets and share with neighbours I am Robin Christmas is an important festival for us On this festival we decorate the Christmas tree and hang gifts on it Friends and relatives visit our home on this day We greet each other and enjoy the festival Know this Festivals bring family members relatives friends and neighbours together Know this All the people of the place locality gather together and celebrate some festivals Fairs are also community festivals A fair is also called utsava and urus All the people work collectively in these festivals and enjoy Sing and Enjoy I went to the fair To our village fair All my friends Assembled there We enjoyed together With wonderful sights Sweets and entertainments Have made me fair Sing and Enjoy sing this song with action I went to a fair What did you bring I brought a pair of scissors I went to a fair What did you bring I brought a bell I went to a fair What did you bring I brought a cycle I went to a fair What did you bring I brought a necklace I went to a fair What did you bring I brought a belt This song should be sung by joining the action of one line with the action of another line Collect the songs like this related to fairs LESSON A DAY IN MY LIFE Know this The childern who are engaged in work at an early age face some problems They do not get access to school learning and playing They miss proper education Many jobs are dangerous for children Such children are open to health risks They may be punished by the owners There are possibilities of getting into bad habits So the Government has enforced the Child Labour Prohibition Act Children of school age are being identified and brought back to school Efforts are made to provide good education to these children Education is the Fundmental right of every child Education is a must for every child LESSON THE GAME HIDE AND SEEK Kannamuchhe Kadegoode Uddinamoote urule hoythu Namma hakki bitte bitte Nimma hakki mucchikolli Rani sang the song aloud and opened the closed eyes of Ranga When she was singing the song Suma Vinay John and Haseena hid behind the tree When Ranga was searching for them Suma John and Haseena came quickly and touched Rani and shouted Oh we touched Rani But Ranga touched Vinay before he touched Rani and shouted out Meanwhile it started raining The children went into the house of Ranga Ranga My uncle has bought many story books would you like to see them Vinay No thanks Today is Sunday Let us watch children s programme on the T V Rani No we shall listen to the songs over the radio All No No let us play games All right Then what game shall we play Discussion started once again Rani Let us play chaukabara game of squares Ranga But we are six members here Chaukabara can be played by only four Suma Then let us play halaguni mane attukuni mane John No only two people can play it Haseena What about carrom Ranga Sorry I don t have a carrom board Vinay Let us play acchekallu annikallinata John looked outside and said Rain has stopped Let us go out and play games Childern came outside shouting with joy A question arose Which game has to be played Each one told the names of the games they knew They had to choose one game out of lagori monkey prank marakothi chinni-dandu marble game spinning top cricket hopping game skipping and ball game Finally they decided to play the hopping game know this Games which are played outside the house in the field playground are called outdoor games Games which are played inside the house are called indoor games Write the names of the outdoor and indoor games you play Know this We get entertainment and information from T V radio and books Playing games gives us entertainment The body and mind freshens up Playing games makes our body strong and healthy LESSON STORY OF A POT You know that many things are essential in your daily life You need food everyday Observe how it is prepared in your house You already know about the use of various types of utensils to prepare food items and to store water in the house Thigari thiruguve gara gara Madake maduve bhara bhara Who am I I the wheel revolve round and round A pot is shaped in every round LESSON THE EARTH-OUR HOME Look at the picture given below What picture is this Write its name in the space given with the help of your teacher or elders Observe the shape of the earth Compare the shapes of the sun and the moon with the shape of the earth Is there any difference Describe the shapes of the sun the moon and the earth in the square given Know this The earth where we live also has two tips They are northern tip and southern tip As in the case of the orange the north and south tips of the earth are mostly flat The earth has its own specific shape This spherical shape of the earth is called geoid shape The photo of the earth with blue green and brown colours looks very attractive Observe the picture It is a small model of the earth It is called a globe By using it we know about the earth The globe shows the shape length and breadth of the earth very accurately Sing and Enjoy See the globe see the globe See that is the model of the earth See the way the earth rotates See the game of day and night See the vast land and water See this is the life of the living beings You already know that the globe is a model of the earth It is easy to learn more about the earth with the help of a globe Take the globe Observe its flat tips The top tip is called north pole and bottom tip is called south pole Observe the horizontal and vertical lines drawn on the globe These are only imaginary lines drawn on the globe They are not seen really on the earth They are drawn to know the time of a place and the distance between two places Observe the given picture In this picture lines are drawn horizontally on the globe These are latitudes Major latitudes have specific names Read them with the help of the picture Observe the given picture Many lines have been drawn vertically on the globe as the lines drawn horizontally These lines are longitudes Read the name of the important longitude given in the picture On the globe the portion of land is called geosphere and the portion of water is called hydrosphere Observe the above pictures The portions of land is spread over here Know this Hot cloudy windy cold and rainy are the factors of weather These are the factors that change everyday These changes may occur in a day also The changing atmospheric condition from day to day and hour to hour is weather The intensity of the sun rays may be more in the afternoon compared to morning and evening Otherwise in the evening it may be cloudy followed by rain thunder and lightening You have learnt about directions in the previous class Try to remember Look at the picture given below In the evening Sinchana is facing the sunset You write the names of the directions in the boxes given You have already learnt to locate the directions east west north and south by facing the direction of sunrise Now observe the picture given below Students are playing in the classroom Identify the directions where they are standing Write them in the space given You can easily identify the directions where Abhishek Keerthi Reeta and Shruthi are standing can t you Identify the directions where Kuresha Suchitra Rafik and Rakesh are standing with the help of the picture given below and write in the squares North North East East South East South South West West North West LESSON MAP Symbol Details black board teacher s chair table Ramesh Riyaz Sheela Kevin Disha door window dustbin Ramesh has marked his place on the second bench which is on the rightside Know this A small sketch of a place which gives the picture of the shape of the place border features like rivers hills roads and buildings the position and distance between them is called a map The vast area can be represented on a small piece of paper You have seen a globe haven t you It can be represented in flat on a piece of paper It is also a map The entire earth can be grasped at a glance into it symbols details river house tree sun hills moon man LESSON MY DISTRICT YOUR DISTRICT Look a t the picture I t is Mallepura village There are many houses here Mallepura belongs t o Channarayapatna hobli In this hobli there are a number of villages like Mallepura Here is a picture of Hoblis Many hoblis together form a taluk If you are living in a village know the names of Hobli and taluk in which it is located If not write the name of a village that you know and write the names of hobli and taluk in which the village is located Village Hobli Taluk Make a list of hoblis of your taluk and display it in your class room You know that a taluk consists of many hoblis Observe the map given below A group of many taluks is called a district Identify the district which is given in the map and say Many districts together form a state Our state is Karnataka Do you know how many districts there are in our state Observe the map of Karnataka Make a list of districts given there Give the total number of districts The pictures given below depict the speciality of famous places of our state like Hampi stone chariot Vijayapura Golgumbaz Mysuru Palace Bengaluru Vidhanasoudha Shivamogga Jog falls Mandya Kokkare Belluru bird sanctuary They also depict the specialities of the concerned districts Every district has its own famous places Each district of our state is unique Each district has its own weather crops industries occupations and famous places Know about your district Go on a tour to other districts and try to know more about them PROSE JUMBO OF INDIAN CRICKET ANIL KUMBLE Kabbadi Kabbadi is a team game Two teams with seven players each occupy opposite halves of a field The first team sends a member known as the raider to the other half of the field to attack This person has to keep saying Kabbadi Kabbadi all the time holding the breath and try to win points for his team by touching or pulling members of the opposite team and getting them out The team on the other side tries to form a chain and catch the raider to get a point for their team They try to stop the raider from going to the home side before taking a breath This is a very exciting game Kabbadi is derived from a Hindi and Punjabi word meaning holding the breath In Western India the game is known as Hu-tu-tu In Eastern India it is also known as Ha-Do-Do The game is played for minutes with a minute half-time break Both men and women play this game Anil Kumble was born on October in Bengaluru He began playing cricket in the streets of Basavangudi in Bengaluru Later he joined the Young Cricketers club He started playing first class cricket in He is also a qualified mechanical engi neer Anil began playing test matches in In the match against England he took wickets in overs with maiden overs He has taken test wickets the third largest in Test history In Kumble set a new record by taking all wickets in single innings while playing against Pakistan He is the first Indian cricketer to achieve this He has been honoured with the Arjuna Award and thePadmashree by the Government of India The Government of Karnataka has honoured him by naming a roundabout in Bengaluru as the Anil Kumble circle Anil Kumble served as the captain of the Indian Test team before he retired He lives in Bengaluru with his wife Chetana and their three children The Best Six Doctors An Action Poem The best six doctors Put up six fingers And no one can deny it Shake nod head Are sunshine water rest and air Exercise and diet count using fingers These six will gladly attend you put up six fingers If only you are willing point to the children Your mind they will ease point to the head Your will they will mend points to self And charge you not a shilling nods the head slowly SPORTS IS FUN For each and every one Let s go out and play On this bright sunny day Should we play and skip Or do high jump or long jump Let s race each other To see who runs faster Come out and play Throw ball and volleyball Kick the football Basket the basketball Hockey and cricket Let s play them all Oh Look at the pool Let s swim It ll make us cool And then we shall go Walking to School New Words bright shining strongly full of light skip jump over a rope holding both ends volley hit or kick the ball before it touches the ground pool a small area of still water formed naturally or artificially UNIT PROSE ALL BIRDS CANNOT FLY A tiger was dozing under a tree A mosquito came buzzing by The tiger side Hey Mosquito Go away The mosquito said Why should I go away I am not afraid of you The tiger was angry He hit out with his paw The mosquito flew off The paw struck his own cheek It began to bleed The mosquito buzzed away The tiger struck with his other paw The mosquito flew off This time too he hit himself The tiger was helpless The mosquito continued to buzz The tiger got up and quietly walked away the mosquito called out after him Don’t be so proud my friend Everyone is great in his own way Mrinalini Srivastava angry bleed great hit proud ALL BIRDS CANNOT FLY An Ostrich was sitting with a gloomy face in a forest A hen came there The hen saw the ostrich They talked to each other What did they talk about Read on Characters Ostrich hen and peacock Hen Good morning Ostrich How’re you Ostrich Boo-hoo Boo-hoo I’m sad I’m sad Hen Sad Why What’s the matter Why re you sad Ostrich I’m not happy with God I’m angry with Him Hen Why What did He do Ostrich He has given me wings but I can’t fly in the sky Look at those birds flying high in the sky I can’t do that Hen Oh That’s the matter So what if you can't fly Look at me I'm also a bird But even I can't fly Ostrich Hm… May be But I wish I could fly So many other birds can fly Boo-hoo boo hoo I'm sad I can’t fly Hen Oh don’t worry You can do so many things that other birds can't do You should be proud that you are the largest and swiftest running bird No bird can compete with you And yes there is one more thing that you should be proud of meanwhile a peacock enters Peacock Hello everybody Friend hen you were saying that the ostrich should be proud of one more thing… what's that one more thing Hen The ostrich lays the largest eggs of all They weigh many kilograms Ostrich That's true But… but I can’t fly I can't fly Peacock Oh come on don't be so sad Look at me I'm a bird too but I can fly only a few yards I can't fly high in the sky And… you might be surprised to know but there re many other birds who can't fly Ostrich wiping its tears and looking surprised Really Many others Can you tell me who those are Hen Sure Kiwis can't fly at all Penguins can hardly fly They live on the snow And they're all very happy They don't feel sad at all Ostrich Oh Is that so Then I'll not feel sad anymore jumps around with relief Now I'm happy Now I know all birds can't fly Ho Ho I'm happy I'm happy Now I am happy Now I am happy gloomy sad depressed proud feeling pleased with one s achievement swift quick sudden Poem THE LITTLE DUCKLING The little duckling sees a peacock What a beautiful tail I want a beautiful tail too Suddenly the little duckling has a big beautiful peacock s tail The little duckling is very pleased The little duckling sees a flamingo What beautiful legs I want beautiful legs too Suddenly the little duckling has long thin pink legs The little duckling is very pleased The little duckling sees an eagle What beautiful wings I want beautiful wings too Suddenly the little duckling has big brown wings The little duckling is very pleased The little duckling sees a cock What a beautiful hat I want a beautiful hat too Suddenly the little duckling has a big red handsome hat The little duckling is very pleased All the little duckling s friends swim in the river The little duckling says Stop Wait for me And he jumps into the water But his peacock s tail is very heavy His big brown wings are very heavy His long thin pink legs cannot swim His handsome red hat is very heavy and he can't breathe Glug Glug Glug I want a little duckling s tail and a little duckling s legs and wings and I don't want a hat Suddenly the little duckling can swim And he can swim very well Soon he is with his friends pleased – happy heavy not light having great weight handsome good looking glug sound made while drowning in water hat the cock s comb PROSE HOW TENALI RAMA BECAME A JESTER There was once a king who had a wise minister It was the habit of this minister to say Whatever happens happens for the best Once the king went with his minister hunting in the forest His horse stumbled and the king fell down He hurt his big toe on the right foot The minister on looking at this said calmly Do not worry my Lord whatever happens happens for the best The king hurt from his fall was angry at these words He looked around and saw an old dried-up well nearby He pushed the minister into the well and walked on Soon a group of cannibals saw the king and shouted with joy They carried him to their chief The chief told them to get the king ready for a sacrifice to their Goddess As the cannibals were taking the king to the river they saw that he couldn't walk properly since his toe was hurt One of the cannibals ran back to the chief to report this The chief heard him and told him to let the king free because he was hurt and couldn't be offered to the Goddess The king now walking away a free man recalled the minister s words He felt that the minister was right and looked for him in the well The minister was still there wondering how to get out The king pulled him out with difficulty and hugged him apologizing sincerely The minister thanked the king saying that he was alive only because the king had pushed him into the well Cannibals people who eat human flesh HOW TENALI RAMA BECAME A JESTER In a South Indian village called Tenali there lived a clever boy His name was Rama Once a wandering sage saw him and liked his looks and clever ways So he taught him a prayer and told him Go to the goddess Kali s temple one night and recite these words three million times She will appear before you and give you whatever you ask for Rama went to the Kali temple outside his village and did as he was told The Goddess appeared before him with her several faces and two hands When the boy looked at her appearance he wasn't frightened He began laughing Angry the Goddess asked him Why are you laughing at me Rama answered O Mother we humans have lot of trouble wiping our noses when we catch a cold though we have two hands and only one nose If you with your many faces catch a cold how will you manage with just two hands for all those noses The Goddess was furious She said Since you laughed at me you'll be a vikatakavi a jester Oh a vi-ka-ta-ka-vi That's terrific It's a palindrome replied Rama The Goddess was pleased by Rama s cleverness that saw a joke even in a curse She at once became calm and said You'll be a vikatakavi but you will be a jester to a king and she vanished In this way Tenali Rama began to live as a jester in the court of King Sri Krishnadevaraya of Vijayanagara jester a person who amuses people at a king s court terrific wonderful very good frightened afraid several many curse a wish for something bad to happen to others furious very angry vanish disappear palindrome a word which reads the same even when read backwards Ex Madam noon Poem THE LOOKING GLASS Every day Mummy goes down to the shops And sometimes I go as well And of all the things we see in town I'd never have time to tell Today while Mummy was buying some eggs I waited for her outside And there I saw a little green girl Whose shoe-lace had come untied She stooped to tie it and so did I Then we both turned away and both peeped back I smiled and she did the same It seemed like playing She wore a pretty green dress like mine Green stockings up to her knee And who do you think was that little girl Why that little green girl was ME Ruth Underwood looking glass mirror stockings close- fitting covering for foot and leg stooped bent down untied become loose peeped look quickly and secretly SAFETY FIRST Up the street I look to see If any traffic is near to me Down the street I look as well And listen for a horn or bell There s something coming – wait a bit If I run out I may be hit But now the road is really clear No car or motor-bus is near I'll run across the road so wide Hurrah I'm safe on the other side Enid Blyton UNIT PROSE UNDER THE SEA Here is the Sea Action Song Here is the sea the wavy sea wave your hands from side to side Here is the boat the sailing boat cup your hands like a boat and rock And here is me and here is me point to yourself All of the fishes all of the fishes wriggle your palm and fingers like a fish Down below down below point downwards Wriggle their tails wriggle their tails wriggle your fingers And away they go and away they go wriggle your fingers and take them behind you Now ask them if they know what creatures live in the sea Write the words on the board Ask them if any of these creatures can be kept at home Extract the word Fish from them UNDER THE SEA Many wonderful creatures live in the sea Some are large but others are small Some colorful and some with varied patterns Some live deep in the ocean Let s see what some of these are Seahorses are a small type of fish They are cms long Angelfish are colourful with different patterns The young angelfish usually has a different pattern from the adult fish They live among coral reefs Seals look very clumsy on land But they move very fast in water and are good swimmers A layer of fat called blubber keeps the seals warm Sea anemones are brightly coloured have wavy tentacles and look like plants Their mouth is in the middle of their bodies Sharks swim in the open sea They have huge strong jaws with several rows of teeth If they lose a tooth another one grows quickly Sharks are very fierce creatures seal brightly-coloured sea animal that sticks onto rocks tentacles long thin arms of sea creatures blubber fat of sea animals fierce very angry and ready to attack clumsily move awkwardly Poem MY GOLDFISH Sea Sounds I walked on the beach Walk And picked up a shell Bend down and pick up And held it close to my ear Pretend to hold shell to ear I walked on the beach Walk And picked up a shell Bend down And held it close to my ear Pretend to hold shell to ear And what did I hear Pretend to hold shell to ear with questioning look R-O-A-R S-w-i-s-h Say ROAR loudly R-O-A-R S-w-i-s-h Whisper Swish The sound of the sea I did hear My Goldfish for memorization All day long he swims around His little home of glass He never smiles he never frowns I watch him pass and pass Round the globe and round again Makes me dizzy watching Open mouth then shut again Wonder what he s catching Shining like a piece of gold Glistening like a star Never winking never blinking- Round and round the jar Round the globe and round again Round eyes never blinking Looking very very wise Wonder what he s thinking John R Crossland frown facial expression of anger pass and pass go round and round dizzy feel as though everything around you is going round and round glistening shining quivering shaking slightly gravely seriously home of glass an aquarium in the context UNIT Prose Kittur rani channamma Madakarinayaka was ruling Chitradurga The Chitradurga fort was very beautiful and strong There was a brave woman in the city Her name was Obavva Her husband was the guard of the watch-tow fort of Chitradurga Once Hyder Ali attacked the Chitradurga fort The soldiers on both sides fought bravely Hyder Ali sent his soldiers into the fort through a secret tunnel While the soldiers were rushing into the fort through this tunnel at night Obavva saw it She was brave and patriotic Without disturbing her husband she came towards the tunnel with her onake pestle Hiding beside the opening of the tunnel she began to kill the enemy soldiers one by one She hit them on their heads with her onake as they came out of the tunnel What a brave woman She had saved the fort The guard Obavva s husband saw Obavva with hundreds of the enemies dead bodies around her He was shocked Obavva was an ordinary woman and she protected the fort Madakarinayaka praised her patriotism and bravery She was a great woman like Rani Kittur Chennamma and Keladi Chennamma Glory be to her KITTUR RANI CHANNAMMA We got freedom on th August Many of our great leaders fought against the British rule Rani Channamma was born in She was the daughter of Dhulappagouda a desai of Kakati village of Belagavi Her mother Padmavati was a pious woman Channamma was brought up with love and care She learnt Urdu and Marathi along with Kannada When she was young she read epics like the Ramayana and the Mahabharata She also read different books of the Vachanas Channamma learnt shooting and horse riding She was bold and intelligent The wise men said Channamma will become a great queen That became true Once a tiger appeared near the Kakati village for- est area The tiger was troublesome to the farmers He would destroy their crops At that time Mallasarja the king of Kittur state had come to Kakati The people came to meet him They requested Mallasarja to drive out the tiger Along with some soldiers Mallasarja set out into the forest He was a skilled hunter He chased the tiger in the forest Suddenly the tiger disappeared On the other side Channamma rode her horse behind the tiger Finally she shot him with arrows Two arrows pierced his body Channamma had killed the tiger before Mallasarja came to the spot What a brave lady Mallasarja praised her bravery He married Channamma because of her valour and beauty Her Fight against the British Channamma was patriotic She loved her country the most The British attacked Kittur Fort in She fought against the British bravely She killed a number of British soldiers She won the first battle but in the second battle she was caught and imprisoned She kept in Bailhongal jail There she breathed her las Feb Her name has been written in the page our history Every Indian remembers her pierce to make a hole using an object with a sharp point battle a fight between two armies valour great courage patriotic loving one s country pious deeply religious epics a long poem describing the action of heroic figures or the history of a nation uimprisoned kept in a jail destroy spoil ruin breathed her last died disappear pass from sight drive out to force something someone to leave Poem THIS NATIVE LAND She is a rich and rare land O She's a fresh and fair land She is a dear and rare land This native land of mine No men than hers are braver Her women s hearts ne er waver I d freely die to save her And think my lot divine Thomas Davis fair beautiful dear loving brave courageous not afraid waver become weak divine connected with God sacred native place of one s birth my lot whatever one has been given in life UNIT Prose PUPPIES FOR SALE It Made A Difference As I walked on the seashore one evening I saw an old man bend down pick up something from the ground and throw it into the water I went close to him and saw that he was throwing the small fish back into water With every tide hundreds of small fish would roll near the shore and die without water There were too many of them around for the old man to save I felt he was tiring himself unnecessarily I watched him for sometime and asked Why are you wasting your time There are hundreds of fish lying on the shore You throw them into the water and the next wave will bring some more fish to the shore What difference would your action make The old man looked at me picked up a little star fish that had been stranded on the shore and threw it back into the water He said It made a difference to this one As I thought about his words I felt they were very true He certainly would not be able to save all the stranded fish but some fish would be always grateful to him for being saved In the same way every little thing we do will make a difference to someone in our country PUPPIES FOR SALE Krishnappa was a farmer He had some puppies He wanted to sell them One morning he found a little boy standing at his door The boy asked him Uncle I want to buy one of your puppies Krishnappa said These puppies cost you a lot of money The boy felt sad He took out some coins from his pocket and said Will that be enough Krishnappa smiled and called his dog out A dog came running followed by four beautiful puppies The boy s eyes gleamed with happiness But wait There was another little pup limping awkwardly He was trying hard to join others The boy pointing to the last one said I will buy that one Krishnappa was surprised He said Son that pup will never be able to run or play with you The boy stepped back and slowly rolled up his pants He had a steel brace on his leg A specially made shoe was attached at the end of the brace He looked at Krishnappa and said You see uncle I don't run too well myself and he will need someone who understands Krishnappa had tears in his eyes He reached down and picked up the little pup He handed it to the boy How much asked the little boy No charge answered Krishanappa Love costs nothing puppy young one of a dog gleam shine limp walk haltingly walk with difficulty awkwardly clumsily brace clamp Poem KINDNESS TO ANIMALS Little children never give Pain to things that feel and live Let the gentle robin come For the crumbs you save at home As his meat you throw along He'll repay you with a song Singing as if twere always spring And fluttering on an untired wing Oh Let him sing his happy song Nor do these gentle creatures wrong Anonymous let allow robin a bird with a brown back and wings crumbs pieces of bread or chapatti meat here food soaring going or flying high and fast fluttering moving the wings UNIT PROSE KALI AND THE RAT SNAKE IF I MET If I met a crow I should say Caa—caa If I met a lamb I should say Baa-baa If I met a cow I should say Moo Moo If I met a dove I should say Boo coo If I met a dog I should say Bow wow If I met a cat I should say Mi-aow If I met a crocodile What should I say Why nothing at all I should just RUN AWAY KALI AND THE RAT SNAKE Kali walked slowly along the forest path on his way to school He wished it was a Sunday He wanted to go with his father to the forest and look for different kinds of snakes His father was a famous snake-charmer of the Irula tribe Kali had joined school two months ago Before that he was roaming around in the jungle free to do whatever he wanted Now he felt lonely at school because he did not have a single friend In fact when he introduced himself to his classmates on the first day of school everyone laughed at him For the first time in his life Kali did not feel proud of being an Irula He wished he could leave school But the teacher was very kind She praised Kali for any little work he did at school One day during an English class there was a big commotion One child was pointing a trembling finger at the roof saying Snake Kali looked up and saw a snake He understood that it was a rat snake and was harmless He also remembered his father s words Rat snakes come mistaking the smell of humans to be that of rats Suddenly the snake fell down in the middle of the room Everyone was very scared There were screams from all the children But Kali did not show any fear He quickly grabbed the snake with his hand behind the snake s headA loud cheer broke out Everyone started chanting Kali Kali Kali……… Kali looked up with surprise All the children started dragging Kali by the hand saying Kali you are brave You must sit next to me Kali had a big grin on his face tribe a group of people living together sharing the same language customs religion etc trembling shaking grin broad smile commotion noise confusion Poem MY PIG WON’T LET ME WATCH TV My pig won't let me watch TV It's totally unfair He watches anything he wants But doesn't even share I never get to watch cartoons Or anything like that He's busy watching farming shows I should have got a cat I should have got a goldfish Or a guinea pig or goat Instead I've got this pig Who's always hogging the remote Kenn Nesbittgoldfish a small reddish-golden fish found in ponds and an aquarium guinea pig a tailless South American rat-like animal hogging selfish not sharing with others remote a device that allows us to operate the television from a distance UNIT PROSE THE THREE FRIENDS WICKED CHINTOO There was a boy named Chintoo in a school He was very naughty He troubled everyone He would take his friends toys and break them Sometimes he would pinch his friends till they cried A boy named Robert joined Chintoo s school The very first day Chintoo stole Robert s pencil box and pinched him very hard One day all the students went on a picnic to a small forest They played different games and enjoyed themselves Chintoo was as usual troubling everyone All of a sudden he slipped and fell into a deep pit He could not get out He cried for help but no one heard him After a while Robert passed by and heard Chintoo s cries He called the others and helped Chintoo climb out Chintoo realized that even though he had always troubled others they did not mind helping him He thanked them all and became a good boy thereafter THE THREE FRIENDS Once upon a time there lived a peacock and a parrot in a forest They were good friends and liked each other very much The parrot liked the beautiful feathers of the peacock The peacock liked the parrot s green feathers and red beak There was a crow in that forest She was black So both the parrot and the peacock did not like her But the crow never felt sad She always considered them her friends One day the parrot laid some eggs in her nest She flew away looking for food A snake climbed up the tree to eat the eggs in the nest The crow saw the snake and attacked it The snake was frightened and it went away When the parrot returned to the nest she learnt how the crow had saved her eggs She thanked the crow Another day the peacock fell seriously ill He could not move even a little A wicked fox attacked the peacock The crow saw the fox She called the other crows for help Together all of them pecked at the fox and frightened it away The peacock thanked the crow for saving his life The parrot and the peacock realized that even though they had ignored the crow she had helped them All of them became friends and lived happily ever after admire respect very much consider think offrighten be afraid realize understand slowly incident event pecked prick with beak Poem NOBODY S FRIEND She had some sweets that she wouldn't share She had a book that she wouldn't lend She wouldn't let anyone play with her doll She s nobody s friend He had some toffee and ate every bit of it He had a bicycle he wouldn’t lend He never let any one play with his train He s nobody s friend But I'll share all of my sweets with you My ball and my books and games I will lend Here s half my apple and half my cake I m your friend Enid Blyton share give to others from our portion lend give to use sometime THE LION AND THE MOUSE A little mouse at play one day Did on a lion creep And tickling him as it ran off Disturbed him in his sleep The lion wakened seized the mouse And would have crushed it quite Had not the little mouse implored Forgive me Lord of might I did not mean to give offence Oh spare my life this day And I shall ever try my best Thy kindness to repay The lion laughed and set it free And went to look for prey But he got caught in a net And could not get away He tried in vain to free himself From man s ensnaring rope When to him came the little mouse And told him to have hope It slowly bit with its small teeth The ropes that made the net Till one by one the cords gave way And free the lion set This shows that we should not despise The humblest thing that lives The strongest at some time may need The help a poor man gives Adapted from Aesop s fables Edgar C Hay – Ellis UNIT PROSE MAGNIFICENT SUCCESS STORY OF MARY KOM Once an ant was pulling a sheaf of wheat to its home The grasshopper which was singing in the field looked at it and laughed It asked the ant You are so tiny Do you need so much food The ant stopped and said I cannot eat all of that now But I have to stock for the winter This will not be available then The grasshopper laughed again and said Aren't you a fool to struggle like this You can always go out and eat your food instead of keeping it in your house The ant thought the grasshopper would never understand and went on its way After some days the weather changed and it began to rain Soon it became very cold too and very few animals came out The ant was in its home warm and happy when it heard a knock on its door It peeped out of the window and saw the grasshopper shivering and standing near the door It asked what the grasshopper wanted The grasshopper said I'm very hungry Please give me something to eat The ant remembered the way the grasshopper had laughed at it and said All summer you sang now you go and dance I've nothing for you Magnificient Success Story of Mary Kom Mary Kom was born in in a poor family in Kangathei Manipur She is the first daughter of Shri M Tonpa Kom and Smt M Akham Kom They belong to Kangathei village a small village in Churachandpur district in Manipur Her parents Mangte Tonpa Kom and Mangte Akham Kom worked injhum fields Her family background speaks a lot of how Mary overcame hardship and inconveniences and created a name for herself in the arena of world boxing She completed her primary education from Loktak Christian Model High School Moirang till her class sixth standard at St Xavier School Moirang upto class She then moved to Adimjati High School Imphal for her schooling for class and but could not pass her examination She did not want to reappear for her exams so she quit her school and passed her examination from NIOS Imphal and graduation from Churachandpur College Being the eldest Mary helped her parents work in the fields cutting wood making charcoal and fishing On the other hand she also spent a good time looking after her two younger sisters and a brother Mary Kom was interested in sports since her childhood She took a keen interest in Athletics When she was in class in Loktak Christian Mission School Moirang and class in St Xavier School Moirang Mary thought that she would become a good athlete one day and carve a name for herself in the discipline But fate decided otherwise She took to sports in an effort to provide some financial support to her family I was initially an all round athlete and m and javelin were my pet events It was the success of Dingko Singh that inspired her to become a boxer The rise of Dingko Singh and the demonstration of women boxers at the National Games Manipur inspired her When Dingko Singh returned from Bangkok Asian Games with a gold I thought I should give it a try Dingko s success triggered a revolution of sort in Manipur and surprisingly I found that I was not the only girl who was drawn into boxing she has said Mary began boxing in and was a quick learner who preferred to be put through the same paces as the boys around her In just two weeks I had learnt all the basics I guess I had God-given talent for boxing Mary had tried to hide her interest in boxing from her family since it was not considered as a sport for them Her father scolded her when a photo of her winning the state boxing championship appeared in the newspaper This however did not deter her from pursuing a career in boxing Mary Kom decided to enter into the ring with determination and strong will To pursue her dream of becoming a world class pugilist she joined Sports Authority of India Khuman Lampak and underwent an intensive training from coach and mentor Shri Ibomcha Singh At a tender age of Mary made her debut at the first Women World Boxing Championship after just one year of starting to learn boxing which was held at Pennsylvania USA At her debut event itself she won a silver medal in the kg weight category A year later she went on to win the gold at the second Association Internationale de Boxe Amateur AIBA World Women s Senior Boxing Championship held at Antalya Turkey Mary Kom is a mother of twin sons In she came back from a two-year maternity break to clinched her fourth boxing gold in World Championships That instantly won her the name Magnificent Mary Mary Kom fought Asian champion Kim Myong Sim in the title bout at the Asian Cup women s boxing tournament in Haikou China little Khupneivar cheered for mummy from his hospital bed in Chandigarh Mary Kom s Quotes I do not only rely on my technique or strength but also on my mind To be a successful boxer one must also have a strong heart Some women are physically strong but fail when it comes to having a strong heart One also must have the zeal and the right fighting spirit says Mary Kom People used to say that boxing is for men and not for women and I thought I will show them some day I promised myself and I proved myself Likening her story to that of David facing Goliath Mary Kom says I always remember I am also so small and Manipur is very small but if I pray and if I do very hard work then I will win Mary Kom is a five-time successive World Boxing champion a biennial amateur boxing competition organised by the International Boxing Association AIBA She is the only woman boxer to have won a medal in each one of the six World Championships As of June she is ranked world no in the kg women s category by AIBA She has more than three Asian titles and eleven National titles under her belt She is a recipient of the Arjuna Award the Padma Shri Award the Rajiv Gandhi Khel Ratna Award and a special award from AIBA Mary Kom created history by becoming first person from north east to win bronze medal in Olympics Source Inspire Minds jhum process of growing crops by clearing land of vegetation and burning them for good soil arena stage or scene triggered caused revolution a sudden and extreme change pugilist boxer goliath A Bibical gaint inspiration stimulate Poem MUMMY S DARLING Sunday Morning Mummy yells Your room s so dirty Clean this mess Under my bed Was my wet swimsuit A half-eaten cake Smelly canvas shoes On the floor were Bubblegum wrappers Pencil sharpenings And potato wafers At last when I cleaned my room With dustcloth mop Dustpan and broom Dear Daddy smiled And Granny cooed Granpa hugged me Over the moon Mum calls me Mum calls me But when she calls me Her darling I like that BEST yells shouts mess untidy wafers chips over the moon very happy UNIT PROSE WHO S BLESSED Once upon a time all the trees in the forest started fighting among themselves The coconut tree said I am more important I give coconuts You can drink it eat it make oil and even a rope from it The Mango tree said I am more important I give delicious mangoes to eat and I also give shade The Neem tree said I am more important I give shade People make medicines with my leaves flowers and seeds I drive mosquitoes away The Gulmohar said I am no less I give shade and beauty My flowers are a beautiful orange colour No one could give a satisfactory answer So they all went to the Banyan tree You are the oldest and wisest of us all Tell us who is the most important The Banyan tree said All of you try to do everything Try to give flowers and fruits shade and medicine oil and wood and paper All the trees went back and tried hard But they could not do everything The Coconut tree could not give orange flowers or shade The Neem could not give mangoes The Gulmohar could not give coconuts or mangoes They all went to the Banyan tree again and said We cannot do everything The Banyan tree said Yes you are all different You do different things So you are all important WHO S BLESSED Once upon a time it was very cold in the high mountains in the north All the birds flew away to warm places They would come back in spring But there was a little bird with a broken wing She could not fly She looked around for a place to keep her warm Then she saw the trees in the forest She thought May be the trees will keep me warm through the winter So she went to the forest hopping with her broken wing The first tree she came across was a slim Birch tree Oh beautiful birch tree she said will you let me stay in your branches till spring comes Oh no said the birch tree I have to take care of my leaves through the winter Go away The little bird hopped with the broken wing and went to the next tree It was a big Oak tree Oh big Oak tree said the little bird Will you let me stay in your warm branches till spring comes Oh no sorry said the oak tree If you stay in my branches all winter you will be eating all my nuts Go away So the little bird hopped with the broken wing and went to the willow tree near the stream Oh lovely Willow tree said the bird will you let me stay in your branches all winter No sorry said the willow tree I don't speak to strangers Go away The poor little bird was very sad and did not know what to do and where to go with the broken wing Poem TREESNeem Peepal Banyan Coconut Mango Banana Tamarind Gulmohar Eucalyptus Ashoka Trees short trees tall Trees large trees small Trees are home for birds and bees Trees dance and sway in the breeze Trees lush trees bare Trees cool and clean the air Plant trees everywhere For trees are precious friends rare from Karadi rhymes lush growing thickly and strongly sway move from side to side precious very valuable TREE TALKI am a tree Fat and round I have lots of green leaves On my crown I have a trunk Tall and wide Here birds and squirrels Love to hide I give you flowers I give you wood I give you shade I give you food WORD LISTabsorb take in anonymous with a name that is not known or not made known aquarium a water-filled glass tank for keeping fish and other water creatures and plants aspect a particular part or feature of a matter assumed pretend to have or feel attack act harmfully upon someone or something begets leads to gives birth to berry a small round juicy fruit without a stone birch tree a slender tree with thin peeling bark blinking shutting and opening the eyes quickly bowing bending forward as a mark of respect to someone brunt the chief effect of something bad cannibal a person who eats the flesh of other human beings cartoons an animated film or set of humorous drawings chanting repeating a phrase or singing a phrase repeatedly cheer shout for joy or in praise or encouragement cheese food made from the pressed curds of milk cooed spoke very lovingly in a soft voice coral reef the place where coral is found coral a hard substance secreted by certain sea animals as an external skeleton used in jewellery cord thin string or rope made from several twisted strands courage the ability to do something that frightens one cowherd one who takes the cows for grazing creep move slowly and cautiously crown the top or highest part of something crushed press so as to squash or kill demon an evil spirit or devil despise hate dislike strongly disguised changed in appearance or nature so as to conceal the identity of display put on show in a noticeable and attractive way dolphin a small whale with a beak-like snout and a curved fin on the back drown ed die or kill through submersion in water duckling the young one of a duck dustpan steel or plastic pan used to collect dust from the floor ensnaring catching in or as in a trap fable a short story with a moral favourite the one liked more than all others of the same kind flamingo a wading bird with mainly pink or scarlet feathers and a long neck and legs glide move with a smooth quiet motion globe the earth gnaw bite at or nibble something continuously goldsmith a person who makes gold articles grab bed to take suddenly and roughly grunt of an animal make a low short sound habitat the natural home or environment of an animal or plant hazy vague or unclear honoured an award or title given as a reward for achievement hop of a bird or animal jump along with two or all feet at once hugged hold someone or something tightly in one s arms humblest of the lowest rank hymn a religious song of praise especially a Christian one ignore d fail to notice or consider something important implored beg earnestly or desperately incident an event a happeningjumbled mixed up jungle an area of thick tropical forest and tangled vegetation juniper an evergreen shrub or small tree with sweet-smelling berry-like cones King s court the residence ministers and household staff of a king kitten the young one of a cat kiwi a New Zealand bird with hair-like feathers and a long bill has no tail and cannot fly kneel sit or rest on a knee or the knees labour hard work lark a brown songbird that sings while flying leap jump high or a long way link join bring together Lord of might a very strong person maiden over an over in which no runs have been scored by the batsmen mason a builder and worker in stone maze a complicated network of paths through which one has to find a way microscopic so small in size that it has to be seen through a microscope mop a bundle of thick strings or a sponge or cloth attached to a handle used for wiping floors oak tree a large tree which produces acorns and a hard wood used for building and furniture obstacle a thing that blocks one s way or hinders progress offence a feeling of hurt or annoyance ostrich a large African bird with a long neck and long legs that runs fast but cannot fly over a sequence of six balls bowled by a bowler from one end of the pitch pane a single sheet of glass in a window or door patriotic strongly supporting one s country and being ready to defend it pattern a repeated decorative design penguin a black and white seabird of the southern hemisphere which cannot fly pet a bird or animal kept for companionship or pleasure pilot a person who operates the flying controls of an aircraft pine tree an evergreen coniferous tree having clusters of long needle-shaped leaves pounce move suddenly so as to catch or attack prey an animal hunted and killed by another for food principles rules or beliefs governing one s personal behavior proverbs a short saying stating a general truth or giving a piece of advice punctuality quality of keeping to the appointed time punctuation marks such as full stop comma etc used in writing in order to separate sentences and to make the meaning clear recite repeat a passage or a poem aloud from memory in front of an audience reflected of a mirror or shiny surface show an image of repay give back a loan riddle a cleverly worded question that is asked as a game roaming travel or move around without a purpose over a wide area sacrifice giving up something one loves for the sake of something that is more important sage a very wise man sailor a person who works as a member of the crew of a ship or boatscared afraid scatter throw in various random directions scream a loud piercing cry or shout expressing great emotion or pain sea anemone a sea creature with a tube-shaped body which bears a ring of stinging tentacles around the mouth seahorse a small sea fish with an upright posture and a head and neck like that of a horse seal a water-dwelling mammal with flippers and a streamlined body seize d take hold of suddenly and forcibly shallow not very deep having a very short distance between the top and the bottom shark a large sea fish with a triangular fin on its back shied unwilling or reluctant to do something shore the land along the edge of a sea lake etc simplicity quality of being simple humble skilled having special abilities or training spare stop from killing or harming spruce tree a widespread coniferous tree with a conical shape and hanging cones starfish a sea creature having a flattened body with five or more arms extending from a central point stroll ed walk in a leisurely way suitable right or appropriate for a particular person purpose or situation swing move back and forth or from side to side while hanging tailor a person whose occupation is making clothes for people thigh the part of the leg between the hip and the knee tickle d lightly touch in a way that causes twitching and often laughter tongue twister a sequence of words that is difficult to pronounce quickly trot move at a speed faster than a walk uncountable that which cannot be counted abstract unfair not showing fairness or justice untired wing wing which allows the bird to fly for a long time unusual not often done or occurring varied involving a number of different types vertebrate an animal having a backbone including mammals birds reptiles amphibians and fishes wakened get up from sleep warrior brave soldier or fighter wild boar a wild pig with tusks willow tree a tree which typically grows near water has narrow leaves and bunches of small flowers wiping cleaning or drying by rubbing with a cloth or one s hand wrappers outer covers of chocolates or biscuits wren a very small songbird with a cocked tail Let us listen Listen to the poem and repeat after your teacher I WANT TO FLY If I had a pair of wings with which to fly I’d soar straight away up into the sky I’d carry a brush and paints in colours bright So I could paint every fluffy cloud in sight I’d paint them purple and yellow and green They’d be the prettiest you’ve ever seen I’d paint rainbows in the sky every single day So I can watch them when I work and play And when the moon and stars come out at night Perhaps I’ll paint them too for my delight Let us read THE THREE BUTTERFLIES There were once three butterflies a pink one a red one and a yellow one They played in the sunshine and danced now on this flower now on that and never grew tired One day it started raining and they got wet So they flew over to a rose and said Good Rose please open your petals wide so that we may take shelter from the rain I’d be glad to shelter you pink butterfly said the rose for you look like me But I won’t shelter your two friends If you won’t shelter my friends you needn’t shelter me I’ll stay wet rather than desert them replied the pink butterfly Then they flew across to a sunflower and said Dear Sunflower open your petals wide so that we may take shelter from the rain I’d be glad to shelter you yellow butterfly replied the sunflower but not the other two If you won’t shelter my friends you needn’t shel ter me said the yellow butterfly I’ll stay wet rather than desert them And so they flew away together Now the sun who was hiding behind a cloud had heard everything He was happy to see the butterflies so united He quickly chased the clouds and the rain away He beamed down on the garden and dried the butterflies’ wings Now they could fly from flower to flower and dance as usual for the rest of the day New words and their meanings petals the colourful parts of a flower that are sometimes shaped like leaves shelter to provide a place where someone is safe rather prefer or wish to desert to leave someone without helping It takes a friend To pick you up when you fall It takes a good friend To pick you up and wipe away the tear It takes a best friend To laugh in your face Santhosh was a student of class His teacher gave him homework everyday Santhosh usually reached home at pm He would have his snacks and then do his homework One day Santhosh returned from school He was happy to see his cousin Sandhya She had come to play with him Santhosh played with Sandhya the whole evening He forgot to do his homework The next day his teacher asked him Why haven’t you done your homework Santhosh did not reply But suddenly he thought of an excuse and said I had fever madam The teacher thought it was true and excused him Now Santhosh felt very sad During the lunch break he sat alone under a tree He did not eat his food Suguna Santhosh’s sister was studying in the seventh standard in the same school She saw her brother sitting alone and came to him Why are you not eating You are looking dull What happened She asked Santhosh kept quiet for sometime and then started weeping Suguna waited for her brother to speak Slowly Santhosh started Yesterday I played with Sandhya and forgot to do my homework But I lied to my teacher Suguna listened to him patiently Then she said Don’t worry Get up Let us go to your teacher Admit your mistake before the teacher Both Santhosh and Suguna went to the teacher The teacher asked What do you want Suguna looked at Santhosh Tears rolled down his cheeks The teacher asked Santhosh What makes you weep Santhosh replied Madam I lied to you in the morning I was not sick I played the whole evening and I did not do my homework Please excuse me The teacher felt very happy She consoled him and said You have admitted your mistake and now You have told the truth Being truthful is always good All things bright and beautiful All creatures great and small All things wise and wonderful The Lord God made them all Each little flower that opens Each little bird that sings He made their glowing colours He made their tiny wings The purple-headed mountain The river running by The sunset and the morning That brightens up the sky The cold wind in the winter The pleasant summer sun The ripe fruits in the garden He made them every one He gave us eyes to see them And lips that we might tell How great is God Almighty Who has made all things well Let us listen and do Singing songs can make learning fun Say the rhyme after your teacher with actions THIS IS THE WAY This is the way I wash my hands Wash my hands wash my hands This is the way I wash my hands So early in the morning This is the way I wash my face Wash my face wash my face This is the way I wash my face So early in the morning This is the way I brush my teeth Brush my teeth brush my teeth This is the way I brush my teeth So early in the morning This is the way I comb my hair Comb my hair comb my hair This is the way I comb my hair So early in the morning CLEANLINESS IS NEXT TO GODLINESS Scene A classroom Characters A teacher and students Teacher enters the classroom Children Good morning Sir Teacher Very good morning sit down children Please answer your attendence Anusha Anusha Yes Sir Teacher Bharati Bharati Present Sir Teacher Chetan Mohsin He is absent Sir Teacher Do you know why he is absent Rakesh He is not well Sir He has malaria Teacher Oh How sad Teacher after marking the attendance starts the discussion These days many people suffer from malaria Rita What causes malaria Sir Teacher Mosquitoes cause malaria They also cause other diseases like dengue chickengunya Savita I have not heard of dengue what is it Sir Teacher Dengue fever is a disease caused by a virus carried by mosquitoes Savita How do I know I have dengue Teacher The symptoms are headache rashes and body pain Suresh Is it infectious Teacher No when a mosquito bites a person who has been infected with a dengue virus the mosquito can become a carrier of the virus If it bites someone else that person can be infected with dengue fever The virus can’t spread directly from person to person Suresh How can we avoid this Sir Teacher It’s easy keep your surroundings clean use an insect repellant cover sleep areas with netting avoid going outdoors at dusk and dawn when mosquitoes are most active Dirty water in the gutters and the ditches are the breeding places for mosquitoes Students We come to school and we don’t find time to clean them up Teacher You don’t have school on Sundays you can spare sometime on Sundays to clear them up Students Good idea Sir We will make sure that we keep our surroundings clean Teacher That’s good Remember Cleanliness is next to Godliness Students Cleanliness is next to Godliness THE CLOCK I’m in the clock crew and I’m okay I tick all night and I tick all day I’ve got two hands I’m having a ball Because I’ve got no arms at all My big hand can move sixty minutes in one hour I’m the one with the strength and power My small hand isn’t quite as fast If they were in a race it would come last It takes so long just to get around hours you know It’s careful small and slow Now meet my friends that help me tick-tock Half past quarter past quarter to and o’clock ANDROCLES AND THE LION Androcles was a poor slave One day he ran away from his cruel master He hid himself in a cave There was a lion in the cave He had a big thorn in his paw It gave him a lot of pain Androcles pulled the thorn out The lion licked his hands to thank him SAMEER’S FRIENDS The school bell rang All the children of class IV were waiting eagerly for the lunchbreak It was a hot sunny day and they were very tired and hungry after their sports activities After washing their hands they rushed to collect their lunch boxes And then they went to the playground for lunch They began to eat their food Suddenly Maya noticed Sameer sitting alone in a corner He was not eating his food So she went up to him and asked What happened Sameer Why are you not eating Sameer replied sadly I forgot to bring my lunch box Mamma packed it in the morning But I forgot to bring it to school Now I have nothing to eat and I am hungry Maya felt very bad for poor Sameer She announced to her friends loudly Listen friends Sameer did not bring his lunch box today What shall we do He is very hungry Shifa was the first one to answer Don’t worry Sameer can eat some of my food Soon Mohan joined her He said I will also share my food with Sameer Then Rayaan and Shreyas shouted together We will also share our lunch with Sameer Soon all the children came rushing to Sameer with their lunch boxes Everyone started to share their food with Sameer So Sameer had a lot of food with him now He was so pleased with his dear friends He had tears in his eyes He did not know how to thank them He only said I wish everyone had friends like you Thank you my dear Friends Fun Time Say who am I I have no legs But I can run I have no tongue But I tell everyone Time to start to work Time to go to bed Time to get up again You sleepy head HEAVEN ON EARTH Little drops of water Little grains of sand Make the mighty ocean And the pleasant land Little words of love And little deeds of kindness Make the Earth an Eden Like the heaven above THE WISE KING OF MEWAR Ranajith Singh was the King of Mewar He was brave as a lion and he was very kind to the poor One day he was strolling in his royal garden His minister and some attendants were with him Blowing breeze and the singing birds had made him happy All of a sudden a stone struck his forehead Everybody was stunned Some of the servants hurried in search of those who had thrown the stone Some men went to call the doctors But the King was calm He pressed the wound with his palm and tried to control the bleeding Then came an old man who looked very nervous He tore the cloth off his shoulder and tied it around the King’s forehead He then fell at the feet of the king and said weeping Oh king it is me who is responsible for hurting you I beg your pardon I did not do it on purpose I am ready to undergo any kind of punishment Why did you pelt the stone then asked the minister angrily The old man knelt before the king folded his palms and said Maharaja I was tired and hungry I wanted to have a mango and pelted the stone at the mango tree The king bent at him caught hold of his shoulders and lifted him up The king wiped off the tears of the old man with his shawl Then smiling at him said Don’t weep What you have done is not a crime to be punished He then ordered his cook to offer the hungry old man some food immediately The old man receiving the food bowed to the king and went his way The king said to his minister Don’t get angry about such petty incidents A tree bears the stroke and gives fruits stands in sun and gives us shade I being a man if I never give food to a hungry man shall be smaller than a tree The minister was ashamed and learnt a lesson Service to Mankind is Service to God Kindness anonymous It takes a big heart and a brave soul To drive someone’s troubles away Everyone promises to offer help tomorrow But very few can step forward to help today Those who dare to act right now rather than later Know the real meaning of kindness It is this urge of wanting to make a visible difference Is when kindliness actually becomes godliness A LETTER TO A DAUGHTER Introduction Harshini’s father works in Delhi and he writes letters to his daughter regularly Here is a letter Dear Harshini Hope you are fine and have got used to the hostel I hope you have read some more books during your holidays In my previous letter I had written to you about the story of Punyakoti Now I am going to write about of Ekalavya Ekalavya lived with his parents in a forest He used to hunt and fish for his living He had a great desire to learn archery but there was no one to teach him He had heard about the great teacher Dronacharya who lived in Hastinapura Ekalavya went to Dronacharya and requested him to teach him archery But Drona refused to take him as his student He said that he was paid only to teach the princes of Hastinapura Ekalavya was very disappointed But his desire for learning was very great So he thought of a plan He made a clay model of Dronacharya and made it for his real guru He prayed before the clay model and then started practising archery everyday He continued this for a long time with deep interest and great concentration Soon he mastered the skill and became an expert archer Harshini don’t you think Eklavya was great Remember where there is a will there is a way Now Harshini you have all the facilities to stay in comfort and learn and very good teachers to guide you Make the best use of these facilities and you will surely succeed Have a nice day and take care my dear Your loving Papa Basavaraj GIVE IT OUR ALL Anonymous Let’s never give in to complaints nor fear With our eyes on our goals the right direction we steer No matter the circumstances with great effort we should always try We must pick ourselves up when we get bruised and we cry Opportunities are plentiful let’s just open our eyes Our dreams we shall nurture as we stare to the skies The trick is to create value that’s honest and real By following our passions in our hearts we shall feel If we never hold back and just give it our all No challenge or obstacle shall ever be tall WHO’S THE BEST Once upon a time in a kingdom far away in Arabia there lived an old king He had a beautiful daughter called Jasmine The king and the princess were full of love for their people The king had no sons So he decided to give his kingdom to the person who would marry his daughter Many princes wanted to marry the princess But the king wanted a suitable match for his daughter and an able prince to protect his people So he decided to test them From among the princes who proposed he selected three namely Prince Faris Prince Anush and Prince Zeeshan He told them I shall give you all a month’s time Whoever brings the best gift for my daughter shall marry her But the gift should be good for my kingdom too All the three princes went their way to bring the best gift for Princess Jasmine After a month all the three returned to the king’s pal ace The king and the princess were curious to see the gifts Everyone was interested to know who their king would be Prince Faris stood up and showed diamonds and rubies He said I have brought these precious stones for princess Jasmine A king had them with him I fought with him killed him and brought these diamonds and rubies Next prince Anush got up and showed a gun He said I have brought a gun to protect ourselves from our enemies This gun can kill many people from a distance Now it was prince Zeeshan’s turn He had brought nothing He bowed to the king and said I could not bring anything for the princess as I was busy the whole month What made you so busy Asked the king The prince replied politely My Lord there is a village in our neighbouring kingdom Some thieves entered it and took away the cows and corn of the villagers I attacked the thieves and returned the cows and corn to the villagers Then I handed over the thieves to the king and requested him to protect his people The king said The first prince thinks only about wealth The second one wants to protect himself But the third one is brave and kind too He can protect my kingdom and people So he shall marry my daughter and rule my kingdom All the people in the palace were very happy with the king’s decision Long live the king Long live Prince Zeeshan they all cheered ANTS AND SPIDERS Cheryl Sandberg Behind the bush upon the mound ants are moving with no sound Leaves are passed along the chain ants as one a single brain Strands of silver make a net unseen web a silent threat Fly is caught it’s far too late spider comes to seal his fate Ants march on to feed the queen deep below she is unseen Workers feed the silent drones in their capsule breeding zones Spider shoots its web to reach across the ever widening breach Swinging on a single thread beyond the gap the web is spread KNOW YOUR NATION Teacher Tomorrow is August All of you should come early by am Let us celebrate the day by hoisting our National flag Ramya Teacher what is the importance of August Teacher A good question You have to know about August We Indians became free on th August Before that Indians were under British rule So Tilak Gokhale Bhagat Singh Gandhi Savarkar Nehru Bose Patel and others fought for many years to make India a free country Rahim Did they really have to fight Teacher Yes they fought for our independence and were sent to prison We must remember them always Deepika Teacher why do we hoist the flag Teacher Flag means the nation itself It represents our motherland As a mark of respect to the country we are born in we hoist the flag to show our gratitude Margaret Teacher our flag has three colours Saffron white and green Teacher Yes and do you know what these colours represent Saffron stands for sacrifice White for peace and green for prosperity Harsha Teacher and the white stripe has the chakra It is blue in colour Jayashree Teacher what does the chakra signify Teacher It is the Ashoka Chakra and it is the symbol of progress Abdul Other than a flag are there any other symbols for our country Teacher Yes our national animal is tiger Our national bird is peacock Our national flower is lotus Aparna Teacher our national anthem is Janaganamana and Gurudev Ravindranath Tagore wrote this Teacher Good Have you noticed our national emblem in our currency Jayashree No Teacher Teacher Takes out a hundred rupee note and shows the national emblem This is the Lion Capital with a Chakra flanked by a horse and a bull taken from the Sarnath pillar of Ashoka the Great Arjun Thank you Teacher I did not know these things From now on I’ll love and respect my motherland like my own mother Teacher Good We should not only respect our national symbols but also protect them from abuse Varsha I stand at attention whenever our National Anthem is being sung Teacher That’s fine Even though August is a holiday we can pay tribute to our country by taking an active part in national festivals Students We love our country We are proud to be Indians Teacher Now let us all say Jai Hind Students Jai Hind A NATION’S STRENGTH Ralph Waldo Emerson Not gold but only men can make A people great and strong Men who for truth and honour’s sake Stand fast and suffer long Brave men who work while others sleep Who dare while others fly They build a nation’s pillars deep And lift them to the sky Dr KOTNIS We all remember great men and women born in our country Very rarely are people remembered in other countries Here is a story of one great Indian who is remembered and respected in China for his service even today Dwarakanath Shantharam Kotnis was born on October in Solapur a Kannada speaking area in Maharashtra After his matriculation he wanted to become a doctor and serve people but his family was not in a position to bear the expenses for his medical education With a lot of hard work and help from others he was able to pursue his dreams His determination to study medicine and help the needy brought him success He studied Bachelor of Medicine at GS Medical College of the University of Mumbai There was a war between China and Japan in Many Chinese soldiers were injured China requested India to send doctors to treat the injured soldiers Dr Kotnis was one among the five Indian doctors who went to China Only Dr Kotnis remained there when the others returned to India He used an ambulance as a mobile clinic to treat the wounded soldiers There were times when he carried the wounded soldiers on his shoulders Once he happened to work for hours continuously without rest or sleep The hardships of military life and stress made him weak He died of epilepsy in at a very young age of His body was buried in the courtyard of Heroes The President of China mourned the death of Kotnis by observing that The army has lost a helping hand the nation has lost a friend Let us always bear in mind his international spirit Even today Dr Kotnis is revered by the Chinese In April on the occasion of the ‘Ancestors Commemoration Day’ flowers were sent to the statue of Dr Kotnis from all parts of China even by school children The story of his life was the subject of a Hindi film Dr Kotnis Ki Amar Kahani directed by V Shantharam who was a Kannadiga Any Chinese top level delegation to India never misses to honour the family of Dr Kotnis The gratitude of Chinese towards him is highly remarkable FOR ALL WE HAVE Roger J Robicheau A table with chairs that welcome sight Our family our friends pure delight A caring kiss with a gentle smile Each tender hug lasts that country mile The presence of love so fills the air This gift of God brings our hearts so near Reflections of past bring nurtured thought Great visions come by what life has taught In thankful ways we embrace this day And often think of loved ones away Those serving us proud are often gone But their spirit remains closely drawn Our Nation should praise each special one For all we have is through what they’ve done The freedom to have Thanks giving Day Keeps certain plates bare please truly pray THIMMAKKA Thimmakka was born in a very poor family in Hulikal village in Magadi taluk near Bengaluru and so she could not go to school Even today she does not know how to read or write When she grew up she married Chikkaiah who was a cowherd She herself began to work as a labourer Soon after their marriage Thimmakka learned that she would not be able to have a child She was very unhappy However with no children around she had a lot of free time So she decided to do something to keep herself busy She decided to grow something Thimmakka began to plant trees along the road connecting her village with the neighbouring village She had only one aim to create life She and her husband together planted saplings in the first year Next year they planted saplings and in the third year They continued planting more and more saplings year after year They also began spending a lot of time looking after the saplings just the way parents would look after their children Chikkaiah carried water in large pots for a distance of four kilometres to water the saplings Thimmakka carried one pail of water on her waist and another on her head for the same distance They planted the saplings mainly when the rains started and watered each new sapling twice a week for one full year By the end of the year the plants would take roots At times when one or two died Chikkaiah made sure that they planted fresh ones in their place The two of them together have planted trees already One day Thimmakka was shocked to learn that some of the villagers were planning to cut a few of her trees With the help of the local police she stopped them from cutting the trees This made news Many people read about Thimmakka’s efforts to grow plants Her love for plants earned her many awards Her hut looks like a gallery The walls of the hut display National Citizen’s Award of Indira Priyadarshini Vrikshamitra Award of Veera Chakra Prashasthi Award of a certificate of honour from the Women and Child Welfare Department of the Government of Karnataka and a certificate of appreciation from the Indian Institute of Wood Science and Technology Bengaluru Thimmakka has spent a major part of her life looking after trees and plants It is sad that she has noone to look after her in her old age TREES ARE A LOT LIKE US Michael Mitchell I’d like to take a walk in the woods Come with me do you think you could We’ll find a tree that we can climb We’ll have fun all afternoon Little trees need a chance to grow It takes time and care They’re a lot like us you know So many kinds of different trees They look like one big family Big ones short ones baby ones too I’ll name this one after you It’ll be a long time before he Is tall and strong like a grown up tree For now he’s just a kid like us Playing out in woods LET US LEARN SOMETHING NEW Beena and Zoheb are playing a game of word building Each one has to make a word beginning with the last letter of the word by another person Beena paper Zoheb read Beena daydream Zoheb What do you mean by daydream Beena Beena Hmmwhy don’t you look up in the dictionary and see it for yourself Zoheb But I don’t know how to look up in the dictionary will you help me Beena Sure look all the words in the dictionary are arranged in an alphabetical order that is from A to Z Zoheb Okay but there are many words that begin with the same letter How are they written Beena Yes let us take the examples dark dear and down All these words begin with the letter d In such a case we need to see the second letter of these words Then which word do you think will come first Zoheb dark because the second letter is a Beena That’s right Now what are the words that would follow Zoheb dear and then down e comes before o Beena Good Now how do you think words would be arranged if the first two letters are the same Zoheb Simple the third letter is also written in the same alphabetical order Beena Wonderful For example the words dear deer dentist and desk are in an alphabetical order The same order is followed for words having the same first three letters and so on Zoheb How about words like do and door which one comes first Beena do comes first because it does not have third letter So door comes next Zoheb EmmI understood how words are arranged in a dictionary Wait Let me tell you the meaning of daydream now Here it is it means dreaming of things when you are awake Beena Wow So you have learnt how to find the meanings of words in a dictionary Such words whose meanings are explained are called head words Daybreak do door dear deer are all called headwords And also remember one more thing The first headword on the left hand page is mentioned on the top left corner of the page And the last headword of the page is mentioned on the top right corner of the page Beena What is the headword on the top left corner of the page Zoheb paper Beena That’s right And what is the headword on the top right corner of the page Zoheb passer-by Beena Good Zoheb Oh Thank you so much for teaching me something new From now on I shall find out the meaning of all difficult words in the dictionary Beena You’re welcome CHIMPU MONKEY Chimpu was a clever little monkey He had lots of friends in the forest and they all loved him One day Jumbo the elephant went to meet Chimpu Chimpu look what I found in the forest A man’s coat I will give it to you as it will look good on you said Jumbo Chimpu took the coat and looked at it and said Hey It’s beautiful I will wear it at once Just then Perky Parrot flew to them and cried out Chimpu Chimpu Tiggy Tiger has chased a little monkey up a small tree And Tiggy and his friend Billu Bear are now waiting below the tree to catch him Poor little monkey Please save him Chimpu Chimpu was quiet for a while Then he quickly put on the coat jumped on to Jumbo’s back and said Perky you fly ahead and shout ‘A hunter is coming A hunter is coming’ I will take care of the rest Perky quickly flew to the tree and shouted A hunter is coming A hunter is coming Tiggy Tiger heard the cry Is Perky telling the truth He wondered and looked around Suddenly in the distance he saw someone wearing a coat and sitting on an elephant coming towards them Foolish Tiggy thought Chimpu dressed in a coat was a man a hunter He was terrified He shouted Billu Look A hunter Run And Tiggy Tiger and Billu Bear turned and ran for their lives When they were out of sight the little monkey got down from the tree He thanked Chimpu Perky and Jumbo for saving his life and ran to his mother who was in a nearby tree NITHIN’S TRICYCLE Nithin got a little tricycle as a gift on his birthday it was a cute little tricycle with three wheels It also had a horn which went Pom Pom Pom Nithin sat on it and cycled round and round the compound One day the cycle told Nithin Nithin I am tired of going round and round in the same place Let’s go to the main road and have a race with the cars and buses What are you saying cried Nithin shocked The big cars and buses will knock us down No I will ride only in the compound The little cycle got angry with Nithin and decided to go out of the compound alone The next day when Nithin was away at the play school the little cycle rolled out of compound It rolled on into a narrow lane feeling very happy Suddenly a big bicycle came from behind ringing its bell Tring Tring Who’s left this silly little tricycle in the middle of the road shouted the big fat man on the big bi cycle The little tricycle shook with anger Hmmmmph I am not a silly little tricycle I too have wheels and pedals and a beautiful seat it shouted after the man and rolled on After a while an autorikshaw came rattling along It stopped and said to the cycle Little one you should not roll about here It’s dangerous The little cycle was not ready to listen I too have three wheels Why should’nt I move around like you it asked and then rolled on and reached the main road What a sight it saw Cars and buses and lorries The road was full of them Wow It’s fun to roll on like this it cried At that moment a car came to a screeching halt behind the little tricycle Roll home before you get knocked down it told the tricycle and moved on The little tricycle got very angry It got on to the main road and started rolling with the other vehicles Just then two huge lorries came one in front of and one behind the little cycle I am finished they’ll crush me Cried the terrified little cycle closing its eyes tight The next moment the cycle felt itself being lifted and thrown away it fell upside down It opened its eyes to see what had happened The lorries had stopped and carefully pushed it to one side Both the lorries scolded the cycle and drove away The little cycle slowly turned right side up onto its wheels Its whole body was aching but it somehow slowly rolled back homewards The car on the road asked the little tricycle Are you tired of the road The little tricycle kept quiet Nithin was right it thought and decided never to roll out of the compound ever again THE TOOTH FAIRY Once there lived a little boy called Abdullah who loved to eat banana chips He was so fond of them that he could never have enough of them One night Abdullah was busy munching and crunching his chips when he suddenly heard a loud Carrack in his mouth One of his teeth had fallen off as he was biting the chips Abdullah remembered what his grandmother had once told him A tooth that has fallen has to be thrown over the roof He held the tooth in his hand and ran out of the house Go away go away big old tooth Come out come out tiny new tooth Go away go away dirty broken tooth Come out come out clean white tooth he sang and threw the tooth over the roof Then he went to his room and lay down to sleep As he fell asleep he had a dream A fairy whose head had the shape of a tooth stood before him Her hands were full of teeth of different shapes and sizes Which of these teeth do you want She asked Abdullah Abdullah chose a long pointed tooth like the ones tigers have Abdullah opened his mouth and stuck the long sharp tooth into his gum Then he tired to close his mouth But the tooth was so long that he could not close it Besides the sharp end was poking into his lip No I don’t like this sharp tooth he told the fairy Please let me choose another one The fairy held out her hand once again This time Abdullah chose a tooth that had the shape of a rabbit’s tooth Then he opened his mouth and stuck the bunny tooth into his gum But when he closed his mouth the tooth was sticking out All his friends teased him about it Abdullah got very angry He pulled out the tooth and gave it back to the fairy I don’t want this tooth either She smiled and showed him other teeth to choose from Suddenly Abdullah spotted a large tooth among them He picked it up opened his mouth and tired to fix the giant tooth in his gum But it was so big that he could not even push it in Hey This must be an elephant’s tooth he cried My dear fairy none of these teeth suit me please could you choose the right one for me He asked The fairy smiled and held out her hand This time there was just one small tooth in it Abdullah fixed it in his mouth and it fit him just right Abdullah was delighted It’s not as sharp as nails it doesn’t stick outside it isn’t too big it fits my mouth just right he cried He sang and jumped up and down with joy The fairy smiled and told him A tiger’s or rabbit’s or elephant’s tooth can never suit you dear Abdullah I have given you a tooth meant for humans Take good care of it Abdullah nodded his head and agreed to do as she said As the fairy slowly disappeared Abdullah woke up with a start It was morning He jumped up from his bed and looked into the mirror to see if the tooth that the fairy had given him was in his mouth Yes indeed In the place of the fallen tooth a tiny little tooth peeped out Abdullah remembered the fairy’s words and quickly went to the bathroom to brush his teeth OBEY YOUR PARENTS There lived a little fawn with his mother The fawn thought that he always had to go everywhere with his mother Now he was grown up He could go alone to places but his mother did not allow him The fawn found it very frustrating and decided to sneak off alone without informing anyone On a hot summer day when the fawn’s mother was asleep he slipped out from there He went to an open field and began to play hither and thither and found it very thrilling After some time he felt thirsty He went to a nearby stream to drink water After he had finished drinking water he saw a lion staring at him from the upper side of the stream The lion was licking his lips and planning to eat him The fawn was aghast to see a lion with red and burning eyes lolling his tongue with a clear intention to devour him He began trembling with fear He did not know what to do The lion called him and said You have spoilt the water You know I am drinking the water that has been made dirty by you The fawn started moving backward slowly and said Sir how can I spoil the water It is flowing from your side to wards me The lion did not know what new blame to put on him again Suddenly he heard a deer calling the fawn The fawn ran quickly to his mother Within a few seconds they were out of sight The lion was disappointed It is correctly said that children should obey their parents in order to avoid getting into difficulties After studying this lesson you identify the similarities and differences between human beings and animals external characteristics understand the relationship mutual dependance between human beings and animals In your previous class you have learnt about different animals You know that birds and insects are also animals Do you know that we human beings are also animals Observe the animals that you see around you Identify the similarities that you find between animals and yourself Sathish and Joseph are friends Sathish has come to Joseph’s house to meet him Here is a problem The dog is guarding Joseph’s house Help Sathish to reach Joseph’s house without being caught by the dog Draw a line like the face of eyes the place to stick the trunk an elephant on a thick card board or a sheet of paper as shown in the picture Let that mask be a little bigger than the dimension of your face Mark holes for the eyes as shown and cut it Draw the shape of ears on another card board or a sheet of paper as shown in the picture and cut it Paint the face and the ears Stick the ears to its place Take a long cardboard or a sheet of paper to prepare the trunk Paint this sheet Fold it in the middle Cut it and let one side be broader than the other Fold the paper from one side as shown in the picture Press the foldings for some time Stick the broad side of the paper to the part of the trunk Make small holes on both sides of the mask Tie a piece of thread joining both the sides Now the mask is ready Put it on your face and enjoy The tiger is the national animal of India Now-a-days the number of tigers is decreasing The project tiger a project of the Government of India is to preserve tigers The number of insects is very large in the animal kingdom A cheetah runs at km per hour The blue whale which is m long is the biggest animal in the animal kingdom Some animals like chameleon and leaf insects change their colour to suit their environment to protect themselves from enemies Children were standing in a corner in the village fair eating some sweet meat A few pieces of sweet meat fell on the ground Soon a few ants gathered around the pieces of sweet meat to eat Fathima Look here Radha how many ants have gathered around the pieces of sweet meat Radha Yes Fathima See how unitedly they are carrying their food Tejas Oh Look there How lovely the kittens are Fathima Oh How white they are The cat is licking the kitten with love Radha Animals also live together like human beings don’t they Tejas Yes my father told me that most of the animals live together Once When I had been to Nagarahole forest I saw a herd of deer and elephants also in groups I saw a tiger also But it was all alone Fathima Look at the dogs fighting for a piece of bread Radha Look at the sky The birds are flying together Tejas Yes Radha Look at the tree The monkey is sitting on a branch Fathima The baby monkey is holding on to the belly of its mother Radha Oh What if the baby monkey falls down Tejas No the baby monkey is holding its mother very firmly Radha Look there Tejas The hen is teaching its chicks how to search for food Fathima Look at the honey bee sucking nectar from a flower Radha Come let us talk to the honey bee Tejas Honey bee honey bee where is your hive Honey Bee Look there my hive is in that tree Tejas We see only the bees there Honey bee That is my family Fathima What You have such a big family Honey bee Yes there are thousands of bees in a family There is one queen bee and the rest are worker bees The worker bees do the works such as building the hive collecting food looking after the queen bee The work of the queen bee is only laying eggs Radha Oh Tejas Your hive looks very beautiful Honey bee We produce a sticky material called wax We build the hive with the wax We build it on the branches and in hollows of trees terrace of the big buildings Fathima Your food is the nectar of the flowers isn't it Honey bee Yes we store the nectar in the hive and eat it when we need food It is the honey Tejas I too like honey My grandmother told me that it has medicinal qualities Honey bee True Do you know that all the honey you eat is not pure People mix jaggery or sugar syrup to honey and sell it Fathima Then how do we find out whether the honey is pure or not Honey bee Do this Take a glass tumbler Put some water in it Add two or three drops of honey into the water If it mixes with water before it settles down it is not pure honey If it settles down and mixes with water very slowly then it is pure honey Now do you know which is pure honey Tejas Oh Honey bee Oh it’s getting late I have to collect the nectar I have to leave you children Radha All right honey bee Let us meet again Fathima Do you know I have seen small bees They build a hive in the space between the stones Observe the pictures The size of the bees and the type of the hives are not same Observe the different types of bees and hives around you Tejas I have seen the rearing of bees and collection of honey near Nagarahole forest Fathima Wooden honey boxes are kept in gardens People get the honey collected in it Tejas Yes I have seen such boxes in my uncle’s garden Radha A lot of honey is used at home I like honey very much Tejas and Fathima We like it too Radha My grandfather tells me that there are other products from the hive Bees are going in big big swarms from flower to flower here and there Collecting nectar Oh So sweet And then they return to their combs Bees Bees big and small How good they look in varieties though Producing lots of wax and honey Only for us not themselves Preserve the bees who produce honey Bees are our dear dear friends They provide honey for our health Its use is unlimited A honey bee collects nectar from to flowers in one round The only food that man eats produced by the insects is honey As the ants and white ants burrow the ground and allow the air to pass into the soil the plants grow luxuriantly Hives nests ant-hills termitaria and spiders' web are the wonderful constructions of the animal kingdom The ant which carries leaf on its back to protect itself from the sunlight is called umbrella antsauba ant know about trees that are near the house and in the forest know about the fruits available in the forest develop the attitude of not felling the trees as they are ours realize the necessity of growing trees Sita lives with her family on the outskirts of a forest Besides her family there are many of other families too Sita loves the forest and the trees in the forest Now she will introduce the forest where she lives Listen to her ¨Come I’ ll introduce my forest See here are teak sandal wood matti and honne trees They are surrounded by creepers with fragrant flowers Look at the monkeys swinging and snakes crawling on the trees Look at the herds of elephants and deer Trees provide shade for all Oh Sweet fruits Have you ever tasted these fruits Come taste these fruits How big and beautiful is my forest This is my sweet home In the previous class you have learnt about the Chipko Movement Do you know the reason for this movement In the western ghat region of our state the destruction of forests has increased due to paper industry plywood industry hydro-electric plant and construction of dams As a result of this the forests that existed for many generations were destroyed This affected the life of the people Angered by this people embraced the trees whenever someone came to cut down the trees and prevented the destruction of the forest Their desire for conserving the forest was successful The forest department accepted their demand for growing more trees and plants Cutting down trees and use of forest products were prohibited The slogan of Chipko Movement was 'Save forest Grow forest and Use forest Do it yourself First decide where to plant saplings and how many saplings are to be planted Whether to plant a sapling that gives fruits or flowers or shade Then get saplings from the nursery of the forest department or neighbours who have grown such saplings Otherwise with the help of your friends sow the seeds in the school backyard or near your house and allow them to grow Dig a pit so that the roots are covered and fill half of the pit with soil Pull out the sapling which is soaked with water from the ground or the plastic bag without damaging its roots Place the sapling in the pit and the fill the pit with soil Press the soil with your hands near the stem so that the sapling should stand straight and firm Make a bed around the sapling Later pour some water Put a small tree guard around it so that it is not eaten by goats and other animals Water the plant regularly Take the help of your family members and friends in growing the trees Sing and enjoy Trees add beauty to nature Lot of greenary and fruits they give Air Water Food and Energy This is what we get from trees Trees are nature's boon to us Sing and enjoy No land without forests No fruits without trees No fauna without fodder No life without these Do you know this Bomboo belongs to the grass family Some plants grow from the leaves For example Bryophyllum The seeds of mangrove plant which grow in the coastal region germinate on the plant itself Later on seedings fall on the ground and grow The plants such as pitcher plant Drosera and cobralily eat insects They are called insect eating insectivorous plants The seed of coco-de-mer is the largest seed in the world It weighs nearly kg Karnataka has National Parks Bird Sancturies and Wildlife sancturies Do it your self Take two coconut shells or small tin boxes Fill both of them with soil Put some ragi or paddy grains in one shell Don't put anything in the other shell Sprinkle some water on both the shells daily The ragi or paddy grains germinate with in a week After seedlings grow bigger invert both the shells Observe the soil of both the shells Roots bind the soil particles together like a web This supports the plant to stand straight on the ground Do it yourself Take some horsegram seeds and sow them in the garden of your school or house Saplings sprout after a few days Pull out two such plants gently without damaging roots Cut the roots of one plant Let the other plant be as it is Take two pots having wide mouths Make holes at the bottom of the pots so that the excess water can be drained out Fill both the pots with soil and place one plant in each pot Keep them in the sun light and pour sufficient water daily After or days observe changes in the plants Do it yourself Take a glass bottle or tumbler Fill it with water Add one or two drops of red ink or any other colour Pull out balsam plant from the soil gently without damaging its roots Wash the roots of the plant and put the plant in the coloured water Keep it in the sun light Observe the plant the next day Know this The roots absorb water and nutrients essential for the plants from the soil Water and nutrients reach the stem and leaves through the roots Root web conserves soil particles and water Roots fix the plants firmly to the soil Roots absorb water and nutrients from the soil and supply them to the other parts of the plants Do you know this There is a record that a farmer in Britain grew a carrot as long as feet in the year The root of a plant of grass family is km This is the distance from Bengaluru to Kalaburagi There are records that a banyan tree spread more than acres with the help of its proproots For example the big banyan tree in Bengaluru Some plants appu plants grow on trees The roots of these plants are green and open to air They absorb the moisture from the air The roots of some plants which grow in the places of scanty rainfall have the capacity to store water and provide to the plants when they need Certain tribal people use the water from the roots to drink There is a record of roots which store about kgs of water After studying this lesson you collect different kinds of flowers and discuss about their shape colour petals and fragrance identify the uses of flowers in daily life recognize flowers printed on different objects know the informal measurements used by florists and the cost of the flowers On a lovely morning many girls in the school had plaited their hair and wore jasmine flowers on their plaits Teacher Oh There is good fragrance in this room Haseena Sir some girls have jasmine flowers on their plaits Vijaya Yes now it is the season of Jasmine flowers isn't it Teacher In summer there is jasmine in rainy season there is dahlia and in winter there is chrysanthemum Thus there are different flowers in different seasons Teacher Come let’s go to the nearby garden and get introduced to a variety of flowers But nobody should pick flowers All of them went to the garden Haseena Oh So many flower blossoms The garden looks very beautiful There is also a sign board Don’t pick flowers Teacher Yes follow that instruction You also practise to grow flowers near your home and the school Nagaraja Look there are flowers even in that pond Teacher Children name flowers that grow in water Sing and enjoy I am in the garden used to worship God The garlands are fine used for decoration I am the food for honey bee Medicine for the diseases My fragrance is in the perfume My uses are plenty I am better than human beings Sing and enjoy Fragrant flowers Who needs Buy them Sure to be yours Moves the flower seller Singing from door to door Announcing her wares Marigolds fresh Lilies jasmine Yellow palmyra Twined together Like of yours Jasmine white Gold flower yellow Murugha fresh green All knit in garlands Come and buy And all for you Red roses Radiant lilies Blossomed lotuses Milk white lily Yellow as well All are yours Need varities of Fragrant flowers I have them So sings the florist Walks slowly In front of your houses Do you use flowers Do your family members use flowers Do you grow or buy the flowers used at home Girija Shahina’s father has a flower stall Vijaya Shahina from where do you get flowers Shahina My father buys flowers from the market All of us at home string them Teacher Shahina what’s the price of jasmine flower per kg How do you sell it after you string them Shahina Today’s price of jasmine flower is ` per kg We sell at ` for a cubit length Teacher Do you know about the cubit length and yard Fathima Yes one yard is equal to four cubit length Teacher These are units of informal measurement Use of these measurements is useful to the people who string flowers sellers and buyers of flowers Teacher Plant the saplings of flower plants in the yard of your house or grow them in pots Practise to use flowers Vijaya Sir Haseena’s dress has the design of so many flowers on it Teacher Yes you can see the designs of flowers on different things Flowers inspire the painters Observe the things around you Which things do you find having flower designs Do you know this The flower of Rafflesia plant is the largest flower Its circumference is meter and it weighs kg But its seed is as small as a poppy seed This flower has a very bad smell The flower of Wolffia a water plant of India is the smallest flower A number of Wolffia flowers can be placed on the tip of a needle Lantana flower is one among the world’s most beautiful flowers Not only perfume is extracted from rose but a sweet called gulkand is also prepared from it Karnataka is a prominent state in the field of floriculture According to a report of the country’s flowers are grown here The flowers of our country are exported to foreign countries also After studying this lesson you explain the water cycle measure the water used in daily life by using informal measurements classify the sources of water that are suitable for drinking make a list of problems caused due to shortage and wastage of water understand the importance of re-cycling of water and rain water harvesting Three parts of the earth is full of water The water evaporates due to heat of the sun The water vapour travels towards the sky It gets cooled and changes into water droplets The droplets of water together form clouds The clouds float so high in the sky Cold cold wind around the clouds The droplets of water become heavier And fall in the form of rain The rain water joins streams and ponds This water evaporates once again Singing this song observe the picture given on the next page Know this When the water boils it evaporates In the same way due to the sun’s heat water gets evaporated Know this Water is a liquid When it is boiled it becomes vapour This is the gaseous state of water This process of changing water from liquid state to gaseous state is called evaporation Know this Due to the heat of the sun water gets evaporated and rises up Due to the cool air water vapour turns into drops of water This process of changing water vapour into liquid state is called condensation Know this When the rain drops become too cold they fall on the earth in the form of small pieces of ice These are hailstones Know this Water is not only used for the daily activities of living beings but also it is very essential for agriculture industries water transportation construction of buildings and generation of hydro-electricity Know this Only this much of water is available for you Imagine that there are only spoons of water on the earth More than spoons of water is salty spoons of water is in the form of ice Less than spoon of water is available for our daily activities Know this The water that is used for washing utensils clothes and vegetables can be used again for watering plants This is called re-cycling of water By re-cycling of water we can save water Do you know this India has the richest water resource in the world The major portion of the fresh water available on the earth is ice Water in the air is in the vapour form Fish are reared to purify the water of reservoirs Water maintains the shapes of the body of plants and animals There is about of water in the body of human beings In other living beings the water is to In leaves water is more than We should drink at least liters of water everyday Mouseen Ram in Assam receives the highest rainfall in India Agumbe receives the highest rain fall in Karnataka After studying this lesson you know the reasons of water pollution and its evil effects make a list of diseases that spread through water know the reasons for dehydration and preparation of Oral Rehydration Solution Know this If the water is not pure and not fit for drinking it means that water is polluted The water may contain soil particles dirt and small insects that may be visible or not visible to our naked eyes Dirt that comes from washing of utensils and clothes pesticides and fertilizers industrial wastes make water polluted Then it becomes unfit for drinking This is called water pollution Know this Diseases like cholera are spread through water If not treated properly in time it can lead to death In the case of vomiting and diarrhoea the body loses the water content and the patient becomes tired This is called dehydration To avoid dehydration a mixture of salt sugar lemon juice boiled and cooled water should be given to the patient This is called rehydration Do you know this Most of the rivers in our state and country are polluted If we drink water containing fluorine mercury arsenic and lead it may cause deadly diseases In our state we have reports about the death of the aquatic animals mainly fish due to contamination of water 'Pollution Control Board' is a Government organization established to protect the quality of water The chemical chlorine is added to drinking water to purify it from germs and then is supplied to the houses in towns and cities The manure pits and soak pits should be at least meters away from the sources of water such as wells ponds Otherwise the water contaminating germs collected in these pits may be added to the sources of water and pollute them When we boil water all the bacteria will die It is good for health to boil and cool the water before drinking Desalting is the process of reducing the salt content of the sea water and use it for agriculture and house hold activities This is very costly In cities it has been made compulsory to collect rain water that falls on the roof-tops of the buildings to prevent scarcity of water Purifying and reusing of water once used in the industrial sector is in practice to minimise the scarcity of water After studying this lesson you explain balanced diet classify different nutrients practise the methods of preserving food items discuss the food habits of animals and birds and know how their beaks teeth and other parts are modified to suit their food habits It was Deepa’s birthday She likes carrot halwa very much Her mother had prepared carrot halwa for her birthday She ate well and slept well She had a dream What did she dream of Carrot Carrot Deepa I am a carrot You had enough of my halwa Now let me know what you eat regu larly Deepa I eat well different food items everyday I know how and from which food items are prepared Carrot All right make a list of all the food items that you know and eat Carrot Deepa do you know the food you eat contains the nutrients that give energy help to grow and protect health Deepa No I don’t know Carrot These nutrients are carbohydrates proteins lipids or fat mineral salts vitamins In which food items are these nutrients found Now know it from my friends I am ragi I have carbohydrates as the main nutrient I give energy to the body Pictures of my friends who have a lot of carbohydrates are given here Identity and name them Due to the shortage of carbohydrates one has to suffer from weakness Deepa look here I am cow beans I have a lot of protein I help in the growth of your body Carrot Deepalook here the butter It has high fat content Groundnut oil coconut oilsesame oil ghee also have high fat content Deepa What is the use of fat Carrot Even if we use a little fat it's enough Fat gives more energy than carbohydrates Deepa Does it Carrot Do you eat different vegetables fruits and salt Deepa Yes I do But I don’t like greens Carrot Look Deepa you have to eat all vegetables greens and fruits As they are rich in mineral salts and vitamins they protect you from diseases and keep you healthy Corrot Do you like to be a patient always Deepa No what should I eat to be healthy Carrot Besides all the food items mentioned beans radish leafy vegetables fruits with edible skin apple and guava and cereals They are rich in fibres and help in excretion Deepa Is it possible to eat all these food items at a time Carrot It is not so You should eat all these food items daily in the right proportion It provides the required amount of nutrients to the body The food which provides all the nutrients to our body in a required proportion is called balanced diet Besides you should drink to glasses of water daily Sing and enjoy Carbohydrates in cereals and sugarcane Fats in oil and ghee Proteins in grains and milk Vitamins in vegetables and fruits Every food has minerals To protect our body from diseases We require all these daily For they help us grow and be healthy Play the game Take empty chalk boxes Decorate them with colour papers and write the names of nutrients on them Take a drawing sheet make circles on it and cut them in circular shapes Write the name of food items or paste the pictures of food items With the help of the teacher put the circles having the name or pictures of food items in the respective boxes with the names of nutrients on them Call each one of your friends ask them to take each circle shaped paper read the name of food items and put it out side the box After this mix up of all the circles of paper keep them away from the boxes Again each of your friends should come and put the circle of papers in the respective nutrient box At the end count and identify which box contains more number of the circle shaped papers Deepa Oh It’s wonderful the way animals eat food Wait I feel hungry once again I'll come back after eating halwa Deepa enters the kitchen She sees the halwa being eaten by screams Carrot Why Deepa what happened Deepa Cockroaches are eating halwa Please drive them away I have to eat the halwa Carrot No Deepa Don't eat that halva Once the animals touch the food item it becomes contaminated We shouldn't eat such food Deepa What will happen if we eat Carrot Read this news item Children fall ill by eating contaminated food Children fall ill by eating the food exposed in a fair It is confirmed that contaminated food is the cause The children who ate the food which was contaminated by flies and cockroaches are suffering from vomiting and dysentry They are admitted to a hospital Four of them whose condition is very serious are shifted to the city hospital for further treatment Deepa Poor Children Carrot Come I’ll take you to a nearby fair Look at the shops where eatables are kept uncovered Deepa Those house flies are sitting on the rubbish They fly and sit on the sweets also Carrot If we eat such food we get diseases like cholera So we should always cover the food with plates to avoid insects sitting on them The vessels in which we store water for cooking and drinking should be covered Care should be taken to avoid pollution of water Hands should be washed before eating food Understand Deepa Yes I understand Carrot We shouldn’t eat stale food We should wash the vegetables and raw fruits before eating them Fruits should be cut to pieces just before eating Vegetables should not be over cooked Over cooking destroys the nutrients present in them Food if boiled well will be soft and it digests easily The germs present in them will also be killed Eat hot food Don’t eat oily fried and too spicy food Deepa Do you know I am following all these tips Carrot Then throw out the halwa eaten by cockroaches Deepa OK Deepa threw the halwa sobbing Deepa’s mother woke up Deepa who was sobbing in her dream Deepa woke up suddenly and asked her mother why she hadn’t covered the halwa with a lid Mother laughed and asked Deepa whether she had a dream Do you know this The sun rays help to produce vitamin D in our body Goitre is caused due to the deficiency of iodine Major food grains that we use are rice wheat jowar and ragi The food will be spoiled or become stale when germs enter it When we eat such food it causes diseases of the abdomen and the intestine Sometimes the diseases will be severe and cause death Food is preserved at home by drying salting fuming cooling boiling In the markets the food items are purified and preserved by different methods and then they are sold For example cool drinks bread fruit juice and jam After studying this lesson you explain from where and how we get food identify the circumstances of mass feeding Practise the orderliness that is followed during mass meals appreciate the food and cultural diversity know the food habits and cultural diversity of your district and of neighbouring districts I hope you have understood what I discussed with Deepa about food Have you ever thought where and how we get food from Observe the pictures given on the next two pages Stages of production of food are shown here Arrange them in the proper order Write the serial number to show the correct order Write a sentence for each picture in the space given Have you eaten food in a fair in a village festival an urs Come let us go to our village fair Look there people are moving together in a procession The beats of the drums are getting louder Tigermasked dancers and the keelu kudure are giving great entertainment to the people gathered there People of the village have prepared food for all those who presented cultural items in the fair There is mass feeding People co-operated for this arrangement They have given money grains fire wood They together have prepared the food There are different kinds of sweets Come let’s have food Some volunteers are removing the leaves after the meal and cleaning up the place of eating Let us join them The people who participated in the fair are going home happily They have the satisfaction of sharing work and eating together Know this The materials the vessels and water used to prepare food should be clean The persons who cook and serve food should be clean Their nails should be trimmed and hair should be covered with cloth The place of eating food should be free from dust germs and insects Pure water should be provided for drinking The place where the food is cooked should be clean and free from insects and animals The place where food is cooked should have proper ventilation and light Do you know that the people of different regions have different food habits For example in northern districts like Belagavi and Bidar most of the food is prepared from jowar Similarly in coastal districts like Mangaluru and Udupi cooking fish is special In the districts of the plain region like Mandya and Mysuru ragi and rice are mainly used as staple food Know this Food habit depends on the food items available in that place People follow different food habits according to the customs of their locality or family Do you know this A Python can survive without any food for a year The major part of the food you eat is used for keeping your body warm It is better to eat fruits before meals The nutrients present in the fruits will get digested well and enter the blood stream It is better to eat raw vegetables or half cooked vegetables If the vegetables are over cooked the nutrients present in them will be destroyed Radish was grown in Egypt in BC It is surprising that the colour of the radish was black We should eat food in a balanced way Over-eating causes ill health Vitamin B is abundant in the outer layer of the rice If rice is polished more it destroys vitamin B The nutrients that are present in an apple are equal to the nutrients present in two bananas or five gooseberries After studying this lesson you recognize the changes in the construction of houses from time to time identify the differences between the houses in the urban and the rural areas know about the multi-storeyed buildings and slums of urban areas find out the variety in habitats and shelters of animals identify the variety in the nests of birds and dwellings of animals and in the materials needed to build them You know about the need of a house the materials needed for its construction and the way of construction Let us know about the houses constructed in different parts of our state Education department had organized a camp at Dharwad Children from different parts of the state attended it They discussed the houses of their region Come let’s go there The children are sitting there They are speaking one after the other Let's also sit and listen to them I am Sangeetha I have come from Jevargi taluk Kalaburagi District It’s a hot place with scanty rainfall People build the houses using Shahabad stones or slabs of stone The roof is constructed with wooden planks Over it they put mud Some people place stone slabs on it I’m John I’m from Koppa of Chikkamagaluru district Rainfall is heavy in our place People build the walls with bricks or mud The roof is thatched with hay dry grass The roof is sloppy Every year they cover it with fresh hay Once in to years they change the entire hay roof Some people use hard red bricks to build walls and make the sloppy roof with tiles In places like Chikkamagaluru where there is heavy rain fall the roofs of the houses are sloppy Why I’m Haseena from Bengaluru Now-a-days people are constructing houses one above the other These are called multi-storeyed buildings Burnt bricks or bricks made of cement and steel rods are used for the construction Flooring is done with colourful tiles or marble There is a facility of staircases along with lifts To construct such multi-storeyed buildings huge machines such as crane and mixer are needed I’m Vivek I am also from Bengaluru My house is near a slum The houses there are very small They build the house with bricks dry leaves and tin sheets The roof is either thatched with dry leaves or covered with tin sheets A few people put tiled roofs As there is no drainage the waste water from washing the clothes bathing stagnates in front of the houses Therefore mosquito threat is common In a small area hundreds of houses are built close to one another Therefore there is no proper ventilation and lighting facility And also the people who stay there do not keep their surroundings clean They dump the waste materials everywhere and dunghills have been created there The housefly and other insects sit on the dunghills and spread diseases Now let’s listen to the story told by Venkajji Venkajji lived in a village for a long time and then came to her grandson's house which is in a multi storeyed building in Bengaluru She was surprised at that splendour She sat on the sofa and went back to the memories of her childhood days I was a small girl then I lived with my three sisters two brothers and parents in a thatched hut Our hut would leak when it rained During summer the leaves on the thatched roof would dry due to heat making holes in them One day our hut caught fire and was burnt down After that my parents decided to build a house My father taking the help of another person built the mud walls My father brought bamboos from the nearby forest I along with my mother brothers and sisters brought small bamboos We placed them on the mud walls and spread mud clay on them Later we went round the open field and collected cow dung My mother mixed it with water and plastered the floor and the walls with it We decorated the front of the house put rangoli and entered the house I grew and got married I came to my husband’s house That house was better than ours The walls were built with burnt bricks and they were white washed The Mangaluru tiles were used for roofing The flooring was done with black stone The doors were made of wood with beautiful carvings on it The broad windows allowed light and ventilation into the house Our neighbours also had constructed good houses similarly but they used slabs of stone for roofing Cement flooring had a smooth surface I did not have to smear the ground with cow dung or mud I had to cleanse the floor with water Venkajji who began to sip coffee given by her grandson remembered the house of her daughter It was a concrete house with marble flooring coloured walls a small garden around the house and a compound Her house with all these facilities was really beautiful Venkkajji is now looking at the apartment of her grandsonstoreyed building with more than houses There is a lift service to reach houses on the top floors Certain machines were used to construct these houses There are three bed rooms dining room and a living room of this house Every thing is really fine Still houses are constructed like match boxes arranged closely There is some problem of ventilation and light Wardrobes are constructed to arrange the household articles in an orderly fashion Doors and windows are not of wood They are made of steel or plastic Venkkajji was surprised to observe the changes in the construction of houses from the huts to multi-storeyed buildings Do you know this Burj Khalipha in Dubai is the tallest building in the world Its height is meters feet Dharavi of Mumbai is the largest slum in India More than lakh people live there It is also called the largest slum area of Asia Now a days some projects have been implemented to construct eco-friendly houses by using the materials in a limited way People are interested in constructing houses by adapting solar heater to heat water rain water harvesting and management of garbage in the house itself There are records about the anthill which spreads for more than acres They are called great nests Lakhs of ants live in them After studying this lesson you distinguish between the rural wastes and urban wastes understand the proper methods of disposal of waste practise the habits of reducing waste They are municipality workers They have come with vehicles to collect waste from these dust bins They remove the wastes from the dust bins and keep the place clean and tidy They carry the wastes to the outskirts of the locality and dispose them there See the board with instruction showing the types of wastes to be thrown in the dust bins Dry waste Plastics glass pieces of metal rags and rubber Give them to rag pickers Wet waste Left over food kitchen waste decaying food items meat vegetable wastes dry leaves pieces of paper Convert them into manure Hazardous waste Paints insecticides poisonous chemicals broken tube lights used batteries expired medicines Keep them in bags and put them in the municipality bins for proper disposal Polluted waste Used bandages infected cotton drips syringes and used needles Keep them in bags and put them in the municipality bins for proper disposal Know this One should minimize one's requirements It reduces waste Many used things can be reused This is reusing Decaying wastes can be converted into compost that can be used to grow plants New things can be prepared from used plastic sheets glass and paper This is called recycling Used water can be used to water plants or drained into the soak pit Do you know We can convert and use about percent of the total solid wastes generated in our country into manure New materials are made by recycling glass metal and plastic materials Packing of some products costs more than the products themselves Every year innumerable number of sea animals die due to plastic wastes If cotton cloth takes one month to decay nylon cloth takes years to decay After studying this lesson you locate direction by using local symbols learn the basic skills of drawing maps and draw map using different symbols to locate the places Yasmin of standard has learnt to draw a simple map of her class room Listen to her Yasmin My teacher asked me to measure the length and breadth of my class room with my foot steps When I did so I found that the length of the room is twelve foot steps and breadth of the room is ten footsteps My teacher told me that my two foot steps are equal to one meter The foot steps differs from person to person Someone’s one foot step may be th meter Know the length of your foot step Measure your room by placing your foot steps and record it I'll tell you how to draw the same on a sheet of paper Let us imagine that the length of the room you measured is foot steps and breadth is foot steps So if your two foot steps are equal to metre feet metre feet metre That means the length of the room metres The breadth of the room metres If we convert one metre into one centimeter on a scale metre cm metre cm Sk h this measurement of cm on a sheet of paper This is the outline map of your class room Know this Large area can be represented on a map The squares in the maps are helpful to find out the exact location of the things ffice In the centre of the main road there is the Gandhi Circle If you go towards its east on the right side you will see a hotel Next to this there is a hostel then a post office and a school Next to the school is the taluk office It is situated about twenty meters away from the school I have measured the distance by my foot steps Anwar has drawn a simple map of the area from Gandhi Circle to the taluk office with the help of directions and land marks Do you know this All the maps have centimeters or inches as the units of measurement World map is the map of the earth One can easily understand the physical features land routes and populated areas with the help of the map Longitudes and latitudes the imaginary lines help to form the grid on the map There are different types of maps For example physical map soil map weather map train route map It is believed that the Egyptian kings used to draw maps to know the regions of their rule and the Greeks drew the map of the earth in BC After studying this lesson you know the main functions of the human body and the main organs responsible for these functions develop the habits of cleanliness to keep these organs healthy know healthy habits These organs are situated outside the body and we can see them There are many organs inside our body We cannot see them Let us learn about them You cannot see the muscles and bones of our body which are covered by the skin The skin protects our body Bones and muscles together give shape and structure to our body There are differences between the shape and structure of your body and the shape and structure of the bodies of your friends Observe them The important functions of our body such as respiration digestion blood circulation and excretion keep our body strong and healthy Learn about the inner organs of the body and their functions Respiration You know that you take in air through the nose Our body needs oxygen that is in the air When we breathe the lungs absorb the oxygen from the air The carbon dioxide which is not needed to our body goes out with the air through the wind pipe and the nose The process of taking in oxygen and giving out carbon dioxide is called respiration Know this Clean your nose regularly when you take bath Do not cover your face while sleeping When you are moving in the place of dust take care to avoid dust entering your nose Do not be in a hurry while eating food and drinking water Do not expose yourself to smoke If you breathe smoke it causes problems related to lungs At least once in a day sit straight and take deep breaths for ten times Practise it daily Do not put things such as stick pen piece of chalk into your nose Do not breathe through the mouth Cover your mouth with a handkerchief while coughing or sneezing The germs can be avoided from entering the air if you are suffering from cold and cough This avoids the spreading of cold and cough to others Do you know that the blood circulates in all parts of the body The main organ of the body which pumps blood to all parts of the body is called the heart You have already learnt about the lungs The heart is located between the lungs slightly towards the left It is protected by the chest cavity Have you seen lifting water from a well through pipes with the help of a pump In the same way heart pumps blood to all parts of the body through blood vessels The blood circulates to all parts of the body It gets impure by receiving carbon dioxide from all parts of the body This impure blood enters the heart through blood vessels From the heart this impure blood reaches the lungs In the lungs it gives up carbon dioxide and receives oxygen and becomes pure The pure blood reaches the heart once again through the blood vessels The pure blood which has oxygen reaches all parts of the body through blood vessels This is blood circulation For proper blood circulation in your body eat vegetables and fruits regularly Do exercises daily Teeth in the mouth chew the food items into small particles The chewed food reaches the stomach through the food pipe Food in the stomach gets digested to some extent It remains here for about three to four hours Then this food reaches the small intestine and gets digested further The digested food reaches blood through small intestine and reaches all parts of the body The undigested food reaches large intestine and moves out of the body through anus in the form of faeces The process by which the food gets digested and reaches the blood is called digestion Know this Good food habits Wash your hands before and after taking food Eat fibrous food such as beans radish Eat fresh and healthy food Clean your mouth teeth and tongue after eating food Chew the food slowly and properly It is better to eat once in four hours Excretion Waste is produced due to the household activities We throw out this waste every day In the same way so many materials which are not required for the body are produced in our body due to the biological processes like digestion These are wastes If these wastes remain in the body they may cause some diseases You know that the body removes these wastes through skin and lungs These are excretory organs A pair of kidneys is situated on either side of the backbone The blood gets filtered here Impurities present in the blood are separated here This waste reaches the urinary bladder through urinary canal Then it passes out of the body through urethra in the form of urine Know this Pass urine regularly Take bath everyday and wear clean clothes Wash your face hands and legs often It helps to remove the wastes which are collected through sweat This cleans the skin and opens the sweat pores Drink litres of clean water everyday It helps to remove wastes from the body through sweat and urine You have learnt that our body is like a wonderful machine that performs respiration blood circulation digestion and excretion Know about the steps to be taken for the proper functioning of your body Know this Practise to eat and excrete regularly Play games do exercises and walk daily Eat healthy food Do not over eat fried food items and sweets Take bath daily and keep your body clean Wear washed clothes daily Do you know this There are bones and more than joints in our body Even if your height is three feet your digestive organs will be feet long They are in the form of coiled tubes Our heart beats about seventy times per minute and one lakh times per day Three litres of air is filled in the lungs Human body contains about litres of blood Blood will be produced again after donating the blood It needs to weeks Sir Who is standing in the middle of the road Why is he standing there He is a traffic policeman It is a place where four roads meet That is the circle Controlling the movement of people and vehicles is his duty So many vehicles are moving How shall we cross the road We should cross the road at Zebra crossing Sir what is the zebra crossing Where is it Children see there There are white stripes in the middle of the road It looks like the stripes on a zebra So it is called zebra crossing and pedestrians people who walk on foot should cross the road only at the zebra crossings Sir red light is on there All the vehicles halt Why That is the signal light Generally we find it in circles where roads meet These lights give specific instructions to the movement of vehicles The red light indicates stop yellow light indicates get ready and green light indicates move There are red green and yellow lights in the signal light Why Sir red light is on Vehicles are not moving Shall we cross the road through zebra crossing Stop we should not cross the road when the red light is on Another signal light is there for pedestrians to cross the road Look there the green light is on Now we can cross the road on zebra crossing Sir Why do we need signal lights Traffic lights are there in circles to avoid accidents between the vehicles or between the vehicles and pedestrians and for the safe movement of vehicles and people Know this We will be safe if we follow the traffic rules Accidents can be avoided by following the traffic rules Do you know this Bus day has been celebrated in Bengaluru to avoid traffic jams to save fuel and to avoid air pollution On that day many people having own vehicles travel by bus Transport department celebrates Road Safety week in January every year In cities transport department gives training to school students on traffic rules When road accidents happen free ambulance vehicle bearing No has been provided in our state for taking the affected to hospitals for emergency treatment After studying this lesson you recognize the use of animals as mode of transport behave sensitively about animals recognize the changing mode of transport over the years Know this We should have sensitivity and love towards the animals which are used for transport Know this Look at the pictures given below and read the information A means of communication through writing that can be sent with the help of post office An instrument through which we can directly speak to the other person at a distance A means of communication which publishes news from different parts of the country and the world everyday An attractive means of communication in which regional national and cultural programmes are telecast A means of communication in which regional national and international news can be heard A wonderful means of communication used to get and send any information of the world with in a very short time Know this Who discovered what Wright brothersaeroplane Grahm Belltelephone Charles Babagecomputer John Biardtelevision Marconi radio Do you know this The train is the major mode of transport in India The first train in India ran in from Bombay to Thane about km The camel's body structure is suitable for walking in deserts It is used for transport in desert areas So it is called the ship of the desert Submarine travels in the deep sea Spacecrafts are used to study the things beyond the earth Paper published everydaydaily news paper Paper published once in a weekweekly news paper Magazine published once in fifteen daysfortnightly magazine Magazine published once in a monthmonthly magazine The first animal which was used for transportation was a dog Some of the fast moving trains in the world can travel at more than km per hour These trains can cover the distance between Bengaluru and Hubballi in an hour After studying this lesson you recognize the changes that have taken place in the family system over the years record the changes in a simple family tree Know this Some of the members of the family shift to other places due to some reasons and new members join the family Do you know this People of generations are residing in a family in the village of Lokuru km away from Dharawada Now there are members in this big family In Krishnamurthy’s family which is recognized as MM industry family there are members and are residing at Bengaluru Because of misunderstanding non-cooperation inequality in work distribution new requirements big families changed into small families Family tree or information of generations is used for some rituals and economic transactions After studying this lesson you know that the family is a small unit which has its own religion values and cultural practices observe the changes that have taken place in the society due to the change of values in families Pavithra My father does Pooja every morning We eat together at night My father always brings the same type of books and pens for me and my brother He tells us to respect everyone and to help those who are weak He distributes sweets to the children on festivals We attend our village fair every year Raziya Friday is a holy day for us On that day my mother and I do Namaz at home My father and brother go to the mosque to participate in the Namaz We help the poor on the festival of Ramzan My grandmother tells us to treat and respect everybody equally My mother teaches me Arabic whenever she is free John Sunday is a holy day for us On that day all the members of our family go to chruch and offer prayers It is a holiday for mother and father We eat food together My mother decorates the house reads the Bible and tells stories whenever she is free My father says that we should not quarrel with each other and should treat everyone as a friend Know this People of different religions have their own religious celebrations But every religion stresses the importance of good behavior like respecting elders helping the poor showing love and affection to all and being friendly with all Know this A family is a small unit having its own religion values and cultural practices Know this There will be many changes in the society as the values of the family changeFor exampleWomen are working in all fields of life Child marriage has been reducedEducation has guaranteed the fundamental right of every child Know this Story of two children Chandranna lost his way while coming from his village He was tired He wanted to take rest He saw a house there and went near it There was a boy at the door and he shouted Catch him rob the valuables from him Chandranna being afraid started running and came near another house at the end of the road A boy who was standing at the door saw Chandranna and said Please come in shall I give you a glass of water Chandranna drank water and left the house thinking about the different behaviours of the boys Do you know this Jains are the strict followers of non-violence Ahimsa We can see that in their food habit also They eat vegetarian food only They do not eat roots because the plant will die if the roots are separated Major General Cariyappa of Kodagu was the first chief of Armed forces of free India He was the first person to attain this highest position among the two Indians He learnt values like discipline courage dedication from the family especially from his father in his childhood It helped him to attain good position in his life Mr BGL Swamy son of the famous poet DV Gundappa DVG was a famous botanist Influence of his father’s literary skill can be seen in his famous book Hasiru Honnu It is one of the important reference books for botany Students After studying this leeson you recognize the good qualities and skills of family members and friends recognize that each one is unique learn the methods of communication of children with special needs and respond with sensitivity to them 'Prathibha Karanji' is going to be held in Latha’s school next week Teachers decided to conduct various competitions for the students on that day List of the competitions was displayed on the notice board After the school hours Latha and her friends started discussing about their participation in the competitions Latha Raju you draw pictures well register your name for drawing competition Raju Latha you have a melodious voice Why don’t you participate in the singing competition Mohammed Rita you make clay models You are the best person to participate in that competition Rita Mohammed acts excellently Latha why can’t he participate in the drama competition They discussed among themselves and decided about the participation in the competition Know this Dr Rajkumar Dr Rajakumar became very famous in the Kannada film industry with his acting and singing skills He is the first Kannadiga who got 'Dadasaheb Phalke Award' He acted in more than films Acting was a gift from his father He acted in the plays at the age of as a child actor Kuppali Venkatappa Puttappa Kuvempu Kuvenpu who was born at Kuppali is famous as a national poet He wrote our Nadageethe Jaya Bharatha Jananiya Tanujathe which we sing everyday in our schools He is the first Kannada poet to get the Jnanapeeta Award for his writing He wrote Kindar Jogi Nanna Gopala Amalana Kathe for children Kuvempu who is famous in the literary field started reading and writing stories poems and books in his childhood Kuvempu became a great poet by the encouragement of many people Kittur Rani Chennamma Chennamma was born in a small village called Kakathi in Belagavi district She was a brave girl She learnt horse-riding sword fighting and archery in her childhood She learnt the skills of warfare in her childhood Then she got married to Mallasarja Desai of Kitturu and became the queen of Kittur After the death of Mallasarja she fought bravely against the British and she has been called a brave woman Gangubai Hanagal Gangubai who was born in Dharawada is very famous in India for her singing When she was years old her parents recognized her interest in music and admitted her to a music school After learning both Hindustani and Karnatic music she gave many music concerts in many places of India She got many awards She gave many music concerts over the radio She is very famous in Hindustani music Know this Thomas Alva Edison Edison was very poor in mathematics in his childhood He could not pronounce words properly He attended school only for three months He had a severe fever and his hearing was affected He became deaf He had to leave school Mother took extra care of him and gave him education at home He grew into a famous scientist and invented many things Electric bulb which glows in our houses is one of his important inventions Know this Visually challenged people use Braille script The people having disorder of speech and hearing use sign language to communicate with other people They are very much like us They are ours They need special education We should treat them as our equals Do you know this Sir M Vishweshwarayya became a great engineer by adopting skills and values from childhood He built many dams industries and roads which are helpful to thousands of people Government of India awarded him the highest civilian award Bharatha Rathna in Mother Teresa dedicated her whole life to the service of the sick the weak and the orphans She got Nobel Prize for her service to man kind Kannada actor TN Balakrishna was deaf but his acting was amazing After studying this lesson you recognize the different artisans of your locality and other places recognize the problems of working children It is Somu’s house There are many articles which are used in this house everyday What are they made of Who make them Know from the elders and give the answer Ramanahalli is a small village The different kinds of occupation of the people of that village are shown in the picture Which occupation do these people follow Write in the space given I don’t have a table to keep the plate of sweets If you bring a table I'll give you sweets Please give me a table for the sweet seller I don’t have a saw to cut the wood If you bring a saw I'll give you the table Please give me a saw to cut the wood I don’t have a pot to keep water to make the heated iron cool Go and bring a pot Please give me a pot brother It is not possible for me to temper the clay If you help me to temper the clay I'll give you the pot Brother it is very pungent please give me some sweet Even if we get ready-made garments from the garment shops many people work to get them prepared Other than elders many children are engaged in many occupations You have learnt in the previous class about the problems faced by the working children Do you know this There are many artisans who prepare the articles from our daily needs to the preparation of decorative things of the house Handicraft is also one among these occupations Karnataka is famous for carvings on sandal wood among its handicrafts Channapatna in Ramanagara district is famous for dolls and toys carved out of wood Engaging the children below the age of in work is a punishable offence It is the responsibility of all to make the children of this age to get compulsory education The Government of Karnataka has established residential schools and rehabilitation centres in every district for the education and development of the working children aged betweenyears participate in the school functions and national festivals recognize the importance of national festivals identify national symbols and respect them A small crane which was flying in the sky with its mother saw the celebration in a school ground Amma What is going on there What are the children doing Today is August India got its independence on this day In its memory they are celebrating Independence day It is our national festival What is a national festival A country is also called a nation People of the country celebrate certain days which have national importance as festivals They are celebrated every where in the country They are called the national festivals Know this Generally we use the words nation and country interchangeably but a country has a specific geographic area and comes under a specific administration A Country having the people of the same history culture desire and feeling of oneness is a nation No dear child We have other national festivals also In Karnataka we celebrate Kannada Rajyothsava on November st On that day our state Karnataka was formed People of Karnataka celebrate it with pleasure Know this People celebrate the festivals which come from tradition that promote cultural oneness as state festival In Karnataka we celebrate Dasara as state festival Now our national flag has been hoisted and the National Anthem is being sung So they are standing straight and showing respect That is our national flag Jana gana mana Adhinayaka Jayahe Amma look down Why are the children standing like that Amma look at that flag flying Child you have understood our national flag and national anthem Look at the pillar there See the four lions on it It is our national emblem It is also called Simha Bhodige There are actually four lions They are standing back to back So the fourth lion is hidden We cannot see it Below the lion there is a horse a wheel and a bull Sathya Meva Jayathe is written below them It appears that there are three lions standing on the pillar I keep the prizes ready for the winners in the competitions I dance with my friends I speak about Nehru I decorate the photo with flowers I decorate the hall Students of standard were brimming with joy They were waiting for the teacher The teacher told them that she would take them to the ground to play khokho The teacher took them to the field and showed the khokho field The children went round the khokho field Teacher formed two teams of members each One is the running team and the other is the chasing or touching team Teacher explained to them the rules of the game and how it has to be played Know this Rules KhoKho match has two innings Each inning has running and touching rounds Each round will be of seven minute duration A KhoKho team consists of players Out of them are players and are extra players The students began to play with the guidance of the teacher As the group games cultivate co-operation mutual understanding team spirit obedience to rules friendship determination to reach the goal they develop socialrelations and harmony We get entertainment by playing games In the same way circus and fairs also provide us entertainment Know this The number of famous circus companies have been decreasing The main reasons are The animal welfare organizations protest against the use of animals in the circus for entertainment and the training given to the animals by using violence People have lost interest in circus as they are easily getting entertainment from TV computer and mobile Lack of skilled artistes and the encouragement to their art Maintenance of required facilities to the artistes of the circus is very expensive Do you know this Prakash Padukone is the youngest badmiton player to win the National championship Famous KhoKho player Usha Anantharaman of Karnataka is the first player to win the Rani Lakshmibai Award Youth services and sports department has been managing many sports schools and sports hostels all over the state In the year a fire accident took place at Venus Circus at Bengaluru people were burnt to death and people were wounded in this fire accident Exhibition of animals and their astonishing feats were of great attraction in the olden days But efforts have been going on to ban the use of animals in circus as violent methods are used to train the animals With the help of science and technologies man has learnt to use many natural resources For example machines vessels metals used to construct a house Use of petrol or diesel in tractors lorries buses water pumps manufacture of paper by using the wood pulp With this by using their creativity they learn to prepare different kinds of machinery clothes vessels paper and different kinds of products In this way people are changing their life to be easy by using natural resources and their creativity Do you know this It is said that Charles Babbage a British Mathematician made the first computer in So many people called him The Father of Computer Metals are hard and glittering We can give different shapes to them It is very easy to clean them It is not an exaggeration to say that there is no work without metals It is said that the Statue of Liberty in America is made of kg of copper The use of mud pots for cooking has been decreasing By using the creativity flower pots flower vases are prepared and used to decorate the houses Many improvements have taken place in the methods of pot making also After studying this lesson you discuss the variety in dress colours used in the manufacture of clothes and designs know the different types of dresses and clothes used in different districts collect the pieces of cloth and prepare the models of dress Food for satisfying hunger Tent for protection Dress protects our body Light clothes for summer Water proof clothes for rainy season Woollen clothes for winter season Variety of dresses of different colours Colourful dress of different yarns Dress is essential for every one You know that dress is essential for us Prepare colours by using easily available things such as leaves vegetables flowers nuts hibiscus leaf flower beetroot turmeric Colour a white piece of cloth You may use the pieces of lady's finger radish for design Tightly wrap a coin in a piece of cloth and dip it in coloured water Open it after it gets dried and observe Put four to five colours into water and dip a piece of white cloth or a piece of paper in it and immediately remove it Carefully hang it and observe after it gets dried Make impressions on a white paper dipping your thumb in different colours Take cotton bulbs dip them in different colours and make different picture patterns Do you know this In the beginning clothes were made of hide wool leaves and grass There are different yarns from plant yarns to silk and nylon yarns From these yarns different types of clothes are prepared The clothes are coloured using the colours made of plants and chemicals It is an example for the creativity of man Karnataka is the state which produces most of the silk in India Around of the silk produced in India is from Karnataka Most of the silk is produced in Bengaluru rural district Ramanagara district and Mysuru district Silk is produced out of a liquid produced in the body of the silk worm an insect The sarees manufactured in Ilakal in Bagalakote district are famous all over the world Traditional dress of Karnataka State Dress of menDhothi shirt towel Dress of womenSareeblouse or Long skirt veil blouse appreciate that the earth as a shelter of all living beings has air soil and water which are essential to live recognize the importance of air and soil recognize the changes that occur during different seasons Hey sea shore How cool it is Row of coconut palms The waves striking the shore create foam Floating on the wind I have risen a little high Hey where have I come to Oh How hot it is There are heaps of sand every where Strong wind is blowing No trees are seen Child now I am in a desert By floating I have risen up Oh How broad and flat it is It is very fertile as the flowing rivers bring fertile soil with them This is a plain It is very green It is very suitable for agriculture Oh wind is blowing fast I am floating higher and higher The place where I am now is called a plateau This region is broad and even It is a little bit above the sea level Oh I have risen very high See the mountain range It is nearly meters high Child see the river flowing down the hill Look down the flowing river joins a valley How small it looks The narrow region between two hills is the valley Sometimes we can see the rivers flowing here Oh Here is a waterfall also A waterfall forms when the water falls from the top of the hill to great depth Oh Look here What a beautiful scene Tell me the name of a waterfall that you know Oh How strong is the wind I’m now rising up again from hills valley and waterfalls Alas The blow of the wind is increasing Oh God I'm near a mountain What are you thinking Do you want to know what a mountain is That is a very high hill It is more than thousand meters above the sea level At some places it is covered with snow The mountain covered with snow which is famous all over the world is to the north of our country Do you know its name You already know about hills and mountains Will you write the difference between hills and mountains in the space given It is getting very cold as the wind rises up The water vapour that I carry is turned into water drops Oh Now I’ll fall as rain Run home before getting wet Human beings animals birds insects and varieties of plants are living in different places of the earth that you know Air water and soil are important for the life on earth Air You know that air is necessary for breathing Water Water is very essential for all living beings You already know about water and its importance Soil Soil is very important for living beings Soil is necessary for the growth of plants to build houses and to make bricks Now-a-days the soil is being polluted due to the over use of plastics chemical fertilizers Prevent air water and soil from being polluted Know about the steps to protect them Follow these steps and protect these valuable resources Because these are very essential for us and other living beings to live Weather and Climate changes that occur in a day This is called weather Know this The weather is changing during the day or day by day The weather of a place is observed for a period of thirty to thirty five years The sum of this long time weather is called Climate There is a relationship between climate and life of the people Dress of the people the construction of houses industries and crops depend upon the climate of that particular place The houses with sloppy roof can be seen in the places of heavy rainfall The crops such as jowar ragi are grown in very hot places with scanty rainfall Summer season rainy season and winter season cause many changes in the life of people They influence the dress costume crops and food habits Do you know this The Himalayan mountain range is km long and is covered with snow Valleys will be V or U shaped The plateau of Tibet is called the roof of the world The soil that is deposited by the rivers is called alluvial soil The Thar desert is on the west of India Mullayanagiri is the highest peak in Karnataka Its height is about m from the sea level Inhaling polluted air causes diseases like tuberculosis and asthma Pre-monsoon and post-monsoon winds bring rain to India More than half of the land surface is plain land Kashmir is a valley region in the North India There are seven colours in the rainbow But these seven colours are not visible clearly is the English word used to remember the colours in the rainbow These letters represent the beginning letter of the to the physical divisions of Karnataka state recognize the historical and famous natural resorts of our state and develop an attitude to protect them by knowing their importance You know that many districts together form a state A country is an area which has such states together India is our country Karnataka is our state There are districts in our state You already know about this In the previous class you have learnt about your district and surrounding districts Each state has special physical features For example hills coastal area You have already learnt different physical features On the basis of physical features and climate our state is divided into four natural regions The rivers Many rivers flow in our state Some of them flow towards the east and some towards the west Here is a list of rivers of our state With the help of your teacher classify them as west flowing rivers and east flowing rivers Krishna Ghataprabha Sharavathi Kali Malaprabha Bhima Aghanashini Thungabhadra Cauveri Netravathi Hemavathi Kabini Places of attraction There are many places of attraction in our state Thousands of tourists visit our state every year The details of important cities historical places and natural resorts are given here Observe Bengaluru Bengaluru is the capital city of our state Vidhana soudha Vikasa soudha High court Vishveshwarayya industrial and technological museum Venkatappa art gallery Tippu's summer palace Jawaharlal Nehru planetarium Lal bagh and Cubbon park are the main places of attraction Mysuru Illuminated palace Chamundi hills and zoo are important places in Mysuru Dasara celebration held here is famous all over the world The historical places are the important places related to the history of our state Hampi Observe this picture This is a picture of the famous stone chariot of Hampi Hampi is in Ballari district It was the capital city of Vijayanagara empire The architecture of this place is very famous The carvings of Virupaksha temple Lotus Mahal Hazara Ramaswami temple are very beautiful Some places attract tourists by their scenic beauty These are natural resorts Nandi hills Bababudangiri Mullayana giri Kemmanugundi Kudremukh and Kodachadri are important hill stations People visit the hill stations because of their cool weather and scenic beauty There are beautiful beaches in Ullal Mangaluru Malpe and Karawara Jogfalls of Shivamogga district Shivanasamudra of Mandya district and Gokak falls of Belagavi district are very beautiful Wild life sanctuaries of Bandipura and Nagarhole and bird sanctuaries of Ranganathittu and Kokkare Bellur are the main attractions for the people The bear sanctuary of Daroji in Ballari district is very famous Historical places and natural resorts are the symbols of national pride in our state It is our responsibility to protect them Our state has been recognized as an important state in the country by its many distinctive characters You must be proud of our rich and beautiful state Do you know this In Andrapradhesh was divided into two states namely Andrapradhesh and Telangana The river Cauveri takes its birth at Talakaveri of Brahmagiri hill in Kodagu district Bengaluru is famous for information technology So it is also called Silicon city In Asia the first electricity generating station was established in at Shivanasamudra of Mandya district Jog falls the highest waterfall in India is in Shivamogga district of Karnataka Thonsepar island or Saint Mary's island of western coastal region has the octagon shaped structures Hampi and Pattadakallu the historical places of Karnataka are in the list of world heritage sites LESSON SWAMI VIVEKANANDA India is a land of many religions and cultures People here take both pleasure and pain alike They are dedicated and duty bound In this land many well known religious leaders have been born One such leader has been Swami Vivekananda One day a small boy jumped out of the coach in which he was travelling and ran to his mother with a smiling face He pointed at the coachman and told his mother I want to be a coachman How nice it is to drive a coach The mother could not say anything at that time Later she showed him the picture of Geethopadesam and patted him saying Dear Naren if you want you can be a coachman But you should be a coachman like Krishna who taught Arjuna Though the boy did not understand it clearly he became later what his mother wanted him to be The little boy Naren later came to be known as Swami Vivekananda a great spiritual leader and India’s pride Narendra was born on th January to Vishwanatha Dutta and Bhuvaneshwari Devi in Kolkata Calcutta They considered the child the boon of God Vireshwara Shiva and named him Vireshwara Laterthey gave him the name Narendranath Dutta At the age of six Narendra was sent to a primary school and later to a private tutor He studied Sanskrit grammar long passages from the Ramayana and the Mahabharata He had a strong desire to study more and he wanted to see god He met many people but he was not able to get a satisfactory answer The desire to see god grew day by day Finally one day he became successful when he could meet his guru from whom he got the answer to his desire He could see god The Guru who made this possible for Naren was Sri Ramakrishna Paramahamsa Sri Ramakrishna Paramahamsa could help him experience god Thus Sri Ramakrishna Paramahamsa became Naren’s spiritual guru Swami Vivekananda did not stop with this He went on and on walked miles travelled all over the country to discover truth Naren was kind to all He had sympathy for the poor he was courageous too These qualities helped him become a wandering monk travelling alone to all places to help the needy He often expressed his ideas on education According to him education should develop a complete human being He made a speech in the Great Hall of Columbus in the Parliament of Religions at Chicago on September He began his address with the words Sisters and Brothers of America Immediately there was thunderous applause from the vast audience and it lasted for two minutes The Swami spoke of the religion that was very vast as the sky and deep as the ocean Further he thanked all those who had assembled there He referred to the Indians of all classes and sects He said about the Hindu religion that in the true sense it embraced all humanity And declared I am proud to belong to a religion which has taught the world both tolerance and universal acceptance We believe not only in universal tolerance but we accept all religions as true These words were very impressive He observed that the divisions in society based on religion has resulted in human hatred He felt that human society would be far more advanced when there were no divisions Swami Vivekananda expressed his hope saying that the time for driving away these evil forces in society had come He told them that everybody should develop a sense of brotherhood and love for each other There was great respect and appreciation from the people of America After his return to India he spent his time preaching religious tolerance and worked for the upliftment of the poor He established Belur Math in which became the centre of Ramakrishna Mission with the motto Work is Worship Though he had only a short span of life on earth the essence of his words have been inspiring men and women throughout the world Glossary spirituality the concept of being a good human being dedicate devote desire wish earnest serious wandering going from one place to another Comprehension Swami Vivekananda established the Belur Math to a make people remember his speech in the Parliament of Religions spread the principles of Sri Ramakrishna Paramahamsa develop human values promote social divisions Swami Vivekananda acquired the knowledge of human values from his parents through his spiritual experience visiting countries all of the above Narendra was born on September January September January The audience in the Parliament of Religions applauded Swami’s speech because he spoke well he addressed them as Sisters and Brothers of America he spoke in English his speech convey humanism Say whether the following statements are true or false Swami Vivekananda was a wandering monk because he wanted to spread Hinduism The audience in the Parliament of Religions did not accept the speech of Swami Vivekananda Swami Vivekananda worked for universal brotherhood The words of Narendra’s mother made him become a wandering monk Swami Vivekananda went to Chicago as a political leader The Belur Math was established before Swami Vivekananda went to Chicago Answer the following questions in one or two sentences each How is India described by the writer What kind of a coachman did Narendra’s mother want him to become Why did Narendra want to be a coachman Why was Narendra named Vireshwar Why was Narendra considered a wandering monk What kind of education did Narendra advocate What made the audience in the Parliament of Religions give a thunderous applause to Narendra What helped Narendra earn respect and appreciation from the people of America Did Narendra believe in superstitions Now using the information given in the above table write a paragraph in words on the life of Swami Vivekananda Language exercise Fill in the blanks choosing the right word given in the box spiritual superstitions earnest despair preach Ramakrishna Paramahamsa is a very well known leader Whenever people in approached him he would say that they must be in their belief in the Divine He also used to that belief in may not take anyone forward Substitute the following with one word You can take the help of the choices given in the box below A man who drives a coach One who believes in the existence of God One who does not believe in the existence of God One who doubts the existence of God One who believes in serving mankind philanthropist theist atheist coachman agnostic Use the following words in meaningful sentences pride accept experience dedicate tolerance strong hope despair evil good weak love n death life hatred Grammar Read the following sentences carefully You will find them expressing different functions i The school begins everyday at am Why are you late a Go to the post office and get me some stamps b Please keep quiet What a lovely picture Sentence above expresses a fact It is a statement Sentence above seeks an answer or a piece of information It also does the function of asking It is thus a question or an interrogative sentence It has a question mark at the end Sentence iii gives directions or instructions or makes a request Such sentences are called imperative sentences Sentences express appreciation Sentences like this may be used to express surprise shock pain grief and so on Such sentences are called exclamatory sentences and they have exclamation marks at the end Ah Oh Alas Hurrah are some expressions or words used to express surprise or shock iThe earth revolves around the sun Statement ii Animals can be either wild or domestic When did you come back from Hubballi Pass the ball please Ah How cruel he is Oh What a wonderful game Are you prepared for the examination a Imagine that you are on a visit to Bengaluru you ask for direction to go to St Martha’s Hospital Read the dialogue Hello good morning Where do you come from B I’m Srikrishna and I’m from Chikkodi Is it your first visit to Bengaluru No It’s my second visit What can I do for you How do I go to St Martha’s Hospital From here go to Majestic take the bus that goes to Market from Majestic Ask for St Martha’s Hospital stop On the opposite side you will see the hospital How kind of you Thank you Imagine that you are near the market in your town Complete the following dialogue The post office is near the railway station How do I go to the railway station from here You can board the bus from here and ask for MG Road When does your school reopen Thank you very much POEM HE DID IT Said the dangerous sea You’ll not conquer me Try as hard as you can You are not a whale You are not a shark You cannot walk On the waves young man So he made a boat That was able to float Ho ho said his foe It floats all right And it’s watertight But you can’t make it go Oh yes I can Replied the young man And he made some oars And learned how to row When the sea saw The boats and the oars And all the rowers He said Young man They make a fine show But what will you do When they venture out Where the deep sea swells Can take them up And toss them about Like cockshells You can’t stump me Said the bright young man And cut down a tree And made a tall mast And rigged it with sails To catch the high winds And weather the gales When the ships set out With their sails unfurled To cross the Atlantic And discover the world The sea looked them over From stern to stern And when he saw With considerable awe That Columbus himself Was on one of them He said with a show Of humility I admit young man You have conquered me MARY BRITTON MILLER Glossary conquer overcome win over venture undertaking risky job unfurl spread out humility humbleness rigged provided stump to give someone a very difficult problem foe enemy oars paddle Understanding the poem Why is the sea so confident that the young man will not be able to conquer him What did the young man do on listening to the challenge of the sea Did the sea think that the young man would be able to make his boat go How did the young man prove that he could make it go What did the sea want to know when the young man was all set to go read lines Why did the young man make the mast Was the sea angry to see ships cross the Atlantic How did the sea show its greatness of heart Do you think the poet is telling a story Or Would you take the poem as a reflection on man’s conquest of the sea What is the attitude of the sea when it says I admit young man You have conquered me magnanimous generous submissive and humble indifferent Who is portrayed as the conqueror the man or the sea What aspects of man are described in the poem Explain And when he saw With considerable awe That Columbus himself Was on one of them What picture of the sea do you get from the poem He said with a show Of humility I admit young man You have conquered me Who does the word you refer to What aspect of man is described in the poem When did the speaker say these words Who do you think is mightier ‘The sea or the man’ Discuss in groups Pick out the pairs of rhyming words from the poem LESSON THE NUCLEAR TEST Amma why are you removing all my things from the cupboard Anjali asked in a voice which sounded like she was ready for a fight You already know Anjali Dada and dadi are going to need some place for keeping their things her mother replied firmly But Ma where will my things go This has been my room since I was a baby Why should I give up everything just because dada and dadi are coming to live with us cried Anjali Come on Anju You are not giving up everything You are only going to sleep on the couch in the hall instead of in this room And your things can be accommodated elsewhere replied her mother trying to be sensitive but feeling rather exasperated with her daughter’s endless objections This is how it had been ever since Anjali had been told that her grandparents would be living with them from now on They had recently sold off all their land in the little village where they had lived most of their life Dada was nudging seventy now and was too old to be able to run the farm all by himself He had promised he would not leave his beloved land till he dies but he was finding it more and more difficult to live there alone All his children had migrated to the cities Two of Anjali’s chachajis were abroad Only Papa lived in Pune while Rita bua was in Delhi Dada had been persuaded by Anjali’s father to come and live with them Papa wanted all of them to be together as a joint family He could then take care of his ageing parents Of course Anjali enjoyed meeting her grandparents during her holidays but that did not mean she was going to be happy giving up her room for them Anjali was an only child Never in her life had she liked sharing anything and she wasn’t ready to change now And so it was that when her grandparents came Anjali was fussy irritating and brattish worst She made a big hue and cry over how she had lost her room When she wasn’t making rude comments she would not talk much and pretended to be glued to her favourite programme on the TV She was not very polite and complained though not directly for she was afraid of her father’s wrath It was true having grandparents living with them needed adjusting to a new routine They were used to a different way of life They woke up much before anyone else did and that made things awkward Dadi was forever doing some puja or the other and if there was objection to onions in the food one day it was eggs the next They would not go with them to eat out in restaurants They would not watch movies in theatres They would not enjoy shopping just for fun They thought strap dresses were too foreign and short skirts totally avoidable Pop music was noise and ice creams were not good for health The one thing they did share was an addiction to television but the programmes they watched put Anjali to sleep Anjali felt as if she had suddenly been imprisoned The house all eight hundred and fifty feet of compact space planning suddenly looked too small As the days passed Anjali’s anger mellowed into a guarded truce It was impossible to remain angry with someone who was so kind Dadi stopped commenting on her clothes and even bought her a pretty Shirt when they went sightseeing TV became a divided schedule of the most favourite programme on each individual list Dada helped Anjali with her projects and he was a big help with the Math syllabus He also got Anjali into the habit of reading the newspaper and they would exchange world views when he walked with her to the bus stop every morning Anjali’s mother worked in an office and she left along with her father every morning Breakfast was always cornflakes and it was usually sandwiches for Anju’s lunch box And when her mother got back in the evening she was so exhausted herself that cooking was never a great activity But now Dadi had taken over the kitchen she actually said she was getting bored of doing nothing Dadi was a fantastic cook Suddenly they were being pampered with the most divine parathas and subzi mithai and pakoras salads and pickles Anjali’s mother could now slow down a little and rest her feet She even had more time for her daughter She was also immeasurably reassured that her child was in the most caring hands possible till one day when the grandparents announced We are thinking of going to Rita’s place for a while Before anyone could say anything Anjali burst out Oh Can I have my room back then DadaDadi when are you going The silence that followed was terrible and only Dadi had some kind and general words to fill it with Later apart from her room Anjali got the worst scolding she deserved and in two days time they were a nuclear family again But it was a lonely achievement There was no one to come home to but the silly TV There was none to talk to Her mother was again overworked with no time for anything or anybody But most of all the noise and bustle of one big happy family had faded into silence The house all eight hundred and fifty feet of compact space planning suddenly looked too big When the phone rang the following night just like they had expected it would it was Anjali who ran and picked it up to say DadaDadi When are you coming back Glossary couch a long comfortable seat sofa exasperated irritated nudging push gently migrate move from one place to another abroad a foreign country persuaded urged fussy difficult to please brattish badly behaved child wrath anger awkward lacking in grace imprisoned caged addiction here strong attraction mellowed here softened truce temporary deal hint of apology feeling sorry hue and cry loud fuss immeasurably assured very certain Comprehension Choose the most appropriate answer Anjali’s father persuaded Dada to come to Pune because Dada was too old to run the farm Anjali’s chachajis were abroad Dada’s children had migrated to cities he wanted to take care of his aged parents Anjali enjoyed meeting her grandparents everyday during holidays during weekends d during her visits to their village Say whether the following statements are true or false Anjali always disliked sharing her things with others Anjali’s mother was a fantastic cook Dada and Dadi enjoyed shopping for fun Anjali was extremely happy when her grandparents decided to go to Rita’s place Pick out the word that best describes a Anjali b Dada Dadi d Anjali’s father e Anjali’s mother pious possessive caring strict busy Answer the following questions in two or three sentences each Why did Anjali’s mother remove all her things from the cupboard How old was Anjali’s grandfather Why was it difficult for him to live in the village Writing eight sentences each The family became a nuclear family again What brought about this change Anjali was too eager to have her grandparents back What does this tell you about Anjali Is the title of the story suitable to the context Give your opinion Language Exercise Vocabulary Give one word substitutes for the following One who resides temporarily outside the country One who is only concerned with oneself A state of perfect balance One who is a hundred years old A person in his sixties equilibrium egocentric expatriate centenarian sexagenarian Grammar Nouns are naming words which are used to express names of animals or objects or places Nouns can either be singular or plural Plurals are used to express more than one Certain nouns do not have plurals for which the singular and plural are the same The plurals are usually formed by adding to the singular boy boys bench benches leaf leaves story stories Now form the plurals of the following words house student toy flower knife cloth berry eye table piece company lorry II Identify the errors in the following words and write them correctly bullocks vehicle photos tomatoes potatoes calves There are some irregular plurals man men child children ox oxen Using a dictionary find a few more irregular plurals III Write a paragraph on A day in your school You can use the following as hints The time you left for school The number of classes you had Time when your classes began The different activities The games that you played in school The time you returned home Other activities in school POEM GREAT GRANDMOTHER She looks out at me From the yellowing photograph Misted over by time It is a frank and serious look Her eyes are stern But they can laugh too Her hair is pulled back Tightly in a bun And on her black dress She wears no jewellery I never knew her Yet I recognize myself in her Three generations later May my great grandchildren Feel as close to me As I now do to her Alan Maley Glossary yellowing discolouredgetting old White paper turns yellow after a long period misted dimmed stern strict frank straightforward recognize understand identify find Comprehension Answer the following questions in two or three sentences each What has happened to the photograph Why What expression does the poet read in the eyes of his great grandmother Describe the poet’s great grandmother as she appears in the photograph Did the poet know her personally Why Which line suggests this She looks out at me What does this opening line of the poem mean Pick out the word from the poem which means that the photograph is old What were the feelings that the poet experienced when he looked at the photograph of his great grandmother Answer the following questions Yet I recognize myself in her three generations later a What does the word recognise mean in this context Explain the term three generations What feelings thoughts run in the poet’s mind as he looks at the photograph of his great grandmother What picture do you get about the great grandmother of the poet Appreciation Which line in the poem do you like Say why Attempt a description of your mother or grandmother or great grandmother LESSON THE GRATEFUL TENANT A settled homelife gives everyone a chance to shine Read how one man remembers with affection the help that an elderly couple gave him when he was a penniless student I went for morning walks everyday I enjoyed the stroll because of the scented breeze that blew from nearby gardens and also the mild warmth of the early sun On one such day I noticed a plaque on the wall near the gate entrance It had the name of the house Shyamkamal engraved on polished black granite I asked Ramesh why he had chosen this name for his home It is a combination of the names of the two people who changed my life the ones I remember and thank each day said Ramesh Shyamkamal stands for Shyama Rao and Kamala Do you remember when I was in Dharwad I used to stay with an old couple And I remembered there was an elderly couple in Dharwad who used to rent out their outhouse to college students Ramesh had stayed there for six years Ramesh went on At that time they supported me wholeheartedly in my decision to study in a bigger town Shyama Rao was a retired postmaster and my father’s friend He gave me a place to stay in Kamala Bai was so selfless that she would share her meals with me I enjoyed the meals so much and felt like I was having these meals with my mother As Dharwad was very famous for the Peda Mr Shyama Rao always brought pedas They did not let me go hungry for a single day and treated me like their son If I was late in paying my college fees he would lend some money from his meagre pension and help me out But you used to run errands for them and do odd jobs like going to the post office buying fruit and vegetables watering the plants and pumping the water out of the tank In fact we used to call you their Man Friday behind your back I replied I don’t agree with that said Ramesh Think of the old couple They were not well off but they went out of their way to help me Without their help I do not know where I would have been today But why did you name the house after them I went back to my original question It was my father’s suggestion He said there are some people who do things out of affection and not just out of duty and they change your life with love and generosity Even my children should know their origins of my success I also want them to understand the gratitude I feel towards Shyama Rao and Kamala Bai not through mere words but through actions It is people like Ramesh who reaffirm our faith in humanity SUDHA MURTHY Edited Glossary plaque a nameplate fixed to the wall engraved cut words on wood stone metal outhouse a small building in the ground floor usually at the back of the main house whole heartedly completely and sincerely selfless caring about others not about oneself meagre small quantity Man Friday a trustworthy character in the novel Robinson Crusoe run errands do petty jobs reaffirm prove again Comprehension Answer the following questions in two or three sentences each Why did Ramesh name his home Shyamkamal Whom did Ramesh stay with when he was in Dharwad Was Kamala Bai selfish How did Shyama Rao help Ramesh Why did Ramesh’s friends call him the couple’s Man Friday What kind of person do you think was Ramesh Describe Kamala Bai and Shyama Rao How can you make old people happy Writing Describe an elderly person in your house It may be your grandfather grandmother father or mother and say why you like himher Hisher name Age Physique looks height weight Admirable qualities Abilities and shortcomings Language Exercise Vocabulary Match the words in list A with their opposites in list remember selfish selfless forget agree early success disagree grateful thankless late failure unkind The word notice has two meanings as an action word It means to see observe or keep in one’s mind Eg I noticed a book on the table The same word notice as a naming word means a written or printed statement to announce something in public Eg He displayed a notice on the door saying that he had gone to his village Use the following words in sentences first as action words and then as naming words Change share love name question OUT Look at the words given in the balloons above Join each one of them with the word out Write the newly formed words against their meanings given below money spent on something b line showing the shape of something something that exists outside the main set of things especially clothes for a particular purpose declare someone an outsider or expelled way out for liquid or gas views or perception group of people or settlement far from the main group or settlement outer areas or limits of a town j small building near a larger main building Substitute the sentences with one word using the words given in the box below Short account of an amusing or interesting event One who has no money Name shared by all the members of the family A laudatory speech or written tribute especially praising someone who has died high praise or commendation praise acclamation A quality that means greatness of heart surname eulogy anecdote generosity pauper Grammar Verbs are action words No sentence can be complete without a verb or an action word that expresses the action eg I run fast They sit quietly She learns well He listens attentively The words underlined in the above sentences denote actions I Now identify the action words in the following sentences They sing well We play in the evening He works in a hospital Our parents guide us in our work Dog jumped into the well Cow eats grass They attended a meeting yesterday Ramu walked to the school She painted all the pictures They danced together POEM LINEAGE In this poem you will learn how old people are stronger than the youth Here the poet talks about her grandmothers and asks why she is not able to be like them My grandmothers were strong They followed ploughs and bent to toil They moved through fields sowing seed They touched earth and grain grew They were full of sturdiness and singing My grandmothers were strong My grandmothers were full of memories Smelling of soap and onions and wet clay With veins roughly over quick hands They have many clean words to say Why am I not as they Margaret Walker Glossary plough a large tool used by farmers to turn over the soil before planting crops plow North American spelling sturdiness strength quick busy Comprehension I Answer the following What kind of life did the poet’s grandmother lead List the different types of work the grandmothers of yesteryears could do List the different qualities they possessed Is the poem an admiration of the grandmother of the poet or the elderly women in general Why do you think the poet is not as strong as her grandmother What aspects of the elderly people are appealing to the poet Look at the second stanza of the poem Read it carefully The last two lines are in the present tense Compare these with the first stanza which is in the past tense Why do you think the poet has used the past and the present tenses in this way Further reading Read the story My First Student by Sudha Murthy In this story she tells us about how she taught her grandmother aged how to read and write Read from Kalakanni Jataka the story of Kanni The Unlucky Read the poem Women by Alice Walker LESSON BIRD MIGRATION Human beings move from their birthplace to other place for jobs or work They also visit different places Moving from one place to another for some purpose is migrating Birds like human beings move from their native lands to other lands in search of food or shelter when the climate is not suitable for them to survive in their native lands Activity Before reading the text work with a partner and answer the following questions Base your answers on your knowledge of the topic What words would you use to describe animals and birds What are the birds commonly seen in your locality Why do you think birds migrate How do you think birds warn us of climate changes Birds are a man’s and the environment’s best friends They could be kept as pets They can perform marvellous feats Like human beings who go in search of job opportunities to earn their living birds travel from place to place for different reasons Their movement is seasonal There are surprising facts about their movement The migration of birds is as old as the history of mankind Yet it’s a surprise Why do birds keep migrating from place to place There is no satisfactory answer However there are many facts related to the amazing phenomenon called bird migration The word migration refers to the movement of birds from one place to another from lowlands to highlands and from the interior to the seacoast Birds migrate for various reasons For instance it is observed that during winter birds go to warmer places because some of them cannot survive The birds that feed on insects will not be able to find their food in winter Weather conditions alone would not make birds migrate Birds migrate depending on the seasons How do the birds identify the seasonal changes It is said that birds can find the seasonal changes by knowing the length of the day It is also believed that birds can understand it when days get shorter and when they get longer This ability in birds functions like an alarm clock Birds breed in summer and this is also connected with migration During this season birds migrate northward The change in the length of days and the lack of food tell the bird to migrate to suitable places The breeding instinct helps them migrate up north In late summer many birds fly down south Sometimes they travel to different continents and return to their nests in their own country in spring Their ability to find their home is as amazing as their readiness to migrate How do birds find their way home There is a belief that birds can understand the magnetic fields that surround the earth These magnetic fields run from the north to south poles Perhaps the birds are directed themselves by these lines of force However this theory has not been proved Birds migrate for many reasons and may have their instinct to find their way home They are the champions among all migrating animals The Arctic Terns are the champions among the birds These travel an average of miles a year During its flight the Tern nests at different places and takes about weeks to make its trip down to the Antarctic region Its average speed is miles a week Most landbirds make short hops during their migration The American Golden Plover is an exception It makes a long nonstop flight and can fly a distance of about miles over water without food or stopping Birds do not actually begin their migration the same day every year For instance the famous Swallows of California are supposed to leave on October rd and return on March th But their dates of departure and return have been found to be varying from year to year Birds migrate for satisfying their needs as human beings do Impact of Cell Towers on birds Ever wondered about vanishing house sparrows declining number of peacocks and other birds in the city A study A possible impact of communication tower on wildlife birds and bees conducted by the expert committee of Union Ministry of Environment and Forest attributes the drop in number of birds in Indore Bhopal Jabalpur Ujjain and other cities to increased use of mobile phones and electromagnetic radiation EMR emitted from communication towers Concerned over the increasing number of mobile towers in the city a city based animal activist Sudhir Khetawat has written a letter to the Animal Welfare Board urging them to take necessary action in the matter It is dangerous for birds and even the forest department in its letters dated May and May has accepted that mobile tower radiation is affecting the health of birds and peacocks in particular said Khetawat Girish Kumar from Electrical Engineering department of IIT Mumbai who has done extensive work on harmful effects of mobile tower radiation on humans birds and animals has said that birds including sparrows honey bees and peacocks are severely affected by cell tower radiation as their surface area is more so radiation absorbed is also more compared to their bodyweight He added that the effects on the peacocks is much more pronounced as their wings feather occupy more surface area resulting in large absorption of radiation hence creating more health hazards and leading to various ailments and even death Source The Times of India May Glossary lowland flat land highland mountainous area marvellous astonishing feat achievement phenomenon fact departure leaving exception not included unusual nests stays halts Comprehension Answer the following questions in a sentence or two each What does migration mean Is migration of birds seasonal Do birds migrate only in search of food How do birds identify seasonal changes Why do birds migrate Is migration a necessity State one theory which helps us understand how birds find their way home Give an example to show that birds do not migrate at the same time How are the Arctic Terns the champions among migrating birds Describe the movement of birds during their migration What is the characteristic feature of American Golden Plovers in relation to migration Name the birds mentioned in the lesson Choose the appropriate answer Birds migrate to warmer places because they like warmer places can’t survive in winter breed in winter migrate for a change Birds are directed to their homes by magnetic lines seasons direction of the sun changes in the colour Say whether the following statements are true or false Birds are the enemies of man The breeding instinct helps birds to migrate to the eastAll birds migrate at the same time Birds can find the seasonal changes by knowing the length of the day Magnetic lines str h from north to south poles Writing Write a paragraph on the migrating habits of Arctic Tern American Golden Plover \Swallows of California Imagine you are a parrot Write in hundred words describing your appearance food habits places where you can be found your speed of movement and migrating habits Write a letter to your friend on your visit to a zoo nearby Language Exercise Vocabulary I Substitute the following with one word each Choose from the list of words given in the box below The study of birds Fear of flying in an aircraft Large area of high and fairly flat land The study or practice of travelling through the air A strong rush of air rain smoke carried by wind gust aeronautics aerophobia ornithology plateau Circle the names of animals birds hidden in the following square One is done for you Grammar Read the sentences given below The words underlined in them either describe or say something about the person or the object or the thing in the sentence Such words are called descriptive words or adjectives The table is round Raju is an intelligent boy They are all good workers Their garden has well grown trees Words like round intelligent good and well grown are some of the adjectives Look at the pictures and complete the phrases table clock flower stream neck bird trunk child Now using the describing words describe the objects in your classroom Using appropriate words describe yourself Pick out the describing words in the lesson The essay Bird Life in the City by Ruskin Bond Salim Ali Salim Moizuddin Abdul A li November June best known as the Grand Old Man of Indian Ornithology and also referred to as the Birdman of India was the first among many to conduct a systematic bird survey in India His research and findings have served as the basis for the modern specifications of Indian birds He was awarded the Padma Bhushan in and the Padma Vibhushan in India’s third and second highest civilian honours respectively Several species of birds and a couple of bird sanctuaries and institutions have been named after him POEM THE SKYLARK Now read the poem The earth was green the sky was blue I saw and heard one sunny morn A skylark hang between the two A singing speck above the corn A stage below in gay accord White butterflies danced on the wing And still the singing skylark soared And silent sank and soared to sing The cornfield str hed a tender green To right and left beside my walks I knew he had a nest unseen Somewhere among the million stalks And as I paused to hear his song While swift the sunny moments slid Perhaps his mate sat listening long And listened longer than I did Christina Rossetti Glossary skylark a small singing bird speck tiny shape of the bird soar to fly high swift quick stalk a long and narrow part of a plant I Answer the following questions Where did the poet see the skylark a on the ground b flying in the sky in the nest between the earth and sky Why is the skylark described as a singing speck How are the butterflies described Explain the meaning of these two lines in your own words And still the singing skylark soared And silent sank and soared to sing What part of the day is mentioned in the poem What is the mood of the poet Why does the poet say I knew he had a nest unseen What kind of a field does the poet talk about in the poem Which one does the poet enjoy most the dancing of the butterflies or the flight of the skylark Why Read the following lines aloud You will notice the end rhymes The earth was green the sky was blue I saw and heard one sunny morn A skylark hang between the two A singing speck above the corn Say the pairs of words aloud blue two morn corn The rhyme scheme you learn is as follows Now find the rhyme scheme in the following lines And tell me now what makes thee sing With voice so loud and free While I am sad though I’m the king Beside the river Dee LESSON THE GREAT SPIRIT OF THE SAL TREE Once upon a time a king of a north Indian kingdom wanted to build a palace more remarkable than any other in the country He could not make it richer taller stronger or more beautiful without great expense and trouble So he decided to make it special in another way by setting the whole palace upon a single wooden column a column carved from one of the biggest trees in his kingdom He sent for his minister and said Send men to my forests far and near and tell them to cut down and bring to the city without delay the mightiest tree they can find Thirty foresters were dispatched but they soon returned saying that though there were many trees equally strong and gigantic in the king’s forests they could never carry or drag them over the difficult terrain that lay between the forests and the city The king heard this But later he sent for the foresters again By means of horses one of these trees must be brought here he said It is not possible they said No horse could move such a tree even an inch By means of bullocks then he said The bullocks could not possibly force their way through miles of such dense forest By means of elephants then It is hardly possible for the ground is so marshy that the elephants would sink to their knees in it Very well said the king angrily If you cannot bring me such a tree from the forests then you must find it within one of my village parks Bring it here within a week The foresters left and went directly to a splendid sal tree which grew not far from the palace It was worshipped by the people of many villages around because within it dwelt a tree spirit who gave the tree its great strength size and beauty The foresters decided with much reluctance that the king’s column must be made from this lordly sal tree and from no other They returned to it with garlands lamps and music to offer them to the spirit inside and to warn him that he must leave his abode for within seven days it would be cut to the ground The tree spirit heard and understood well enough what was about to happen It remained quiet as a resting breeze blew for a few moments Then all his leaves began to whisper and his topmost branches bowed and the foresters went away satisfied that he had answered their plea But this was what the leaves were whispering to each other Should the king’s decision hold not only shall we perish we and our spirit for the soul spirit cannot exist anywhere else but our fall will crush all the little sal trees that have sprung up and thrive under our protection For ourselves we care not but for the children’s sake we wish that the king had not wished is so The spirit within the tree thought This must not be allowed I must visit the king and persuade him That night while the king was asleep a shining figure appeared to him in his dreams and spoke in a voice that was like a rustle I am the spirit of the sal tree O King your foresters this day have told me of your decision to feel me I have come to beg you to change your mind No I cannot grumbled the king Yours is the only tree in all my parks strong enough to support a palace building and therefore I must have it Consider O King For a thousand years I have been worshipped by the people of many villages and never has anything but good come out to them The birds nest in me I send a vast and lovely shade upon the grass beneath me Against my trunk people rest and wild creatures too glad of the coolness The earth blesses me All true enough good tree spirit spoke the king but for all this I cannot spare you I have made up my mind Then grant me one last request said the tree spirit Let me be felled in three parts First my head with its crown of waving greenery Next my middle with its hundred strong arms and hands Last my base which bears the heaviest and knottiest of my limbs upon it This is a strange request said the king never before did I hear of one who desired three times to suffer the death stroke Why not endure the agony but once and have it over It is like this O King around me have grown up my family Dozens of young sal trees have sprung from me and thrived in my generous shadow Should you feel me with one mighty stroke my weight would certainly crush all my children to death But if three times I suffer the stroke and fall in three pieces some of the little ones may escape Is my prayer granted Indeed it is said the king whereupon the tree spirit faded away The next morning the king called his minister and his foresters and told them that he had changed his mind The column for the new palace should be built of stone not wood For said he within the sal tree dwells a spirit nobler than my own And he told them of his vision and they all marvelled The Chipko Movement a protest by villagers who embrace the tree to prevent it from being felled A prominent leader who has contributed significantly to this movement is Sundarlal Bahuguna a Gandhian Glossary column pillar terrain str h of land spirit ghost supernatural being abode home felled cut down thrive live agony great pain Comprehension Choose the most appropriate answer from the four alternatives given below each statement The foresters could never drag the huge trees to the city because only thirty foresters were dispatched the trees were very heavy the foresters were lazy there was a difficult terrain between the forest and the city The foresters worshipped the tree spirit because they were afraid of it it commanded them to do so it gave the tree great strength size and beauty d it was just a custom The tree spirit requested the king that it be felled in one stroke all at once in three strokes in two strokes branch by branch Say whether the following statements are True or false The king sent his men to the forest to cut down and bring the mightiest tree Only elephants could be used to move the tree The leaves of the sal tree were concerned only about themselves The king was very pleased to change his mind at the tree’s first request The king decided that the column for the new palace should be built of stone III Answer the following questions in two or three sentences each How did the king want to make his palace special Name the animals suggested by the king for pulling the tree How did the tree spirit describe itself to the king IV Match column A with column B Column A has the animals suggested by the king Column B has the reasons for not being able to use the animals to drag the tree Horses Legs could sink in the marshy ground Bullocks Would not be able to move the tree even an inch Elephants Would not be able to force their way in the dense forest Writing Answer the following questions in a paragraph six to eight sentences each What did the foresters warn the tree spirit about How did they know that he had answered their plea Some of the little ones may escape What quality of the tree spirit does this statement convey The king felt that the spirit of the sal tree was nobler than his own Why did he feel so Write an imaginary dialogue between you and a tree which is getting cut down Language Exercise Vocabulary Substitute the sentences with one word Choose from the choices given in the box below Government by kings and queens A feeling of pain Cutting down trees in a forest Plants in a particular region Deforestation abode monarchy spirit flora agony Pick out the opposites of the following words from the text a true b accept c dissuade d domestic e rejected f liking Grammar English language uses a few words to describe actions or give extra information to a verb eg Deer runs fast Snails move slowly Some people rarely work She sings well They fought bravely He is seriously ill The words underlined in the sentences above describe the manner of action in each of them They are called adverbs Adverbs are usually formed by adding ly to the describing words eg careful carefully plain plainly serious seriously deep deeply brave bravely Now identify the adverbs in the following sentences The child listened patiently to his mother The horse rode as quickly as possible Students answered correctly I read silently The farmer told the hiker plainly Joe cried bitterly when he broke his new glasses List different actions that you do between am and pm at school everyday and say how you do them eg I listen carefully i sit I read I speak There are a few adverbs which are used to express the frequency of the action done eg I often read the newspaper They never play in the evening Rekha usually goes to school with her brother Lankesh sometimes drinks coffee The words underlined are adverbs of frequency They express how often one does the work reading playing going drinking and so on Correct the following sentences I ate quick Unfortunate everyone was injured in the accident He spoke to her gentle They all spoke loud It rained heavy He shut the door quiet Now imagine you need to tell your friend how often you do the following Fill in the table below using a tick mark and construct sentences as shown in the example I always obey my parents POEM WHAT THE LEAVES SAID The leaves said it’s spring And here are we Opening and on every tree The leaves said it’s summer Each bird has a nest We make the shadow Where they can rest The leaves said it’s autumn Aren’t we all gay Scarlet and golden And russet were they The leaves said it’s winter Weary are we So they lay down and slept Under the tree Anon Glossary shadow shade gay cheerful happy russet reddish brown Comprehension I Answer the following questions in two or three sentences each What are the leaves described as doing in the first stanza Which stanza tells us that the leaves are happy Pick out the line that conveys this In which season do leaves give shade for the nest of the birds Why are the leaves described as lying down to sleep in winter II Answer the following questions in a paragraph each six eight sentences What do the words scarlet golden and russet in stanza three suggest Which season do you like the most Why A day has four distinct parts morning afternoon evening and night How do you usually feel during these periods of the day Which part of the day do you like the most III Pick out the rhyming words in each stanza Write a suitable rhyming word for each of the following words spring summer slept Personification Poets use this figure of speech for emphasis To personify means to give human characteristics to abstract ideas or nonliving things For example Fear knocked on my door Pride goes before a fall A picture speaks The telephone shrieked loudly The poem personifies leaves The poet has given a voice to the leaves by saying the leaves said Also the poet has given other descriptions that personify leaves Can you pick out a few Identify the season each picture depicts List out the festivals that you celebrate during Spring Summer Autumn Winter LESSON THE WARRIOR WHO BROUGHT GL India has been the land of many rivers and legends where people with different cultures traditions and beliefs live together This vast country with many different religions languages has seen many wars and battles It has a glorious past Great writers patriots and courageous men and women have worked for the country One such courageous man is Sam Manekshaw the great warrior Read the following to know more about Sam Manekshaw Sam Harmuzji Pramji Jamshedji Manekshaw or Sam Manekshaw as he is better known was born in Amritsar on April Even as a child he displayed his ambition to join the army Out from Sherwood College in Nainital after completing his class XI Senior Cambridge Manekshaw appeared for the army entrance examination in There were applicants along with him for vacancies He was not sure if he could make it However he was successful In he passed out from the Indian Military Academy at Dehra Dun Manekshaw took part in World War II He was defending Burma against the Japanese attack History has recorded some of his memorable experiences One day as he moved forward with his men against the Japanese army he got shot by a Japanese soldier which seriously wounded him Major General David Cowan thought that Manekshaw would lose his life and he immediately pinned his own Military Cross ribbon on Manekshaw saying A dead person cannot be awarded a Military Cross This incident shows how Manekshaw had the unique distinction of having got honoured for his bravery on the battlefront itself To everyone’s surprise Manekshaw soon recovered from his injury not to rest but to take more active part in challenging battles and to shoulder responsible assignments In all these Manekshaw was highly successful a n d v i c t o r i o u s Manekshaw w a s very cordial with his fellow-soldiers He was so warm and kind-hearted that the warriors in the Gurkha Regiment would compose and sing songs in praise of his humaneness His superiors too had an appreciation for his service and sense of duty devotion and commitment General Sir Roy Bucher the British Commander-in-chief of the Indian Army described Manekshaw as the very best staff officer he ever had InJunehe succeeded General Kumaramangalam as the eighth chief of the Army Staff As a commander he served the nation with dedication and within two years of his promotion to this highest rank he had to lead the Indian Army to confront the designs of the neighbouring Pakistan in The entire nation stood united to salute its illustrious and brave children In recognition of his services to the nation he was conferred with a lot of titles honours and was awarded many medals These include Padma Vibhushan in and the title Field Marshal in Retiring from service in Manekshaw settled in Coonoor in Nilgiris His contribution to the nation continued till his death in June at the Military Hospital in Nilgiris in Tamil Nadu A man known for his distinguished service untiring selfless struggle he felt that there should be no reason to stop working until one has to Field Marshal Sam Manekshaw is a war-hero It is certain that he will dwell in the hearts of millions of Indians because he made the nation proud by his dedicated service Glossary display show make it achieve passed out came out successfully dedication commitment confront face v conferred awarded distinguished excellent defend guard against assignment any piece of work humaneness kindness rammar Prepositions are words such as in of to at for between These words are used to express location time position duration place and so on Some of the prepositions can be used to express many of these functions Prepositions like in on and at can be used to express place and time eg I was born in the year time My house is in Bengaluru place Vegetables are purchased at the market We waited for them at the bus stop Rehman celebrates his birthday on th October The monkey is on the tree POEM THE PATRIOT The poem describes the plight of a person who does not possess any love or patriotic feelings towards his motherland Breathes there the man with soul so dead Who never to himself hath said This is my own my native land Whose within him As home his footsteps he hath turn’d From wandering on a foreign strand If such there breathe go mark him well For him no minstrel raptures swell High though his titles proud his name Boundless his wealth as wish can claim Despite those titles power and pelf The wr h concentred all in self Living shall forfeit fair renown And doubly dying shall go down To the vile dust from whence he sprung Unwept unhonour’d and unsungSir Walter Scott Glossary breathes lives hath has old usage burn’d feel excited strand shore minstrel poet no raptures swell no poet would sing about him pelf money wealth wr h unfortunate or annoying person forfeit lose renown fame vile worthless whence where old usage UNIT THE PARABLE OF TALENTS The Parable Of the Talents For it is as if a man going on a journey summoned his slaves and entrusted his property to them to one he gave five talentsto another two to another one to each according to his ability Then he went away The one who had received the five talents went off at once and traded with them and made five more talents In the same way the one who had the two talents made two more talents But the one who had received the one talent went off and dug a hole in the ground and hid his master’s moneyAfter a long time the master of those slaves came and settled accounts with them Then the one who had received the five talents came forward bringing five more talents saying Master you handed over to me five talents see I have made five more talents His master said to him Well done good and trustworthy slave you have been trustworthy in a few things I will put you in charge of many things enter into the joy of your master And the one with the two talents also came forward saying Master Master you handed over to me two talents see I have made two more talents His master said to him Well done good and trustworthy slave you have been trustworthy in a few things I will put you in charge of many things enter into the joy of your master Then the one who had received the one talent also came forward saying Master I knew that you were a harsh man reaping where you did not sow and gathering where you did not scatter seed so I was afraid and I went and hid your talent in the ground Here you have what is yours’ But his master replied You wicked and lazy slave You knew did you that I reap where I did not sow and gather where I did not scatter Then you ought to have invested my money with the bankers and on my return I would have received what was my own with interest So take the talent from him and give it to the one with the ten talents For to all those who have more will be given and they will have an abundance but from those who have nothing even what they have will be taken away Source Bible NRSV Matthew New Revised Standard Version NRSV New Revised Standard Version Bible copyright c the Division of Christian Education of the National Council of the Churches of Christ in the United States of America Used by permission All rights reserved Glossary talent ability Here a talent is worth more than the wages of a labourer for fifteen years entrust to trust to the care of slave a person whose labour and life is subject to the owner’s will trustworthy reliable deserving of trust scatter separate to disperse wicked evil or mischievous by nature Language Exercise Grammar You learnt in the previous lesson that verbs are action words Verbs indicate time and express tense Different forms of verbs are used to express time and tense Verbs have the present form the past form and the past participle form The past form is usually formed by adding There are some verbs whose past form cannot be formed by adding d or ed to their present forms Such verbs are called irregular verbs eg learnlearnt gowent comecame buybought Dear father We go to the Nandi hills yesterday There are thirty students in the party We travel by bus We leave the school at am We reach there at am On the way we saw on both the sides tall trees and thick bushes and monkeys too The road was nice We play games and rest for three hours We return at pm All of us enjoy the trip Yours lovingly Sneha POEM THE KITTEN AT PLAY See the kitten on the wall Sporting with the leaves that fall Withered leaves one two and three Falling from the elder tree Through the calm and frosty air Of the morning bright and fair See the kitten how she starts Crouches str hes paws and darts With a tiger-leap half way Now she meets her coming prey Let it go as fast and then Has it in her power again Now she works with three and four Like an Indian conjuror Quick as he in feats of art Gracefully she plays her part Yet were gazing thousands there What would little Tabby care William Wordsworth Glossary conjuror juggler here feats accomplishments stunts here Prey-pray way-weigh fair-fare These words sound the same but have a different meaning and spelling They are called Homophones Write the appropriate word below the picture LESSON THE DINNER PARTY Mona Gardner Now read the story The Dinner Party The country is India A colonial official and his wife are giving a large dinner party They are seated with their guests army officers and government officials and their wives and a visiting American naturalist in their spacious dining room which has a bare marble floor open rafters and wide glass doors opening onto a veranda A spirited discussion springs up between a young girl who insists that women have outgrown the jumping-on- a-chair-at-the-sight-of-a-mouse era and a colonel who says that they haven’t A woman’s unfailing reaction in any crisis the colonel says is to scream And while a man may feel like it he has that ounce more of nerve control than a woman has And that last ounce is what counts The American does not join in the argument but watches the other guests As he looks he sees a strange expression come over the face of the hostess She is staring straight ahead her muscles contracting slightly With a slight gesture she summons the servant standing behind her chair and whispers to him The servant’s eyes widen and he quickly leaves the room Of the guests none except the American notices this or sees the servant place a bowl of milk on the veranda just outside the open doors The American comes to with a start In India milk in a bowl means only one thing bait for a snake He realizes there must be a cobra in the room He looks up at the rafters the likeliest place but they are bare Three corners of the room are empty and in the fourth the servants are waiting to serve the next course There is only one place left under the table His first impulse is to jump back and warn the others but he knows the commotion would frighten the cobra into striking He speaks quickly the tone of his voice so arresting that it sobers everyone I want to know just what control everyone at this table has I will count three hundred that’s five minutes and not one of you is to move a muscle Those who move will forfeit fifty rupees Ready The twenty people sit like stone images while he counts He is saying two hundred and eight when out of the corner of his eye he sees the cobra emerge and make for the bowl of milk Screams ring out as he jumps to slam the veranda doors safely shut You were right Colonel the host exclaims A man has just shown us an example of perfect control Just a minute the American says turning to his hostess Mrs Wynnes how did you know that a cobra was in the room A faint smile lights up the woman’s face as she replies Because it was crawling across my foot Glossary naturalist one who studies animals and plants crisis extremely dangerous time summons orders impulse a sudden feeling to act slam close with great force forfeit lose sober serious and sensible gesture unit for measuring weight commotion noise and confusion screams shouts rafter a long wooden beam veranda an open room staring looking at something for a long time bare empty bait food used to attract some animal Language Exercise Vocabulary I Use the following words in sentences of your own a forfeit b sober c gesture d stare Grammar In one of the earlier lessons you learnt the functions of adjectives In this lesson let’s learn how the three different forms or the degrees of the adjective are formed The three different forms degrees of adjectives are i The Positive degree The Comparative degree iii The Superlative degree Usually the comparative degree is formed by the addition of er to the positive degree form eg tall taller short shorter near nearer The superlative degree is usually formed by the addition of est ex strong stronger strongest broad broader broadest near nearer nearest Now form the comparative and superlative degrees of the adjectives given below Positive Comparative Superlative fine sweet dear high fat long weak fair cool low bold few There are however certain adjectives which do not take er or est either in the comparative or superlative forms respectively eg intelligent more intelligent most intelligent difficult difficult most difficult There are a few more adjectives which take irregular forms in the different degrees much many more most good better best bad worse worst Such adjectives are called irregular adjectives brilliant sea sharp light loud shower juicy knife heavy fruit busy noise rough cut street POEM ANOTHER CHANCE How often we wish for another chance To make a fresh beginning A chance to blot out our mistakes And change failure into winning It does not take a new day To make a brand new start It only takes a deep desire To try with all our heart To live a little better And to always be forgiving And to add a little sunshine To the world in which we’re living So never give up in despair And think that you are through For there’s always a tomorrow And the hope of starting new -Helen Steiner Rice Glossary blot out purposely try to forget an unpleasant memory brand new completely new despair the state of having lost all hope you are through here you have lost something forever LESSON THE CHALLENGED CONQUEROR Pt Dr PUTTARAJ GAWAI Look at the photograph He is a person without eyesight attired in a plain dhoti and spotless clean khadi full-shirt with a laced turban adorning his head vibhuti sacred ash on his forehead a sandal tilak between the eyebrows and a Braille wrist watch on the left hand He has a rosary of rudrakshi round his neck He is playing on the veena Can you guess who the person is Yes you have guessed it right It is none other than the legendary musician Pt Dr Puttaraj Gawai a picture of deep simplicity The word Gawai means a great singer Puttaraj Gawai is Vaggeyakara a composer He has created and contributed new ragas to the world of music He is a legendary musician a vocalist a gifted writer a playwright an instrumentalist an ardent lover of music a proprietor and director and a poet all rolled into one He dedicated his entire life for educating the visuallychallenged and destitute children Though he was an embodiment of knowledge he considered himself putta small in everything His dedication to his guru was great and it speaks of his great humility Devarahospet a village in Hangal Taluk in Dharwad district is a place of pilgrimage for devotees of Shiva There lived a pious couple named Revanayya and Siddamma A boy was born to them on rd March in his mother’s native place Devagiri near Karajagi in Haveri District They named him Puttayya The child was very attractive with bright eyes The parents were very happy and their joy knew no bounds But providence had a different game to play When Puttayya was not even six months old his eyes became infected The condition of the child aggravated and the mother tried various medicines suggested by native doctors One such suggestion proved to be deadly in his losing the eyesight at an early age This was a big blow to the family Misfortunes struck him in succession Puttayya lost his father when he was just two His maternal uncle Chandrasekharayya took him under his care Then came a turning point in the life of Puttayya One day Chandrasekharayya had been to his fields The boy Puttayya was very sure that nobody down to play on it After sometime returning home Chandrasekharayya heard from a distance someone playing his harmonium He instantly flew into a rage He could not tolerate others handling his harmonium He came closer He was filled with wonder and delight when he heard the sweet melody on the harmonium It was his nephew Puttayya Tears of joy rolled down his cheeks and he embraced the boy Puttayya’s grasping power was a matter of wonder to Chandrasekharayya He learnt everything about music within a short time from his maternal uncle But it was evident that there was in him an unquenchable thirst for knowledge The uncle thought of a competent teacher to teach him He took him to Pt Panchakshara Gawai the pontiff of Veereshwara Punyashrama Under the paternal care and expert guidance of Panchakshara Gawai Puttayya mastered both Hindustani and Carnatic music and soon became UBHAYA GANA VISHARAD Puttayya also learnt to play many musical instruments such as the Veena the Tabla the Mridangam the Dilruba the Shehnai and the Sarangi and was recognized as an outstanding musician He attained a high degree of mastery over all of them His Guru Pt Panchakshara Gawai also initiated him into the study of literature He arranged for the teaching of the celebrated works like Shabara-Shankara Vilasa Rajasekhara Vilasa and the Jaimini Bharata Puttayya also learnt Braillethe script for the visually challenged Having mastered Kannada Hindi and Sanskrit Pt Puttaraj authored over outstanding works which include puranas biographies drama commentaries and texts on music Notable among them Kumareshwara Kavya Akkamahadevi Purana Satisukanya Puratanara Puraba Sharanara Basaveshwara Purana Guru Sudha and Sangeeta Shastra jnana are his works on music His translation of Siddanta Sikhamani from Sanskrit and Basava Purana from Kannada to Hindi are commendable His Basava Purana in Hindi won the appreciation of the then President of India Dr Rajendra Prasad On learning that the author was blind the President invited him to his residence and honoured him They say Pen is mightier than the sword It is true of Dr Puttaraj Gawai In spite of his physical disability Pt Puttaraj Gawai achieved wonders as the editor of Panchakshara Vani a monthly magazine It is a great contribution in the field of Kannada and Veerashaiva literature Pt Puttaraj set up Sri Guru Kumareswara Poshita Natya Company and from the money he earned provided free food shelter and education to the disabled and the orphans This theatre company has given innumerable performances throughout Karnataka Sri Shivayogi Siddharama a play written and directed by him earned him both fame and money Hema Reddi Mallamma and Nellura Nimbekka have been till date his most successful plays One can assess the popularity of the play Hema Reddi Mallamma from the fact that it had uninterrupted performances in Gadag With the profit from these plays the company became very stable financially With this he purchased a acre plot of land in Gadag which has now come to be referred to as Mallammana Hola This has become a permanent source of income to the Veereshwara Punyashrama Today this institution has become highly renowned and runs on a secular approach It admits students from all sections of the society without any discrimination It has been contributing thousands of nationally and internationally famous musicians radio artists music teachers stage-artists keertana karas and professionals to the field of music and fine art in the country The music maestro Puttaraj Gawai became the successor of the ashram Veereshwara Punyashrama after his Guru Panchakshara Gawai died on June th This ashram is specially dedicated to imparting musical knowledge to people who are differently-abled especially the visually challenged drawn from all castes religions and sections of the society Today the ashram is a place of musical pilgrimage for lovers of music At the age of the leading light of music Pt Puttaraj Gawai passed away on th September at the Veereshwara Punyashrama in Gadag in north Karnataka More than lakh devotees attended his funeral ceremony He was buried at the ashram as per the tradition and with government honours Dr Puttaraj Gawai has led a legendary life His life is a saga rich with music literature shivapuja shivanubhava and other divine experiences Every moment of his life was rewarding Dr Puttaraj Gawai has been conferred with many titles and awards by many institutions that promote art and culture recognize talent and service to humanity These titles and awards include President Award for Basava Purana in Hindi Honorary Doctorate by Kannada University Nadoja Prashasti Kanaka Purandara Prashasti Kendra Sangeet Nataka Academy Award Rajya Sangeeta Vidwan by Government of Karnataka National Award for the betterment of disabilities by Government of India Nadoja Award from Karnataka University Basavashree Award Kalidasa Samman by Government of Madhya Pradesh and Padma Bhushan The story of the life of Dr Puttaraj Gawai is a lesson to all those who are physically challenged for he could overcome his disability and reach such unimaginable heights This physically-challenged individual was a sublime ideal soul in word thought and deed Glossary attire dressed legendary well-known for long humility being humble pious religious deeply devoted aggravated increased know no bounds unlimited without any boundary evident observable noticeable unquenchable unappeasable that which cannot be satisfied renowned famous well-known sublime great magnificent Grammar Articles Articles are language units words used to express quantity and specificity There are three articles in English They are a an and the In this lesson you will learn to use a and an a is always used to express a single unit an is also always used to express a single unit but before the words that begin with the vowels or vowel sounds too a mango an old student an orange a village a university an umbrella an MLA an MP an ink bottle POEM THE OUTSIDER I’m handicapped and wheelchair bound Expected to sit and not make a sound Just to smile and let the world go by With saintly patience and never sigh Inside my head thoughts come and go Ideas are born which long to flow Flow from my lips and link me with others But words sound strange so no one bothers My tongue and lips do not as I ask I cannot perform the simplest task But I have a mind and I’m still there Don’t lock me out in your ignorance there Talk though I seem not to understand Touch me include me hold my hand I am alive and I have time to give Let me share in the life I was given to live Anonymous Glossary handicapped a term used to describe people who have a permanent injury or illness which makes it difficult for them to use a part of their body easily or fully a differently abled or physically challenged person wheelchair bound Unable to move without a wheelchair saintly patience the ability to stay calm without complaining even when it is very difficult to do so others expect physically challenged people to behave like saints they forget that they are just like everybody else ignorance here people do not understand differently abled people that their physical difference does not affect their mind LESSON MOVING PICTURES The movie industry might be very well known and honoured today It will be interesting to know how this media originated In the Californian rail road tycoon and racehorse breeder Stanford had an argument over whether a galloping horse ever has all four hooves off the ground or not Experts and artists alike agreed that the hooves of horses always kept at least some contact with the ground but Stanford decided to know better So he got into a bet with others saying that horses sometimes left the ground completely As horses’ legs move too quickly for anyone to see exactly what happens Stanford hired an English photographer named Edward Maybridge with the intention of capturing the truth on a photographic plate He had to wait five years for an answer Maybridge was an eccentric because of serious head injuries sustained in a stage-coach accident He emigrated to America in the s In after being tried and acquitted of the murder of an individual he stayed in central America for a short while But his determination persisted On his return in Maybridge set up a battery of cameras parallel to a race track in Sacramento with each camera’s shutter connected to a wire str hed across the race track As the horse galloped past its legs tipped the shutters in an order creating a series of photographs showing the portion of the horse at each instant Maybridge stuck the images on a rotating disc and sent a ray of light through them The flickering images proved that Stanford was right the horse did in fact sometimes have all four hooves off the ground Maybridge carried out many studies with Etienne Jules Marey a French scientist who in invented a single camera capable of taking many exposures in quick succession Thomas Edison in asked one of his assistants William Dickson to devise a suitable camera as a means for projecting the resulting images This resulted in the invention of Kinetograph a camera which could capture images at frames a second allowing individuals to watch the resulting film The first kinetoscope booth operated for business in Antoine Lumiere a French photographic materials manufacturer was the first to visit this booth Impressed by this Lumiere instructed his sons to develop a light weight camera and projection systems capable of making movies that could be viewed by an audience In March they gave the first demonstration of their cinematograph systems a one-minute film of workers emerging from Lumiere’s factories in Lyon It was the beginning of what we call now the motion picture This was the beginning of something that has become more than merely a form of entertainment It has also become an important medium of social change Glossary tycoon a powerful businessman breeder one who keeps animals for the purpose of breeding animals galloping moving swiftly hooves the horny covering encasing the foot in certain animals as the horse and ox hired paid for services capture catch eccentric abnormal sustained suffered acquitted declared innocent emigrate move from one country to another to reside there Language exercise I Vocabulary One word substitution look into the dictionary for help Part of the earth where life is found A person with strange habits A book giving information on all branches of knowledge A painting drawing or photograph of a person especially of the head and shoulders Skillful in inventing Ingenious Encyclopaedia Portrait Biosphere Eccentric POEM ROADWAYS One road leads to London One road leads to Wales My road leads me seawards To the white dipping sails One road leads to the river And it goes singing slow My road leads to shipping Where the bronzed sailors go Leads me lures me calls me To salt green tossing sea A road without earth’s road-dust Is the right road for me A wet road heaving shining And wild with seagulls’ cries A mad salt sea-wind blowing The salt spray in my eyes My road calls me lures me West east south and north Most roads lead men homewards My road leads me forth To add more miles to the tally Of grey miles left behind In quest of that one beauty God put me here to find John Masefield Glossary bronzed tanned of skin forth forwards lures attracts homewards towards home quest of in search of seeking Unit Prose Love for Animals The school bell rings It is in the evening Lucy and Nithin are returning home from school They see a man walking with his pet dog The man is trying to tell his dog something The dog seems to be answering him by barking Watching this Lucy remembers Ramana Maharshi Lucy Do you know anything about Bhagavan Ramana Maharshi Nithin No I don’t What’s special about him Lucy Sri Bhagavan Ramana Maharshi loved animals and birds Nithin Can you tell me more about Ramana Maharshi Lucy Listen Even animals were attracted to him He spoke to them just as he would speak with people Nithin You mean just like the man we saw talking to his dog Lucy Yes he called the dogs boys He used to say Are the boys eating their food Nithin Really Lucy Yes and he called his cow Lakshmi He used to say Give Lakshmi some rice Nithin Where did he keep all these animals Lucy These animals lived in his ashram He always fed the animals and birds first He ate only after feeding them Nithin Even birds Lucy Yes Ramana Maharshi called the peacocks by making sounds of their cries Then they would go to him and eat the peanuts rice and mangoes from his hands Nithin That’s interesting Lucy will you please tell me more interesting stories about Ramana Maharshi and animals Lucy Yes listen One day Maharshi was sitting on a hillside A snake crawled over his legs He didn’t move nor show any fear Later someone asked him what he felt like when the snake crawled over his legs He replied Cool and soft Nithin My God I would have cried and run away Did anyone kill the snakes in the ashram Lucy Ramana Maharshi never allowed people to kill snakes in his ashram He said We have come to their home and we have no right to trouble them They do not trouble us Oh We are nearing our homes I will continue the story tomorrow Nithin Yes Thanks a lot Who told you all these stories Lucy My grandmother knows a lot of stories She tells us stories every day Bye Nithin That’s wonderful Tell me more tomorrow See you bye Words to know attracted a feeling of liking somebody ashram a place where hermits live cries Here sounds made by birds and animals interesting a feeling to know more about something crawl move slowly on the belly trouble a problem or difficulty wonderful great Vocabulary V Give the opposites of the following words more remember always first soft nearV Match the words in column A with the names in column B A B sage Lucy and Nithin boys Lakshmi cow Ramana Maharshi storyteller dogs friends grandmother Sound that Say a long Where is the back part of your tongue Practise making Now say these lines aloud Dingdong Sing a song Drumming humming humming drumming Poetry The Elephant The elephant’s big The elephant’s grey The elephant walks For miles each day His trunk is long And O what fun When it comes out For a cake or bun The elephant’s big His ears are wide His back is broad For all to ride The elephant’s big He’s kind too He carries the children Round the zoo Words to know wide broad ride to travel on kind helpful caring Unit Prose True Friendship cunning helpful angry understanding bad generous kind rude sensitive impatient Warm-up Activity Task A All of us have friends Who is your close friend What is special about your friend Share it with your partner Task B Listen to your teacher reading the story of Krishna and Sudhama Listening text on page Task C Remember the story of Krishna and Sudhama Underline the words in the given box that refer to the qualities of a good friend Once upon a time in the city of Syracuse lived two friends Damon and Pythias Both of them were lovers of truth However their king Dionysius was an evil-minded ruler One day the king heard that Pythias had called him cruel and had said something against him So he got very angry He announced that Pythias would be punished for this and hanged In the court of King Dionysius Dionysius is on the throne Pythias’ hands are tied behind Soldiers are on his either side Pythias O King Please allow me to go and meet my old mother and my sister before I die I must arrange for my sister’s marriage and bid goodbye to my mother After that I will return This is my last wish King Dionysius Impossible I cannot grant your wish How can I be sure that you will return Damon enters the scene Damon Sir I’m Damon and a true friend of Pythias Please let him go to fulfil his last wish I will remain in your custody until he returns Damon Sir I’m Damon and a true friend of Pythias Please let him go to fulfil his last wish I will remain in your custody until he returns King Dionysius All right Pythias but on one condition I will fix the day and the hour of your return If you do not return in time your friend Damon will have to die instead of you So Pythias was granted his last wish He went home completed his work and hurried back to Syracuse He had to face many dangers and so he was delayed On the fixed day Pythias had not returned As a result Damon was taken to be hanged In the court of King Dionysius Dionysius is on the throne Damon’s hands are tied behind Soldiers are on his either side King Dionysius Where is your friend now Damon He has left you here to die I’m certain that he will not return You are a fool to be here in his place Damon You are mistaken I know that Pythias will keep his promise He will be back in time Even if he does not come back I will be happy to die in his place as I love him dearly Pythias enters the court hall running gasping for breath Damon embraces Pythias and weeps Pythias I have come please do not kill Damon I have come back to take the punishment Please hang me Damon No please hang me If he were to be late then I would have been hanged So I am to be punished Both of them argued for some time At last King Dionysius All right Pythias but on one condition I will fix the day and the hour of your return If you do not return in time your friend Damon will have to die instead of you So Pythias was granted his last wish He went home completed his work and hurried back to Syracuse He had to face many dangers and so he was delayed On the fixed day Pythias had not returned As a result Damon was taken to be hanged In the court of King Dionysius Dionysius is on the throne Damon’s hands are tied behind Soldiers are on his either side King Dionysius Where is your friend now Damon He has left you here to die I’m certain that he will not return You are a fool to be here in his place Damon You are mistaken I know that Pythias will keep his promise He will be backin time Even if he does not come back I will be happy to die in his place as I love him dearly Pythias enters the court hall running gasping for breath Damon embraces Pythias and weeps Pythias I have come please do not kill Damon I have come back to take the punishment Please hang me Damon No please hang me If he were to be late then I would have been hanged So I am to be punished Both of them argued for some time At last King Dionysius Never in my life have I seen such friendship Both of you have kept your promises I am happy to know that such friendship exists I set you both free Words to know Syracuse a city in ancient Greece Pythias evil-minded having bad or cruel thoughts impossible something that cannot happen certain sure fulfil to do what is hoped for loyalty staying firm in friendship execution putting to death Speech sounds ‘U’ as in ‘up’ See that your teeth are kept well apart SayGet up early take a tub Scrub yourself and briskly rub Mug of milk and buttered bun Kiss your mother off you run I say mug not moog Do not say but tub upon punish must until return result Poetry Friends How good to lie a little while And look up through the tree The sky is like a kind big smile Bent sweetly over me The sunshine flickers through the lace Of leaves above my head And kisses me upon the face Like Mother before bed The wind comes stealing o’er the grass To whisper pretty things And though I cannot see him pass I feel his careful wings So many gentle friends are near Whom one can scarcely see A child should never feel a fear Wherever he may be Abbie Farewell Brown Words to know lie to sleep on the backface upwards flickers shines dimly lace a decorative cloth which is made by weaving steal to take something without permission whisper to speak quietly in a low voice gentle mild and kind scarcely rarely lie a little while a whispers pretty things sky b are near whom one can scarcely see sunshine c and look up through the tree wind d flickers through the lace of leaves gentle friends e is like a kind big smile Friends Krishna and Sudhama Lord Krishna and Sudhama were childhood friends who had been at Sandipani’s Gurukula as boys As time passed the friends went their separate ways Sudhama and his family lived in utter poverty One day Sudhama’s wife said Why don’t you go and meet Krishna Lord of Dwaraka He will surely help you if he loves you as a friend Sudhama felt bad at the thought of asking Krishna for help but he decided to go as he wanted to meet his beloved friend He wanted to carry some small gift for Krishna so his wife gave him a small bundle of ‘Poha’ beaten rice or avalakki and Sudhama set off on his journey After a tiring journey Sudhama reached Krishna’s palace He waited before he went in as he was not sure if Krishna would remember him Just then Krishna rushed forward and hugged Sudhama He washed Sudhama’s feet with his own hands People were surprised and wondered who Krishna’s poor guest was They chatted happily about their childhood days Krishna teased Sudhama saying What present have you brought for me When Sudhama was a little shy to give him the bundle of poha Krishna said The gift that you bring with such love means more to me than the most expensive gift in the world Thus saying he pulled out the little bundle from Sudhama’s hands and opened it Oh It’s poha my favourite food he said and started eating it with joy Sudhama spent the night at the palace and returned home the next morning He realized that he did not ask Krishna for any help but was very happy at the treatment he had been given But what was he going to tell his wife Sudhama was in for a surprise As he neared his house he saw that his old hut was transformed into a beautiful big house His wife and children came out to welcome him dressed in fine clothes It was then that Sudhama realised that all this wealth was because of Lord Krishna and the friendship they shared Hard Work Work hard to acquire knowledge skills and wisdom Swami Vivekananda Unit Prose The Child Who Saved the Forest Prem lived with his parents in a small village near Bandipur forest He had the good habit of taking an evening walk in the forest After some days he became friendly with the animals and birds in the forest One day he came home from school looking sad His mother asked What is the matter Prem He replied Ma I have heard that many trees in the forest will be cut down Where will the animals and birds go if the trees are cut His mother knew that Prem loved trees birds animals and flowers so she said Why don’t you go to the forest with your friend Nasrin Find out what has happened exactly Prem took his friend Nasrin with him to the forest They walked to their most favourite place in the forest As they sat on the rock and looked around Heera the deer came sprinting towards them Nasrin asked Prem What’s the matter Why is the deer looking sad Prem replied that the trees in that forest would soon be cut down And Heera must have heard about this Both thought for a while about where these animals would go Then Prem looked at Nasrin and asked How can we stop the cutting down of trees Nasrin replied We will approach the authorities concerned to stop the cutting down of trees Both of them were very happy and returned to Prem’s house Prem told his mother about their plan Prem asked his mother But who shall we complain to Mother replied Of course to the President of Gramasabha Prem wrote a letter to the President of Gramsabha and requested his parents and their friends to sign on it They also took signatures of the people in the local community and those residing in nearby villages Prem sent the letter to the President of Gramsabha Very soon he got a reply from the President of Gramsabha Dear Prem We are happy about the love you have shown towards nature Your request for not cutting down trees in the forest has been accepted We have decided not to cut down the trees in the forest Now the plants animals and birds will be safe You may give this good news to all your friends and villagers Yours sincerely Smt Rukmini Ramaiah President of Gramasabha That evening Prem went back to the village and assured the villagers that nothing would happen to the forest and the animals Words to Know sprinting running very fast authority people who have power complain express dissatisfaction about something delighted happy appreciate praise deer forest friend authority community Listen to your teacher not pronouncing some letters in the given words Such letters are silent letters eg iron should could would know knife knee comb Which letters are not pronounced in the above list of words List some more words that have silent letters in them Poetry Tamarind Nobody knows where my Tamarind stood Just by a winding lane Each year it gave me fruit and shade and drew Me to my home again I loved to sit beneath her shady boughs And rest up for a while To gaze out upon the distant blue hills With laughter and a smile And now that I’m back I’m eager to find My tamarind again I hasten down to that favourite spot I search but search in vain Then I stop and I stare I stand quite still I listen to my heart That magnificent tree that was my life Has just been ripped apart I turn to the hills my eyes filled with tears For sure I’ve lost my soul Where once it stood tall there’s nothing there now Merely an empty hole Anonymous Words to Know boughs branches drew past tense of draw to pull to attract eager keen to do something excited about something hasten to move quickly merely only as described and nothing more in vain without success winding going in curves or twists magnificent great wonderful You have to dream before your dreams can come true Abdul Kalam Unit Prose The Boss Who Cares Warm-up Activity Task A With the help of your teacher try to know what work has been done in Indian Space Research Organisation ISRO and the Defence Research and Development Organisation DRDO Task B Look at this word SATELLITE How many smaller words can you make from this one word sat salt At Thumba Space Centre there were about seventy scientists They were all involved in developing rockets This was an adventurous task And this took a lot of time There was so much of work that really made them restless They worked right from morning till night and sometimes they left for home at midnight But they were all happy to work under their boss and did not think of quitting the job One day one of the scientists came to his boss and asked Sir I have promised to take my children to the exhibition in town today Will you please allow me to leave the office at half past five in the evening His boss replied All right you’re permitted to leave the office early today The scientist was happy and started working He was so busy working that he never even bothered to look at his watch After the day’s work was completed he looked at the watch and it was half past eight in the evening He looked for his boss The boss was not there As he had told the boss in the morning itself he closed everything and left for home On the way home he remembered the promise he had made to his children He felt sad for disappointing them He wondered how he would calm his wife The scientist reached home He found that the children were not there He saw his wife sitting alone in the hall knitting He expected that his wife would verbally jump on him But she asked him calmly Would you like to have a cup of coffee or shall I straightaway serve dinner if you are hungry He was surprised at this and replied I would like to have some coffee and you too must have with me Before that tell me where the children are She said Why don’t you know Your boss came here at quarter past five and has taken the children to the exhibition This was what had happened The boss who granted the scientist permission saw him working seriously at five in the evening He thought to himself This person will not leave the work but if he has promised his children a visit to exhibition they should enjoy So he decided to take them himself That is why all the scientists at Thumba work under their boss even though the workload is too much By the way can you guess who the boss was He was none other than Dr APJ Abdul Kalam Words to Know Thumba a village near Thiruvananthapuram in Kerala Space Centre a place where studies are conducted about outer space involved engaged rocket a vehicle used to put a satellite into space adventurous daring quitting to leave the job verbally orally by using words never remember happy finish quitsad startforget always remain Dr Abdul Kalam is presently the President of India He took care of all the scientists He visited the exhibition because he liked it The scientists were happy to work under him Thumba is in Karnataka Poetry Believe Believe in Love Believe in Faith Believe in Truth Believe that no matter what happens you have the power to prevail Believe in Strength Believe in Courage Believe in Honour Believe that everyone has the power to beGood at heart Believe in Song Believe in Dance Believe in Culture Believe that no matter who you are or where you’re from everyone is unique Believe in Time Believe in Forever Believe in YOU Believe that as long as you believe in yourself anything is possible Chelsea Varvaro Words to Know prevail achieve something unique only one of its kind Conviction Have conviction in the power of goodness purity and honesty Swami Vivekananda Unit Prose Shabale Sabala Warm-up Activity Task A Re-arrange the following words in the correct order to form meaningful sentences are beings Animals living us Animals feel also like useful us to are Animals Task B How do you think that a cow is a useful animal Discuss with your partner Once there was a sage whose name was Vasishta He lived in a forest Vasishta had a cow by name Shabale also known as Nandini daughter of Kamadhenu the Heavenly Cow Whenever Vasishta asked her for anything such as food drink or clothes she would give them to him Both of them lived happily in the forest One day Kaushika a powerful king and his soldiers came to the forest They were hunting They saw a small hut and decided to rest there for some time When they came near the hut Vasishta greeted Kaushika and his men He prayed to Shabale to give his guests a tasty meal In minutes Shabale gave them a tasty meal Kaushika was impressed by Shabale’s special gift He wanted to take Shabale to his palace So Kaushika asked Vasishta to give Shabale to him in exchange for ten thousand cows But Vasishta refused Kaushika even offered his entire kingdom and asked for Shabale but Vasishta still refused He said Shabale belongs to the Gods and Goddesses and she should not be misused Kaushikadecided to take Shabale by force He put a rope around Shabale’s neck and dragged her but she was not willing to go with the king Shabale saw her master’s helplessness She decided to teach Kaushika a lesson She freed herself ran and stood next to Vasishta She underwent an amazing change Fire gushed out of her eyes Her head and neck grew larger Balls of fire came out from her tail Many soldiers came out from her mouth udder and her sides These soldiers chased Kaushika and his men out of the ashram But they did not kill anyone Kaushika realized that he was not powerful enough and could not win anything by force He left his kingdom and went into the forest to become a sage After many years of prayer and meditation he became a true sage and came to be called Vishwamitra Vishwamitra means the friend of the world Words to Know sage hermit greet welcome entire complete whole drag to pull forcefully amazing surprising udder part of the cow where milk is stored chased drove wisdom knowledge learning sound judgement devotion great love for God meditation praying with concentration gushed to flow or burst out greedy desiring more than you need She gave him food drink clothes She underwent an amazing change She was producing fierce warriors to protect her master Her head and neck grew larger Balls of fire came out from her tail Many soldiers came out from her mouth udder and her sides Shabale with Vasishta Shabale with the king Kaushika Soldier My Lord we’re tired We have been in the forest for such a long time King Yes what shall we do Soldier Why don’t we rest for a while King We could but where Soldier Looks ahead I see some huts There seems to be a small group of people living It looks like a hermitage Shall we go there King Yes let us make our way to the hermitage and meet the sage who lives there Vasishta Welcome Please come in King Kaushika My people and I are happy that you have come to my hermitage King It is an honour to be with you great sage Vasishta Your men and you look tired You need food and rest Please be my guests King I would not like to trouble you My whole army is with me and you’ll find it hard to look after so many of us We’ll rest for sometime and leave Vasishta Please stay I’ll be able to take care of all of you He speaks to the sacred cow My dear Shabale the king and his men are tired and hungry Help me to give them a hearty meal Shabale Oh great sage I’m here to serve you I’ll do as you say and give King Kaushika and his army a meal that they will never forge tSpeech sounds as in go Keep your teeth well apart and the lips rounded Say Not a word Joe spoke He could only croak With a moan and a groan When he choked on a bone It’s no joke to choke With a bone in your throat Poetry The Cow The friendly cow all red and white I love with all my heart She gives me cream with all her might To eat with apple-tart She wanders lowing here and there And yet she cannot stray All in the pleasant open air The pleasant light of day And blown by all the winds that pass And wet with all the showers She walks among the meadow grass And eats the meadow flowers Robert Louis Stevenson Words to Know cream might strength apple tart apple cake wanders goes here and there without any aim lowing sound made by cows stray deviate pleasant nice meadow grassland cow trumpets a cat bleats a dog moos a sheep barks an elephant fox tiger dog cow elephant bear sheep goat lion ox buffalo giraffe Unit Prose Dignity of Labour Warm-up Activity Task A Discuss with your partner the different kinds of professions Task B You must have seen your mother and father work at home and outside They work hard from morning till night Make a list of the work each one does Once there lived a rich businessman He had a lazy son The father wanted his son to be hard-working and responsible He wanted his son to realize the value of labour One day the father called his son and said Today I want you to go out and earn something Otherwise you won’t be given food tonight The lazy boy was not used to doing any kind of work This demand by his father scared him He went crying to his mother Her heart melted at the sight of tears in her son’s eyes She gave him a gold coin In the evening when the father asked him what he had earned he showed the gold coin The father asked him to throw it into the well in front of their house The son did as he was told The father was a man of wisdom He guessed that the gold coin was given by his wife The next day he sent her to her parent’s house He ordered his son to go out and earn something This time the sister gave him a rupee coin The boy showed his father the coin The father asked him to throw that coin too into the well The son did so The father realized that yet again someone had helped the boy He sent his daughter back to her in- law’s house He again asked his son to go out and earn something else he would not be given supper This time there was no one to help the boy He went to the market in search of work A shopkeeper offered him two rupees for carrying his bag to his house The boy accepted the offer He was sweating a lot by the time he finished the work His feet were trembling and his neck and back were aching He returned home and handed the two-rupee coin to his father His father asked him to throw it into the well The boy cried out in pain and said Father I earned this money My entire body is aching my palms have rashes and you are asking me to throw my hard-earned money into the well The businessman was happy His son had realised the value of hard work The son promised never to be lazy The father handed over the keys of his shop to the son Words to Know lazy one who does not want to work responsible one who can take up work and finish it realise become aware or understand something labour hard work scare get frightened melt get softened wisdom knowledge supper meal eaten at night accept agree tremble shake due to fear or excess work ache pain rashes red marks on the skin businessman two rupees mother rich sister gold coin son one rupee shopkeeper lazy scared lazy wise guess tears sweat happy rashes strict ache value of hard work promised What kind of a boy was the businessman’s son What did the businessman tell his son Why did the mother give her son a gold coin What did the father ask the son to do with the coins Why did the son go to the market How did he earn two rupees Why was the boy not ready to throw the two-rupee coin into the well Describe the attitude of the boy towards work you are asking me to throw my hard earned money into the well Explain the feelings of the boy when he said this Cannot can’t We will we’ll Do not don’t We are we’re They have they’ve You are you’re There is there’s Who is who’s Is not isn’t Has not Are not Have not They are I will Speech sounds as in oil A noise irritates a boy But doesn’t his temper boil Now say these words boil coil soil spoil coin join voice choice Poetry Results And Roses The man who wants a garden fair Or small or very big With flowers growing here and there Must bend his back and dig The things are mighty few on earth That wishes can attain we want of any worth We’ve got to work to gain It matters not what goal you seek Its secret here reposes You’ve got to dig from week to week To get Results or Roses Edgar A GuestWords to Know attain to reach or succeed in getting something to achieve repose to rest or stay seek to try to find or get something fair beautiful Unit Prose A Great Coachman Warm-Up Activity Task What do you want to be when you grow up Why do you want to become thus Discuss with your friends Task A Name some of your family members whom you think are great B Name some great men of our country A little boy jumped out of the coach He ran to his mother He pointed to the coachman and said Mother I want to be a coachman like him How nice it is to drive a coach His mother smiled and wisely said Naren if you want to be a coachman you can But you should be a coachman like Krishna who guided Arjuna and showed the path to the innocent people of the universe Little Naren could not understand his mother’s words quite clearly Later on he became what his mother wished for Narendra became famous as Swami Vivekananda Narendra was born on th of January His parents were Vishwanath Dutta and Bhuvaneshwari Devi They considered the child was a gift from Lord Veereshwara So they named the child Veereshwara Later they gave him the name Narendranath Dutta He was sent to school at the age of six He read stories from Ramayana and Mahabharatha He had a desire to study more and become a scholar He wanted to see God Later he met his real guru Ramakrishna Paramahamsa and experienced God He stayed with Ramakrishna Paramahamsa for a few years Then he became a wandering monk visiting different places in India He spoke to the people about the importance of education He said that education should develop a complete human being He fought against social evils like caste system superstitions and so on Swami Vivekananda went to the United States of America USA in He made a great speech in the Parliament of Religions at Chicago He said that all religions in the world preached the same truth Therefore everyone in the world should develop a sense of brotherhood and love each other He came back to India and began to teach tolerance and love He established the Belur Math in Calcutta which became the centre of Ramakrishna Mission The main motto of Ramakrishna Mission is Work is Worship He lived for only years but his achievements are great He made the world understand that India was a great country Vivekananda’s words guide us even todayWords to Know coach horse-drawn carriage desire wish scholar a learned person wandering moving from place to place monk a holy man social evils evils that affect the society caste system different groups in the society superstitions blind faith religions systems of faith and worship brotherhood a feeling that all belong to a family and are brothers and sisters motto That expresses the aims and beliefs of a person achievements great works with to under for on A mouse ran the wall and hid the table I poked it a stick It jumped the stool and was there sometime Later it ran out and disappeared should be a coachman like Krishna What did Naren’s mother mean What did Vivekananda tell in the Parliament of World Religions at Chicago Collect pictures of Swami Vivekananda and write about Swami Vivekananda’s life Speech sounds as in school Say this aloud Linda is dressed in blue Brinda too is dressed in blue Blue is lovely too You know it is true Brinda looks best in blue Say these words moon toon soon spoon glue true Poetry Paper Boats Day by day I float my paper boats one by one down the running stream In big black letters I write my name on them and the name of the village where I live I hope that someone in some strange land will find them and know who I am I load my little boats with shiuli flowers from our garden andhope that these blooms of the dawn will be carried safely to land in the night I launch my paper boats and look up into the sky and see the little clouds setting their white bulging sails I know not what playmate of mine in the sky sends them down the air to race with my boats When night comes I bury my face in my arms and dream that my paper boats float on and on under the midnight stars The fairies of sleep are sailing in them and the lading is their baskets full of dreams Rabindranath TagoreWords to Know stream flowing water strange unknown shiuli flowers white and orange parijatha flowers blooms bud opening into flower dawn time of first sunshine launch send bulging swollen playmate a friend fairies beautiful charming ladies who live in the other world lading load Comprehension C Answer the following questions in two to three sentences each How many boats did the child float Why did the child write its name on the boat What did the child load the boat with What did the child dream at night flowing water flowers that blossom in the early morning set the paper boats afloat imaginary friend A RIDDLE I go up and down a lot Whether it is cold or hot Sometimes I am on the ground Other times I am in the clouds My name rhymes with daughter I am your friend named Ans Water Unit Prose Children of Courage Bravery Awards Warm-up Activity Task A Imagine you are walking home from school You see a small boy sitting on a branch of a tree There is a crack in the branch and the boy is about to fall What would you do Discuss with your partner Task B Think of some stories that you have heard about accidents that have been prevented because of the brave acts of children Tell your partner and share with the class Every year the Indian Council for Child Welfare ICCW awards children who have performed outstanding deeds of bravery about children below the age of are given this award annually The national awards for bravery began in The first award was given to a child who saved the life of the first Prime Minister of India Jawaharlal Nehru Let us know how it all began On of October India’s first Prime Minister Jawaharlal Nehru was watching a performance at Delhi’s Ramlila ground in the Red Fort A fire broke out in a shamiana through a short-circuit Harish Chandra a year old scout quickly took out his knife and cut the burning shamiana This act saved the lives of hundreds of trapped people Pt Nehru was inspired by this to initiate the awards He asked the authorities to honour brave children from all over the country This tradition continues even today Brave Harish Chandra became the first recipient of the award The Bravery Awards are announced on November th Children’s Day and presented by the Prime Minister on the eve of the Republic Day The awardees receive a medal a certificate and cash as a token of appreciation of their valour Some of them are also granted financial assistance to complete their higher education On th January they take part in the Republic Day Parade in New Delhi riding atop decorated elephants The awards are given to acknowledge the extraordinary courage displayed by children in difficult situations The awards also encourage children to use their presence of mind and show courage in real life Some children have saved lives some have helped the police in arresting criminals and some others have averted accidents While doing these deeds some have even sacrificed their lives Let us come to know the brave acts of some of these young awardees sometimes known as ‘ Brave Hearts’ In six-year-old twins Gagan and Bhoomika J Murthy of Bengaluru were honoured for saving an eighteen month old child The twins were sitting in their father’s car at the vegetable market in Madivala They saw two bulls running towards each other They saw the child lying in the bulls’ path The two immediately ran out and pulled the child away In another awardee was Rahul a twelve-year- old balloon seller He was an eye-witness to the blasts in New Delhi The information that he gave about the men who planted bombs on one of the important roads helped the police in making sk hes of the criminals Silver Kharbani of Meghalaya saved the life of her young cousin who was caught in a fire Vishal Suryaji Patil of Maharashtra saved a woman and her child from drowning Among the children conferred with the National Bravery Awards for was thirteen-year-old Gaurav Singh Saini from Haryana He saved people during a stampede at the Naina Devi temple in Himachal Pradesh Kumari Maibam Prity Devi of Manipur aged saved several lives She used her bare hands to dispose a live grenade that was hurled at her mother’s shop in Imphal Her aim is to fight terror by joining the police force Ten-year-old Priyanshu Joshi from Uttarakhand is one of the award winners for He single-handedly fought off a leopard that was trying to attack his sister when they were on their way to school Eleven-year-old Gurjeevan Singh from Punjab helped to prevent a bank robbery by attacking the thieves with bricks They opened fire but he escaped The pistol slipped from their hands and others managed to catch the robbers Moonis Khan from Madhya Pradesh received the award for saving an old man from a railway accident We salute these brave children Words to Know shamiana decorated tent initiate to begin something recipient a person who receives something eve evening before the event valour great courage atop on the top of conferto give somebody an award averted avoided stampede a situation in which a group of people suddenly start running salute show of honour for somebody in public for their achievement Vocabulary V Fill in the blanks with the words given in the box bravery courage unfortunate ready It was that Abhi and his friends met with an accident on the way to Nandi Hills His friend Nitin showed in saving them when he pulled Abhi and two others out of the car Nitin received an award for He is always to help his friends Gagan and Bhoomika a saved an old man from J Murthy a train accident Moonis Khan b saved the life of her cousin from a fire Rahul c saved a baby that was caught in the path of two bulls Silver Kharbani d used her bare hands to dispose of a live grenade Kumari Maibam e identified criminals who Prity Devi had planted bombs f fought off a leopard that was trying to attack his sister V Fill in the blanks with suitable adjectives choosing the correct word from the brackets This is an story adventure adventurous She is a girl beautiful beauty He is a boy young youth This is a tree tall high Our teacher isto us better good Indian music is very expressive It is traditionally taught through oral methods The system of Indian music is based on two important pillars-rag and tal Rag is the melodic form while tal is the rhythmic form The interpretation of the rag and the tal is not the same all over India Today there are two major traditions of classical music There is the north Indian Hindustani sangeet The other is the south Indian Carnatic music Both systems are fundamentally similar but differ in performance Speech sounds Try these tongue-twisters Red bulb blue bulb She sells sea-shells by the sea-shore I scream you scream we all scream for ice-cream Poetry My Land She is a rich and rare land Oh she’s a fresh and fair land She is a dear and rare land- This native land of mine No men than her’s are braver Her women’s hearts ne’er waver I’d freely die to save her And think my lot divine She’s not a dull or cold land No she’s a warm and bold land Oh she’s a true and old land This native land of mine Oh she’s a fresh and fair land Oh she’s a true and rare land Yes she’s a rare and fair land This native land of mine Thomas Davis Words to Know rare uncommon fair beautiful waver hesitate be scared of native land land of one’s birth lot one’s fortune divine god-like bold courageous Comprehension C Answer the following questions How is the native land How are the men or women in this land Write a short paragraph of five sentences on India My Motherland Activity A Write the opposites of the following words dull brave warm fearful plenty Laxmi Bai was the queen of Jhansi Her struggle with the British is legendary The battle began early in June Sir Hugh Rose captured the fortress of Jhansi in March Rani Laxmi Bai resisted but Jhansi was captured by the British when traitors opened the gates of the fortress for them On the night of th of April she escaped from the fortress and joined Tantia Tope at Kalpi Rani Lakshmi Bai and Tantia Tope captured the fort of Gwalior from Sindhia She died fighting the British on th of June at Gwalior Give a suitable title to this paragraph Identify the nouns in the paragraph LESSON LIVING WORLD Protection of environment is the duty of all You must have heard this saying The word environment is very familiar to us The things around us is environment We can enjoy environment by seeing only We see hills forest river falls streams honey bee insects eagle snake soil light birds and so many other things around us which make us wonder This is our environment Our environment is home for diversity You have the curiosity to know the speciality of this diversity Haven't you If so understand this unit After studying this lesson you identify living beings and nonliving things know the important characteristics of living beings introduce yourself to the method of food production in plants life cycle and different types of plants classify animals based on their feeding habits know the importance of protection of plants and animals Read this story Lazy Somanna Somanna is a lazy person Even though he owns a piece of land he has not worked for a single day in his land He used to live only by receiving what others gave him He was very fond of groundnuts especially fried groundnuts Once while eating fried groundnuts he got an idea He thought that if he sowed groundnuts in his land he would get enough groundnuts to eat and he need not beg anybody for it Also he felt that if he sowed fried groundnuts yield would be fried groundnuts So there would be no need to fry the groundnuts Not knowing the type of seeds to be sown Somanna started sowing fried groundnuts from the next day itself Seeing Somana working in his land the neighbouring farmers were very happy that Somanna had shed his laziness finally Days passed Plants grew and greenery was everywhere But not a single plant appeared in Somanna's landRaw groundnuts have the characteristics needed to grow into a plant It is called living component In fried groundnuts the living component is destroyed It is called the nonliving state In the environment there are living beings which have the living characteristics and non-living beings which do not have the living characteristics In the following chart some components of the environment and some living characteristics are given Read carefully If in each of the component the characteristics given in front of them are found put mark If these characteristics are not found put mark Components of the environment Characteristics Growth Eating food Movement Respiration Excretion Response to stimulus Reproduction mouse mango brick clock butterfly man frog paper mobile The components which you have marked are called living beings and those which you have marked are called nonliving things in environment Some of the components seen in environment are given below Identify them as living beings or nonliving things Put mark in front of the correct choice Components of the environment Living beings Non living things birds balloon water mango tree vehicle pen Activity Make a list of other living beings and non living things you have seen Plants and animals are living beings There are certain characteristics to decide them as living beings The characteristics of living beings are given here Know about this Living beings are made up of cells Observe these pictures They are of plant and animal cells You must have observed how a house is being constructed When several things such as bricks cement water steel wood are arranged in an order a house gets ready Similarly the body of living beings is made up of cells You will learn more about cells in higher classes Living beings respire You have learnt in the previous classes that living beings respire During respiration living beings take in air use the oxygen and give out carbon dioxide Observe the given picture Identify the picture and write here There are special organs to respire in animals Plants also depend on oxygen for their respiration Usually they respire through stomata small openings which are present on the lower surface of leaves With the help of oxygen the energy in the food is made available to the living body Think What are the advantages of the energy that is obtained from the food Living beings eat food Living beings perform many activities daily such as wood cutting carrying load hunting The names of some living beings are given below They help us to work How do they help us write here Living being Helpwork elephant bullock dog To do all these works living beings need energy They get this energy through food Food of plants Each part of a plant does one or the other activity Don't they also need food How do plants obtain their food Think Yes green plants produce their own food That is why green plants are called autotrophs Preparation of food in plants atmosphere carbon dioxide solar energy water minerals salts chlorophyll Observe the picture Four important components needed to produce food by the plants are given An activity Which From what is given below Join the statements correctly and write Which From what Correct and write here solar energy green leaf water minerals salt atmosphere carbon dioxide sun chlorophyll soil Plants use solar energy carbon dioxide in air absorb water minerals and salts from soil through roots and prepare food with the help of chlorophyll in leaf This process is called as photosynthesis In the preparation of food by the plants glucose is produced and oxygen is released Write here the uses of these two for the living beings glucose oxygen Discuss in groups What would have happened if there is no sun Observe the pictures given below How do these plants obtain their food Though plants like Drosera Nepenthes Utricularia prepare their own food they depend on insects for nitrogen These are called insectivorous plants You will know about them in higher classes Food of animals Animals do not prepare their own food They depend on plants and other animals for food Therefore animals are called heterotrophs All animals do not eat the same type of food Based on the food they eat the animals are classified as follows Herbivore Animals that eat only plants and plant products Carnivore Animals that eat other animals Omnivore Animals that eat both plants and animals With the help of these pictures list out herbivore carnivore and omnivore in the chart below Herbivore Carnivore Omnivore Living beings grow Observe the pictures given below These pictures show the growth of that particular organisms In every picture there is an increase in height and size This is called as growth Certain statements related to growth are given below If the statements are correct put mark if not put mark Correct the incorrect statements and write All organisms are small at the time of birth later acquire definite height and size Growth takes place rapidly in one or two days Plant growth is observed at its stem tip or the size of the stem Living beings move Observe these pictures Which living characteristic do they indicate Yes all these are related to movement Movement is a living characteristic specially of animals Movement of animals Animals move from one place to another They have special organs for this Some animal names are given below Write their organs of movement here man eagle kangaroo bat Think Cars and buses run on road Hands in a clock move circularly Rivers and streams flow Do they have life What is the difference between the movement of living beings and non living things Plants do not have organs for movement as in animals As soil holds the root of plants they cannot move from one place to another Still we can observe the following movements in plants Roots growing towards water in the soil Sunflower plant turning towards the sun Do this Keep a potted plant in a room Let light pass in through a window Observe it after some days Observe the direction towards which the leaves have bent Discuss with friends Think If plants had legs like you what would have happened Living beings excrete Many activities take place in the body of organisms As a result things which are unwanted for the body are also generated These have to be thrown out of the body If not body gets affected Animals throw out unwanted things of the body in the form of carbon dioxide sweat faeces and urine They have special organs for this purpose Plants also give out carbon dioxide during respiration Dry leaf stem rotting parts all these separate from the plants They release excess water to the atmosphere through leaves Do this Take a potted plant Cover the plant with a plastic cover and tie it tightly at the stem portion Keep it in the sunlight for hours Observe the plastic cover closely Share your observation in the class Living beings reproduce Observe the organisms and their young ones in the above pictures Young ones of each organism resemble that respective organism which gave birth to them The process of an organism giving birth to young ones which resemble it is called reproduction Statement Right wrong Corrected statement Organisms continue their generation by reproduction Due to reproduction the other organisms in environment get food Reproduction is seen only in animals There will not be any danger in the environment by over-reproduction of a single organism Some animals carry out reproduction by laying eggs and some others by directly giving birth to young ones Activity List out the animals that lay eggs and those which directly give birth to young ones Life cycle of a plant Seed is an important part of reproduction in plants Seeds developing from seeds is one of the wonders of nature Some plants apart from seeds produce new plants through stem buds You will learn more about them in higher classes A life cycle of a plant producing seeds from a seed is given here Observe Think Usually reproduction takes place by seeds in fruits How is the reproduction in a coconut tree Take the help of the teacher Activity Reproduction of plants is advantageous to animals including man in many ways Discuss with your friends and list them Do this Collect seeds from plants in your neighbourhood in the beginning of rainy season Take fertile soil and make soil balls out of it In each of the soil ball insert a seed When rain starts plant them in the soil Do this every year In this way some seeds you have put might grow very well in future Living beings respond to stimulus When thorns prick our feet we feel pain We have observed our body shivering in cold snake hissing in self defence and buffaloes getting into water to cool off during excessive heat Some insects bite us when we touch them Animals shout Like this organisms respond in their own way All these are the responses given by organisms to the surrounding stimulus Living beings respond to the changes in their surrounding environment Usually they respond to touch heat cold sound and smell They have special organs for these Observe the pictures Folding of leaves when touched in touch me not plant stinging of scorpion when some external thing touches it flower of sunflower plant turning towards the sun these are the ways that organisms respond to stimuli Think A calf jumping when it sees mother cow mother bird crying in distress when young ones are not found in the nest a mother hen protecting its chicks either by covering them with wings or attacking the cat or eagle to protect the chicks-all these exhibit animal feelings Think and list out the feelings of different organisms Living beings have life span Organisms take birth become adults reproduce become old and die at last The period between birth and death of an organism is called lifespan The average life span of some animals are given below Observe Animals Average life span in years turtle elephant cow eagle man Based on the life span plants are classified into annuals biennials and perennials Understand it through the following pictures Annuals jowar wheat paddy pumpkin vegetables Plants which bear flower produce fruits and die in a year or a season cotton Biennials carrot ginger cabbage beetroot Plants which live upto two years or two seasons produce flower fruit and seeds and die sugar can Perennials mango lemon are nut neem jackfruit Plants which live for many years and keep producing flower fruit and seeds Write the uses of the plants given below Annuals Biennials Perennials Apart from the life span plants are classified based on the nature of seed leaf as monocotyledonous and dicotyledonous plants Do this Take ragi and groundnut seeds Put them into two separate water filled glasses before going to sleep Next day morning drain the water Press tightly the ragi and groundnut seeds with your hands Share your experience Monocotyledonous seed has only one cotyledon seed leaf Example Jower ragi wheatpaddy millets Dicotyledonous plant seed has two cotyledons seed leaf Example horse gram groundnut redgram bengalgram blackgram Do this Collect monocotyledonous and dicotyledonous plants from your locality Observe their leaf and root Know the difference with the help of your teacher You have learnt about the characteristics of living beings Plants and animals are two important components of the environment But now-a-days their number is decreasing as a result of man's greediness Protection of plants and animals is the need of the day Why should we protect plants For rain For food For future generations Discuss with your friends about the methods of protecting plants Importance of animal protection Read the incident given below Once in Borneo there were too many flies Insecticides were used to control them All flies died Lizards started eating the dead flies As a result the insecticides in the body of the flies entered the lizard's body Their movement slowed down Now cats could easily hunt them The insecticides which entered the body of cats through lizards turned poisonous for them and many cats died As the number of cats decreased the number of rats increased enormously Because of this plague disease erupted and caused the death of many people Government had to import cats from other countries This incident conveys the importance of animal protection and balance of living beings in nature Many more points about the importance of animal protection is given below Read them Animals play an important role in maintaining the environmental balance If animals are destroyed it affects other organisms as there will be scarcity of food In the recent years the Government has taken measures to protect animals through national forests wild life sanctuaries bird sanctuaries and reserved forests Hunting is banned List out the national reserve forests wild life sanctuaries and bird sanctuaries in Karnataka The living world around us is a wonder Knowing about the plants and animals we should protect them Then only the existing environment we see now will be available to the future generations Remember always that if we protect nature it will protect us LESSON FAMILY You already know that the members of a family are related to one another and live together Sometimes the members of a family leave the main family for various reasons like marriage job education and make their own separate family Over the years there has been a number of changes in the structure of a family After studying this lesson you understand the importance of a family get introduced to your family using a family tree develop the skill of identifying relationships based on signs identify the changes in the structure of a family understand the features of nuclear and joint families You have been introduced to the family tree in class itself What is a family tree Write the answer in the space provided Family tree I am Manu I will introduce my family through the family tree My family tree is in the next page In this I am in the green square Read the names of all my family members The signs used in the family tree Male Female Husband and Wife Children born to father-mother st Generation th Generation rd Generation nd Generation Ramappa Bhagyamma Vinutha Rakshith Manu Radha Priya Prema Ravi Raju Ramya Pallavi Suma Kiran Keerthana Sharan The names of the family tree above are given in the list below Imagine that you are Manu write the relationship of the persons given in this family tree Observe the example of Sl No No Name Relationship Priya elder sister Rakshith-Radha Prema Ramappa Bhagyamma Ravi Vinutha Pallavi Sharan Suma Raju Ramya Kiran KeerthanaThink Is Prema's and Manu's relationship the same with all these people While drawing the family tree symbol for men and symbol for women have been used Look at the symbols given below and name the relationship No Sign Relationship wife-husband father-daughter elder sister-younger sister You have been introduced to my family Now you draw your family tree Compare your family tree with mine and answer the questions that are given below How many generations are there in my family How many generations are there in your family Which is the bigger family of our two families How There are four generations in my family All of us live together in the same house All of us have our meals together We celebrate festivals and other functions together We all get the love of our great grandfather and great grandmother All of us take care of them with respect My family members do all the work with their guidance This type of a family with more than generations living together in the same house is called as a joint family In my aunt Prema's family only four members are there Prema aunty Ashok uncle and their two children Prema aunty's Mother-in-law and Father-in-law live in a different city Hence their family is a small family This type of a small family with only two generations living together is called as a nuclear family Do you want to know the type of your family Then put or marks for the following family features If you have more of marks then your family is a nuclear family and if you have more of mark then your family is a joint family SlNo Features of the family Yes No There are generations in my family We are all related The elders in the house are father and mother The size of my family is small All the children of the family are unmarried With the help of the above features we come to know that my family is a familyDo you know this While preparing a family tree the names of children are written according to the seniority In a family tree the names of the children of that family from the eldest to the youngest is first written and then the names of their husband wife are written The word family tree indicates that many generations spread out and grow just like the many branches of the tree But while drawing a family tree it is written from the eldest to the youngest from top to bottom It is written this way to denote the younger generations after the older generations Now I will introduce my friend's families to you Come let us see my friend's family His family is a joint family You have seen my friend's family Write your opinion about his family Write the similarities and differences you have noticed so far among my your and my friend's families Similarities Differences My friend's family is a joint family Discuss with friends and write the advantages and disadvantages of this family SlNo Advantages Disadvantages Now let us go to the house of another friend of mine Her mother is telling something Let us listen to her I grew up in a big family There were members in my family Everybody took the responsibility of nurturing and taking care of the children When I was young grandmother used to tell stories My grandfather told me how to behave But now in my family we are only me my husband and my two children Now I have to take lunch to my husband who is hospitalized Where do I leave my small child This is my worry now Her neighbour Razia didi has come now Let us listen to what she will say Don't worry Leave your little child in my house I will take care We should help one another when we are neighbours shouldn't we Did you hear My friend's mother's worry has been solved Then who is there to help your family Write the various types of help they have done for your family in the space provided Who What type of help Think Have relativesfriends who live in a far away city ever helped you I have introduced you to different families Read the below aspects and differentiate as my family and others Write the differences in the boxes provided in the next page Taking care and protection Give the required education Provide provisions for food Teach lessons Consoling if we lose in the game Provide treatment when sick Show love and affection Provide necessities Support when mother is not there Spare lots of time My family Others Along with the members of my family others and neighbours also help us Activity Visit houses in your neighbourhood Write down the name of the head of the family in every house and mention the number of members in that family Observe the example Fill in the information in the format as shown No Name of the head of the family Number of members in the family Who are they Give the relationship with the head of the family Example Ramanna Father mother wife son daughter Know this Now a days due to reasons like job income education lifestyle a lot of changes are taking place in the structure of a family Nuclear families are increasing Sing and enjoy Open the door and you will see Mother father sister and me We are a little family of four Who live and eat together for sure I love my family Oh yes I do My mother father and sister too They play with me and take me out They love me too and I love them My life I cannot think without My lovely little family of four health affection fulfilment of necessities education respect for elders co-operation identification nurturing protection co-ordination position in the society improving relationships blessings of elders habitual practises living together love What are the good qualities I learn from a family LESSON COMMUNITY Group of people living in a specific area is called a community Members of the community are interdependent on each other for many things Community is called with many other names Example Rural community Urban community Tribal community After studying this lesson you recognize the features and types of communites know about rural community its occupations problems of rural people and solutions for them know about the lifestyle of urban people their problems and solutions for them get introduced to the tribal community appreciate the dignity of labour by understanding the need of different occupations and their values recognize the assistance of the community during natural calamities Different communities Here is a picture of a village Look Don't you see many houses There are many families living in this village The group of all these families is called a community Think Many families from different places have come to participate in a big fair Can we call it a community Read the story of Ravi and answer the questions that follow Ravi's house is in Anandapura His father was born and brought up in that village Likewise many people have been living in the village for many years When there is a funtion in someone's house then everybody help Being a farmer Ravi's father is dependent on others to get his work done What are the features of a community Any three Know this ∙ Group of people living in a particular place with we feeling for a long time is called a community Every member of the community will have the feeling of dependency on the community The feeling of dependency is more if the community is small This feeling decreases as the size of the community increases ∙It is found that most of the animals in the environment live in groups and it forms their community The speciality of honeybee and ants is that they live in a community and distribute the work among themselves Identify the communities of living beings found around you and discuss about it with your friends Write the aspects identified by you in the pictures given Identified aspect Rural community Urban community Tribal community There are different communities like rural community urban community and tribal community Here is a picture of a rural community You can see many activities in the pictures Differentiate agricultural activities and non agricultural activities and write them separately in the space given below Agricultural activities Non-agricultural activities Each family in a community needs many things and equipments for their day-to-day activities Interdependence is found more in rural communities People respect all occupations Activity Make a list of implements required by a farmer for agricultural activities From whom do we get them Write it in the space given below Equipment From whom In India of the total population live in villages Agriculture is the major occupation of of these people Along with agriculture other occupations like dairy rearing cow buffalo poultry fishery sericulture are also done We also find occupations like weaving blacksmithing carpentry basket weaving and others in villages Agricultural activities are totally dependent on rain Villages have problems related to hygiene health education and jobs The Government has introduced many rural development programmes They are Rozgar Yojana and Jawahara Gram Samruddi Yojana for the educated youth in villages for self employment Sarva Shiksha Abhiyana to give quality education Nirmala Grama Yojana for the cleanliness of villages Bhagyalakshmi Yojana for the better future of girls Ashraya Yojana to provide free sites and grants and loans to build houses for the poor Urban community Here is a picture of a mega city What do you see in the picture People migrate to cities in search of jobs and for better education People in cities are engaged in different occupations India has nearly five thousand cities There are cities with a population of one million or more Bengaluru our capital city is one among them Here are some pictures which give a complete picture of a city Look at these pictures and answer the questions that follow Discuss the given topics with your friends under the guidance of your teacher Present it to the class Housing problem in cities Traffic jam Pollution in industrial areas Disposal of garbage Slum areas Water pollution The Government has undertaken many programmes to solve these problems Underground drainage system Supply of pure drinking water Well equipped bus stations and railway stations Ring roads in the out skirts of the city Developing gardens It is the responsibility of every citizen living in the cities to keep the cities clean They should co-operate with the Government to maintain the cleanliness of the city People should live with co-operation love and friendship Tribal community Observe the picture and explain how it differs from your environment Write it in the space given below Families living in dense forests or hilly areas are called Tribal community The living conditions language dress and marriage system of the tribals are distinct In Karnataka Soligas of Mysuru district Koragas of Dakshina Kannada Jenu kurabas and Yeravas of Kodagu district are the tribal communities Since tribal communities live in forests and hilly areas they are deprived of health residence education transport food and electricity facilities The Government is trying to provide education food house and health facilities to these people in the recent years You know that a group of people living together to fulfill their basic needs and to help each other is called a community Different types of communities can be seen in rural urban and tribal communities Know this Different types of Communities · Community of like minded people come together to exchange their ideas and opinions For example Community of people interested in folk lore and arts · Community of people who work together to bring change or to achieve something in their endeavour For example community of nature lovers · People belonging to the same profession or same vocation come together to form a community For example community of teachers Like this people get together because of their interest time leisure practice occupation and hobby They form their own communities Communities are not only formed among families but also between persons because of their individual relationships Apart from these caste religion aim language culture age and sex are also basis for formation of communities You have already learnt about the jobsoccupations Do you know how many people help to get the food you eat Observe the chart given below and write what you have learnt from this Food Required food items Farmer Assistants Land Wate well canal bore well diggers pipe pumpset manufactures electric linemen farmer seed collectors seed conservers packing material manufacturers vehicle-drivers merchants manufacturers processors bag makers bag fillers weighers transporters merchants researchers manufacturers workers merchants vehicle-driver labourers agricultural labourers Wholesale merchantbroker Wow how many people have worked to get the food we eat Then think of those people who toiled behind the manufacturing of clothes we wear building houses we live in Work will not be completed without a single person in this chain We should not think that we can buy anything easily by paying money We should not forget that many people have worked hard for the production of goods and food items we use We should respect each and every joboccupations and also respect each and every person in the community How do we get salt which is prepared by sea-water Make a chart of persons who help produce salt and distribute it to the people Take the help of your teacher You know that there should be different occupations for the development of a community With the occupations which provide basic needs of the community there are people who follow other proffessions in a community Look at the pictures Who are they How are they useful to us Write it in the space given below the pictures In a community along with people who manufacture and supply things people who clean the environment and people who provide the basic necessities of life we also need people who entertain give happiness give information and relief Eveybody in the community has to contribute for its development Every occupation has its own value and we should respect everyone Collect pictures of persons who have excelled in different fields Exhibit them in the classroom Which occupation would you like to choose when you grown up What are the advantages of your choice to the community Share your opinion in your class Look at the picture given below Explain the situation in the picture When somebody in the community is in trouble others will help them Likewise if there are natural calamities such as floods droughts earth quakes other communities help the affected community Every person is a part of the community Community is formed by every member living in the community It is not possible to live without the co-operation of the community So when situation demands we should help others in the community LESSON COMMUNITY GAMES The community has given rise to games To relax and spend free time people have made games a means Games build the relationships among individuals in a community It provides an opportunity for elders and youngsters of the community to play together Games are nothing but activities that people have formed for entertainment and physical exercise This has definitely increased the harmony in the community by being responsible for all to play and enjoy together After studying this lesson you become aware of the importance of games and exercises get introduced to adventure games Sunday is a holiday to school You are in a holiday mood How will you spend your time on a holiday Write all that you will do on that day Among these identify the activity which will give you maximum happiness Is there a game in it Then observe the list given below Pick the uses of games from the list and write happiness writing skill development of intelligence co-operation entertainment competitive spirit attitude to accept both success and failure equally hunger is pacified Protection of environment physical exercise friendship knowledge Physical and mental health will develop if games yoga and physical exercises are done as per the need regularly The body will be strong and the weight of the body can be maintained The body will also look beautiful if it has a good physical structure It increases our Free time will be utilized beneficially We can be active and happy always as games give entertainment and happiness Think What kind of problems will a person who does not indulge in physical activities have What steps should a heavy person follow to lose weight according to you Are only we benefitted from games National and international games help to build friendship and co-operation with other states and countries which helps to improve the bond between different countries river rafting mountaineering sky diving rock climbing mount cycling Know this Games which provide excitement and a special experience with special physical competence are called adventure games These games offer challenge to reach the goal in not so common situations These games need a lot of preparation speed skill training and physical exercising to meet the new challenges it has to offer Such games provide a lot of happiness determination to face dangers mental stability physical fitness and entertainment But they are definitely dangerous games Hence the cautions given below have to be followed Should not participate in such games without proper training and guidance Before participating in such games all the necessary special equipment have to be procured and required skills have to be developed Have to behave with a lot of patience and responsibility Situations will have to be handled with competence Must prepare well ahead and gain sufficient experience to face the threat harm and dangers of such adventure games by practising well to face the challenges Should participate in the games with co-operation of the team Do you know this The highest peak in the world Mount Everest was first climbed by Edmund Hillary and Tensing Norgay Bachendri Pal was the first Indian woman to climb Mteverest Native adventure games reflect our culture but they are being overshadowed by the advent of new technology like TV and internet Wrestling is a sport game which had gained prominence right from the time of the Maharaja of Mysuru Even to this day it has remained a part of the Dasara games Cycling swimming brisk walking and yoga are some very good excercies This helps to improve one's health LESSON NATURAL RESOURCES Our earth consists of essential resources which support life Water soil air minerals plants animals which occur naturally on earth are called resources These resources are necessary for all living organisms including man These are the most valuable things in the progress of mankind After studying this lesson you understand the need of natural resources know the types of natural resources understand the significance of different resources classify natural resources into renewable and non-renewable resources realise the moderate use of natural resources and their conservation Solve the following riddles to identify natural resources You can't live without me Every plant tree animal needs me Nobody can see me Who am I I occupy major portion of the earth I satisfy all your thirst I make animal tree and plant cool Who am I I let you live on me I help to grow plants and trees I support all life on me Who am I I give fruits and nuts I spread cooling shades No life without me Who am I Vehicles like bus lorry and car use me to run Took thousands of years to form me From underneath the soil you extract me Who am I Plate tumbler and vessels are made up of me Beautiful jewels are made up of me My ore will be hardened by you Who am I Darkness drives away from me Bright light comes from me A source of energy that is me Who am I Generally natural resources can be classified as renewable and non-renewable resources Renewable resources Resources like solar energy air water soil forest are available in nature in spite of their usage Since these are continuously available over the period of human life time these resources are called renewable resources Non-renewable resources Resources like coal petrol diesel and natural gases will run out due to their continuous usage Such resources cannot be renewed Hence these resources are called as non-renewable resources Put the following resources into the suitable baskets by drawing lines coal iron petrol diesel cooking gas water oxygen forest gold wild animals solar energy Non-Renewable Resources Renewable Resources You have learnt about the types of natural resources Let us now know about renewable resources in detail Solar energy Solar energy is the energy obtained from the sun Sun is the main source of heat and light to the earth We get light and heat from the sun You know that plants prepare their food using solar energy You will learn more about solar energy in the unit Amazing Energy Air and water are also natural resources You will know about these in the next units Soil We walk on soil We live on soil Soil is also a renewable resource like water Soil is necessary for the growth of plants You already know that plants get water and salts required to prepared their food from soil You will know more in detail about soil in higher classes Know this The outermost rocky layer of the earth is known as crust Soil is the thin top layer of the crust containing minerals and organic substances It takes nearly to years for the formation of about cm of soil Soil is formed by the weathering of rocks by flowing water blowing wind and other organisms What happens to the top soil in the following circumstances Discuss with your friends When the wind is stormy When there is water current after rain The following measures are taken to preserve the top soil from erosion Observe the pictures Note down what you have learnt Know this Contour farming Farming according to the shape of land to prevent soil erosion is called contour farming Forests Forests are the natural habitat of wild animals and birds They provide the necessary food to the animals and many useful materials to man Observe these pictures and make a list of the uses of forests Know this Forests are also one of the natural resources They provide fruits flowers medicinal plants wood Forests are the shelters for tribals Forests prevent soil erosion washing or blowing away of top soil The trees give out oxygen and increase its quantity in the atmosphere Such useful and valuable forests are being destroyed for various human activities like urbanization industrialization construction of dams We must not forget that destruction of forests is destruction of life Conservation of forests Forests can be conserved by restricting unnecessary felling of trees tree planting proper usage of forest products cutting down tree branches causing forest fire The Government has made amendment to National Forest Policy in and has taken many steps to nurture and conserve the forests Know this The Government is maintaining and conserving national forests through the forest department Village panchayath and local community protect social forests National park and wild life sanctuaries Some forests are identified and preserved along with its wild life Example Bannerughatta and Bandipura forests are protected by making many laws Felling of trees smuggling of wood hunting wild animals are punishable offenses Some religious beliefs and rituals are also helpful to conserve forests Example Nagabana of Dakshina Kannada Devarakadu located in Kodagu Cutting down of trees is prohibited here Many movements have taken place against deforestation when the implementation of several mega projects were proposed Know this Panduranga Hegade initiated Appiko movement to prevent deforestation in westerns ghats rich in diversified wild life in Karnataka Environmentalists of Kerala successfully stopped a hydro electric power scheme proposed by the Government in silent valley by conducting silent valley movement Save forests the jungle bachao movement triggered in Bihar for the conservation of forests reached even Jarkhand and Odisha and saved many forests Sundar lal Bahuguna opposed cutting down of trees by the well known Chipko movement in Himalayan region and thus saved many forests Know this Salumarada Thimmakka a proud daughter of Karnataka is known as Vruksha mathe throughout the country Daughter of Vijayamma and Chikkarangaiah of Gubbi taluk Tumkur district Thimmakka was married to Bikkala Chikkaiah of Hulikal village and stayed there Later on she has planted and protected Banian trees beside the road from her village Hulikal to Kudur with the help of her husband Considering these trees as her children Thimmakka dedicated her entire life for them Hence centenarian Thimmakka is called Salumarada Thimmakka The Governament of Karnataka has declared a project called Salumarada Thimmakkana Neralu Yojane in its budget Hundreds of awards have been conferred for her immense concern towards nature The important awards are Nadoja AwardKannada University Hampi Karnataka Rajyotsava award Indira Priyadarshini Vruksha Mitra Award Government of India Parisara Rathna Award Salumarada Thimmakka is a role model for all of us in the conservation of environment Her concern towards environment is remarkable and it should be followed by us Know this Animals are also renewable resources They enhance their population by reproduction Sometimes hunting of wild animals leads to the extinction of their race and thereby make them non renewable sources It is our duty to conserve such resources You have learnt about renewable resources Let us know about some non-renewable resources Fuels Fuels are substances which release heat and energy on burning We use fuel for many purposes Example running vehicles cooking food Name three fuels used to run vehicles Name three fuels used to cook food at home Fossil fuels are formed by the remains of extinct plants and animals which were buried under the earth's crust over millions of years The main fossil fuels are petroleum natural gas and coal Petroleum Petrol diesel kerosene wax are the byproducts of petroleum Petroleum is a liquid mineral formed beneath the earth It is formed by the action of bacteria heat and pressure on dead organisms buried under the layers of the rocks The byproducts of petroleum like wax and paraffin are used in making candles wood polish ointments dyes lipsticks chemical fertilizers vaseline jelly Natural gas Natural gas is found with petroleum in petroleum wells Compressed natural gas is used as an alternative fuel to petrol and diesel to run vehicles Know this You have seen the use of cooking gas at home This is called Liquified Petroleum GasLPG It is obtained by refining petroleum or moist natural gas Coal Millions of years agothe remains of plants and trees that were buried beneath the earth's crust did not decay completely Due to the high temperature and pressure they turned into coal under the layers of the rocks This is used as fuel in the production of electricity This source of energy is also used in industries Write examples for the following Solid fuel Liquid fuel Gaseous fuel What measures can be taken to conserve the following fuels Write here Cooking gas DieselPetrol Know this Excessive use of fuels is dangerous to the environment Now-a-days efforts are being made to use alternative sources of energy like solar energy Mineral resources Minerals are formed in the earth as a result of prolonged natural process They are available along with rocks in the surface of the earth Minerals are extracted in the form of ore refined in factories and metals are separated from them Example Separation of iron from iron ore Metals like aluminium copper silver are extracted from their ores Word help Mineral It is a multi useful material available in nature Its composition can be represented by the chemical formula Look at the following pictures and write the uses of minerals Think What would have happened if there were no minerals Explain in your class about the minerals used at your home Know this Regaining of emptied mineral resources depends on the scientific process that takes place inside the earth Minerals are formed over millions of years Hence they must be used moderately Write the uses of the natural resources given in the table Natural resources Uses soil forests solar energyanimals fossil fuels minerals The availability of natural resources that fulfill our needs is not uniform everywhere The quality of available resources is also not the same As a result of excessive usage more than our requirements there is scarcity of such natural resources If the same condition persists some of the resources may not be available in the future Hence these resources must be used moderately and they must be reused if possible Know this Natural resources are there to fulfill our needs but not to fulfill our greed Natural resources should be used moderately and the balance in nature should be maintained Do you know this In earlier days natural things like mountains forests minerals animals soil water were considered as natural resources Now a days it has got a wider meaning The meaning of the word resource is changing with time A thing once considered as a resource may not be considered as a resource after some years Example Natural gas is a resource now but it was not so about a thousand years ago Sun light water soil available everywhere on the earth are called universal resources If forest resource is used for fire wood and wooden logs then it cannot be reused again As a result forests become non-renewable resources Growing more trees and moderate use of wood can make the forests renewable Now-a-days sea water can be converted into pure water for drinking purpose by using some methods But these methods are very expensive Human beings with innate intelligence creativity expertise and aesthetic sense can also be considered as a type of resource LESSON AIR Air is one of the natural resources The earth is surrounded by layers of air called atmosphere Air being a mixture of many gases is very essential for sustaining the life of animals and plants After studying this lesson you know about the existence of air through experiments know the components of air understand some characteristics of air through experiments understand the uses of air discuss about air pollution causes and effects and remedies Air is not visible but its presence can be felt How do you know that air is in your surroundings Write experiences about it Know this We use oxygen in air for respiration We cannot live without respiration In the same way animals and plants also need oxygen for respiration Oxygen is necessary for fuels to burn There are many more uses of air You will learn about these in the next classes Air is a mixture of nitrogen oxygen carbon dioxide water vapour noble gases and dust particles Oxygen Water vapour noble gases and dust particles Do this Press a piece of dry paper to the inner bottom of a glass tumbler Invert the glass and press it carefully in a trough filled with water as shown in the picture Observe what happens Is there water inside the glass Does the piece of paper in the tumbler get wet No Why is it so Now tilt the glass slightly What do you observe Air bubbles comes out of the tumbler and water goes inside How does this happen An empty tumbler is not really empty It is filled with air When it is pressed inversely in the trough filled with water air comes out and water goes into the tumbler What do you understand by this activity What is being done here to inflame fire in the oven What do you learn from this Write here Think What happens when the tyre of a vehicle gets punctured You will know more about the use of wind energy in the unit amazing energy Moving air is called wind Wind has enormous energy What do you learn from these incidents Roofs of houses are carried away by strong winds While walking on a street sometimes we feel the wind pushing us Clothes hung out to dry will flutter when the wind blows A vehicle cannot move if the air inside the tire comes out Coconut trees swing in strong winds Kites fly up in the sky Air is polluted by the smoke released by factories automobiles burning of substances and crackers Mixing chemicals dust micro organisms which are harmful to man and other organisms into air is called air pollution Air gets polluted when chemicals and micro particles of smoke from industries and vehicles mix up with it It causes serious health issues like heart disease cancer breathing problems It has a negative impact on growth of plants and their yield Some animal races may get extinct Since all organisms need air it is necessary to prevent air pollution So we must take measures to stop air pollution Write any two measures to prevent air pollution Get the help of your teacher elders Know this Some of the measures to be followed to prevent air pollution are as follows Preventing the mixing up of chemical wastes discharged by factories with air Installing tall chimneys in factories so that the smoke can be released at a higher altitude Using gaseous fuel instead of coal diesel and petrol Designing emission control systems Using public transport Using alternative energy sources like solar energy hydro electric power and wind power Avoiding burning of substances near civilian areas LESSON WATER Water is very essential for the life of plants and animals Crops cannot be grown without water Water is a basic need for all There are many uses of water So water is a very important resource It is called life liquid of the earth surface is covered by water After studying this lesson you know about the sources of water understand the physical characteristics of water appreciate the biological importance of water know the importance of conservation methods of water verify the traditional and modern ways of water conservation Recall the distribution of water on the earth that you have learnt in your previous class Answer the questions Where can you find more water on the earth What is the consumable quantity of fresh water What are the sources of fresh water Write here the sources of water that you know Rain is the main source of water Let us know about other sources Oceans Oceans are the biggest source of water on the earth Look at this Globe Blue colour indicates the portion of the earth covered by water Rivers Rain is the source of river water also Melted snow from mountains reaches the river during summer So rivers overflow All the rivers flow in their definite route and finally reach the ocean Springs Water that is stored under the earth's crust and comes out due to the pressure through an opening is called spring Rain water which enters the earth through its loose portions will be collected as underground water and this comes out in the form of a spring Wells Underground water obtained by digging the earth's crust to a certain depth is called well water How many types of wells are there Which are they Write here Know this Due to the excessive utilization of underground water it is getting exhausted It can be regained by the absorption of rain water into the earth Soak pits must be constructed for this purpose We have to minimise the utilization of underground water and we have to follow some restoration methods like rain water harvesting and recycling of water Ponds An artificially man-made low level portion of land to store water is called a pond Its capacity of water storage is less It is constructed in such a way that rain water which drains from high level will be stored here Rain water reaches ponds by running through rivulets small streams also Reservoires Dams are constructed across the rivers to store water through out the year and to supply water to places where there is scarcity and also for multi purpose projects These are capable of storing water in large scale and they are called reservoirs Write the names of water reservoirs in Karnataka Think Our elders constructed tanks ponds and open wells to conserve water Now-a-days reservoirs are constructed to conserve water Which one is eco friendly among these Why Collect the information about tank pond open well or reservoir which are near your locality by visiting with your teacher an elder In what kind of place is it constructed How is water collected What are its uses In which season of the year will it be full In which season will it be empty or less Why From which source do you collect water in your house and at the school Write here Know this In the list of uses that you wrote have you considered the use for transportation People also travel on water Yacht boats are used for shorter distances and also to catch fishes Ships are used to travel longer distances Do this Collect flowing rain water in a glass bottle Collect rain drops directly in a bottle Look at their colour Write the difference that you find Take two glasses of water add a spoon of sugar to one glass and a spoon of salt to another Stir them and taste both Write down what you have understood Pure water is colourless odourless and tasteless Salts and minerals dissolved in water are responsible for its taste Activity Statement Lift an empty tumbler and a tumbler of the same size filled with water Water has weight Pour a cup of water on the stairs Water does not flow from heigher level towards lower level Boil water in a small vessel Water evaporates when it boils Put some specific quantity of water in a glass tumbler a glass bottle a glass vessel Water does not take the shape of the container You have learnt some physical characteristics of water Water is a liquid substance You will learn more about it in the lesson Nature of matter Let us learn the biological importance of water Organisms have enormous quantity of water in their body Plants and animals have of water in their body Origin of very early life took place in water Water is essential for biological activities of plants and animals Water is required for the growth of plants Green plants need water for the production of their food Think What happens if required quantity of water is not supplied to plants Our elders treated this precious water as an integral part of their life They reserved a prominent place for water in their family rituals Have you observed this at your home or in your neighbourhood Which are the practices of worshipping water that you have seen in your home or in your neighbourhood When are they celebrated Water pollution Water is physically polluted by mud garbage paper food residuals Water mixed with industrial chemicals chemical fertilizers and insectisides which have dangerous components turns the water poisionous Drinking this water may cause diseases like cholera diarrhea dysentery Sometimes it may even lead to death Contaminated water extinguishes the aquatic life also Know this We should not drink contaminated water Health can be maintained properly by drinking potable water Prepare and exhibit a chart in your class by discussing with your friends about what you will do to get purepotable water You know about the disease cholera caused by contaminated water Mosquitoes breed on stagnant water Mosquitoes spread malaria disease The parasite Plasmodium is present in the body of the female mosquito called anaphylus This parasite enters the human blood when a mosquito bites and leads to symptoms of fever shivering vomiting and head ache This is called malaria If proper treatment is not given it may causes death LESSON AGRICULTURE Negila hididu holadolu hadutha Uluva yogiya nodalli Phalavanu bayasade seveye poojeyu karmave ihapara sadhanavu Kashtadolu annava dudivane thyagi Srishti niyamadolagavane bhogi Read the famous poem in Kannada written by Rastrakavi Kuvempu In this poem words like Uluva yogi the person who ploughs annava dudivane thyagi the person who sacrifices himself and produces food have been used Can you guess who he is Write your answer in the box given below This poem is composed on farmers who provide food for us Agriculture is the main occupation of the farmers So farmers are also called agriculturists Agriculturists engage themselves in agriculture and related activities to lead their life Come let us know certain informations about agriculture and agriculturists After studying this lesson you understand the various stages of agriculture and from where we get food understand the nature of work and the problems of farm labourers small scale farmers and large scale farmers and give solutions understand organic farming and chemical farming and differentiate it know about rain fed agricultural land and irrigated agricultural land understand drip irrigation and spray irrigation and make a list of crops grown in both methods collect information about intensive farming mixed farming and horticulture recognize the modern and traditional methodssystems of seed storage Crops growing in the districts of Karnataka have been given here Observe Sl No District Important crops Bidar redgram wheat jowar sugarcane Kalaburagi redgram wheat jowar pearl millet bengalgram cotton Vijayapura redgram wheat jowar pearl millet bengalgram sugarcane grapes Yadagiri jowar pearl millet redgram wheat paddy sugarcane Belagavi sugarcane jowar wheat bengalgram groundnut cotton tobacco Bagalakote sugarcane wheat jowar pearl millet bengalgram Raichur paddy cotton jowar pearl millet bengalgram soyabean Uttara Kannada paddy coconut areca cardamom pepper cashewnut Dharwad cotton jowar wheat paddy sugarcane Gadag jowar wheat groundnut cotton sugarcane Koppal paddy cotton pearl millet redgram sugarcane greengram Haveri cotton sugarcane millets jowar sunflower Ballari jowar cotton paddy redgram sunflower Shivamogga areca ragi coconut paddy sugarcane Davangere cotton paddy maize ragi sugarcane Udupi paddy coconut areca wheat pepper cashewnut Chikkamagaluru ragi coffee paddy cumin tea pepper Chithradurga groundnut maize cumin bengalgram Dakshina Kannada paddy coconut areca pepper cashewnut cocoa Hassan paddy horsegram ragi tobacco coffee sugarcane Tumakuru ragi groundnut coconut greengram banana redgram Chikkballapura horsegram ragi mulberry Kodagu coffee orange rubber pepper ragi paddy Mysuru paddy ragi bengalgram tobacco sugarcane groundnut Mandya paddy ragi sugarcane horsegram Ramanagara ragi mulberry horsegram cowbeans mango Bengaluru rural ragi cowbeans coconut grapes Bengaluru urban ragi horsegram Kolara ragi horsegram mulberry Chamarajanagara ragi jowar mulberry cowbeans sugarcane Look at the pictures given below Read the statements given in front of the pictures The pictures and statements do not match with each other Match the pictures with the correct statements by drawing a line Protecting the crop from animals birdsinsects and diseases Ploughing the land to grow crops Sowing the seeds to grow crops using chemicals or organic fertilizers for proper growth of the crop Harvesting the crop either manually or with the help of machines Irrigation for the proper growth of crops You have matched the pictures with the correct statements haven't you These are the stages of growing crops You have matched the pictures with the correct statements but they are not in the proper order Write them in the correct order in the space given below Think Plants grown on the agricultural field are called crops Why You know that farmers involve themselves in agriculture related works The farmers working in the fields are of three categories Farm labourers Small scale farmers Large scale farmers It is a village All the people of the village are living with love faith and peaceful co-existence Rangamma belongs to the same village She doesn't have agricultural land of her own It is her responsibility to manage her family So she does weeding planting and separating cotton from the plant in other farms Julakamma of the same village is a close friend of Rangamma Julakamma is a farmer She owns a piece of land She runs her family by selling crops grown on her farm Both these women like Manjamma very much Manjamma is a successful lady agriculturist She owns aboutacres of land in the village Many women of the village like Rangamma work in her agricultural land Manjamma not only grows crops but also she rears fowl and cattle She purchases modern agricultural equipments for cultivation purposes She also earns money through apiculture rearing honey bees and sericulture silkworm breeding So people of the village call her a large scale farmer She always encourages and gives suggestions to the villagers to practice agriculture like her You have read the information haven't you Now match characters in the information with the correct words Rangamma Large scale farmer Julakamma Farm labourer Manjamma Small scale farmer Farm Labourers They do not have their own agricultural land They work in some other person's field to earn their living Farm labourers have problems of their own Here are some statements Put mark to the statements that are related and mark to that are not related to the problems of the farm labourers Farm labourers do not get work through out the year They get very less wage Farm labourers are very rich Do this Meet some farm labourers of your village Write in the space given below the problems they face Many rules have been implemented to solve the problems of the farm labourers Example It is mandatary to give minimum wages to the labourers Think Think about the solutions for the problems of the farm labourers Activity With the help of your teacher make a list of solutions for the problems of farm labourers Small scale farmers Small scale farmers own a piece of land of their own They sell the crop they grow in their field and earn money to lead life They also face a number of problems Example Shortage of money to cultivate the land As the land holding is little their earning is not self- sufficient to lead the family Many times they don't get water for the land because of poor irrigation facilities They lack proper guidance to grow crops that suit soil fertility of their land or the seasons A number of steps have been taken to solve their problems Example Monetary aid through bank loans Irrigation facilities through canals Apart from these many more solutions have been provided to these farmers Make a list of them with the help of your teacher Large scale farmers Usually large scale farmers own more agricultural land In addition to family members many others help them in the agricultural practices Some statements related to large scale farmers are given here Observe They purchase and use modern agricultural equipments They store the grains in barns god owns and sell it when they get a better price They utilize the monetary facilities of the banks Their income is high as they grow different crops What are the facilities that large scale farmers get from the banks Discuss and write in the space given below Think There are many helpers in the field of large scale farmers Why We know that the farmers do agriculture in their agricultural land Agricultural land has been classified into two categories Rain fed agricultural land Irrigated agricultural land Farmers grow crops according to the category of the land they own Rain fed agricultural land Agricultural land which falls under less rainfall areas is called rain-fed agricultural land Crops which require less water and are suitable for that soil are grown there Rain-fed cultivation is called kuski or dry land cultivation Activity Make a list of crops that are grown in rain fed areas Irrigated agricultural land Water is an important wealth for farmers Cultivation of crops is impossible without water Rain is the main source of water We don't get rain all the time So water is stored in different sources and utilized to cultivate the land Observe the pictures given below Apart from rain water is supplied to the crops from ponds canals wells and bore wells Cultivating the land using water from any of these sources is called irrigated agriculture Sugar cane paddy cotton are grown depending upon the soil quality of the irrigated land These crops are called irrigated crops Activity Make a list of irrigated crops discussing with your friends Water is available for agricultural land from ponds canals wells and bore wells They are called sources of Irrigation Farmers who have sources of water follow some typical distinct irrigation methods to avoid wastage of water They are Drip irrigation Spray sprinkles irrigation Look at the pictures try to understand drip irrigation and spray irrigation In drip irrigation water is supplied to the roots of the crops drop by drop In spray irrigation water is sprayed over the crops uniformly as in rainfall Activity Make a list of drip irrigated crops and spray irrigated crops take the help of teachers elders Think Farmers are advised to adopt drip irrigation in recent years Why Know this In certain agricultural lands soil has deficient nutrients So it is less fertile It is called barren land It is not easy to grow crops here But recently plants such as Jathropa and pangamia honge which yield biofuel are being grown in barren land You have learnt about the types of agricultural land haven't you In recent years farmers follow two types of cultivation farming to grow crops whether it is rain-fed agricultural land or irrigated agricultural land They are Organic farming Chemical farming To understand these methods read the statements given below With the help of your teacher identify the statements related to organic farming and chemical farming Write them in the respective charts Statements Chemical fertilizers are used Manureorganic-compost is used for agricultural land Vermi-compost is used to increase the fertility of the soil Pesticides are used to grow crops Green leaves dry leaves are also used in this method of cultivation Organic farming In chemical farming chemical fertilizers and pesticides are used to grow crops In organic farming manure green leaves compost vermi-compost and organic pesticides are used to grow crops Think Organic farming is better than chemical farming How In agriculture many methods are being followed to grow crops For Example Some of the methods of cultivation are given here Read and understand Intensive farming Growing to crops on the same land in a year For Example jowar paddy ragi sunflower cotton horsegram bengalgram redgram Mixed farming In addition to cultivation of crops cattle rearing poultry sericulture and apiculture are also done Activity Many agricultural activities and secondary occupations are also practised in mixed farming With the help of your teacher make a list of secondary occupations Plantation farming Fruits vegetables coffee tea or flowers are grown instead of food crops on the agricultural lands Activity Make a list of fruits vegetables flowers which can be grown in Plantation farming Get the help of the elders Thus farmers adopt different agricultural methods and earn their income Do this Go to an agricultural land with your friend Observe the methods being followed there and name them Storing and preserving the grains after the harvest of the crop is also very important Observe these pictures Some of the methods of storing and preserving the grains have been shown Identify them with the help of your teacher In the first two pictures we can see the storage system used in olden days They are called underground granary Hagevu and bamboo granary These are traditional methods of storing grains Food grains products are being grown on large scale Granaries have been constructed to store and preserve food grains products Farmers can preserve their food grain in government granaries in little expense Think Preserving grains is essential Why How is it useful for both the farmer and buyers Write here Agriculture and farmers are like two wheels of a cart Agriculture is the main occupation of our country People who lead life following the profession of agriculture are the real food providers Annadatas If the cultivator harvests the whole world rejoices If the cultivator fails to harvest the whole world sobs These lines highlights the importance of the farmers Let us salute the farmers the food providers LESSON FOOD ESSENCE OF LIFE Hasiyade unabeda hasidu matthirabeda bisigoodi thangalunabeda vaidyanagasaneye beda Sarvajna Observe the tripadi of Kavi Sarvajna In the second line he says not to eat stale food mixing with fresh food Why does he say so Think Write your answer here Yes this line refers to the food which we eat Food is the essence of our life Everyday we do one or the other work We need energy for doing work We get energy from the food we eat Food is necessary for our growth development and good health What is there in the food we eat How should our food be This unit contains some information about it Read and understand After studying this lesson you recall the nutrients of food know about the sources of food and availability of food recognize the diversity of food in different places by understanding the points that decide the food system understand the changing food habits and its effects on health understand the term food wastage and the methods to preserve it You already know that there are many nutrients in the food that we eat The nutrients of food and the food materials which are rich in those nutrients are given below Match the statements that suit the nutrients correctly Nutrients Food materials carbohydrates fenugreek menthya carrot sprouted seeds fish oil green-yellow vegetables lipid ragi wheat jowar foxtail millets little millets bread honey protein groundnut meat fish dry coconut sesame egg yolk vitamin vegetables fruits lemon cereals minerals cucumber watermelon grapes radish ash gourd brinjal cabbage cauliflower water cow beans red gram black eyed beans milk green gram soybean You have matched the nutrients and their suitable food materials Haven't you These nutrients are helpful for our growth repair body building and for being healthy Think We can't maintain our health if we eat food containing the same nutrients everyday Why Observe the following food materials Paddy foxtail millets meat pearl millet mango cheese ragi ghee egg cauliflower milk fenugreek seeds carrot butter milk radish Do this Classify the food materials given above and write them in the table given below Food materials from plant source Food materials from animal source These materials are available for us from plant source and animal source The food substances from plant source are classified as follows cereals pulses oil seeds vegetables green leafy vegetables fruits The list of some food materials obtained from plant source is given Observe mango brinjal sesame green gram foxtail millets amaranth harive palak groundnut lemon beetroot fenugreek seeds menthya sunflower seeds sweet potato redgram jowar black gram orange little millet Write the food materials given above in the related petals of the plant source Plant source green leafy vegetable cereals pulses fruits vegetables oil seeds Millets The food we eat consists of more than one nutrient Among them millets like foxtail millets barnyard millets kodo millets are the barn of nutrients Our elders used to consume more of millets Now-a-days the consumption of these cereals which are considered to be healthy is reducing Important millets jowar pearl millet brown top millet little millet ragi kodo millet proso millet barnyard millet foxtail millet Activity List out the millets shown in the picture Uses of millets Millets can be grown using less water in less period of time They grow easily in different environment and climatic condition These can be grown without using chemical fertilizers pesticides and herbicides These are called the friends of famine These cereals have a lot of nutrients Think Now a days doctors advise patients to consume millets Why Availability of food The fertility of agricultural land and climatic conditions differ from one place to another in our state So all types of crops cannot be grown in all the places Crops like jowar ragi and paddy cannot be grown in all places Think Increasing population and decreasing agricultural land is the cause for decrease in the availability of food How Therefore the Government has taken steps to ensure availability of food for all the people Example Giving milk and mid-day meals to students in school Supplying food materials at nominal rates through fair price shop Steps are taken to prevent unnecessary holding of food materials by the merchants Purchasing the food materials from the farmers storing them in proper god owns and then distributing Think What are the advantages of giving mid-day meals and milk in schools As food materials are available it is possible to prepare food for us Make a list of the food prepared at your home Compare this list with that of your friends Observe whether your and your friends' list of food differ Complete the following activity Your food Season Food you eat Summer Rainy Winter Neighbour's food Neighbouring house The common food of your village or town The common food of your district The common food of different places of Karnataka Get the help of the teacher North Karnataka South Karnataka Coastal Karnataka Malnad Answer the following questions use the chart shown above Which food do you take mainly in summer Which food do you take commonly in winter Which is the main food of your district The food of different places in Karnataka are different Why You have answered the questions Haven't you Some statements about the factors which decide the food we take are given Observe Although we are of the same state our food system is on the basis of the climate and the food materials which are available grown in the region in which we live The food which we eat is decided by the tradition beliefs of a particular family Our food changes according to the seasons like summer rainy and winter Although all these aspects influence our food now a days our food habits are becoming similar Observe the following pictures The above factors are responsible for the change in our food habits rice cups onion chopped ginger small piece coriander-to garnish curry leaves-stem mustard seeds-spoon black gram spoon turmeric powder spoon capsicum big tomato big garam masala spoon salt to taste They can be described as follows Magazines advertisements Cooking related programmes telecasted in TV channels and radio The new food habits have become common due to the use of internet in mobile phones and computers Cookery books Due to the influence of factors mentioned above our food habits have changed as follows Consumption of food items like pizza burger sauce samosa corn-flakes soup noodles ice cream chocolate chips have increased instead of consuming nutritious home made food Some of them are considered junk food Know this Junk food means the food material which has less nutritional value or is unnecessary from the health point of view Think Junk food is not good for health Why Consuming sauce rich food items like gobi manchurian pani purichinese food has become common The sauce contains certain chemicals which make food tastier Consuming the outside food instead of home made food is on the increase todayUse of readymade food is increasing in the mechanical life of city town Eating fast food is an example for this Think What is fast food The effects of change in food habits People fall sick easily Poisonous chemicals enter the body due to the intake of tasty food instead of healthy food Body is losing the power to fight diseases Consumption of spicy food and junk food has given rise to obesity problems Activity Which type of food should we eat Discuss with your friends about this Ready made food packets Now-a-days food we eat is now available in packets While buying them observe the following points Date of manufacture and expiry date The ingredients added to the stuffs quantity of chemicals Temperature needed to preserve the packet Activity Take a packet of food stuff and list out the points mentioned above Wasting of food We can see food being wasted here and there in these pictures Throwing away food which is worth consuming is called wasting of food It is important to preserve our food or food stuffs without wasting and spoiling them Now a days food stuffs are preserved by following some methods They are We know the taste of pickles Salt is added to it in order to avoid spoiling for many days Chemicals like sugar are used to preserve the fresh fruits Grapes are dried and used as dry grapes Activity List out the food stuff which are preserved by drying them Fish meat and milk are preserved by storing them at very low temperature It is called cold storage For example Refrigerator fridge Good food keeps us healthy-physically and mentally Food is the essence of our life To be healthy it is important to protect ourselves by eating good food LESSON RESIDENCES You might have heard that home is the first school and mother is the first teacher Home is a familiar term for us Early man protected himself against sun light rain wind and wild animals by living in caves and bushes Hence they are called the early shelters of mankind Home became a need as man became civilized Construction of houses were started by the civilized man as the need for a home increased in accordance with the changes in society Construction of residences started from independent houses and got transformed to community houses After studying this lesson you know about personal and community housing projects understand the problems related to rural and urban residences Look at the pictures given below You have learnt about the construction of these houses in the previous class Write the materials required to build the houses given in the picture in the space provided Type of house Building materials required People live in various types of houses such as hut house with tiled roof and houses with concrete terrace Many families in villages or towns are living in houses constructed side by side in a locality These are called residences Do this Observe the lanes of your village or town These are the areas of common residences Generally families lead their life by constructing their own personal houses The common features found in residences are given below Write down the other features that you have observed Houses built here and there or houses in a lane Lanes are mostly zig zag Street lights are there in the residential areas Facilities are rarely available in areas where people build their own houses Now-a-days community housing projects have started to meet the needs and demands of the people due to over population Following pictures are the examples of community housing Community houses are constructed for various advantages Some statements are given below But some of them are not the correct reasons Put mark only for correct reasons Many families live together in community houses The Government provides housing facilities for the poor families by constructing community houses in villages and cities They are constructed to provide systematic basic facilities for a large population in limited space Houses in multistoreyed buildings are constructed and are suitable for the residence of a single family Objectives of community houses are To provide all the facilities to the houses which are required by families Providing good roads transportation facilities electrification water supply and garbage disposals in a planned way Constructing parks hospitals for public needs Connecting community houses to the regional main roads Do this Make groups of four students each List out the facilities available in community houses Take the help of your teacher The facilities available in community houses are given in this chart Observe Transportation Health and sanitation Essentials of life Entertainment and cultural programmes Street lights Safety Parking facility Roads Under ground drainage Health center Gym Play ground Toilets Vegetable stall Provision store Electricity Garbage disposal Water supply Drama theater Community hall Park Film talkies Activity Is it possible to provide facilities available in community houses to the independent houses Discuss with your friends Usually community housing projects are implemented in suitable places in villages and cities The Government build community houses in villages The Government has formed separate housing boards for the construction of houses in cities Many problems arise during construction of houses in villages or cities The above pictures reveal some problems of residential areas Observe the following statements Some residential problems of rural urban areas are given Write the rest after discussing with your friends Take the help of your teacher Housing problems in urban areas No underground drainage system Garbage disposal problems Frequent fire accidents in multistoreyed buildings Housing problems in rural areas No bathroom and toilet facility No proper electrification Lack of pure drinking water supply Roads not suitable for the transportation of vehicles No underground drainage facilities Look at the list of urban and rural housing problems The facilities that the best city residence village residence must have are given here Observe Housing features of the best city or village Proper ventilation and light Rain water harvesting system from the roof of each house and its storage Electricity by solar energy Closed underground drainage system Proper system for garbage disposal and preparation of manure from garbage A good house can provide health happiness and peace for the family members and their neighbours Houses with the best facilities lead to good health LESSON NATURE OF MATTER We see several materials objects in our daily life and use a few of them These materials are also called matter These materials are not just like one another But if you observe keenly the characteristics of some materials appear similar Every one is eager to know what are the constituents of these materials What are the common characteristics of these materials After studying this lesson you understand about matter explain the characteristics of matter identify different states of matter understand the types of change in states of matter understand about mass density pressure sublimation and buoyancy In our daily life we see objects in different forms Activity Collect at least ten objects in your surroundings What objects should I collect Shall I collect water Activity List out the names of the materials you have collected by arranging them neatly Observe whether the objects you have collected are as follows If yes put mark and if no put mark Have you brought hard materials there any soft materials there any material which could be stored in a bottle or a bowls there any brittle materials there any material which can be dissolved in water Is there any material which turns into manure after mixing with the soil Oh the materials I have brought are in various forms From the above activity you can understand that materials are in different forms in their shape colour brightness solubility Isn't it Observe the differences if any by comparing the materials collected by you and your friend Matter object How are the materials available in nature created Experiment Take some chalk powder Dip your finger in it and sprinkle slowly over a plane glass Observe these minute pieces carefully through a convex lens Can these minute pieces be divided further Think and try It is not possible Why Is it not possible for us to divide them further We can observe that the finest pieces of chalk cannot be divided further though we try to do so Scientifically materials are called matter Matter is made up of small particles The smallest piece of matter is called particle Think Read the instances given below and try to remember if you have experienced any How did fragrant particles reach your nose from the opened scent bottle How did your nose feel that the neighbouring room is being swept Did you notice any collection of dark particles when fire wood is burnt or kerosene lamp is lit Particles present in the matter are invisible Matter is made up of very minute particles Hence visible matter consists of invisible particles What do you mean by matter Properties of Matter Matters have special properties These properties can be understood with the help of some experiments and activities Matter occupies space Activity Pour the wheat flour or any other flour into a bowl from a box Again try to fill the bowl so that the flour does not spill Was it possible Did you completely fill the bowl What should be done to pour some more flour into the bowl Why It was impossible to fill the bowl completely with the entire quantity of the flour present in the box Why Experiment Put a glass beaker completely filled with water on a plate Slowly immerse a stone of appropriate size tied with a thread into the beaker as shown in the picture What happened when the stone is immersed in the beaker Why did water spill out Why it is so Think and explain to your friends Matter occupies space A matter cannot occupy the place of another at a same time Write the names of some matter arround you Air is a matter Air occupies space in its container Activity Blow air into a balloon Particles in the air are rarely distributed So particles of one matter can be accommodated in another in which particles are rarely distributed Activity Add some sugar or salt into a beaker fully filled with water without allowing water to spillout How is it possible Discuss with your teacher Think What happens to the tube of a vehicle when it is filled with excess air Why Matter is made up of various visible and invisible particles Matter has mass Activity Take a weighing balance and note down the position of its needle Write here Put any material of g in one pan and note down the position of the needle Write here Weigh different materials you have or those which are available in your classroom with your friends Think Is there any matter without weight Place a matter in a pan of the balance Observe Is it possible to keep both the pans equal Try If not why Activity Try to lift a bag with kg rice and another same type of empty bag Write your experience here Matter is a total sum of many particles It has mass Matter is made up of small particles Total number of particles in a matter depends upon its weight The material which occupies space and posseses mass is called Matter Activity What are the properties of matter Write here States of matter Depending upon the arrangement of the particles in a matter different states of matter are recognized Activity Fill up the following table using the clues Required To burn To drink To breath Fill up the names of the matter filled above in the following table Solid Hard material Liquid which gets the shape of the container Gas which cannot be held is invisible spreads can be experienced Activity List out the materials that you know which are in the form of solid liquid and gas Solid Liquid Gas Think and group these materials in their particular column buttermilk candle curd kerosene charcoal honey piece of brick smoke Solid Liquid Gas Matter is identified in its three forms Solid Liquid and Gas In solids particles are densely and orderly arranged Example stone iron In liquids the particles are loosely arranged when compared to solids Example water milk In gases the particles are rarely arranged Example air smoke Think Where have you found the presence of gas Activity Let us conduct an experiment to know that the particles are loosely distributed in a liquid Take a beaker completely filled to the brim with water Drop three marbles into it Now water spills out Why Think and write here Take another beaker of the same size completely filled wit Add some sugar powder of equal to weight of the three marbles Did you find any difference in the water level Observe and Write here Why doesn't water spill out Since sugar particles have combined with the water particles water does not spill out Activity Place a marble on a table plate beaker and so on Did you find any difference in the shape and size of it Shape and size of the solids in any place do not change Activity Pour water into a beaker plate polythene bag Do you find any difference in its shape Liquid takes the shape of its container But does not change in size Activity Light an incense stick and allow its smoke to spread inside a jar What is the shape of the smoke now Gases spread over the entire space of the container and its volume changes Activity Let us conduct an activity to know that the air has weight Take a stick of cm length Tie an air filled balloon to one of its end and an empty balloon to the other end Tie a thread at the exact center of the stick as shown in the picture and hold it freely What do you observe Write here Activity Observe the picture given below Do this activity with the help of your teacher Shape of the liquid changes according to the space available in the container Place a glass beaker filled with water on plane surface and observe Place a glass beaker filled with water in a slant position and observe Smoke filled jar placed upright Smoke filled jar kept slant Gas occupies the shape of the container Come let us play Before you play write some names of solids liquids and gases on plain cards You and your classmates stand around a circle Now put the cards inside the circle and run around the circle Ask one of your friends to stand outside the circle and stop you by blowing the whistle When he blows the whistle all of you should stand near the cards inside the circle Your friend who blew the whistle should call out any one among solid liquid and gas If he says solid the players who stand near the cards of solids will be out Like this continue the game Ask the last one to give examples for solid liquid and gas one for each and congratulate himher Effect of heat on matter Activity As shown in the picture fix a metallic ring to a stand so that a bob can just pass through it Take a pendulum of an iron bob and try to pass it through the ring Take the help of your teacher Did the bob pass through the ring Activity Take a small glass bottle filled with coloured water upto half of its volume and close it with a single holed cork as shown in the picture Insert a thin transparent tube inside the bottle Now roll the glass bottle between your palms as shown in the picture Observe the water level in the tube and write here What is the change that has taken place inside the bot- tle due to rubbing by palms Why From the above activity we understood that matter gets changed when heated Matter expands on heating Hence solids liquids and gases expand on heating Write what happens when the following objects are heated candle rice in a cooker water Change in state of a matter When an object is heated there will be a rise in its hotness The state of matter changes due to heat Write the states of matter in the following situations Ice cube on heating Water on heating Vapour on cooling Water on cooling Matter changes its state from one form to another due to heat This is called as change in state of a substance On heating many solids change into liquid state Effect of heat on a matter depends upon the level of hotness On increase in the heat solid changes into liquid and liquid changes into gas In the same way on cooling gas changes into liquid and liquid changes into solid Example heating heating Ice cube water vapour solid cooling liquid cooling gas Activity Take a broken piece of a glass bangle By heating bend it into required shape and stick it on a cardboard Take the help of your teacher parents You have learnt from the previous experiment that objects expand by heating Sublimation Experiment Take a few naphthalene balls in an evaporating dish Close it with a glass funnel as shown in the picture Take some cotton and close the other end of the funnel Heat the dish slowly Naphthalene converts into milky vapour and will be collected in the inner side of the funnel Stop heating and observe what happens Write here We know that when solids are heated they are converted first into liquid and then into vapour Similarly on cooling the vapours are converted first into liquids and then into solids But some solids on heating directly convert into their vapour state and vice versa without passing through the liquid state and this is called sublimation Example camphor iodine Think What happens to naphthalene balls kept in an almirah after a few days Why Mass Activity Light a wax candle and observe what happens to the wax after sometime Now put off the candle and observe what happens to the melted wax and write here Give examples for the following Take the help of your teacher parent heating cooling Solid Liquid Solid Activity Measure the weight of different objects using physical balance in your school with your friends and note down The weight see examples given rice duster groundnut kg Mass is the total quantity of matter cohering together to make an object or a substance The mass is measured in terms of weight The SI unit of mass is kilogram kg Density It is generally said that the cotton is light and iron is heavy Why Write here When two objects of same size are measured one may weigh more and other may weigh less Genarally we say that the density of less weighting objects will be less and the density of more weighing objects will be more Activity Pour a cup of water and a cup of oil into a glass jar They won't mix together and will be seen seperately Why Activity Learn from the elders about the tools used to measure the quantity of objects in olden days and write here rice pavu Think Which one is heavier among kg of cotton and kg of iron Density is the amount of mass contained in a unit volume Generally density of the solid is more than that of the liquid and the density of liquid is more than that of the gas The mass of an object weight in g in cubic meter of its volume is called density SI unit of density is kgm kilogram per cubic meter Pressure Activity Take a tumbler containing water Place a blade horizontally It floats Place the same blade perpendicular to the surface of water See what happens Handle the blade carefully with the help of teachers parents Activity List the objects with less and higher density Less Density oil High Density water Even though the mass of the blade is same it floats in the former case but sinks in the later case When the blade is placed horizontally its mass is distributed over a wider area Therefore mass per unit area is less and hence it floats When the blade is kept perpendicular to the water surface it sinks since the mass is distributed over a smaller area Therefore the consequence depends upon mass per unit area This is called pressure Pressure is the force exerted on a unit area Activity Immerse a stone gently into a glass beaker containing water ∙ Write here what you have noticed Immerse a wooden plank into the other beaker containing water Write here what you have noticed When an object is immersed in water it exerts a downward force on water and the water in turn exerts an upward force or upward thrust on the objects If the upward force exerted on the object is more than the downward force then the objects float This upward force exerted is called buoyancy Write names of any four objects which float on water Activity Fill water in a glass jar as shown in the picture Then put marble coin dried leaf wooden plank straw in the jar Ask your friends to tell what happened to each object that you have put in water by observing it Some objects float in water and some sink Think A raft does not sink in water Why What objects are used to immerse the wooden plank in water Why Activity Put some small objects in the water Write what happened to those objects Objects that float in water Objects that sink in water Activity Fill water in two glass jars as shown in the picture Now pour sugar to one jar and charcoal powder into another and stir Did the sugar and charcoal powder dissolve in the water Observe and write here Some objects dissolve in water This is called solubility Some objects do not dissolve in water Activity Put the given objects in the water and stir Observe and write what happened to these objects salt sand sugar kerosene turmeric powder sugar candy coconut oil milk Soluble objects in water Insoluble objects in water LESSON ELEMENTS COMPOUNDS AND MIXTURES In our daily life we make use of different kinds of matter The matters available in nature consist of molecules or compound molecules When these compound molecules are subdivided elements are obtained The smallest unit of the element is called atom Atom is the smallest unit of an element having same properties Some atoms easily combine with others and form different substances Depending on the atoms present in the substances they are classified as elements compounds and mixtures After learning this lesson you classify the matter into elements compounds and mixtures recognise the differences between element compound and mixture Elements Elements are made up of very small particles These are formed by particles with same properties Example Oxygen Hydrogen Elements cannot be subdivided chemically and cannot be synthesized by other elements Some elements are naturally available whereas some other elements are artificially prepared Example Natural element Gold Artificial element Plutonium Elements are classified as metals and non metals You will learn about metals and non metals in higher classes Compounds When two or more elements combine chemically compound is formed There are groups of atoms of different elements in it When two are more elements combine chemically in a specific ratio and form a substance of new property it is called a compound Example Water Water is a compound formed by the chemical combination of Hydrogen and Oxygen in the ratio Molecular formula is used to represent a compound Know this Representing the number of atoms in a molecule using chemical symbols is called molecular formula Molecular formula represents the elements of a compound as well as the number of atoms A compound does not possess the properties of its constituent substances Example Sugar is made up of carbon hydrogen and oxygen But sugar does not possess any of their properties The constituents of compounds cannot be separated easily Know this Take sodium chloride salt which is used in daily life It is a compound formed by sodium and chlorine Though both sodium and chlorine are poisonous the salt formed by their combination is not poisonous We use this in daily life Mixtures We see many mixtures in our daily life Mixtures are substances consisting of two or more substances If two or more substances elements or compounds are mixed together in any ratio such that they do not undergo any chemical change but retain their individual properties then the resulting substance is called mixture Example Soil is a mixture of sand clay many types of salts and residues of plants and animals Element compound and mixture may be solid liquid or gas Element Compound Mixture Solid iron sugar soil Liquid mercury water sea water Gas oxygen carbon dioxide at room temperature air Differences between compounds and mixture Compounds Mixtures When two or more elements combine chemically compounds are formed When two or more substances mix physically mixtures are formed The constituents of compounds are combined in definite ratio or proportion The constituents of a mixture may be mixed in any proportion The constituent substances of a compound do not retain their original properties after combination The constituent substances of a mixture retain their individual properties The constituents of compounds cannot be separated by simple methods without chemical reactions The constituents of mixtures can be separated by simple methods LESSON AMAZING ENERGY In the previous lesson you learnt that the world we live in is made up of matter and energy Human beings are the integral part of nature They have understood many natural events of the environment and tried to find out the reasons for the changes that take place in the environment They have learnt to think scientifically about the amazements of nature We in our daily life use the words like force work energy What are these Let us know about them After studying this lesson you understand the meaning of work understand that energy is needed to do work understand the different forms of energy and give examples for the uses of different types of energy recognise the change of energy from one form to another recognise the significance of conservation of energy Work In our daily life activities the word commonly heard is work But the word work has a definite meaning In the above picture both Ramesh and Rasheeda are doing activities deliberately using force Ramesh can complete his work of lifting water from a well But Rasheeda cannot move the wall in spite of several attempts is said that work is done only when the force applied on an object makes that object move in the direction of the force Activity Name any five works you do Storing water You have done all the above works by applying force When force is applied on an object the object changes position or gets displaced Work depends on the quantity of force applied on the object Activity Teacher engages the students in different activities in groups For Example watering the plants drawing arranging desks systematically in the classroom Think Why are the above activities called works We are engaged with one or the other activity to fullfil our needs These activities are called work We use energy to do work We get tired when we do more work People who work hard use more energy to do work Think Can you lift the wooden table in your classroom without the help of others We will be able to work only when we have energy Less energy is required to do simple work more energy is required to do tough work Activity Try to lift your and your friends' school bags How many bags can you lift at a time We get the energy required to do work from food We get the energy for doing several works from different sources in the environment For Example We use physical energy Motor vehicles run by fuel energy to carry loads Solar energy is essential for plants to grow Every work is related with the energy required to do it If work is a needful activity then energy is essential to complete the work Work is also defined as making an object move from one place to another Energy is required to displace any object from one place to another Think Are there any works which could be done without using energy Different forms of energy and use Flying aeroplane in the space running vehicle on land sailing boat ship on water electrical appliances which are used to ease our daily works all use one or the other form of energy Observe different forms of energy in the picture given below Activities happen not only by human beings but also several activities take place naturally in the environment Energy is essential for all these activities to take place Let us know which is that essential energy Different types of works depend upon its related energy There is a natural energy in the environment Sun air water coal are the sources of energy used for certain daily activities in the environment Let us learn about the different forms of energy Muscular energy Activities like walking climbing pulling pushing need muscular energy This energy is released by chemical changes in our body Think Why do our elders insist we take nutritious food Write any four works you do using muscular energy Read and learn Muscular energy can be increased by proper food and regular exercises Mechanical energy Energy of an object by virtue of its position is called potential energy and the energy due to its motion is called kinetic energy Sum of potential energy and kinetic energy is called mechanical energy Water stored in a dam possesses potential energy When the stored water in the dam is allowed to outflow through crest gates then potential energy gets converted into kinetic energy Write any two works you do at your home using mechanical energy Know this Mechanical energy Potential energy energy possessed by a body by virtue of its position energy possessed by a body by virtue of its motion Kinetic energy Heat energy We do our daily works by getting heat from energy like fire wood sun fuel Write any two works done in your home using heat energy Activity Rub your palms rigorously for sometime and touch your cheeks How do you feel Here muscular energy gets converted into heat energy We cook food boil water and do other works using the heat energy from fuels fire wood gas kerosene During winter season condensed oil bottles are kept near the hearth flame or in the sunlight Why Think and write Think What would be the reason for the vibration of lids of vessels kept on burning stove for cooking food Heat is released when fuel is burnt Coal is used as fuel in thermal power stations to produce electricity Know this Thermal power station is established at Raichur Think What is the cause of heat energy in charcoal used iron box Solar energy Sun is the main source of all energies on the earth The energy we get from the sun is called solar energy Living organisms depend on solar energy for their survival Plants prepare their food using sunlight This process is called photosynthesis Think What would have happened if there was no sunlight Activity Discuss with friends or elders and write During summer wet clothes exposed to direct sunlight dry very fast How Water level decreases in ponds and wells during summer Why People wait for sunlight during winter season Why Why is solar water heater used Collect the pictures of solar energy devices and prepare a chart Collect the information about the use of solar energy and compose a poem or talk about it Use of solar energy for different works reduces the use of electricity and prevents pollution of the environment Wind energy Air is one of the sources of energy Moving air wind possesses energy This is called wind energy In ancient times people used to make boats and ships sail on the oceans with the help of wind Wind mills rotate due to the fast movement of wind The turbines rotating due to this wind energy produce electricity Discuss with friends elders and write Wet clothes spread over a rope for drying flutter Why · Why do trees like coconut and are fall down during rainy season what happens when a kite is held against the blowing windWind wheel rotates only when somebody runs holding it Why Why do lanterns have glass covers Wind has enormous energy By using this energy many works could be done Naturally available wind is used as energy and we must learn to protect ourselves from the disasters caused by wind Think What are the adverse effects of cyclones Collect the pictures related to it and discuss with friends Stored energy of water Flowing water is a source of energy In order to use water as a source of energy a dam has to be built across a river and water must be stored in it potential energy Stored water is allowed to flow from a higher level to fall on turbines Due to the force exerted by running water turbines rotate fast and produce electricity These are called Hydro electric power generating stations Know this Energy produced by the ocean tides is called tidal energy Naturally available water is very precious Hence it must be used moderately The electricity which is produced with more effort and expense should also be used moderately and energy should be conserved Think What would have happened if there was no electricity Know this Reservoirs producing Hydro electricity are called hydro electric power generating stations Do this Take the help of elders Collect rain water during rainy season and use it for some works Make use of rain water harvesting Make use of soak pits for the proper use of water Electrical energy Now-a-days most of our daily work is being easily done by the help of electricity Is it possible to do more work in less time using electricity Write any four works done using electrical appliances in your home Electrical Appliance Work Electricity is supplied to houses and other places from electric power generating stations Electrical appliances must be used carefully Bio energy The gas produced by decaying agricultural waste plant residues animal dung in the absence of air is called bio gas It is used for cooking The energy available from biogas can be converted into electricity and may be used for many works If you know the ways of producing useful things out of wastes prepare the useful things with your friends Bio energy obtained from agricultural waste helps human beings to maintain healthy environment Chemical energy Chemical energy is produced by the chemical reactions that takes place in the substances Example Chemical reaction in electric cell produces electricity Fuel energy One more energy available in the nature is fuel energy Fuel is the natural source of energy which is combustible produces heat and usually gives out light This can be converted into electrical energy heat energy and mechanical energy Know this Fuels are the various minerals and their products These are available in the earth's crust These are exhausted gradually and require a long period for their reformation Fire wood is also a fuel Burning of fire wood gives heat By using this heat energy it is possible to cook and do other works Think Write the instances where fuel is used unnecessarily Fuel the natural resource must be used moderately to protect our environment Solar energy must be used more instead of conventional fuels Activity Arrange a debate in the classroom about the pros and cons of fuel Energy is available in different forms from natural sources Think Is it possible to store and use energy Is electricity stored in cells Is it possible Change of energy from one form to another The energy available from sources like sun water wind food chemical reaction are present naturally in the nature The energy found in different forms gets changed and become useful for human life For Example Fuel energy gets converted into mechanical energy to run vehicles Fire wood gets converted into heat energy to cook food Write the changes in the form of energy in the following activities Activity Form of energy Form of changed energy running of petrol car chemical energy fuel mechanical energy drum playing muscular energy sound energy ironing the cloths heat energy drying up of pappad in the hot sun solar energy cooking food using bio gas glowing of an electric bulb by rotating turbine Conservation of energy Energy can neither be created nor be destroyed It can be converted from one form to another form Energy remains in one or the other form If energy released by natural source like sun wind water fuel is used moderately we can save energy Use the clues given in the brackets and write which alternative energy can be saved by doing the activities given below fuel chemical electric charcoal Which alternative energy can be used for the following activities instead of conventional energy Write using clues given in the bracket solar water heater bio gas solar cooker solar cells Activity Alternate energy used instead of hearth electric geyser cooking rice on the hearth electric bulb listening to radio by using electricity While doing work one can use alternate energy Example Using solar energy instead of electrical or fuel energy Energy which fullfils our needs is very essential for the survival of living beings If we use energy gained by the body from food and energy gained from the environment for other activities carefully the capacity of work can be increased LESSON THE SKY Watch the sky in the evening from the play ground after playing the games You will see some stars here and there in the hazy sky When the sky becomes clear you can see countless stars You will be also able to see shooting stars During the rainy season thunder lightning cyclonic winds rains are common Are you eager to know how all this takes place It is day when the Sun rises and it is night when the Sun sets The Moon is seen at night Shall we find out how these changes take place in the sky After studying this lesson you know about the Sun and its family understand the shape and size of the Earth its movements causes of day and night know about the meteors asteroids and comets understand the movements of the Moon and its phases know why the Earth is an unique planet among the other planets The Sun and its family The Sun and its family is known as the Solar System It comprises of planets satellites thousands of asteroids meteoroids and comets Know this The stars are self luminous celestial bodies The Sun is also a star The solar system is a part of a galaxy which is known as the Milky way The Sun The Sun is a star It is closer to the Earth than any other star Therefore it looks bigger and brighter than all other stars It is the centre of the Solar System It exerts a gravitational pull on all its members which orbit around it The Sun provides light and heat to us It appears to rise in the east and set in the west Do we not feel that the sun is moving around the Earth Is this true The heat and light of the sun is essential for human beings plants and animals Know this In ancient times people thought that the Sun the Moon and the planets were orbiting the Earth This was known as Geo-centric model It was expounded by Claudius Ptolemy Arayabhata the first Indian astronomer and mathematician proposed that the Earth and other planets revolved around the Sun This is known as Helio-centric model Nicolaus Copernicus Johannes Keplar also supported this model Later Galileo Galilei an Italian mathematician and physicist invented a telescope and using it further supported the Helio-centric model of Copernicus The planets A celestial body orbiting around the Sun along an elliptical orbit is called a planet Every planet has its own path of movement which is known as the orbit The Earth also has its own orbit The planets are non-luminous bodies They receive light and heat from the Sun The Earth It is our home and it is a unique planet in the Solar System It occupies the third place from the Sun It is the only planet of the solar system where there is life because it has ideal conditions for life such as temperature water and suitable atmosphere with life supporting gases Here is a picture viewing the Earth from the Moon The Shape of the Earth It is confirmed by the scientists that the Earth is slightly flattened at the poles and bulging at the equator Such a shape is called Geoid meaning earth- shaped It denotes the earth is not completely round or circular in shape Size of the Earth The Earth is the fifth largest planet in the Solar System Its equatorial diameter is km and the polar diameter is km This shows that the polar diameter is less than the equatorial diameter by km It denotes that the Earth is spherical in shape The total surface area of the earth is million square km The Movements of the Earth The earth has two movements They are the rotation and the revolution The Earth spins continuously on its axis from west to east This is called rotation The Earth also revolves around the Sun along its orbit This is called revolution The earth continues to rotate on its axis while it is revolving around the Sun Activity Ask two students to stand a short distance from each other One student represents the sun and the other represents the earth The student who represents the sun should sit on the chair Mark an elliptical circle around the chair or feet away from the chair Ask the student who represents the earth to spin himself and revolve around the chair along the elliptical pathin anti clockwise direction Discuss the following questions Is it possible for the student representing the earth to see the student representing the sun by sitting always on the chair How many times has the student representing the earth faced the student representing the sun How many times has the student representing the earth shown his back to the student representing the sun When the student representing the earth shows his face to the student representing the sun then it is assumed that it is day When he is showing the back then it is assumed that it is night What do you learn from this activity Day and Night During the Earth's rotation one side of the earth faces the sun and receives light This part of the Earth has daylight the other side of earth does not receive light and has night dark Since the earth rotates from west to east the Sun appears to rise in the east and set in the west Know this The earth takes hours to complete one rotation This is called a day The earth takes days to complete one revolution This is called a year The day and year are a result of the earth's movements The Earth is Marvelous As mentioned earlier the earth is the only planet that has life Make a list of factors found on the earth to sustain life Know this About of the earth's surface is covered by water and by land The earth is surrounded by the atmosphere Atmosphere has oxygen which is very essential for respiration of organisms nitrogen and carbon dioxide which is essential for the preparation of food and nutrition of plants The water which is essential for living beings is avaiable on the Earth through the process of water cycle How is it possible Life on earth has become possible because of the suitable distance between the Sun and the Earth ideal climate variety of soils which supply food and water to the plants suitable environment which are present on the earth Hence the Earth is a marvelous planet So far we have learnt about the earth which is the third planet from the Sun Now let us learn about the other members of the solar system You have learnt that there are planets in the Solar system In the order of their distance from the Sun the names of the planets are Mercury Venus Earth Mars Jupiter Saturn Uranus and Neptune Earlier Pluto was the the planet of the solar system Recently it has been considered as a dwarf planet and is no more a planet of the solar system Know this Till Pluto was considered as the th planet As it did not have all the characteristics of the planet it was considered as a dwarf planet Mercury It is the nearest planet to the Sun It has no water and is the hottest planet So it has dry climatic conditions It has a rocky surface large craters and mountains It revolves around the Sun faster than any other planet It is brown in colour Venus It is the second planet from the Sun and smaller than the earth It is the brightest planet in the solar system It is also known as morning star silver star and evening star Mars It is the fourth planet from the Sun and is also known as the Red planet Its red soil is formed because of iron oxide It has huge volcanic craters giant canyons and canals The canals are now as dry as dust Thus it looks like a desert Jupiter It is the fifth planet from the Sun and the largest planet in the solar system It is times bigger than the earth It is a gaseous gas giant planet It has a Great Red Spot It is three times the size of the earth There are thin icy and dusty rings around this planet Saturn It is the sixth planet from the Sun and the second largest planet in the solar system after Jupiter It is also made up of gases It has thousands of rings of ice rocks and dust That is why it looks beautiful and attractive Uranus It is the seventh planet from the sun Like Jupiter and Saturn it is made up of gases It is seen as a blue-green disc It has rings which are opaque It is covered by thick clouds Neptune It is the eighth planet from the sun Its composition is similar to that of Uranus Its colour is bright blue It is one of the coldest planet in the solar system due to its great distance from the sun A list of period of rotation and revolution of the planets is given on the basis of Earth's timings With the help of this table answer the following questions Planets Duration of earth's rotation Duration of earth's revolution Mercury Venus Earth Mars Jupiter Saturn Uranus Neptune Meteoroids Small fragments of rocks and debris in space are called meteoroids When they enter the earth's atmosphere they burn up in the atmosphere due to friction and a streak of light is produced They are known as shooting stars Asteroids Small rocky celestial bodies revolving around the sun are called asteroids Most of them are located between the orbits of Mars and Jupiter Know this The elliptical path followed by a celestial body revolving around the sun is called orbit the orbit Comets A comet is an icy body that gives out gas or dust They revolve around the sun They can be seen in the night when they come close to the earth When they come close to the sun they produce a long tail which is made up of gas and dust Some comets appear at regular intervals Hailey's comet appears once in years The last time it appeared was in When will it appear again Activity Draw a picture of the solar system in a chart or prepare its model with the help of your teacher Exhibit it in the classroom Activity Under the guidance of the teacher along with your friends draw elliptical circles on the ground You stand in the centre of the circle representing the sun Ask your friends members to stand on each circle and revolve along their own orbit to represent the planets in the solar system This activity will help you to understand the movements of the planets in the solar system The Earth's Satellite The Moon A celestial body revolving around the planet is called a Satellite The Moon is the only natural satellite of the Earth It revolves around the earth It does not have light of its own It reflects the light from the sun during the night Think If you are living on the Moon will the earth appear as the Moon to you Movements of the Moon The Moon has two movements One is rotation on its axis and the other is revolution around the earth Know this The Moon's rotation takes days and its revolution around the earth takes days As the moon revolves around the earth its position in relation to the sun changes from night to night As a result we can see the Phases of the moon The changes in the moon's visible face is known as phases of the moon You will learn more about this in the higher classes When the moon is completely dark we call it New moon When we see its bright side totally we call it Full moon Know this One day The duration taken by the earth to complete one rotation on its axis is called as day One year As the earth rotates on its axis the duration taken by it to complete one revolution around the sun is called a year One month The duration taken by the moon to complete one revolution around the earth is called one month Think When we watch a live broadast of Olympics or other global level games it was day in different countries of the world while it is night in our country How is it possible Activity The name of the planets and duration visiblity are given below Observe this along with your friends Planet Morning Evening Venus April to June Mars January to March May to December Jupiter February to May September to December Who belongs to which category Write in the table Sun Moon Mars Mercury Jupiter Venus Saturn and pole star Star Planet Satellite Do you know this The Sun and other celestial bodies orbiting the Sun is called Solar System The two natural satellites of Mars are Phobos and Deimos Jupiter has more than natural satellites and Saturn has more than natural satellites The Uranus has minimum natural satellites whereas Neptune has natural satellites Mercury and Venus do not have any natural satellites As we know the earth is the only planet of the solar system on which there is life The artificial satellites which revolve around the Earth are prepared by man for multiple purposes Aryabhata is the first man-made satellite of India Neil Armstrong was the first human being to land on the Moon Jupiter Saturn Uranus and Neptune are called Gas giant planets LESSON OUR INDIA PHYSICAL DIVERSITY India is our country It has a variety of physical features such as Himalayan mountain ranges very high peaks plateaus vast plains river systems deserts coastal plains and islands Together they make India-our country which is unique in its natural setting Besides India is the home for a variety of plants and animals After studying this lesson you understand the physical map of India know about the Himalayan mountains plateaus plains coastal plains river basins and desert understand how the factors of natural environment influence the life of the people know the effects of physical factors on art and architecture know about the important characteristics of weather and the climate of India know about the plants and animals of India Physical divisions of India Look at the map given in the next page It shows the major physical divisions of India With the help of this map you can easily identify the varied physical features of India Instruction to the Teacher Provide the facility to the students to refer to the Geo-maps on the computer by downloading the maps to understand the abstract concepts What do you see in the map When you look at the land surface of India don't you notice the differences from one region to another You see various types of landforms such as mountains hills plains plateaus valleys gorges These differences that we see on the land surface are known as physical features Now let us study about the major physical divisions of India The Northern Mountains They consist mostly of the Himalayan ranges When you look at the northern part of the map you will notice that the Himalayan ranges extend from Kashmir to Meghalaya The Himalayas are the highest mountains in the world MtEverest kanchenjunja Himadri Siwalic Kailas mountains INDIA NORTHERN MOUNTAINS Zaskar Nangaparbat Dhavalagiri Indus Brahmaputra Naga hills Garo Kasi hills Kohima Mizo hills Manipur hills Ganga R Yamuna R Characteristics of the Himalayan ranges They are covered with snow Hence they are called Himalayas They have many high peaks There are many deep valleys and gorges There are glaciers and the highest mountain passes There are hot springs There is a variety of plant and animal species Advantages Himalayas prevent the cold winds from central Asia blowing into India They are the source of many North Indian rivers They check the monsoon winds and cause heavy rainfallThey are like a gigantic wall and are natural northern frontiers to control foreign invasions Know this A mountain range is a group of or chain of mountains found close together and extend to thousands of kilometres The Aravalli the Western Ghats the Eastern Ghats Vindhyas Satpura ranges are the other important mountain ranges in India The population is less because of the severe cold in the Himalayan ranges The Indus the Ganga the Yamuna and the Brahmaputra rivers have their source in the Himalayan ranges Do you know this Mt Everest is the highest peak m in the world Mt Godwin Austin or Mt K m is the highest peak in India Mullayanagiri m is the highest peak in Karnataka Annaimudi m is the highest peak in South India Know this Air cools as we climb higher places The rivers which have their source in the foot hills of Himalayan ranges have plenty of water even during summer The Northern Plains When we talk about the plains we remember a playground Usually a playground is plain in level with no obstruction to play games Similarly there are plains located to the south of the Himalayan ranges They are very vast fertile and in level Locate this physical division on the map Know this The Northern plains of India are formed by the deposition of alluvium carried by the rivers while flowing from the Himalayan ranges These plains are known as Indus Ganga and Brahmaputra plains These plains are situated between the Himalayan mountains and Peninsular plateaus The Sutlej the Ganga the Brahmaputra and their tributaries flow through these plains The soil of these plains is very fertile due to the deposition of alluvium by the rivers Crops such as wheat paddy maize sugarcane are grown here These fertile plains are known as the Food store house of India Observe Wherever there are river plains there is plenty of water Therefore agriculture rearing of animals transport facilities trade and commerce and industries are developed Hence these plains are densely populated The different types of physical features have influence on the tradition and culture of the people of that area Many towns and cities of Harappa civilization have developed on the river banks Even now there are many famous historical cities and pilgrimage places situated on river banks On account of the ideal conditions for settlement many empires ruled in the Northern plains For example Maurya Mughal and Gupta empires You will learn about this in the higher classes The plains are more helpful for the growth of architecture Since these regions have level land it is easy to construct big buildings The availability of different types of rocks sand metal wood plant fibres soil ideal site craftsmen also helped in the development of architecture For example huge palaces were constructed in Rajastan the Taj Mahal in Agra was built by using marble rock Observe The inner walls of Kollur Dharmastala Kukke Subramanya temples in Karnataka are made of wood Houses in Kashmir valley are built using logs Buildings were constructed using Kadapa rock in Raichur districtKarnataka and parts of Andhra Pradesh In recent years red granite rocks are used for the construction of buildings in Bagalkote and surroundings Belur and Halebidu in Karnataka and most of the temples of Tamil Nadu are built by using soapstone Sandstone cave temples are found in Badami of Karnataka Mark the river Ganga Brahmaputra and Yamuna on the outline map of India A challenge to you discuss in groups It is very essential to maintain cleanliness on the banks of rivers Now the rivers of India are affected by water pollution The harmful activities of human beings destroy the sources of drinking water which is essential for life Do you know how the rivers are polluted Plastics several types of toxic waste and effluents of industries are dumped into the river water Idols or images painted with different chemical paints are immersed in the river water The chemical effluents which are released by industries are let into the river water Big cities produce a large amount of garbage in different forms which is thrown into the rivers and the water gets contaminated Mining activities also cause pollution of rivers For example river of Kali Bhadra Now the Ganga river water cleaning programme is under progress Is it not correct to do this What are the benefits of cleaning river water Write here The Peninsular Plateau Identify the Narmada river on the map of India The Narmada-Sone rift valley divides the Peninsular plateau into two major parts The northern part is called the Malwa plateau and the southern part is called the Deccan plateau The Aravalli range lie to the north-west of Malwa plateau and the Vindhyas lie to the south MtGurushikhar is the highest peak in the Aravallis INDIA PENINSULAR PLATEAU kanyakumari chambal Mullaynagiri Easten Palghat gap Srilanka Mt GurushikarAravalli range Satpura Tapi R Kaveri Nilgiris Annaimudi Palk strait Krishna Bay of Bengal Godavari Mahanadi Chotanagapur Vindhyas Narmada Arabian Sea Deccan plateau Ghats Malwa plateau plateau The Satpura Maikala Rajmahal Amara Kantaka ranges lie to the north of Deccan plateau The Western Ghats are in the west and the Eastern Ghats are in the east The Annamalai Cardamom and Palani hills are to the south of Western Ghats The Western ghats and the Eastern ghats meet at the Nilgiri hills Udhagamandala Ooty a famous hill station is situated here Many rivers of peninsular India have their source in the Western ghats Characteristics of the plateau It is an upland with an extensive almost level surface which is bounded by steep slopes This landform is an extensive area of relatively flat land The Deccan plateau is the largest plateau in India It is made up of the ancient hard rocks Advantages The peninsular plateau is rich in minerals The rivers flowing across it are helpful for the cultivation of crops There are many waterfalls which are useful for the generation of hydro-electricity It is favourable for agriculture rearing of animals and industries Several empires also ruled in the peninsular plateau The Rashtrakutas Chalukyas Hoysalas Vijayanagaras Kadambas the Gangas and Bahamani sultans established their empires here You will be studying more about them in the higher classes Answer the following questions Mention the names of the two important plateaus in India The Coastal plains Now let us study about the coastal plains A flat low lying land between the coast and higher land in the interior is called coastal plain India has a long coastal plain Let us see where they are located in our country INDIA COASTAL PLAIN km Narmada Arabian Sea Bay of Bengal Godavari Tapi R Mahanadi Kandla Krishna Kaveri Srilanka Mumbai Goa Mangaluru Kochi Tuticorin Chennai Vishakhapatnam Paradip Indian Ocean Ennore Kolkata circar coast Coromandel coast Malbar Konkan coast Gulf of khambat coast How is the coastal plain extended Observe the map The western coastal plain lies between the western ghats in the east and the Arabian sea in the west It extends from the Gulf of Kuchh Gujarat in the north to Kanyakumari in the south The eastern coastal plain lies between the eastern ghats and the Bay of Bengal It extends from the Gangetic delta in the north to Kanyakumari in the south Both the coastal plains of India have major ports Kandla Gujarat Mumbai Nhava sheva Maharasthra MarmagoaGoa Nava Mangaluru Karnataka Kochi Kerala Tuticorin Chennai Ennore Tamilnadu Vishakhapatanum Andhra Pradesh Paradip Odisha Haldia and Kolkata West Bengal are the major sea ports of India New Mangaluru port ranks th in importance It is known as the Gateway of Karnataka The important features of the Coastal Plains Fishing is the main occupation of the people living in the coastal plains So most of the people eat fish and prawn Spinach ivy gourd black eyed peas and sambar cucumber are also eaten for food Paddy arecanut coconut cashewnut cardamom banana and vegetables are grown here The use of boiled rice is very popular The houses here have steep sloping roofs due to heavy rain The gently sloping strip of land bordering the sea usually composed of sand and gravel is called beach You can watch the sea as far as you can The striking sea waves bring great delight to your mind and eyes The Ullal Malpe Kapu Om and Maravanthe beaches of Karnataka are attractive and beautiful Which are the other famous beaches of India Know and write here Desert of India Locate the state of Rajasthan on the map of India One can notice that a large part of Rajasthan is a desert This desert is named Thar desert A part of this desert also extends into Punjab Haryana and Gujarat states The desert Rajastan Pakistan Punjab Haryana Gujarat India Features of deserts A desert is a vast dry and sandy area with very little vegetation The temperature is high and climate is dry Scarcity of water due to scanty rain A fertile area in a desert is formed where the water comes up to the ground surface This is known as Oasis Those plants and trees which have special devices to withstand the long drought conditions are grown here They are scrubs cactus accacia thorny bushes The Aravalli range extends into the eastern fringe of the Thar desert It prevents the winds blowing from the east and this causes scanty rain fall Therefore this part has dry climate Find this area on the map and mark it The dry climate and the hot sun causes a feeling of severe burning in the body For some relief from the heat people wear long robes and turbans Lack of water and the blazing sun determine the type of desert animals Camels are able to survive in the desert because they have broad flat toes which are comfortable to walk on the sand Their humps store fat and sufficient amount of water which lasts for many weeks Camels are useful for transporting goods and carrying passengers in the deserts That is why camel is called as Ship of the desert Do you know this Agricultural activities are found around the Oasis Bajra jowar maize sesame dates and chillies are grown here There are some salt lakes in these deserts known as playasFor example Sambhar Didwana and Sargol lakes The Sambhar lake is the largest salt lake in India Know this You have learnt that the factors of environment and climate have an effect on art and architecture There are big and beautiful palaces built by experts which are the best examples of rare architecture in the desert Jaipur Ajmer Pushkar and Mt Abu are places famous for such architecture in Rajasthan Rivers of India There are many river systems in India They are one of the natural resources There is diversity in their origin direction of flowing and volume of water Thus the rivers of India can be classified into two groups-rivers of North India and rivers of South India The Rivers of North India The major river systems of North India are the Indus the Ganga the Brahmaputra and their tributaries Most of them rise in the Himalayan mountains They are perennial rivers The northern plains are fertile due to the deposition of alluvium carried by the rivers of North India They are best for agricultural activities Famous ancient historic and pilgrim centres are situated on the banks of these rivers For example Delhi Agra Varanasi The Rivers of South India These rivers can be divided into the east-flowing and the west-flowing rivers The important east-flowing rivers are the Mahanadi the Godavari the Krishna the Kaveri the Palar and the Pennar They flow south east and eastwards and join the Bay of Bengal The important west flowing rivers are the Narmada the Tapi the Sharavathi the Kali the Netravathi the Zuari and the Periyar They flow westwards and join the Arabian Sea These rivers are short and swift suitable for the generation of hydro-electricity as they have rapids and waterfalls In recent years the rivers specially the Ganga-Yamuna rivers have been heavily polluted which has affected their purity The Climate of India You have already practiced marking the Havaguna Nakshe weather map You have also learnt how to understand the daily weather conditions What do the following pictures indicate India has a tropical monsoon type of climate The term monsoon is derived from the Arabic word Mousim meaning periodic Thus the speciality of the climate of India is that it changes from one season to another Hence we can see the diversity in the climate of India There are seasons in India-winter season summer season south west monsoon season and retreating monsoon season The weather changes from time to time during the day Sometimes it is cool another time it is hot and sometimes it is cloudy Think Why is it so The dry air the changing monsoon winds and the natural hazards like cyclones adversely effect the climate of India Consequently we find the sudden changes taking place in the climate The climate of India can be classified into distinct seasons They are Seasons Duration months Winter December January February Summer March April May South-West monsoon Rainy seasonKharif June July August September Retreating monsoon Rabi season October November Identify the direction of South-West South-East North East and North West on the map of India India receives heavy rain from the south west monsoon winds The movement of air over the earth's surface from high pressure area to low pressure area is called wind The winds which change their direction from one season to another are known as seasonal winds For Example monsoon winds Know this There are two rainy seasons in India They are South West Monsoon Season from June to September and Retreating Monsoon Season from October to November The Western coastal plains western parts of the Western Ghats and North-eastern states receive heavy rainfall Mawsynram in Meghalaya receives the highest rainfall in India Observe Drought occurs when there is a failure in timely rainfall There is no water for crops Livestock and other animals wander about in search of water and may die Due to lack of drinking water and excessive heat people are in distress and migrate to other places These are the effects of drought A challenge to you The earth is heating The ground water is dried up and there is melting of snow in the Himalayan mountains What are the reasons for this Think about it and discuss with your friends Diversity of plants and animals in India Read the instructions about how you have seen the animals and plants given below Mark to the applicable If not put mark Animals Actually seen Seen in pictures Never seen Instruction to the Teachers Use geo maps provide facility to the students to watch thick forest areas Facilitate to look at the forests of Assam Gir forest of Gujarat Vegetation of the Himalayan mountains forests of the Western Ghats the Eastern Ghats Anantha giri forests India has its own plant and animal resources There are thick monsoon forests grasslands thorny bushes scrubs evergreen forests and mangrove forests The deciduous forests are largely found in India They are known as monsoon forests There are animal and bird sanctuaries where elephants tigers lions cheetahs bisons deer peacocks and various birds are found They are the major natural resources of India Remember The forest areas in Malnad or Sahyadris reserved forests of Nagarahole Bandipura and Bhadra are the main natural resources of Karnataka Do you know this In order to conserve the biodiversity census work of the biodiversity is under progress Project workTo show the physical features of India prepare a model of the landform of India under the guidance of your teacher Required materials cardboard clay cotton gum sand red soil water colour Collect information about Salumarada Thimmakka Nagesh Hegde and Dr Madhava Gadgil Children recall what you have studied in this unit Isn't the natural environment of India beautiful We should appreciate its diversity India's climate needs to be appreciated We should protect our resources and prevent their destruction through harmful human activities LESSON OUR INDIA-POLITICAL AND CULTURAL India our country has its own geographical historical political and cultural background It has a rich heritage History has recorded that India was ruled for many centuries by several foreign rulers Among the Europeans who came to India the British ruled for a long period of years As a result of the fight for freedom from the British rule India became an independent country on th August Until then India did not have a definite boundary But after independence it has a definite boundary At present India is one nation with the union of states Let us be proud of our great country-India Let us know about India After studying this lesson you know about the geographical location of India in the world understand the latitudinal and longitudinal extent of India know about the neighbouring countries and water bodies surrounding India identify the states and union territories on the map of India and name them understand about Unity in diversity of India know the significance of the national emblems understand the diversity of India's art literature and culture Let us take an oath for our country All stand up India is my country We Indians are brothers and sisters I respect my country I shall protect its varied resources and rich heritage I am proud of my country Location of India Let us learn about the geographical location of our great India If anybody asks for your home address would you not give the name of your village town city its taluka district state and country Also you would give your post office pin code In this manner you can find out in which part of the world India is located Observe this map Russia Mongolia Kazakhstan Turkey Afghanostan Iran Iraq Saudi Arabia Africa Japan Korea China Srilanka Thailand Myanmar Pakistan indonesia Philippines Arabian Sea Bay of Bengal Pacific ocean India is situated in the southern part of Asia which is the largest continent in the world Latitudinally India extends from o N to o N latitude and longitudinally it extends from o E to o E longitude See map of India page It shows that India lies entirely in the Northern Hemisphere and is at the centre of the Eastern Hemisphere The Tropic of Cancer a special latitude passes through the middle of the country It divides India into almost two equal parts North India and South India Hence India has tropical climate in the southern part of it and subtropical climate in the northern part Know this A set of imaginary lines drawn on the globe from west to east are called Latitudes They are measured in degrees There are o north and o south latitudes from the equator A special latitude which divides the earth into two equal halves is called Equator The half of the earth to the north of it is called Northern Hemisphere and to the south of it is called Southern Hemisphere The special latitudes arethe Equator o the Tropic of Cancer the Tropic of Capricorn the Arctic circle and the Antarctic circle o S Longitudes are imaginary lines drawn on the globe from the north pole to the south pole They are also known as meridians The longitude that passes through Greenwich in England is called the Prime Meridian The half part of the earth to the east of Prime meridian is called Eastern Hemisphere and to the west of it is called Western Hemisphere There are o of east longitudes to the east and to the west of Greenwich Meridian There is a relationship between longitude and time The latitudes and longitudes help to understand the position distance and direction on the earth's surface India is the th largest country in the world with respect to area and the second populous nation after China Know this Area of India square km Population of India crore census The southern most point of India Indira point The northern most point of India Indira Col The western tip of India Ghuar Mota The eastern tip of India Kibithu India and its Neighbouring Countries The neighbouring countries of India arePakistan and Afghanistan to the north-west Nepal Bhutan and China are to the north Bangladesh and Myanmar to the east and to the southeast is Srilanka It is an Island and it is separated from India by Palk Strait and the Gulf of Mannar Frontiers of India Look here Now let us look at the political map of India In this map let us study how the states islands and water bodies are distributed Peninsular India is surrounded by the seas and ocean and has km long coastline This helps the growth of foreign trade shipping fishing and shipbuilding The water bodies which surround India are the Bay of Bengal in the east the Arabian Sea in the west and the Indian Ocean in the south The Andaman-Nicobar Islands are in the Bay of Bengal and the Lakshadweep Islands are in the Arabian Sea Observe the map of India where you can locate the water bodies surrounding India on three sides Such a landform is called a peninsula So South India is a peninsular A piece of land surrounded by water on all sides is called an island The Andaman-Nicobar and Lakshadweep are the islands of India Activity Take the map of Asia or an Atlas With the help of this mark the neighbouring countries of India on an outline map of Asia and write here Administrative Divisions of India Look at the map of India once again You can see the state boundary on the map But there was no boundary line on the earlier maps because as mentioned earlier before independence India was ruled by several native dynasties and external forces The country was fragmented into hundreds of small princely states After independence in order to carry on smooth administration the boundary lines of the states were reorganised The States Reorganization Act of was a major reform of the boundaries of the states of India on the basis of languages There are a large number of languages in India This indicates the diversity of languages Of these languages have been recognised as official languages and are printed on Indian currency Know this We use a language in our day to day activities Understand the feelings of others and maintain harmony India is the th largest democratic country in the world It is divided into states and union territories and one National Capital Territory which is Delhi Since the states are divided on the basis of languages it becomes easy to understand their environment economic cultural and regional traditions Every state contributes its speciality towards the building of a great India With the help of a map let us learn about the different states Activity With the help of a map prepare a chart including the States and Union Territories their capitals and mother tongue Then display it in the classroom The Government of India is officially known as Central Government It is the governing authority of the country's states and union territories Its main offices are located in New Delhi the capital of the country The administration of the states is managed by the states themselves This system is called State Government Every state has its own capital for the purpose of administration Then Which is the capital city of Karnataka state The union territories are ruled directly by the Central Government They do not come under any state The Governor appointed by the President of India is the administrator for the union territories There are union territories They are Diu- Daman DadraNagara Haveli Chandigarh Lakshadweep Puduchery Andaman and Nicobar islands Locate them on the map Know this The administrative divisions of Puduchery are Puduchery Mahe Yanam and Karaikal districts New Delhi is the national capital of India Chandigarh is the capital for both Punjab and Haryana states Activity Observe the relationship of first two words In the same way write the fourth suitable word for the third word Example India Delhi Karnataka Bengaluru Kerala South Kashmir India Peninsula Andaman Union Territory States Bay of Bengal East Arabian Sea India is a land of many religions Hence people follow variety of customs Hinduism Islam Christianity Sikhism Buddhism and Jainism are the major religions of India Besides followers of other religions are also found in the country Thus India is a land of many religions Project work There is also diversity in the culture of our state Prepare a project on the basis of specialities in culture found in North Karnataka South Karnataka Coastal plain and Malnad region collect facts about food clothes festivals folklore games art crops important celebrations rivers Know this People belonging to different religions live in the same street road with love and affection The people of all religions travel together in the bus train aeroplane People of various religions participate in one another's religious festivals and functions and greet each other The people belonging to different religions participate in the urusu fairs festivals and processions with devotion and excitement Respecting all religions living together in peace and having the feeling that we are all indians is integrity Know this In our country there is diversity in landforms river system climate types of soils plants and animals natural resources and methods of agriculture Our occupations religions caste systems languages food habits dress customs and regional culture also have diversity But we live together as people of one country This is known as Unity in diversity Do this Wear the costume of different states for your school functions and exhibit integrity Once in a week sing a song of good will with your friends National Emblems Name the national festivals of India Do we not hoist the National Flag on national festivals What are the colours of our National flag The National Flag is one of the national symbols of our country It is a horizontal rectangular tricolor Tiranga of saffron white and green Saffron stands for courage and sacrifice white colour symbolises peace and purity and green is the symbol of fertility The Ashoka Chakra is at the centre of the flag It is the symbol of progress and movements Our national flag represents India and has a special recognition in the international level Do you know thisOur national flag was initially manufactured at Garaga a small village in Dharwad district Now Karnataka Khadi Gramodyoga Samyukta Sangha based in Hubballi is the only licensed manufacturer of the national flag and is the supply unit for India Namma Baavuta Erutihudu Harutihudu Nodu namma baavuta Thorutihudu hodedu hodedu baaninagala patapata Kesari bili hasiru mooru Banna naduve chakravu Satyashanti tyagamurthy Gandhi hidida charakavu Intha dwajavu namma dwajavu Nodu haarutiruvudu Dwajada bhakti namma shakti Naadagudiya merevudu Kempukirana tumbi gagana Honnabannavaagide Nammanaada gudiyanoda Nodiranna hegide Sing this poem in group Meaning The poem speaks about the splendour of our national flag and the essence of its grandeur It depicts the truth peace and sacrifice of great leaders like Gandhiji It inculcates a sense of devotion in its patrons and gives strength to build our nation stronger Look here This is the picture of a monolith pillar at Saranath The lion seal that you notice here has been adopted as the National Emblem of India This pillar was installed during the reign of Ashoka the Great in North India The four facing lion imprint is our National Emblem You can observe this national emblem on the coins and currency notes Our emblems are the symbols of identity and heritage of India You sing the National Anthem during the school assembly Is it not so Who has written it Understand the theme of our national anthem It represents the diversity and regionalism of India While you are singing this national anthem you feel patriotic Do you know this The National Anthem of India is taken from the first few stanzas of the poem written by Rabindranatha Tagore Observe When the Indian sports persons win medals at the international sports competition they are honoured by being wrapped with the National Flag and the National Anthem is sung In the Olympic games the badminton player PVSindhu won the silver medal and wrestling player Sakshi Malik won the bronze medal On that occasion they were honoured by the hoisting of the National Flag When the Indian soldiers sacrifice their life for the nation they are buried with full state honours Know this The National Flag National Emblem and National Anthem are our National symbols Art Music and Literature Who does not like dancing Every body likes it Is it not so Culture and art differs from place to place Every state is identified by its own dance style It is based on the culture of that locality Dance styles can help in spreading the glory of India's heritage in foreign countries Music and Literature India is rich with litterateurs great artist achievers saints and monks and social reformers Every state contributes its own music literature art sports cinema science and technology The Government of India rewards great personalities by awarding Padmashree Padmabhushana Padmavibhushana and Bharath Ratna to acknowledge their achievement in their concerned field Wherever we are however we are we should cultivate patriotism We should all come together in the name of our motherland when needed India has become an independent country because of its integrity nonviolence and sacrifice Let us develop India and make it a strong nation at the global level It is the responsibility of every Indian to make India a strong nation Mera Desh Mahan LESSON LIVING WORLD Protection of environment is the duty of all You must have heard this saying The word environment is very familiar to us The things around us is environment We can enjoy environment by seeing only We see hills forest river falls streams honey bee insects eagle snake soil light birds and so many other things around us which make us wonder This is our environment Our environment is home for diversity You have the curiosity to know the speciality of this diversity Haven't you If so understand this unit After studying this lesson you identify living beings and nonliving things know the important characteristics of living beings introduce yourself to the method of food production in plants life cycle and different types of plants classify animals based on their feeding habits know the importance of protection of plants and animals Read this story Lazy Somanna Somanna is a lazy person Even though he owns a piece of land he has not worked for a single day in his land He used to live only by receiving what others gave him He was very fond of groundnuts especially fried groundnuts Once while eating fried groundnuts he got an idea He thought that if he sowed groundnuts in his land he would get enough groundnuts to eat and he need not beg anybody for it Also he felt that if he sowed fried groundnuts yield would be fried groundnuts So there would be no need to fry the groundnuts Not knowing the type of seeds to be sown Somanna started sowing fried groundnuts from the next day itself Seeing Somana working in his land the neighbouring farmers were very happy that Somanna had shed his laziness finally Days passed Plants grew and greenery was everywhere But not a single plant appeared in Somanna's land Raw groundnuts have the characteristics needed to grow into a plant It is called living component In fried groundnuts the living component is destroyed It is called the nonliving state In the environment there are living beings which have the living characteristics and non-living beings which do not have the living characteristics In the following chart some components of the environment and some living characteristics are given Read carefully If in each of the component the characteristics given in front of them are found put mark If these characteristics are not found put mark Components of the environment Characteristics Growth Eating food Movement Respiration Excretion Response to stimulus Reproduction mouse mango brick clock butterfly man frog paper mobile The components which you have marked are called living beings and those which you have marked are called nonliving things in environment Some of the components seen in environment are given below Identify them as living beings or nonliving things Put mark in front of the correct choice Components of the environment Living beings Non living things birds balloon water mango tree vehicle pen Activity Make a list of other living beings and non living things you have seen Plants and animals are living beings There are certain characteristics to decide them as living beings The characteristics of living beings are given here Know about this Living beings are made up of cells Observe these pictures They are of plant and animal cells You must have observed how a house is being constructed When several things such as bricks cement water steel wood are arranged in an order a house gets ready Similarly the body of living beings is made up of cells You will learn more about cells in higher classes Living beings respire You have learnt in the previous classes that living beings respire During respiration living beings take in air use the oxygen and give out carbon dioxide Observe the given picture Identify the picture and write here There are special organs to respire in animals Plants also depend on oxygen for their respiration Usually they respire through stomata small openings which are present on the lower surface of leaves With the help of oxygen the energy in the food is made available to the living body Think What are the advantages of the energy that is obtained from the food Living beings eat food Living beings perform many activities daily such as wood cutting carrying load hunting The names of some living beings are given below They help us to work How do they help us write here Living being Help work elephant bullock dog To do all these works living beings need energy They get this energy through food Food of plants Each part of a plant does one or the other activity Don't they also need food How do plants obtain their food Think Yes green plants produce their own food That is why green plants are called autotrophs Preparation of food in plants atmosphere carbon dioxide solar energy water minerals salts chlorophyll Observe the picture Four important components needed to produce food by the plants are given An activity Which From what is given below Join the statements correctly and write Which From what Correct and write here solar energy green leaf water minerals salt atmosphere carbon dioxide sun chlorophyll soil Plants use solar energy carbon dioxide in air absorb water minerals and salts from soil through roots and prepare food with the help of chlorophyll in leaf This process is called as photosynthesis In the preparation of food by the plants glucose is produced and oxygen is released Write here the uses of these two for the living beings glucose oxygen Discuss in groups What would have happened if there is no sun Observe the pictures given below How do these plants obtain their food Though plants like Drosera Nepenthes Utricularia prepare their own food they depend on insects for nitrogen These are called insectivorous plants You will know about them in higher classes Food of animals Animals do not prepare their own food They depend on plants and other animals for food Therefore animals are called heterotrophs All animals do not eat the same type of food Based on the food they eat the animals are classified as follows Herbivore Animals that eat only plants and plant products Carnivore Animals that eat other animals Omnivore Animals that eat both plants and animals With the help of these pictures list out herbivore carnivore and omnivore in the chart below Herbivore Carnivore Omnivore Living beings grow Observe the pictures given below These pictures show the growth of that particular organisms In every picture there is an increase in height and size This is called as growth Certain statements related to growth are given below If the statements are correct put mark if not put mark Correct the incorrect statements and write All organisms are small at the time of birth later acquire definite height and size Growth takes place rapidly in one or two days Plant growth is observed at its stem tip or the size of the stem Living beings move Observe these pictures Which living characteristic do they indicate Yes all these are related to movement Movement is a living characteristic specially of animals Movement of animals Animals move from one place to another They have special organs for this Some animal names are given below Write their organs of movement here man eagle kangaroo bat Think Cars and buses run on road Hands in a clock move circularly Rivers and streams flow Do they have life What is the difference between the movement of living beings and non living things Plants do not have organs for movement as in animals As soil holds the root of plants they cannot move from one place to another Still we can observe the following movements in plants Roots growing towards water in the soil Sunflower plant turning towards the sun Do this Keep a potted plant in a room Let light pass in through a window Observe it after some days Observe the direction towards which the leaves have bent Discuss with friends Think If plants had legs like you what would have happened Living beings excrete Many activities take place in the body of organisms As a result things which are unwanted for the body are also generated These have to be thrown out of the body If not body gets affected Animals throw out unwanted things of the body in the form of carbon dioxide sweat faeces and urine They have special organs for this purpose Plants also give out carbon dioxide during respiration Dry leaf stem rotting parts all these separate from the plants They release excess water to the atmosphere through leaves Do this Take a potted plant Cover the plant with a plastic cover and tie it tightly at the stem portion Keep it in the sunlight for hours Observe the plastic cover closely Share your observation in the class Living beings reproduce Observe the organisms and their young ones in the above pictures Young ones of each organism resemble that respective organism which gave birth to them The process of an organism giving birth to young ones which resemble it is called reproduction Statement Right wrong Corrected statement Organisms continue their generation by reproduction Due to reproduction the other organisms in environment get food Reproduction is seen only in animals There will not be any danger in the environment by over-reproduction of a single organism Some animals carry out reproduction by laying eggs and some others by directly giving birth to young ones Activity List out the animals that lay eggs and those which directly give birth to young ones Life cycle of a plant Seed is an important part of reproduction in plants Seeds developing from seeds is one of the wonders of nature Some plants apart from seeds produce new plants through stem buds You will learn more about them in higher classes A life cycle of a plant producing seeds from a seed is given here Observe Think Usually reproduction takes place by seeds in fruits How is the reproduction in a coconut tree Take the help of the teacher Activity Reproduction of plants is advantageous to animals including man in many ways Discuss with your friends and list them Do this Collect seeds from plants in your neighbourhood in the beginning of rainy season Take fertile soil and make soil balls out of it In each of the soil ball insert a seed When rain starts plant them in the soil Do this every year In this way some seeds you have put might grow very well in future Living beings respond to stimulus When thorns prick our feet we feel pain We have observed our body shivering in cold snake hissing in self defence and buffaloes getting into water to cool off during excessive heat Some insects bite us when we touch them Animals shout Like this organisms respond in their own way All these are the responses given by organisms to the surrounding stimulus Living beings respond to the changes in their surrounding environment Usually they respond to touch heat cold sound and smell They have special organs for these Observe the pictures Folding of leaves when touched in touch me not plant stinging of scorpion when some external thing touches it flower of sunflower plant turning towards the sun- these are the ways that organisms respond to stimuli Think A calf jumping when it sees mother cow mother bird crying in distress when young ones are not found in the nest a mother hen protecting its chicks either by covering them with wings or attacking the cat or eagle to protect the chicks-all these exhibit animal feelings Think and list out the feelings of different organisms Living beings have life span Organisms take birth become adults reproduce become old and die at last The period between birth and death of an organism is called lifespan The average life span of some animals are given below Observe Animals Average life span in years turtle elephant cow eagle man Based on the life span plants are classified into annuals biennials and perennials Understand it through the following pictures Annuals jowar wheat paddy pumpkin vegetables Plants which bear flower produce fruits and die in a year or a season cotton Biennials carrot ginger cabbage beetroot Plants which live upto two years or two seasons produce flower fruit and seeds and die sugar can Perennials mango lemon arecanut neem jackfruit Plants which live for many years and keep producing flower fruit and seeds Write the uses of the plants given below Annuals Biennials Perennials Apart from the life span plants are classified based on the nature of seed leaf as monocotyledonous and dicotyledonous plants Do this Take ragi and groundnut seeds Put them into two separate water filled glasses before going to sleep Next day morning drain the water Press tightly the ragi and groundnut seeds with your hands Share your experience Monocotyledonous seed has only one cotyledon seed leaf Example Jower ragi wheat paddy millets Dicotyledonous plant seed has two cotyledons seed leaf Example horse gram groundnut redgram bengalgram blackgram Do this Collect monocotyledonous and dicotyledonous plants from your locality Observe their leaf and root Know the difference with the help of your teacher You have learnt about the characteristics of living beings Plants and animals are two important components of the environment But now-a-days their number is decreasing as a result of man's greediness Protection of plants and animals is the need of the day Why should we protect plants For rain For food For future generations Discuss with your friends about the methods of protecting plants Importance of animal protection Read the incident given below Once in Borneo there were too many flies Insecticides were used to control them All flies died Lizards started eating the dead flies As a result the insecticides in the body of the flies entered the lizard's body Their movement slowed down Now cats could easily hunt them The insecticides which entered the body of cats through lizards turned poisonous for them and many cats died As the number of cats decreased the number of rats increased enormously Because of this plague disease erupted and caused the death of many people Government had to import cats from other countries This incident conveys the importance of animal protection and balance of living beings in nature Many more points about the importance of animal protection is given below Read them Animals play an important role in maintaining the environmental balance If animals are destroyed it affects other organisms as there will be scarcity of food In the recent years the Government has taken measures to protect animals through national forests wild life sancturies bird sanctuaries and reserved forests Hunting is banned List out the national reserve forests wild life sancturies and bird sanctuaries in Karnataka The living world around us is a wonder Knowing about the plants and animals we should protect them Then only the existing environment we see now will be available to the future generations Remember always that if we protect nature it will protect us LESSON FAMILY You already know that the members of a family are related to one another and live together Sometimes the members of a family leave the main family for various reasons like marriage job education and make their own separate family Over the years there has been a number of changes in the structure of a family After studying this lesson you understand the importance of a family get introduced to your family using a family tree develop the skill of identifying relationships based on signs identify the changes in the structure of a family understand the features of nuclear and joint families You have been introduced to the family tree in class itself What is a family tree Write the answer in the space provided Family tree I am Manu I will introduce my family through the family tree My family tree is in the next page In this I am in the green square Read the names of all my family members The signs used in the family tree Male Female Husband and Wife Children born to father-mother st Generation th Generation rd Generation nd Generation Ramappa Bhagyamma Vinutha Rakshith Manu Radha Priya Prema Ravi Raju Ramya Pallavi Suma Kiran Keerthana Sharan The names of the family tree above are given in the list below Imagine that you are Manu write the relationship of the persons given in this family tree Observe the example of Sl No Sl No Name Relationship Priya elder sister Rakshith-Radha Prema Ramappa Bhagyamma Ravi Vinutha Pallavi Sharan Suma Raju Ramya Kiran KeerthanaThink Is Prema's and Manu's relationship the same with all these people While drawing the family tree symbol for men and symbol for women have been used Look at the symbols given below and name the relationship Sl No Sign Relationship wife-husband father-daughter elder sister-younger sister You have been introduced to my family Now you draw your family tree Compare your family tree with mine and answer the questions that are given below How many generations are there in my family How many generations are there in your family Which is the bigger family of our two families How There are four generations in my family All of us live together in the same house All of us have our meals together We celebrate festivals and other functions together We all get the love of our great grandfather and great grandmother All of us take care of them with respect My family members do all the work with their guidance This type of a family with more than generations living together in the same house is called as a joint family In my aunt Prema's family only four members are there Prema aunty Ashok uncle and their two children Prema aunty's Mother-in-law and Father-in-law live in a different city Hence their family is a small family This type of a small family with only two generations living together is called as a nuclear family Do you want to know the type of your family Then put or marks for the following family features If you have more of marks then your family is a nuclear family and if you have more of mark then your family is a joint family Sl No Features of the family Yes No x There are generations in my family We are all related The elders in the house are father and mother The size of my family is small All the children of the family are unmarried With the help of the above features we come to know that my family is a family Do you know this While preparing a family tree the names of children are written according to the seniority In a family tree the names of the children of that family from the eldest to the youngest is first written and then the names of their husband wife are written The word family tree indicates that many generations spread out and grow just like the many branches of the tree But while drawing a family tree it is written from the eldest to the youngest from top to bottom It is written this way to denote the younger generations after the older generations Now I will introduce my friend's families to you Come let us see my friend's family His family is a joint family You have seen my friend's family Write your opinion about his family Write the similarities and differences you have noticed so far among my your and my friend's families Similarities Differences My friend's family is a joint family Discuss with friends and write the advantages and disadvantages of this family No Advantages Disadvantages Now let us go to the house of another friend of mine Her mother is telling something Let us listen to her I grew up in a big family There were members in my family Everybody took the responsibility of nurturing and taking care of the children When I was young grandmother used to tell stories My grandfather told me how to behave But now in my family we are only me my husband and my two children Now I have to take lunch to my husband who is hospitalized Where do I leave my small child This is my worry now Her neighbour Razia didi has come now Let us listen to what she will say Don't worry Leave your little child in my house I will take care We should help one another when we are neighbours shouldn't we Did you hear My friend's mother's worry has been solved Then who is there to help your family Write the various types of help they have done for your family in the space provided Who What type of help Think Have relatives friends who live in a far away city ever helped you I have introduced you to different families Read the below aspects and differentiate as my family and others Write the differences in the boxes provided in the next page Taking care and protection Give the required education Provide provisions for food Teach lessons Consoling if we lose in the game Provide treatment when sick Show love and affection Provide necessities Support when mother is not there Spare lots of time My family Others Along with the members of my family others and neighbours also help us Activity Visit houses in your neighbourhood Write down the name of the head of the family in every house and mention the number of members in that family Observe the example Fill in the information in the format as shown Sl No Name of the head of the family Number of members in the family Who are they Give the relationship with the head of the family Example Ramanna Father mother wife son daughter Know this Now a days due to reasons like job income education life style a lot of changes are taking place in the structure of a family Nuclear families are increasing Sing and enjoy Open the door and you will see Mother father sister and me We are a little family of four Who live and eat together for sure I love my family Oh yes I do My mother father and sister too They play with me and take me out They love me too and I love them My life I cannot think without My lovely little family of four health affection fulfilment of necessities education respect for elders co-operation identification nurturing protection co-ordination position in the society improving relationships blessings of elders habitual practises living together love What are the good qualities I learn from a family LESSON COMMUNITY Group of people living in a specific area is called a community Members of the community are interdependent on each other for many things Community is called with many other names Example Rural community Urban community Tribal community After studying this lesson you recognize the features and types of communites know about rural community its occupations problems of rural people and solutions for them know about the life style of urban people their problems and solutions for them get introduced to the tribal community appreciate the dignity of labour by understanding the need of different occupations and their values recognize the assistance of the community during natural calamities Different communities Here is a picture of a village Look Don't you see many houses There are many families living in this village The group of all these families is called a community Think Many families from different places have come to participate in a big fair Can we call it a community Read the story of Ravi and answer the questions that follow Ravi's house is in Anandapura His father was born and brought up in that village Likewise many people have been living in the village for many years When there is a funtion in someone's house then everybody help Being a farmer Ravi's father is dependent on others to get his work done What are the features of a community Any three Know this ∙ Group of people living in a particular place with we feeling for a long time is called a community Every member of the community will have the feeling of dependency on the community The feeling of dependency is more if the community is small This feeling decreases as the size of the community increases It is found that most of the animals in the environment live in groups and it forms their community The speciality of honeybee and ants is that they live in a community and distribute the work among themselves Identify the communities of living beings found around you and discuss about it with your friends Write the aspects identified by you in the pictures given Identified aspect Rural community Urban community Tribal community There are different communities like rural community urban community and tribal community Here is a picture of a rural community You can see many activities in the pictures Differentiate agricultural activities and non agricultural activities and write them separately in the space given below Agricultural activities Non-agricultural activities Each family in a community needs many things and equipments for their day-to-day activities Interdependence is found more in rural communities People respect all occupations Activity Make a list of implements required by a farmer for agricultural activities From whom do we get them Write it in the space given below Equipment From whom In India of the total population live in villages Agriculture is the major occupation of of these people Along with agriculture other occupations like dairy rearing cow buffalo poultry fishery sericulture are also done We also find occupations like weaving blacksmithing carpentry basket weaving and others in villages Agricultural activities are totally dependent on rain Villages have problems related to hygiene health education and jobs The Government has introduced many rural development programmes They are Rozgar Yojana and Jawahara Gram Samruddi Yojana for the educated youth in villages for self employment Sarva Shiksha Abhiyana to give quality education Nirmala Grama Yojana for the cleanliness of villages Bhagyalakshmi Yojana for the better future of girls Ashraya Yojana to provide free sites and grants and loans to build houses for the poor Urban community Here is a picture of a mega city What do you see in the picture People migrate to cities in search of jobs and for better education People in cities are engaged in different occupations India has nearly five thousand cities There are cities with a population of one million or more Bengaluru our capital city is one among them Here are some pictures which give a complete picture of a city Look at these pictures and answer the questions that follow Discuss the given topics with your friends under the guidance of your teacher Present it to the class Housing problem in cities Traffic jam Pollution in industrial areas Disposal of garbage Slum areas Water pollution The Government has undertaken many programmes to solve these problems Underground drainage system Supply of pure drinking water Well equipped bus stations and railway stations Ring roads in the out skirts of the city Developing gardens It is the responsibility of every citizen living in the cities to keep the cities clean They should co-operate with the Government to maintain the cleanliness of the city People should live with co-operation love and friendship Tribal community Observe the picture and explain how it differs from your environment Write it in the space given below Families living in dense forests or hilly areas are called Tribal community The living conditions language dress and marriage system of the tribals are distinct In Karnataka Soligas of Mysuru district Koragas of Dakshina Kannada Jenu kurabas and Yeravas of Kodagu district are the tribal communities Since tribal communities live in forests and hilly areas they are deprived of health residence education transport food and electricity facilities The Government is trying to provide education food house and health facilities to these people in the recent years You know that a group of people living together to fulfill their basic needs and to help each other is called a community Different types of communities can be seen in rural urban and tribal communities Know this Different types of Communities Community of like minded people come together to exchange their ideas and opinions For example Community of people interested in folk lore and arts Community of people who work together to bring change or to achieve something in their endeavour For example community of nature lovers People belonging to the same profession or same vocation come together to form a community For example community of teachers Like this people get together because of their interest time leisure practice occupation and hobby They form their own communities Communities are not only formed among families but also between persons because of their individual relationships Apart from these caste religion aim language culture age and sex are also basis for formation of communities You have already learnt about the jobs occupations Do you know how many people help to get the food you eat Observe the chart given below and write what you have learnt from this Food Required food items Farmer Assistants Land Wate well canal borewell diggers pipe pumpset manufactures electric linemen farmer seed collectors seed conservers packing material manufacturers vehicle-drivers merchants manufacturers processors bag makers bag fillers weighers transporters merchants researchers manufacturers workers merchants vehicle-driver labourers agricultural labourers Wholesale merchant broker Wow how many people have worked to get the food we eat Then think of those people who toiled behind the manufacturing of clothes we wear building houses we live in Work will not be completed without a single person in this chain We should not think that we can buy anything easily by paying money We should not forget that many people have worked hard for the production of goods and food items we use We should respect each and every job occupations and also respect each and every person in the community How do we get salt which is prepared by sea-water Make a chart of persons who help produce salt and distribute it to the people Take the help of your teacher You know that there should be different occupations for the development of a community With the occupations which provide basic needs of the community there are people who follow other proffessions in a community Look at the pictures Who are they How are they useful to us Write it in the space given below the pictures In a community along with people who manufacture and supply things people who clean the environment and people who provide the basic necessities of life we also need people who entertain give happiness give information and relief Eveybody in the community has to contribute for its development Every occupation has its own value and we should respect everyone Collect pictures of persons who have excelled in different fields Exhibit them in the classroom Which occupation would you like to choose when you grown up What are the advantages of your choice to the community Share your opinion in your class Look at the picture given below Explain the situation in the picture When somebody in the community is in trouble others will help them Likewise if there are natural calamities such as floods droughts earth quakes other communities help the affected community Every person is a part of the community Community is formed by every member living in the community It is not possible to live without the co-operation of the community So when situation demands we should help others in the community LESSON COMMUNITY GAMES The community has given rise to games To relax and spend free time people have made games a means Games build the relationships among individuals in a community It provides an opportunity for elders and youngsters of the community to play together Games are nothing but activities that people have formed for entertainment and physical exercise This has definitely increased the harmony in the community by being responsible for all to play and enjoy together After studying this lesson you become aware of the importance of games and excercises get introduced to adventure games Sunday is a holiday to school You are in a holiday mood How will you spend your time on a holiday Write all that you will do on that day Among these identify the activity which will give you maximum happiness Is there a game in it Then observe the list given below Pick the uses of games from the list and write happiness writing skill development of intelligence co-operation entertainment competitive spirit attitude to accept both success and failure equally hunger is pacified Protection of environment physical exercise friendship knowledge Physical and mental health will develop if games yoga and physical excercises are done as per the need regularly The body will be strong and the weight of the body can be maintained The body will also look beautiful if it has a good physical structure It increases our self confidence Free time will be utilized beneficially We can be active and happy always as games give entertainment and happiness Think What kind of problems will a person who does not indulge in physical activities have What steps should a heavy person follow to lose weight according to you Are only we benefitted from games National and international games help to build friendship and co-operation with other states and countries which helps to improve the bond between different countries river rafting mountaineering sky diving rock climbing mount cycling Know this Games which provide excitement and a special experience with special physical competence are called adventure games These games offer challenge to reach the goal in not so common situations These games need a lot of preparation speed skill training and physical exercising to meet the new challenges it has to offer Such games provide a lot of happiness determination to face dangers mental stability physical fitness and entertainment But they are definitely dangerous games Hence the cautions given below have to be followed Should not participate in such games without proper training and guidance Before participating in such games all the necessary special equipment have to be procured and required skills have to be developed Have to behave with a lot of patience and responsibility Situations will have to be handled with competence Must prepare well ahead and gain sufficient experience to face the threat harm and dangers of such adventure games by practising well to face the challenges Should participate in the games with co-operation of the team Do you know this The highest peak in the world Mount Everest was first climbed by Edmund Hillary and Tensing Norgay Bachendri Pal was the first Indian woman to climb Mt everest Native adventure games reflect our culture but they are being overshadowed by the advent of new technology like TV and internet Wrestling is a sport game which had gained prominence right from the time of the Maharaja of Mysuru Even to this day it has remained a part of the Dasara games Cycling swimming brisk walking and yoga are some very good excercies This helps to improve one's health LESSON NATURAL RESOURCES Our earth consists of essential resources which support life Water soil air minerals plants animals which occur naturally on earth are called resources These resources are necessary for all living organisms including man These are the most valuable things in the progress of mankind After studying this lesson you understand the need of natural resources know the types of natural resources understand the significance of different resources classify natural resources into renewable and non-renewable resources realise the moderate use of natural resources and their conservation Solve the following riddles to identify natural resources You can't live without me Every plant tree animal needs me Nobody can see me Who am I I occupy major portion of the earth I satisfy all your thirst I make animal tree and plant cool Who am I I let you live on me I help to grow plants and trees I support all life on me Who am I I give fruits and nuts I spread cooling shades No life without me Who am I Vehicles like bus lorry and car use me to run Took thousands of years to form me From underneath the soil you extract me Who am I Plate tumbler and vessels are made up of me Beautiful jewels are made up of me My ore will be hardened by you Who am I Darkness drives away from me Bright light comes from me A source of energy that is me Who am I Generally natural resources can be classified as renewable and non-renewable resources Renewable resources Resources like solar energy air water soil forest are available in nature inspite of their usage Since these are continuosly available over the period of human life time these resources are called renewable resources Non-renewable resources Resources like coal petrol diesel and natural gases will run out due to their continuous usage Such resources cannot be renewed Hence these resources are called as non-renewable resources Put the following resources into the suitable baskets by drawing lines coal iron petrol diesel cooking gas water oxygen forest gold wild animals solar energy Non-Renewable Resources Renewable Resources You have learnt about the types of natural resources Let us now know about renewable resources in detail Solar energy Solar energy is the energy obtained from the sun Sun is the main source of heat and light to the earth We get light and heat from the sun You know that plants prepare their food using solar energy You will learn more about solar energy in the unit Amazing Energy Air and water are also natural resources You will know about these in the next units Soil We walk on soil We live on soil Soil is also a renewable resource like water Soil is necessary for the growth of plants You already know that plants get water and salts required to prepared their food from soil You will know more in detail about soil in higher classes Know this The outermost rocky layer of the earth is known as crust Soil is the thin top layer of the crust containing minerals and organic substances It takes nearly to years for the formation of about cm of soil Soil is formed by the weathering of rocks by flowing water blowing wind and other organisms What happens to the top soil in the following circumstances Discuss with your friends When the wind is stormy When there is water current after rain The following measures are taken to preserve the top soil from erosion Observe the pictures Note down what you have learnt Know this Contour farming Farming according to the shape of land to prevent soil erosion is called contour farming Forests Forests are the natural habitat of wild animals and birds They provide the necessary food to the animals and many useful materials to man Observe these pictures and make a list of the uses of forests Know this Forests are also one of the natural resources They provide fruits flowers medicinal plants wood Forests are the shelters for tribals Forests prevent soil erosion washing or blowing away of top soil The trees give out oxygen and increase its quantity in the atmosphere Such useful and valuable forests are being destroyed for various human activities like urbanization industrialization construction of dams We must not forget that destruction of forests is destruction of life Conservation of forests Forests can be conserved by restricting unnecessary felling of trees tree planting proper usage of forest products cutting down tree branches causing forest fire The Government has made amendment to National Forest Policy in and has taken many steps to nurture and conserve the forests Know this The Government is maintaining and conserving national forests through the forest department Village panchayath and local community protect social forests National park and wild life sanctuaries Some forests are identified and preserved along with its wild life Example Bannerughatta and Bandipura forests are protected by making many laws Felling of trees smuggling of wood hunting wild animals are punishable offenses Some religious beliefs and rituals are also helpful to conserve forests Example Nagabana of Dakshina Kannada Devarakadu located in Kodagu Cutting down of trees is prohibited here Many movements have taken place against deforestation when the implementation of several mega projects were proposed Know this Panduranga Hegade initiated Appiko movement to prevent deforestation in westerns ghats rich in diversified wild life in Karnataka Environmentalists of Kerala successfully stopped a hydro electric power scheme proposed by the Government in silent valley by conducting silent valley movement Save forests the jungle bachao movement triggered in Bihar for the conservation of forests reached even Jarkhand and Odisha and saved many forests Sundar lal Bahuguna opposed cutting down of trees by the well known Chipko movement in Himalayan region and thus saved many forests Know this Salumarada Thimmakka a proud daughter of Karnataka is known as Vruksha mathe throughout the country Daughter of Vijayamma and Chikkarangaiah of Gubbi taluk Tumkur district Thimmakka was married to Bikkala Chikkaiah of Hulikal village and stayed there Later on she has planted and protected Banian trees beside the road from her village Hulikal to Kudur with the help of her husband Considering these trees as her children Thimmakka dedicated her entire life for them Hence centenarian Thimmakka is called Salumarada Thimmakka The Governament of Karnataka has declared a project called Salumarada Thimmakkana Neralu Yojane in its budget Hundreds of awards have been conferred for her immense concern towards nature The important awards are Nadoja Award Kannada University Hampi Karnataka Rajyotsava award Indira Priyadarshini Vruksha Mitra Award Government of India Parisara Rathna Award Salumarada Thimmakka is a role model for all of us in the conservation of environment Her concern towards environment is remarkable and it should be followed by us Know this Animals are also renewable resources They enhance their population by reproduction Sometimes hunting of wild animals leads to the extinction of their race and thereby make them non renewable sources It is our duty to conserve such resources You have learnt about renewable resources Let us know about some non-renewable resources Fuels Fuels are substances which release heat and energy on burning We use fuel for many purposes Example running vehicles cooking food Name three fuels used to run vehicles Name three fuels used to cook food at home Fossil fuels are formed by the remains of extinct plants and animals which were burried under the earth's crust over millions of years The main fossil fuels are petroleum natural gas and coal Petroleum Petrol diesel kerosene wax are the byproducts of petroleum Petroleum is a liquid mineral formed beneath the earth It is formed by the action of bacteria heat and pressure on dead organisms buried under the layers of the rocks The byproducts of petroleum like wax and paraffin are used in making candles wood polish ointments dyes lipsticks chemical fertilizers vaseline jelly Natural gas Natural gas is found with petroleum in petroleum wells Compressed natural gas is used as an alternative fuel to petrol and diesel to run vehicles Know this You have seen the use of cooking gas at home This is called Liquified Petroleum Gas LPG It is obtained by refining petroleum or moist natural gas Coal Millions of years ago the remains of plants and trees that were buried beneath the earth's crust did not decay completely Due to the high temperature and pressure they turned into coal under the layers of the rocks This is used as fuel in the production of electricity This source of energy is also used in industries Write examples for the following Solid fuel Liquid fuel Gaseous fuel What measures can be taken to conserve the following fuels Write here Cooking gas Diesel Petrol Know this Excessive use of fuels is dangerous to the environment Now-a-days efforts are being made to use alternative sources of energy like solar energy Mineral resources Minerals are formed in the earth as a result of prolonged natural process They are available along with rocks in the surface of the earth Minerals are extracted in the form of ore refined in factories and metals are separated from them Example Separation of iron from iron ore Metals like aluminium copper silver are extracted from their ores Word help Mineral It is a multi useful material available in nature Its composition can be represented by the chemical formula Look at the following pictures and write the uses of minerals Think What would have happened if there were no minerals Explain in your class about the minerals used at your home Know this Regaining of emptied mineral resources depends on the scientific process that takes place inside the earth Minerals are formed over millions of years Hence they must be used moderately Write the uses of the natural resources given in the table Natural resources Uses soil forests solar energyanimals fossil fuels minerals The availability of natural resources that fulfill our needs is not uniform everywhere The quality of available resources is also not the same As a result of excessive usage more than our requirements there is scarcity of such natural resources If the same condition persists some of the resources may not be available in the future Hence these resources must be used moderately and they must be reused if possible Know this Natural resources are there to fulfill our needs but not to fulfill our greed Natural resources should be used moderately and the balance in nature should be maintained Do you know this In earlier days natural things like mountains forests minerals animals soil water were considered as natural resources Now a days it has got a wider meaning The meaning of the word resource is changing with time A thing once considered as a resource may not be considered as a resource after some years Example Natural gas is a resource now but it was not so about a thousand years ago Sun light water soil available everywhere on the earth are called universal resources If forest resource is used for fire wood and wooden logs then it cannot be reused again As a result forests become non-renewable resources Growing more trees and moderate use of wood can make the forests renewable Now-a-days sea water can be converted into pure water for drinking purpose by using some methods But these methods are very expensive Human beings with innate intelligence creativity expertise and aesthetic sense can also be considered as a type of resource LESSON AIR Air is one of the natural resources The earth is surrounded by layers of air called atmosphere Air being a mixture of many gases is very essential for sustaining the life of animals and plants After studying this lesson you know about the existence of air through experiments know the components of air understand some characteristics of air through experiments understand the uses of air discuss about air pollution causes and effects and remedies Air is not visible but its presence can be felt How do you know that air is in your surroundings Write experiences about it Know this We use oxygen in air for respiration We cannot live without respiration In the same way animals and plants also need oxygen for respiration Oxygen is necessary for fuels to burn There are many more uses of air You will learn about these in the next classes Air is a mixture of nitrogen oxygen carbon dioxide water vapour noble gases and dust particles Oxygen Water vapour noble gases and dust particles Do this Press a piece of dry paper to the inner bottom of a glass tumbler Invert the glass and press it carefully in a trough filled with water as shown in the picture Observe what happens Is there water inside the glass Does the piece of paper in the tumbler get wet No Why is it so Now tilt the glass slightly What do you observe Air bubbles comes out of the tumbler and water goes inside How does this happen An empty tumbler is not really empty It is filled with air When it is pressed inversely in the trough filled with water air comes out and water goes into the tumbler What do you understand by this activity What is being done here to inflame fire in the oven What do you learn from this Write here Think What happens when the tyre of a vehicle gets punctured You will know more about the use of wind energy in the unit amazing energy Moving air is called wind Wind has enormous energy What do you learn from these incidents Roofs of houses are carried away by strong winds While walking on a street sometimes we feel the wind pushing us Clothes hung out to dry will flutter when the wind blows A vehicle cannot move if the air inside the tyre comes out Coconut trees swing in strong winds Kites fly up in the sky Air is polluted by the smoke released by factories automobiles burning of substances and crackers Mixing chemicals dust micro organisms which are harmful to man and other organisms into air is called air pollution Air gets polluted when chemicals and micro particles of smoke from industries and vechicles mix up with it It causes serious health issues like heart disease cancer breathing problems It has a negative impact on growth of plants and their yield Some animal races may get extinct Since all organisms need air it is necessary to prevent air pollution So we must take measures to stop air pollution Write any two measures to prevent air pollution Get the help of your teacher elders Know this Some of the measures to be followed to prevent air pollution are as follows Preventing the mixing up of chemical wastes discharged by factories with air Installing tall chimneys in factories so that the smoke can be released at a higher altitude Using gaseous fuel instead of coal diesel and petrol Designing emission control systems Using public transport Using alternative energy sources like solar energy hydro electric power and wind power Avoiding burning of substances near civilian areas LESSON WATER Water is very essential for the life of plants and animals Crops cannot be grown without water Water is a basic need for all There are many uses of water So water is a very important resource It is called life liquid of the earth surface is covered by water After studying this lesson you know about the sources of water understand the physical characteristics of water appreciate the biological importance of water know the importance of conservation methods of water verify the traditional and modern ways of water conservation Recall the distribution of water on the earth that you have learnt in your previous class Answer the questions Where can you find more water on the earth What is the consumable quantity of fresh water What are the sources of fresh water Write here the sources of water that you know Rain is the main source of water Let us know about other sources Oceans Oceans are the biggest source of water on the earth Look at this Globe Blue colour indicates the portion of the earth covered by water Rivers Rain is the source of river water also Melted snow from mountains reaches the river during summer So rivers overflow All the rivers flow in their definite route and finally reach the ocean Springs Water that is stored under the earth's crust and comes out due to the pressure through an opening is called spring Rain water which enters the earth through its loose portions will be collected as underground water and this comes out in the form of a spring Wells U n d e r g r o u n d water obtained by digging the earth's crust to a certain depth is called well water How many types of wells are there Which are they Write here Know this Due to the excessive utilization of underground water it is getting exhausted It can be regained by the absorption of rain water into the earth Soak pits must be constructed for this purpose We have to minimise the utilization of underground water and we have to follow some restoration methods like rain water harvesting and recycling of water Ponds An artificially man-made low level portion of land to store water is called a pond Its capacity of water storage is less It is constructed in such a way that rain water which drains from high level will be stored here Rain water reaches ponds by running through rivulets small streams also Reservoires Dams are constructed across the rivers to store water through out the year and to supply water to places where there is scarcity and also for multi purpose projects These are capable of storing water in large scale and they are called reservoirs Write the names of water reservoirs in Karnataka Think Our elders constructed tanks ponds and open wells to conserve water Now-a-days reservoirs are constructed to conserve water Which one is eco friendly among these Why Collect the information about tank pond open well or reservoir which are near your locality by visiting with your teacher an elder In what kind of place is it constructed How is water collected What are its uses In which season of the year will it be full In which season will it be empty or less Why From which source do you collect water in your house and at the school Write here Know this In the list of uses that you wrote have you considered the use for transportation People also travel on water Yacht boats are used for shorter distances and also to catch fishes Ships are used to travel longer distances Do this Collect flowing rain water in a glass bottle Collect rain drops directly in a bottle Look at their colour Write the difference that you find Take two glasses of water add a spoon of sugar to one glass and a spoon of salt to another Stir them and taste both Write down what you have understood Pure water is colourless odourless and tasteless Salts and minerals dissolved in water are responsible for its taste Activity Statement y Lift an empty tumbler and a tumbler of the same size filled with water y Water has weight y Pour a cup of water on the stairs y Water does not flow from heigher level towards lower level y Boil water in a small vessel y Water evaporates when it boils y Put some specific quantity of water in a glass tumbler a glass bottle a glass vessel y Water does not take the shape of the container You have learnt some physical characteristics of water Water is a liquid substance You will learn more about it in the lesson Nature of matter Let us learn the biological importance of water Organisms have enormous quantity of water in their body Plants and animals have of water in their body Origin of very early life took place in water Water is essential for biological activities of plants and animals Water is required for the growth of plants Green plants need water for the production of their food Think What happens if required quantity of water is not supplied to plants Our elders treated this precious water as an integral part of their life They reserved a prominent place for water in their family rituals Have you observed this at your home or in your neighbourhood Which are the practices of worshipping water that you have seen in your home or in your neighbourhood When are they celebrated Water pollution Water is physically polluted by mud garbage paper food residuals Water mixed with industrial chemicals chemical fertilizers and insectisides which have dangerous components turns the water poisionous Drinking this water may cause diseases like cholera diarrhea dysentery Sometimes it may even lead to death Contaminated water extinguishes the aquatic life also Know this We should not drink contaminated water Health can be maintained properly by drinking potable water Prepare and exhibit a chart in your class by discussing with your friends about what you will do to get pure potable water You know about the disease cholera caused by contaminated water Mosquitoes breed on stagnant water Mosquitoes spread malaria disease The parasite Plasmodium is present in the body of the female mosquito called anaphylus This parasite enters the human blood when a mosquito bites and leads to symptoms of fever shivering vomiting and head ache This is called malaria If proper treatment is not given it may causes death LESSON AGRICULTURE Negila hididu holadolu hadutha Uluva yogiya nodalli Phalavanu bayasade seveye poojeyu karmave ihapara sadhanavu Kashtadolu annava dudivane thyagi Srishti niyamadolagavane bhogi Read the famous poem in Kannada written by Rastrakavi Kuvempu In this poem words like Uluva yogi the person who ploughs annava dudivane thyagi the person who sacrifices himself and produces food have been used Can you guess who he is Write your answer in the box given below This poem is composed on farmers who provide food for us Agriculture is the main occupation of the farmers So farmers are also called agriculturists Agriculturists engage themselves in agriculture and related activities to lead their life Come let us know certain informations about agriculture and agriculturists After studying this lesson you understand the various stages of agriculture and from where we get food understand the nature of work and the problems of farm labourers small scale farmers and large scale farmers and give solutions understand organic farming and chemical farming and differentiate it know about rain fed agricultural land and irrigated agricultural land understand drip irrigation and spray irrigation and make a list of crops grown in both methods collect information about intensive farming mixed farming and horticulture recognize the modern and traditional methods systems of seed storage Crops growing in the districts of Karnataka have been given here Observe Sl No District Important crops Bidar redgram wheat jowar sugarcane Kalaburagi redgram wheat jowar pearl millet bengalgram cotton Vijayapura redgram wheat jowar pearl millet bengalgram sugarcane grapes Yadagiri jowar pearl millet redgram wheat paddy sugarcane Belagavi sugarcane jowar wheat bengalgram groundnut cotton tobacco Bagalakote sugarcane wheat jowar pearl millet bengalgram Raichur paddy cotton jowar pearl millet bengalgram soyabean Uttara Kannada paddy coconut areca cardamom pepper cashewnut Dharwad cotton jowar wheat paddy sugarcane Gadag jowar wheat groundnut cotton sugarcane Koppal paddy cotton pearl millet redgram sugarcane greengram Haveri cotton sugarcane millets jowar sunflower Ballari jowar cotton paddy redgram sunflower Shivamogga areca ragi coconut paddy sugarcane Davangere cotton paddy maize ragi sugarcane Udupi paddy coconut areca wheat pepper cashewnut Chikkamagaluru ragi coffee paddy cumin tea pepper Chithradurga groundnut maize cumin bengalgram Dakshina Kannada paddy coconut areca pepper cashewnut cocoa Hassan paddy horsegram ragi tobacco coffee sugarcane Tumakuru ragi groundnut coconut greengram banana redgram Chikkballapura horsegram ragi mulberry Kodagu coffee orange rubber pepper ragi paddy Mysuru paddy ragi bengalgram tobacco sugarcane groundnut Mandya paddy ragi sugarcane horsegram Ramanagara ragi mulberry horsegram cowbeans mango Bengaluru rural ragi cowbeans coconut grapes Bengaluru urban ragi horsegram Kolara ragi horsegram mulberry Chamarajanagara ragi jowar mulberry cowbeans sugarcane Look at the pictures given below Read the statements given in front of the pictures The pictures and statements do not match with each other Match the pictures with the correct statements by drawing a line Protecting the crop from animals birds insects and diseases Ploughing the land to grow crops Sowing the seeds to grow crops using chemicals or organic fertilizers for proper growth of the crop Harvesting the crop either manually or with the help of machines Irrigation for the proper growth of crops You have matched the pictures with the correct statements haven't you These are the stages of growing crops You have matched the pictures with the correct statements but they are not in the proper order Write them in the correct order in the space given below Think Plants grown on the agricultural field are called crops Why You know that farmers involve themselves in agriculture related works The farmers working in the fields are of three categories Farm labourers Small scale farmers Large scale farmers It is a village All the people of the village are living with love faith and peaceful co-existence Rangamma belongs to the same village She doesn't have agricultural land of her own It is her responsibility to manage her family So she does weeding planting and separating cotton from the plant in other farms Julakamma of the same village is a close friend of Rangamma Julakamma is a farmer She owns a piece of land She runs her family by selling crops grown on her farm Both these women like Manjamma very much Manjamma is a successful lady agriculturist She owns about acres of land in the village Many women of the village like Rangamma work in her agricultural land Manjamma not only grows crops but also she rears fowl and cattle She purchases modern agricultural equipments for cultivation purposes She also earns money through apiculture rearing honey bees and sericulture silkworm breeding So people of the village call her a large scale farmer She always encourages and gives suggestions to the villagers to practice agriculture like her You have read the information haven't you Now match characters in the information with the correct words Rangamma Large scale farmer Julakamma Farm labourer Manjamma Small scale farmer Farm Labourers They do not have their own agricultural land They work in some other person's field to earn their living Farm labourers have problems of their own Here are some statements Put mark to the statements that are related and mark to that are not related to the problems of the farm labourers Farm labourers do not get work through out the year They get very less wage Farm labourers are very rich Do this Meet some farm labourers of your village Write in the space given below the problems they face Many rules have been implemented to solve the problems of the farm labourers Example It is mandatary to give minimum wages to the labourers Think Think about the solutions for the problems of the farm labourers Activity With the help of your teacher make a list of solutions for the problems of farm labourers Small scale farmers Small scale farmers own a piece of land of their own They sell the crop they grow in their field and earn money to lead life They also face a number of problems Example Shortage of money to cultivate the land As the land holding is little their earning is not self- sufficient to lead the family Many times they don't get water for the land because of poor irrigation facilities They lack proper guidance to grow crops that suit soil fertility of their land or the seasons A number of steps have been taken to solve their problems Example Monetary aid through bank loans Irrigation facilities through canals Apart from these many more solutions have been provided to these farmers Make a list of them with the help of your teacher Large scale farmers Usually large scale farmers own more agricultural land In addition to family members many others help them in the agricultural practices Some statements related to large scale farmers are given here Observe They purchase and use modern agricultural equipments They store the grains in barns godowns and sell it when they get a better price They utilize the monetary facilities of the banks Their income is high as they grow different crops What are the facilities that large scale farmers get from the banks Discuss and write in the space given below Think There are many helpers in the field of large scale farmers Why We know that the farmers do agriculture in their agricultural land Agricultural land has been classified into two categories Rain fed agricultural land Irrigated agricultural land Farmers grow crops according to the category of the land they own Rain fed agricultural land Agricultural land which falls under less rainfall areas is called rain-fed agricultural land Crops which require less water and are suitable for that soil are grown there Rain-fed cultivation is called kuski or dry land cultivation Activity Make a list of crops that are grown in rain fed areas Irrigated agricultural land Water is an important wealth for farmers Cultivation of crops is impossible without water Rain is the main source of water We don't get rain all the time So water is stored in different sources and utilized to cultivate the land Observe the pictures given below Apart from rain water is supplied to the crops from ponds canals wells and bore wells Cultivating the land using water from any of these sources is called irrigated agriculture Sugar cane paddy cotton are grown depending upon the soil quality of the irrigated land These crops are called irrigated crops Activity Make a list of irrigated crops discussing with your friends Water is available for agricultural land from ponds canals wells and bore wells They are called sources of Irrigation Farmers who have sources of water follow some typical distinct irrigation methods to avoid wastage of water They are Drip irrigation Spray sprinkles irrigation Look at the pictures try to understand drip irrigation and spray irrigation In drip irrigation water is supplied to the roots of the crops drop by drop In spray irrigation water is sprayed over the crops uniformly as in rainfall Activity Make a list of drip irrigated crops and spray irrigated crops take the help of teachers elders Think Farmers are advised to adopt drip irrigation in recent years Why Know this In certain agricultural lands soil has deficient nutrients So it is less fertile It is called barren land It is not easy to grow crops here But recently plants such as Jathropa and pangamia honge which yield biofuel are being grown in barren land You have learnt about the types of agricultural land haven't you In recent years farmers follow two types of cultivation farming to grow crops whether it is rain-fed agricultural land or irrigated agricultural land They are Organic farming Chemical farming To understand these methods read the statements given below With the help of your teacher identify the statements related to organic farming and chemical farming Write them in the respective charts Statements Chemical fertilizers are used Manure organic-compost is used for agricultural land Vermi-compost is used to increase the fertility of the soil Pesticides are used to grow crops Green leaves dry leaves are also used in this method of cultivation Organic farming In chemical farming chemical fertilizers and pesticides are used to grow crops In organic farming manure green leaves compost vermi-compost and organic pesticides are used to grow crops Think Organic farming is better than chemical farming How In agriculture many methods are being followed to grow crops For Example Some of the methods of cultivation are given here Read and understand Intensive farming Growing to crops on the same land in a year For Example jowar paddy ragi sunflower cotton horsegram bengalgram redgram Mixed farming In addition to cultivation of crops cattle rearing poultry sericulture and apiculture are also done Activity Many agricultural activities and secondary occupations are also practised in mixed farming With the help of your teacher make a list of secondary occupations Plantation farming Fruits vegetables coffee tea or flowers are grown instead of food crops on the agricultural lands Activity Make a list of fruits vegetables flowers which can be grown in Plantation farming Get the help of the elders Thus farmers adopt different agricultural methods and earn their income Do this Go to an agricultural land with your friend Observe the methods being followed there and name them Storing and preserving the grains after the harvest of the crop is also very important Observe these pictures Some of the methods of storing and preserving the grains have been shown Identify them with the help of your teacher In the first two pictures we can see the storage system used in olden days They are called underground granary Hagevu and bamboo granary These are traditional methods of storing grains Food grains products are being grown on large scale Granaries have been constructed to store and preserve food grains products Farmers can preserve their food grain in government granaries in little expense Think Preserving grains is essential Why How is it useful for both the farmer and buyers Write here Agriculture and farmers are like two wheels of a cart Agriculture is the main occupation of our country People who lead life following the profession of agriculture are the real food providers Annadatas If the cultivator harvests the whole world rejoices If the cultivator fails to harvest the whole world sobs These lines highlights the importance of the farmers Let us salute the farmers the food providers LESSON FOOD ESSENCE OF LIFE Hasiyade unabeda hasidu matthirabeda bisigoodi thangalunabeda vaidyanagasaneye beda Sarvajna Observe the tripadi of Kavi Sarvajna In the second line he says not to eat stale food mixing with fresh food Why does he say so Think Write your answer here Yes this line refers to the food which we eat Food is the essence of our life Everyday we do one or the other work We need energy for doing work We get energy from the food we eat Food is necessary for our growth development and good health What is there in the food we eat How should our food be This unit contains some information about it Read and understand After studying this lesson you recall the nutrients of food know about the sources of food and availability of food recognize the diversity of food in different places by understanding the points that decide the food system understand the changing food habits and its effects on health understand the term food wastage and the methods to preserve it You already know that there are many nutrients in the food that we eat The nutrients of food and the food materials which are rich in those nutrients are given below Match the statements that suit the nutrients correctly Nutrients Food materials carbohydrates fenugreek menthya carrot sprouted seeds fish oil green-yellow vegetables lipid ragi wheat jowar foxtail millets little millets bread honey protein groundnut meat fish dry coconut sesame egg yolk vitamin vegetables fruits lemon cereals minerals cucumber watermelon grapes radish ashgourd brinjal cabbage cauliflower water cowbeans redgram black eyed beans milk greengram soyabean You have matched the nutrients and their suitable food materials Haven't you These nutrients are helpful for our growth repair body building and for being healthy Think We can't maintain our health if we eat food containing the same nutrients everyday Why Observe the following food materials Paddy foxtail millets meat pearl millet mango cheese ragi ghee egg cauliflower milk fenugreek seeds carrot butter milk radish Do this Classify the food materials given above and write them in the table given below Food materials from plant source Food materials from animal source These materials are available for us from plant source and animal source The food substances from plant source are classified as follows cereals pulses oil seeds vegetables green leafy vegetables fruits The list of some food materials obtained from plant source is given Observe mango brinjal sesame green gram foxtail millets amaranth harive palak groundnut lemon beetroot fenugreek seeds menthya sunflower seeds sweet potato redgram jowar black gram orange little millet Write the food materials given above in the related petals of the plant source Plant source green leafy vegetable cereals pulses fruits vegetables oil seeds Millets The food we eat consists of more than one nutrient Among them millets like foxtail millets barnyard millets kodo millets are the barn of nutrients Our elders used to consume more of millets Now-a-days the consumption of these cereals which are considered to be healthy is reducing Important millets jowar pearl millet browntop millet little millet ragi kodo millet proso millet barnyard millet foxtail millet Activity List out the millets shown in the picture Uses of millets Millets can be grown using less water in less period of time They grow easily in different environment and climatic condition These can be grown without using chemical fertilizers pesticides and herbicides These are called the friends of famine These cereals have a lot of nutrients Think Now a days doctors advise patients to consume millets Why Availability of food The fertility of agricultural land and climatic conditions differ from one place to another in our state So all types of crops cannot be grown in all the places Crops like jowar ragi and paddy cannot be grown in all places Think Increasing population and decreasing agricultural land is the cause for decrease in the availability of food How Therefore the Government has taken steps to ensure availability of food for all the people Example Giving milk and mid-day meals to students in school Supplying food materials at nominal rates through fair price shop Steps are taken to prevent unnecessary holding of food materials by the merchants Purchasing the food materials from the farmers storing them in proper godowns and then distributing Think What are the advantages of giving mid-day meals and milk in schools As food materials are available it is possible to prepare food for us Make a list of the food prepared at your home Compare this list with that of your friends Observe whether your and your friends' list of food differ Complete the following activity Your food Season Food you eat Summer Rainy Winter Neighbour's food Neighbouring house The common food of your village or town The common food of your district The common food of different places of Karnataka Get the help of the teacher North Karnataka South Karnataka Coastal Karnataka Malnad Answer the following questions use the chart shown above y Which food do you take mainly in summer y Which food do you take commonly in winter y Which is the main food of your district y The food of different places in Karnataka are different Why You have answered the questions Haven't you Some statements about the factors which decide the food we take are given Observe y Although we are of the same state our food system is on the basis of the climate and the food materials which are available grown in the region in which we live y The food which we eat is decided by the tradition beliefs of a particular family y Our food changes according to the seasons like summer rainy and winter Although all these aspects influence our food now a days our food habits are becoming similar Observe the following pictures The above factors are responsible for the change in our food habits rice cups onion chopped ginger small piece coriander-to garnish curry leaves- stem mustard seeds- spoon blackgram- spoon turmeric powder- spoon capsicum- big tomato- big garam masala- spoon salt-to taste They can be described as follows y Magazines advertisements y Cooking related programmes telecasted in TV channels and radio y The new food habits have become common due to the use of internet in mobile phones and computers y Cookery books Due to the influence of factors mentioned above our food habits have changed as follows y Consumption of food items like pizza burger sauce samosa corn-flakes soup noodles ice cream chocolate chips have increased instead of consuming nutritious home made food Some of them are considered junk food Know this Junk food means the food material which has less nutritional value or is unnecessary from the health point of view Think Junk food is not good for health Why y Consuming sauce rich food items like gobi manchurian pani puri chinese food has become common The sauce contains certain chemicals which make food tastier y Consuming the outside food instead of home made food is on the increase today y Use of readymade food is increasing in the mechanical life of city town y Eating fast food is an example for this Think What is fast food The effects of change in food habits People fall sick easily Poisonous chemicals enter the body due to the intake of tasty food instead of healthy food Body is losing the power to fight diseases Consumption of spicy food and junk food has given rise to obesity problems Activity Which type of food should we eat Discuss with your friends about this Ready made food packets Now-a-days food we eat is now available in packets While buying them observe the following points y Date of manufacture and expiry date y The ingredients added to the stuffs quantity of chemicals y Temperature needed to preserve the packet Activity Take a packet of food stuff and list out the points mentioned above Wasting of food We can see food being wasted here and there in these pictures Throwing away food which is worth consuming is called wasting of food It is important to preserve our food or food stuffs without wasting and spoiling them Now a days food stuffs are preserved by following some methods They are- y We know the taste of pickles Salt is added to it in order to avoid spoiling for many days Chemicals like sugar are used to preserve the fresh fruits y Grapes are dried and used as drygrapes Activity List out the food stuff which are preserved by drying them Fish meat and milk are preserved by storing them at very low temperature It is called cold storage For example Refrigerator fridge Good food keeps us healthy-physically and mentally Food is the essence of our life To be healthy it is important to protect ourselves by eating good food LESSON RESIDENCES You might have heard that home is the first school and mother is the first teacher Home is a familiar term for us Early man protected himself against sun light rain wind and wild animals by living in caves and bushes Hence they are called the early shelters of mankind Home became a need as man became civilized Construction of houses were started by the civilized man as the need for a home increased in accordance with the changes in society Construction of residences started from independent houses and got transformed to community houses After studying this lesson you know about personal and community housing projects understand the problems related to rural and urban residences Look at the pictures given below You have learnt about the construction of these houses in the previous class Write the materials required to build the houses given in the picture in the space provided Type of house Building materials required People live in various types of houses such as hut house with tiled roof and houses with concrete terrace Many families in villages or towns are living in houses constructed side by side in a locality These are called residences Do this Observe the lanes of your village or town These are the areas of common residences Generally families lead their life by constructing their own personal houses The common features found in residences are given below Write down the other features that you have observed y Houses built here and there or houses in a lane y Lanes are mostly zig zag y Street lights are there in the residential areas Facilities are rarely available in areas where people build their own houses Now-a-days community housing projects have started to meet the needs and demands of the people due to over population Following pictures are the examples of community housing Community houses are constructed for various advantages Some statements are given below But some of them are not the correct reasons Put mark only for correct reasons y Many families live together in community houses y The Government provides housing facilities for the poor families by constructing community houses in villages and cities y They are constructed to provide systematic basic facilities for a large population in limited space y Houses in multistoreyed buildings are constructed and are suitable for the residence of a single family Objectives of community houses are y To provide all the facilities to the houses which are required by families y Providing good roads transportation facilities electrification water supply and garbage disposals in a planned way y Constructing parks hospitals for public needs y Connecting community houses to the regional main roads Do this Make groups of four students each List out the facilities available in community houses Take the help of your teacher The facilities available in community houses are given in this chart Observe Transportation Health and sanitation Essentials of life Entertainment and cultural programmes Street lights Safety Parking facility Roads Under ground drainage Health center Gym Play ground Toilets Vegetable stall Provision store Electricity Garbage disposal Water supply Drama theater Community hall Park Film talkies Activity Is it possible to provide facilities available in community houses to the independent houses Discuss with your friends Usually community housing projects are implemented in suitable places in villages and cities The Government build community houses in villages The Government has formed separate housing boards for the construction of houses in cities Many problems arise during construction of houses in villages or cities The above pictures reveal some problems of residential areas Observe the following statements Some residential problems of rural urban areas are given Write the rest after discussing with your friends Take the help of your teacher Housing problems in urban areas No underground drainage system Garbage disposal problems Frequent fire accidents in multistoreyed buildings Housing problems in rural areas No bathroom and toilet facility No proper electrification Lack of pure drinking water supply Roads not suitable for the transportation of vehicles No underground drainage facilities Look at the list of urban and rural housing problems The facilities that the best city residence village residence must have are given here Observe Housing features of the best city or village Proper ventilation and light Rain water harvesting system from the roof of each house and its storage Electricity by solar energy Closed underground drainage system Proper system for garbage disposal and preparation of manure from garbage A good house can provide health happiness and peace for the family members and their neighbours Houses with the best facilities lead to good health LESSON NATURE OF MATTER We see several materials objects in our daily life and use a few of them These materials are also called matter These materials are not just like one another But if you observe keenly the characteristics of some materials appear similar Every one is eager to know what are the constituents of these materials What are the common characteristics of these materials After studying this lesson you understand about matter explain the characteristics of matter identify different states of matter understand the types of change in states of matter understand about mass density pressure sublimation and buoyancy In our daily life we see objects in different forms Activity Collect at least ten objects in your surroundings What objects should I collect Shall I collect water Activity List out the names of the materials you have collected by arranging them neatly Observe whether the objects you have collected are as follows If yes put mark and if no put mark y Have you brought hard material y Is there any soft material y Is there any material which could be stored in a bottle or a bowl y Is there any brittle material y Is there any material which can be dissolved in water y Is there any material which turns into manure after mixing with the soil Oh the materials I have brought are in various forms From the above activity you can understand that materials are in different forms in their shape colour brightness solubility Isn't it Observe the differences if any by comparing the materials collected by you and your friend Matter object How are the materials available in nature created Experiment Take some chalk powder Dip your finger in it and sprinkle slowly over a plane glass Observe these minute pieces carefully through a convex lens Can these minute pieces be divided further Think and try It is not possible Why Is it not possible for us to divide them further We can observe that the finest pieces of chalk cannot be divided further though we try to do so Scientifically materials are called matter Matter is made up of small particles The smallest piece of matter is called particle Think Read the instances given below and try to remember if you have experienced any y How did fragrant particles reach your nose from the opened scent bottle y How did your nose feel that the neighbouring room is being swept y Did you notice any collection of dark particles when fire wood is burnt or kerosene lamp is lit Particles present in the matter are invisible Matter is made up of very minute particles Hence visible matter consists of invisible particles What do you mean by matter Properties of Matter Matters have special properties These properties can be understood with the help of some experiments and activities Matter occupies space Activity Pour the wheat flour or any other flour into a bowl from a box Again try to fill the bowl so that the flour does not spill Was it possible Did you completely fill the bowl What should be done to pour some more flour into the bowl Why It was impossible to fill the bowl completely with the entire quantity of the flour present in the box Why Experiment Put a glass beaker completely filled with water on a plate Slowly immerse a stone of appropriate size tied with a thread into the beaker as shown in the picture What happened when the stone is immersed in the beaker Why did water spill out Why it is so Think and explain to your friends Matter occupies space A matter cannot occupy the place of another at a same time Write the names of some matter arround you Air is a matter Air occupies space in its container Activity Blow air into a balloon Particles in the air are rarely distributed So particles of one matter can be accommodated in another in which particles are rarely distributed Activity Add some sugar or salt into a beaker fully filled with water without allowing water to spillout How is it possible Discuss with your teacher Think What happens to the tube of a vehicle when it is filled with excess air Why Matter is made up of various visible and invisible particles Matter has mass Activity Take a weighing balance and note down the position of its needle Write here Put any material of g in one pan and note down the position of the needle Write here Weigh different materials you have or those which are available in your classroom with your friends Think Is there any matter without weight Place a matter in a pan of the balance Observe Is it possible to keep both the pans equal Try If not why Activity Try to lift a bag with kg rice and another same type of empty bag Write your experience here Matter is a total sum of many particles It has mass Matter is made up of small particles Total number of particles in a matter depends upon its weight The material which occupies space and posseses mass is called Matter Activity What are the properties of matter Write here States of matter Depending upon the arrangement of the particles in a matter different states of matter are recognized Activity Fill up the following table using the clues Required To burn To drink To breath Fill up the names of the matter filled above in the following table Solid Hard material LiquidÀ which gets the shape of the container Gas which cannot be held is invisible spreads can be experienced Activity List out the materials that you know which are in the form of solid liquid and gas Solid Liquid Gas Think and group these materials in their particular column; buttermilk candle curd kerosene charcoal honey piece of brick smoke Solid LiquidÀ Gas Matter is identified in its three forms Solid Liquid and Gas In solids particles are densely and orderly arranged Example stone iron In liquids the particles are loosely arranged when compared to solids Example water milk In gases the particles are rarely arranged Example air smoke Think Where have you found the presence of gas Activity Let us conduct an experiment to know that the particles are loosely distributed in a liquid Take a beaker completely filled to the brim with water Drop three marbles into it Now water spills out Why Think and write here Take another beaker of the same size completely filled wit Add some sugar powder of equal to weight of the three marbles Did you find any difference in the water level Observe and Write here Why doesn't water spill out Since sugar particles have combined with the water particles water does not spill out Activity Place a marble on a table plate beaker and so on Did you find any difference in the shape and size of it Shape and size of the solids in any place do not change Activity Pour water into a beaker plate polythene bag Do you find any difference in its shape Liquid takes the shape of its container But does not change in size Activity Light an incense stick and allow its smoke to spread inside a jar What is the shape of the smoke now Gases spread over the entire space of the container and its volume changes Activity Let us conduct an activity to know that the air has weight Take a stick of cm length Tie an air filled balloon to one of its end and an empty balloon to the other end Tie a thread at the exact center of the stick as shown in the picture and hold it freely What do you observe Write here Activity Observe the picture given below Do this activity with the help of your teacher Shape of the liquid changes according to the space available in the container Place a glass beaker filled with water on plane surface and observe Place a glass beaker filled with water in a slant position and observe Smoke filled jar placed upright Smoke filled jar kept slant Gas occupies the shape of the container Come let us play Before you play write some names of solids liquids and gases on plain cards You and your classmates stand around a circle Now put the cards inside the circle and run around the circle Ask one of your friends to stand outside the circle and stop you by blowing the whistle When he blows the whistle all of you should stand near the cards inside the circle Your friend who blew the whistle should call out any one among solid liquid and gas If he says solid the players who stand near the cards of solids will be out Like this continue the game Ask the last one to give examples for solid liquid and gas one for each and congratulate him her Effect of heat on matter Activity As shown in the picture fix a metallic ring to a stand so that a bob can just pass through it Take a pendulum of an iron bob and try to pass it through the ring Take the help of your teacher Did the bob pass through the ring Activity Take a small glass bottle filled with coloured water upto half of its volume and close it with a single holed cork as shown in the picture Insert a thin transparent tube inside the bottle Now roll the glass bottle between your palms as shown in the picture Observe the water level in the tube and write here What is the change that has taken place inside the bot- tle due to rubbing by palms Why From the above activity we understood that matter gets changed when heated Matter expands on heating Hence solids liquids and gases expand on heating Write what happens when the following objects are heated candle rice in a cooker water Change in state of a matter When an object is heated there will be a rise in its hotness The state of matter changes due to heat Write the states of matter in the following situations Ice cube on heating Water on heating Vapour on cooling Water on cooling Matter changes its state from one form to another due to heat This is called as change in state of a substance On heating many solids change into liquid state Effect of heat on a matter depends upon the level of hotness On increase in the heat solid changes into liquid and liquid changes into gas In the same way on cooling gas changes into liquid and liquid changes into solid Example heating heating Ice cube water vapour solid cooling liquid cooling gas Activity Take a broken piece of a glass bangle By heating bend it into required shape and stick it on a cardboard Take the help of your teacher parents You have learnt from the previous experiment that objects expand by heating Sublimation Experiment Take a few naphthalene balls in an evaporating dish Close it with a glass funnel as shown in the picture Take some cotton and close the other end of the funnel Heat the dish slowly Naphthalene converts into milky vapour and will be collected in the inner side of the funnel Stop heating and observe what happens Write here We know that when solids are heated they are converted first into liquid and then into vapour Similarly on cooling the vapours are converted first into liquids and then into solids But some solids on heating directly convert into their vapour state and vice versa without passing through the liquid state and this is called sublimation Example camphor iodine Think What happens to naphthalene balls kept in an almirah after a few days Why Mass Activity Light a wax candle and observe what happens to the wax after sometime Now putoff the candle and observe what happens to the melted wax and write here Give examples for the following Take the help of your teacher parent heating cooling Solid Liquid Solid Activity Measure the weight of different objects using physical balance in your school with your friends and note down The weight see examples given rice duster groundnut kg Mass is the total quantity of matter cohering together to make an object or a substance The mass is measured in terms of weight The SI unit of mass is kilogram kg Density It is generally said that the cotton is light and iron is heavy Why Write here When two objects of same size are measured one may weigh more and other may weigh less Genarally we say that the density of less weighting objects will be less and the density of more weighing objects will be more Activity Pour a cup of water and a cup of oil into a glass jar They won't mix together and will be seen seperately Why Activity Learn from the elders about the tools used to measure the quantity of objects in olden days and write here rice-pavu Think Which one is heavier among kg of cotton and kg of iron Density is the amount of mass contained in a unit volume Generally density of the solid is more than that of the liquid and the density of liquid is more than that of the gas The mass of an object weight in g in cubic meter of its volume is called density SI unit of density is kg m kilogram per cubic meter Pressure Activity Take a tumbler containing water Place a blade horizontally It floats Place the same blade perpendicular to the surface of water See what happens Handle the blade carefully with the help of teachers parents Activity List the objects with less and higher density Less Density oil High Density water Even though the mass of the blade is same it floats in the former case but sinks in the later case When the blade is placed horizontally its mass is distributed over a wider area Therefore mass per unit area is less and hence it floats When the blade is kept perpendicular to the water surface it sinks since the mass is distributed over a smaller area Therefore the consequence depends upon mass per unit area This is called pressure Pressure is the force exerted on a unit area Activity Immerse a stone gently into a glass beaker containing water ∙ Write here what you have noticed Immerse a wooden plank into the other beaker containing water Write here what you have noticed When an object is immersed in water it exerts a downward force on water and the water in turn exerts an upward force or upward thrust on the objects If the upward force exerted on the object is more than the downward force then the objects float This upward force exerted is called buoyancy Write names of any four objects which float on water Activity Fill water in a glass jar as shown in the picture Then put marble coin dried leaf wooden plank straw in the jar Ask your friends to tell what happened to each object that you have put in water by observing it Some objects float in water and some sink Think A raft does not sink in water Why What objects are used to immerse the wooden plank in water Why Activity Put some small objects in the water Write what happened to those objects Objects that float in water Objects that sink in water Activity Fill water in two glass jars as shown in the picture Now pour sugar to one jar and charcoal powder into another and stir Did the sugar and charcoal powder dissolve in the water Observe and write here Some objects dissolve in water This is called solubility Some objects do not dissolve in water Activity Put the given objects in the water and stir Observe and write what happened to these objects salt sand sugar kerosene turmeric powder sugar candy coconut oil milk Soluble objects in water Insoluble objects in water LESSON ELEMENTS COMPOUNDS AND MIXTURES In our daily life we make use of different kinds of matter The matters available in nature consist of molecules or compound molecules When these compound molecules are subdivided elements are obtained The smallest unit of the element is called atom Atom is the smallest unit of an element having same properties Some atoms easily combine with others and form different substances Depending on the atoms present in the substances they are classified as elements compounds and mixtures After learning this lesson you classify the matter into elements compounds and mixtures recognise the differences between element compound and mixture Elements Elements are made up of very small particles These are formed by particles with same properties Example Oxygen O Hydrogen H Elements cannot be subdivided chemically and cannot be synthesized by other elements Some elements are naturally available whereas some other elements are artificially prepared Example Natural element Gold Artificial element Plutonium Elements are classified as metals and non metals You will learn about metals and non metals in higher classes Compounds When two or more elements combine chemically compound is formed There are groups of atoms of different elements in it When two are more elements combine chemically in a specific ratio and form a substance of new property it is called a compound Example Water H O Water is a compound formed by the chemical combination of Hydrogen and Oxygen in the ratio Molecular formula is used to represent a compound Know this Representing the number of atoms in a molecule using chemical symbols is called molecular formula Molecular formula represents the elements of a compound as well as the number of atoms A compound does not possess the properties of its constituent substances Example Sugar is made up of carbon hydrogen and oxygen But sugar does not possess any of their properties The constituents of compounds cannot be separated easily Know this Take sodium chloride salt which is used in daily life It is a compound formed by sodium and chlorine Though both sodium and chlorine are poisonous the salt formed by their combination is not poisonous We use this in daily life Mixtures We see many mixtures in our daily life Mixtures are substances consisting of two or more substances If two or more substances elements or compounds are mixed together in any ratio such that they do not undergo any chemical change but retain their individual properties then the resulting substance is called mixture Example Soil is a mixture of sand clay many types of salts and residues of plants and animals Element compound and mixture may be solid liquid or gas Element Compound Mixture Solid iron sugar soil Liquid mercury water sea water Gas oxygen carbon dioxide at room temperature air Differences between compounds and mixture Compounds Mixtures When two or more elements combine chemically compounds are formed When two or more substances mix physically mixtures are formed The constituents of compounds are combined in definite ratio or proportion The constituents of a mixture may be mixed in any proportion The constituent substances of a compound do not retain their original properties after combination The constituent substances of a mixture retain their individual properties The constituents of compounds cannot be separated by simple methods without chemical reactions The constituents of mixtures can be separated by simple methods LESSON AMAZING ENERGY In the previous lesson you learnt that the world we live in is made up of matter and energy Human beings are the integral part of nature They have understood many natural events of the environment and tried to find out the reasons for the changes that take place in the environment They have learnt to think scientifically about the amazements of nature We in our daily life use the words like force work energy What are these Let us know about them After studying this lesson you understand the meaning of work understand that energy is needed to do work understand the different forms of energy and give examples for the uses of different types of energy recognise the change of energy from one form to another recognise the significance of conservation of energy Work In our daily life activities the word commonly heard is work But the word work has a definite meaning In the above picture both Ramesh and Rasheeda are doing activities deliberately using force Ramesh can complete his work of lifting water from a well But Rasheeda cannot move the wall in spite of several attempts is said that work is done only when the force applied on an object makes that object move in the direction of the force Activity Name any five works you do y Storing water You have done all the above works by applying force When force is applied on an object the object changes position or gets displaced Work depends on the quantity of force applied on the object Activity Teacher engages the students in different activities in groups For Example watering the plants drawing y arranging desks systematically in the classroom Think Why are the above activities called works We are engaged with one or the other activity to fullfil our needs These activities are called work We use energy to do work We get tired when we do more work People who work hard use more energy to do work Think Can you lift the wooden table in your classroom without the help of others We will be able to work only when we have energy Less energy is required to do simple work more energy is required to do tough work Activity Try to lift your and your friends' school bags How many bags can you lift at a time We get the energy required to do work from food We get the energy for doing several works from different sources in the environment For Example We use physical energy Motor vehicles run by fuel energy to carry loads Solar energy is essential for plants to grow Every work is related with the energy required to do it If work is a needful activity then energy is essential to complete the work Work is also defined as making an object move from one place to another Energy is required to displace any object from one place to another Think Are there any works which could be done without using energy Different forms of energy and use Flying aeroplane in the space running vehicle on land sailing boat ship on water electrical appliances which are used to ease our daily works all use one or the other form of energy Observe different forms of energy in the picture given below Activities happen not only by human beings but also several activities take place naturally in the environment Energy is essential for all these activities to take place Let us know which is that essential energy Different types of works depend upon its related energy There is a natural energy in the environment Sun air water coal are the sources of energy used for certain daily activities in the environment Let us learn about the different forms of energy Muscular energy Activities like walking climbing pulling pushing need muscular energy This energy is released by chemical changes in our body Think Why do our elders insist we take nutritious food Write any four works you do using muscular energy Read and learn Muscular energy can be increased by proper food and regular exercises Mechanical energy Energy of an object by virtue of its position is called potential energy and the energy due to its motion is called kinetic energy Sum of potential energy and kinetic energy is called mechanical energy Water stored in a dam possesses potential energy When the stored water in the dam is allowed to outflow through crest gates then potential energy gets converted into kinetic energy Write any two works you do at your home using mechanical energy Know this Mechanical energy Potential energy energy possessed by a body by virtue of its position energy possessed by a body by virtue of its motion Kinetic energy Heat energy We do our daily works by getting heat from energy like fire wood sun fuel Write any two works done in your home using heat energy Activity Rub your palms rigorously for sometime and touch your cheeks How do you feel Here muscular energy gets converted into heat energy We cook food boil water and do other works using the heat energy from fuels fire wood gas kerosene During winter season condensed oil bottles are kept near the hearth flame or in the sunlight Why Think and write Think What would be the reason for the vibration of lids of vessels kept on burning stove for cooking food Heat is released when fuel is burnt Coal is used as fuel in thermal power stations to produce electricity Know this Thermal power station is established at Raichur Think What is the cause of heat energy in charcoal used iron box Solar energy Sun is the main source of all energies on the earth The energy we get from the sun is called solar energy Living organisms depend on solar energy for their survival Plants prepare their food using sunlight This process is called photosynthesis Think What would have happened if there was no sunlight Activity Discuss with friends or elders and write During summer wet clothes exposed to direct sunlight dry very fast How Water level decreases in ponds and wells during summer Why People wait for sunlight during winter season Why Why is solar water heater used Collect the pictures of solar energy devices and prepare a chart Collect the information about the use of solar energy and compose a poem or talk about it Use of solar energy for different works reduces the use of electricity and prevents pollution of the environment Wind energy Air is one of the sources of energy Moving air wind possesses energy This is called wind energy In ancient times people used to make boats and ships sail on the oceans with the help of wind Wind mills rotate due to the fast movement of wind The turbines rotating due to this wind energy produce electricity Discuss with friends elders and write Wet clothes spread over a rope for drying flutter Why Why do trees like coconut and arecanut fall down during rainy season What happens when a kite is held against the blowing wind Wind wheel rotates only when somebody runs holding it Why Why do lanterns have glass covers Wind has enormous energy By using this energy many works could be done Naturally available wind is used as energy and we must learn to protect ourselves from the disasters caused by wind Think What are the adverse effects of cyclones Collect the pictures related to it and discuss with friends Stored energy of water Flowing water is a source of energy In order to use water as a source of energy a dam has to be built across a river and water must be stored in it potential energy Stored water is allowed to flow from a higher level to fall on turbines Due to the force exerted by running water turbines rotate fast and produce electricity These are called Hydro electric power generating stations Know this Energy produced by the ocean tides is called tidal energy Naturally available water is very precious Hence it must be used moderately The electricity which is produced with more effort and expense should also be used moderately and energy should be conserved Think What would have happened if there was no electricity Know this Reservoirs producing Hydro electricity are called hydro electric power generating stations Do this Take the help of elders Collect rain water during rainy season and use it for some works Make use of rain water harvesting Make use of soak pits for the proper use of water Electrical energy Now-a-days most of our daily work is being easily done by the help of electricity Is it possible to do more work in less time using electricity Write any four works done using electrical appliances in your home Electrical Appliance Work Electricity is supplied to houses and other places from electric power generating stations Electrical appliances must be used carefully Bio energy The gas produced by decaying agricultural waste plant residues animal dung in the absence of air is called bio gas It is used for cooking The energy available from biogas can be converted into electricity and may be used for many works If you know the ways of producing useful things out of wastes prepare the useful things with your friends Bio energy obtained from agricultural waste helps human beings to maintain healthy environment Chemical energy Chemical energy is produced by the chemical reactions that takes place in the substances Example Chemical reaction in electric cell produces electricity Fuel energy One more energy available in the nature is fuel energy Fuel is the natural source of energy which is combustible produces heat and usually gives out light This can be converted into electrical energy heat energy and mechanical energy Know this Fuels are the various minerals and their products These are available in the earth's crust These are exhausted gradually and require a long period for their reformation Fire wood is also a fuel Burning of fire wood gives heat By using this heat energy it is possible to cook and do other works Think Write the instances where fuel is used unnecessarily Fuel the natural resource must be used moderately to protect our environment Solar energy must be used more instead of conventional fuels Activity Arrange a debate in the classroom about the pros and cons of fuel Energy is available in different forms from natural sources Think Is it possible to store and use energy Is electricity stored in cells Is it possible Change of energy from one form to another The energy available from sources like sun water wind food chemical reaction are present naturally in the nature The energy found in different forms gets changed and become useful for human life For Example Fuel energy gets converted into mechanical energy to run vehicles Fire wood gets converted into heat energy to cook food Write the changes in the form of energy in the following activities Activity Form of energy Form of changed energy running of petrol car chemical energy fuel mechanical energy drum playing muscular energy sound energy ironing the cloths heat energy drying up of pappad in the hot sun solar energy cooking food using bio gas glowing of an electric bulb by rotating turbine Conservation of energy Energy can neither be created nor be destroyed It can be converted from one form to another form Energy remains in one or the other form If energy released by natural source like sun wind water fuel is used moderately we can save energy Use the clues given in the brackets and write which alternative energy can be saved by doing the activities given below fuel chemical electric charcoal Which alternative energy can be used for the following activities instead of conventional energy Write using clues given in the bracket solar water heater bio gas solar cooker solar cells Activity Alternate energy used instead of hearth electric geyser cooking rice on the hearth electric bulb listening to radio by using electricity While doing work one can use alternate energy Example Using solar energy instead of electrical or fuel energy Energy which fullfils our needs is very essential for the survival of living beings If we use energy gained by the body from food and energy gained from the environment for other activities carefully the capacity of work can be increased LESSON THE SKY Watch the sky in the evening from the play ground after playing the games You will see some stars here and there in the hazy sky When the sky becomes clear you can see countless stars You will be also able to see shooting stars During the rainy season thunder lightning cyclonic winds rains are common Are you eager to know how all this takes place It is day when the Sun rises and it is night when the Sun sets The Moon is seen at night Shall we find out how these changes take place in the sky After studying this lesson you know about the Sun and its family understand the shape and size of the Earth its movements causes of day and night know about the meteors asteroids and comets understand the movements of the Moon and its phases know why the Earth is an unique planet among the other planets The Sun and its family The Sun and its family is known as the Solar System It comprises of planets satellites thousands of asteroids meteoroids and comets Know this The stars are self luminous celestial bodies The Sun is also a star The solar system is a part of a galaxy which is known as the Milky way The Sun The Sun is a star It is closer to the Earth than any other star Therefore it looks bigger and brighter than all other stars It is the centre of the Solar System It exerts a gravitational pull on all its members which orbit around it The Sun provides light and heat to us It appears to rise in the east and set in the west Do we not feel that the sun is moving around the Earth Is this true The heat and light of the sun is essential for human beings plants and animals Know this In ancient times people thought that the Sun the Moon and the planets were orbiting the Earth This was known as Geo-centric model It was expounded by Claudius Ptolemy Arayabhata the first Indian astronomer and mathematician proposed that the Earth and other planets revolved around the Sun This is known as Helio-centric model Nicolaus Copernicus Johannes Keplar also supported this model Later Galileo Galilei an Italian mathematician and physicist invented a telescope and using it further supported the Helio-centric model of Copernicus The planets A celestial body orbiting around the Sun along an elliptical orbit is called a planet Every planet has its own path of movement which is known as the orbit The Earth also has its own orbit The planets are non-luminous bodies They receive light and heat from the Sun The Earth It is our home and it is a unique planet in the Solar System It occupies the third place from the Sun It is the only planet of the solar system where there is life because it has ideal conditions for life such as temperature water and suitable atmosphere with life supporting gases Here is a picture viewing the Earth from the Moon The Shape of the Earth It is confirmed by the scientists that the Earth is slightly flattened at the poles and bulging at the equator Such a shape is called Geoid meaning earth- shaped It denotes the earth is not completely round or circular in shape Size of the Earth The Earth is the fifth largest planet in the Solar System Its equatorial diameter is km and the polar diameter is km This shows that the polar diameter is less than the equatorial diameter by km It denotes that the Earth is spherical in shape The total surface area of the earth is million square km The Movements of the Earth The earth has two movements They are the rotation and the revolution The Earth spins continuously on its axis from west to east This is called rotation The Earth also revolves around the Sun along its orbit This is called revolution The earth continues to rotate on its axis while it is revolving around the Sun Activity Ask two students to stand a short distance from each other One student represents the sun and the other represents the earth The student who represents the sun should sit on the chair Mark an elliptical circle around the chair or feet away from the chair Ask the student who represents the earth to spin himself and revolve around the chair along the elliptical path in anti clockwise direction Discuss the following questions Is it possible for the student representing the earth to see the student representing the sun by sitting always on the chair How many times has the student representing the earth faced the student representing the sun How many times has the student representing the earth shown his back to the student representing the sun When the student representing the earth shows his face to the student representing the sun then it is assumed that it is day When he is showing the back then it is assumed that it is night What do you learn from this activity Day and Night During the Earth's rotation one side of the earth faces the sun and receives light This part of the Earth has day light the other side of earth does not receive light and has night dark Since the earth rotates from west to east the Sun appears to rise in the east and set in the west Know this The earth takes hours to complete one rotation This is called a day The earth takes days to complete one revolution This is called a year The day and year are a result of the earth's movements The Earth is Marvelous As mentioned earlier the earth is the only planet that has life Make a list of factors found on the earth to sustain life Know this About of the earth's surface is covered by water and by land The earth is surrounded by the atmosphere Atmosphere has oxygen which is very essential for respiration of organisms nitrogen and carbon dioxide which is essential for the preparation of food and nutrition of plants The water which is essential for living beings is avaiable on the Earth through the process of water cycle How is it possible Life on earth has become possible because of the suitable distance between the Sun and the Earth ideal climate variety of soils which supply food and water to the plants suitable environment which are present on the earth Hence the Earth is a marvelous planet So far we have learnt about the earth which is the third planet from the Sun Now let us learn about the other members of the solar system You have learnt that there are planets in the Solar system In the order of their distance from the Sun the names of the planets are Mercury Venus Earth Mars Jupiter Saturn Uranus and Neptune Earlier Pluto was the th planet of the solar system Recently it has been considered as a dwarf planet and is no more a planet of the solar system Know this Till Pluto was considered as the th planet As it did not have all the characteristics of the planet it was considered as a dwarf planet Mercury It is the nearest planet to the Sun It has no water and is the hottest planet So it has dry climatic conditions It has a rocky surface large craters and mountains It revolves around the Sun faster than any other planet It is brown in colour Venus It is the second planet from the Sun and smaller than the earth It is the brightest planet in the solar system It is also known as morning star silver star and evening star Mars It is the fourth planet from the Sun and is also known as the Red planet Its red soil is formed because of iron oxide It has huge volcanic craters giant canyons and canals The canals are now as dry as dust Thus it looks like a desert Jupiter It is the fifth planet from the Sun and the largest planet in the solar system It is times bigger than the earth It is a gaseous gas giant planet It has a Great Red Spot It is three times the size of the earth There are thin icy and dusty rings around this planet Saturn It is the sixth planet from the Sun and the second largest planet in the solar system after Jupiter It is also made up of gases It has thousands of rings of ice rocks and dust That is why it looks beautiful and attractive Uranus It is the seventh planet from the sun Like Jupiter and Saturn it is made up of gases It is seen as a blue-green disc It has rings which are opaque It is covered by thick clouds Neptune It is the eighth planet from the sun Its composition is similar to that of Uranus Its colour is bright blue It is one of the coldest planet in the solar system due to its great distance from the sun A list of period of rotation and revolution of the planets is given on the basis of Earth's timings With the help of this table answer the following questions Planets Duration of earth's rotation Duration of earth's revolution Mercury Venus Earth Mars Jupiter Saturn Uranus Neptune Meteoroids Small fragments of rocks and debris in space are called meteoroids When they enter the earth's atmosphere they burn up in the atmosphere due to friction and a streak of light is produced They are known as shooting stars Asteroids Small rocky celestial bodies revolving around the sun are called asteroids Most of them are located between the orbits of Mars and Jupiter Know this The elliptical path followed by a celestial body revolving around the sun is called orbit i e the orbit Comets A comet is an icy body that gives out gas or dust They revolve around the sun They can be seen in the night when they come close to the earth When they come close to the sun they produce a long tail which is made up of gas and dust Some comets appear at regular intervals Hailey's comet appears once in years The last time it appeared was in When will it appear again Activity Draw a picture of the solar system in a chart or prepare its model with the help of your teacher Exhibit it in the classroom Activity Under the guidance of the teacher along with your friends draw elliptical circles on the ground You stand in the centre of the circle representing the sun Ask your friends members to stand on each circle and revolve along their own orbit to represent the planets in the solar system This activity will help you to understand the movements of the planets in the solar system The Earth's Satellite The Moon A celestial body revolving around the planet is called a Satellite The Moon is the only natural satellite of the Earth It revolves around the earth It does not have light of its own It reflects the light from the sun during the night Think If you are living on the Moon will the earth appear as the Moon to you Movements of the Moon The Moon has two movements One is rotation on its axis and the other is revolution around the earth Know this The Moon's rotation takes days and its revolution around the earth takes days As the moon revolves around the earth its position in relation to the sun changes from night to night As a result we can see the Phases of the moon The changes in the moon's visible face is known as phases of the moon You will learn more about this in the higher classes When the moon is completely dark we call it New moon When we see its bright side totally we call it Full moon Know this One day The duration taken by the earth to complete one rotation on its axis is called as day One year As the earth rotates on its axis the duration taken by it to complete one revolution around the sun is called a year One month The duration taken by the moon to complete one revolution around the earth is called one month Think When we watch a live broadast of Olympics or other global level games it was day in different countries of the world while it is night in our country How is it possible Activity The name of the planets and duration visiblity are given below Observe this along with your friends Planet Morning Evening Venus April to June Mars January to March May to December Jupiter February to May September to December Who belongs to which category Write in the table Sun Moon Mars Mercury Jupiter Venus Saturn and pole star Star Planet Satellite Do you know this The Sun and other celestial bodies orbiting the Sun is called Solar System The two natural satellites of Mars are Phobos and Deimos Jupiter has more than natural satellites and Saturn has more than natural satellites The Uranus has minimum natural satellites whereas Neptune has natural satellites Mercury and Venus do not have any natural satellites As we know the earth is the only planet of the solar system on which there is life The artificial satellites which revolve around the Earth are prepared by man for multiple purposes Aryabhata is the first man-made satellite of India Neil Armstrong was the first human being to land on the Moon Jupiter Saturn Uranus and Neptune are called Gas giant planets LESSON OUR INDIA PHYSICAL DIVERSITY India is our country It has a variety of physical features such as Himalayan mountain ranges very high peaks plateaus vast plains river systems deserts coastal plains and islands Together they make India-our country which is unique in its natural setting Besides India is the home for a variety of plants and animals After studying this lesson you understand the physical map of India know about the Himalayan mountains plateaus plains coastal plains river basins and desert understand how the factors of natural environment influence the life of the people know the effects of physical factors on art and architecture know about the important characteristics of weather and the climate of India know about the plants and animals of India Physical divisions of India Look at the map given in the next page It shows the major physical divisions of India With the help of this map you can easily identify the varied physical features of India Instruction to the Teacher Provide the facility to the students to refer to the Geo-maps on the computer by downloading the maps to understand the abstract concepts What do you see in the map When you look at the land surface of India don't you notice the differences from one region to another You see various types of landforms such as mountains hills plains plateaus valleys gorges These differences that we see on the land surface are known as physical features Now let us study about the major physical divisions of India The Northern Mountains They consist mostly of the Himalayan ranges When you look at the northern part of the map you will notice that the Himalayan ranges extend from Kashmir to Meghalaya The Himalayas are the highest mountains in the world Mt Everest kanchenjunja Himadri Siwalic Kailas mountains INDIA NORTHERN MOUNTAINS Zaskar Nangaparbat Dhavalagiri Indus Brahmaputra Naga hills Garo Kasi hills Kohima Mizo hills Manipur hills Ganga R Yamuna R Characteristics of the Himalayan ranges They are covered with snow Hence they are called Himalayas They have many high peaks There are many deep valleys and gorges There are glaciers and the highest mountain passes There are hot springs There is a variety of plant and animal species Advantages Himalayas prevent the cold winds from central Asia blowing into India They are the source of many North Indian rivers They check the monsoon winds and cause heavy rainfall y They are like a gigantic wall and are natural northern frontiers to control foreign invasions Know this A mountain range is a group of or chain of mountains found close together and extend to thousands of kilometes The Aravalli the Western Ghats the Eastern Ghats Vindhyas Satpura ranges are the other important mountain ranges in India The population is less because of the severe cold in the Himalayan ranges The Indus the Ganga the Yamuna and the Brahmaputra rivers have their source in the Himalayan ranges Do you know this Mt Everest is the highest peak m in the world Mt Godwin Austin or Mt K m is the highest peak in India Mullayanagiri m is the highest peak in Karnataka Annaimudi m is the highest peak in South India Know this Air cools as we climb higher places The rivers which have their source in the foot hills of Himalayan ranges have plenty of water even during summer The Northern Plains When we talk about the plains we remember a playground Usually a playground is plain in level with no obstruction to play games Similarly there are plains located to the south of the Himalayan ranges They are very vast fertile and in level Locate this physical division on the map Know this The Northern plains of India are formed by the deposition of alluvium carried by the rivers while flowing from the Himalayan ranges These plains are known as Indus Ganga and Brahmaputra plains These plains are situated between the Himalayan mountains and Peninsular plateaus The Sutlej the Ganga the Brahmaputra and their tributaries flow through these plains The soil of these plains is very fertile due to the deposition of alluvium by the rivers Crops such as wheat paddy maize sugarcane are grown here These fertile plains are known as the Food store house of India Observe Wherever there are river plains there is plenty of water Therefore agriculture rearing of animals transport facilities trade and commerce and industries are developed Hence these plains are densely populated The different types of physical features have influence on the tradition and culture of the people of that area Many towns and cities of Harappa civilization have developed on the river banks Even now there are many famous historical cities and pilgrimage places situated on river banks On account of the ideal conditions for settlement many empires ruled in the Northern plains For example Maurya Mughal and Gupta empires You will learn about this in the higher classes The plains are more helpful for the growth of architecture Since these regions have level land it is easy to construct big buildings The availability of different types of rocks sand metal wood plant fibres soil ideal site craftsmen also helped in the development of architecture For example huge palaces were constructed in Rajastan the Taj Mahal in Agra was built by using marble rock Observe The inner walls of Kollur Dharmastala Kukke Subramanya temples in Karnataka are made of wood Houses in Kashmir valley are built using logs Buildings were constructed using Kadapa rock in Raichur district Karnataka and parts of Andhra Pradesh In recent years red granite rocks are used for the construction of buildings in Bagalkote and surroundings Belur and Halebidu in Karnataka and most of the temples of Tamil Nadu are built by using soapstone Sandstone cave temples are found in Badami of Karnataka Mark the river Ganga Brahmaputra and Yamuna on the outline map of India A challenge to you discuss in groups It is very essential to maintain cleanliness on the banks of rivers Now the rivers of India are affected by water pollution The harmful activities of human beings destroy the sources of drinking water which is essential for life Do you know how the rivers are polluted Plastics several types of toxic waste and effluents of industries are dumped into the river water Idols or images painted with different chemical paints are immersed in the river water The chemical effluents which are released by industries are let into the river water Big cities produce a large amount of garbage in different forms which is thrown into the rivers and the water gets contaminated Mining activities also cause pollution of rivers For example river of Kali Bhadra Now the Ganga river water cleaning programme is under progress Is it not correct to do this What are the benefits of cleaning river water Write here The Peninsular Plateau Identify the Narmada river on the map of India The Narmada-Sone rift valley divides the Peninsular plateau into two major parts The northern part is called the Malwa plateau and the southern part is called the Deccan plateau The Aravalli range lie to the north-west of Malwa plateau and the Vindhyas lie to the south Mt Gurushikhar is the highest peak in the Aravallis INDIA PENINSULAR PLATEAU kanyakumari chambal Mullaynagiri Easten Palghat gap Srilanka Mt GurushikarAravalli range Satpura Tapi R Kaveri Nilgiris Annaimudi Palk strait Krishna Bay of Bengal Godavari Mahanadi Chotanagapur Vindhyas Narmada Arabian Sea Deccan plateau Ghats Malwa plateau plateau The Satpura Maikala Rajmahal Amara Kantaka ranges lie to the north of Deccan plateau The Western Ghats are in the west and the Eastern Ghats are in the east The Annamalai Cardamom and Palani hills are to the south of Western Ghats The Western ghats and the Eastern ghats meet at the Nilgiri hills Udhagamandala Ooty a famous hill station is situated here Many rivers of peninsular India have their source in the Western ghats Characteristics of the plateau It is an upland with an extensive almost level surface which is bounded by steep slopes This landform is an extensive area of relatively flat land The Deccan plateau is the largest plateau in India It is made up of the ancient hard rocks Advantages The peninsular plateau is rich in minerals The rivers flowing across it are helpful for the cultivation of crops There are many waterfalls which are useful for the generation of hydro-electricity It is favourable for agriculture rearing of animals and industries Several empires also ruled in the peninsular plateau The Rashtrakutas Chalukyas Hoysalas Vijayanagaras Kadambas the Gangas and Bahamani sultans established their empires here You will be studying more about them in the higher classes Answer the following questions Mention the names of the two important plateaus in India The Coastal plains Now let us study about the coastal plains A flat low lying land between the coast and higher land in the interior is called coastal plain India has a long coastal plain Let us see where they are located in our country INDIA COASTAL PLAIN km Narmada Arabian Sea Bay of Bengal Godavari Tapi R Mahanadi Kandla Krishna Kaveri Srilanka Mumbai Goa Mangaluru Kochi Tuticorin Chennai Vishakhapatnam Paradip Indian Ocean Ennore Kolkata circar coast Coromandel coast Malbar Konkan coast Gulf of khambat coast How is the coastal plain extended Observe the map The western coastal plain lies between the western ghats in the east and the Arabian sea in the west It extends from the Gulf of Kuchh Gujarat in the north to Kanyakumari in the south The eastern coastal plain lies between the eastern ghats and the Bay of Bengal It extends from the Gangetic delta in the north to Kanyakumari in the south Both the coastal plains of India have major ports Kandla Gujarat Mumbai Nhava sheva Maharasthra Marmagoa Goa Nava Mangaluru Karnataka Kochi Kerala Tuticorin Chennai Ennore Tamilnadu Vishakhapatanum Andhra Pradesh Paradip Odisha Haldia and Kolkata West Bengal are the major sea ports of India New Mangaluru port ranks th in importance It is known as the Gateway of Karnataka The important features of the Coastal Plains Fishing is the main occupation of the people living in the coastal plains So most of the people eat fish and prawn Spinach ivy gourd black eyed peas and sambar cucumber are also eaten for food Paddy arecanut coconut cashewnut cardamom banana and vegetables are grown here The use of boiled rice is very popular The houses here have steep sloping roofs due to heavy rain The gently sloping strip of land bordering the sea usually composed of sand and gravel is called beach You can watch the sea as far as you can The striking sea waves bring great delight to your mind and eyes The Ullal Malpe Kapu Om and Maravanthe beaches of Karnataka are attractive and beautiful Which are the other famous beaches of India Know and write here Desert of India Locate the state of Rajasthan on the map of India One can notice that a large part of Rajasthan is a desert This desert is named Thar desert A part of this desert also extends into Punjab Haryana and Gujarat states Thar desert Rajastan Pakistan Punjab Haryana Gujarat India Features of deserts A desert is a vast dry and sandy area with very little vegetation The temperature is high and climate is dry Scarcity of water due to scanty rain A fertile area in a desert is formed where the water comes up to the ground surface This is known as Oasis Those plants and trees which have special devices to withstand the long drought conditions are grown here They are scrubs cactus accacia thorny bushes The Aravalli range extends into the eastern fringe of the Thar desert It prevents the winds blowing from the east and this causes scanty rain fall Therefore this part has dry climate Find this area on the map and mark it The dry climate and the hot sun causes a feeling of severe burning in the body For some relief from the heat people wear long robes and turbans Lack of water and the blazing sun determine the type of desert animals Camels are able to survive in the desert because they have broad flat toes which are comfortable to walk on the sand Their humps store fat and sufficient amount of water which lasts for many weeks Camels are useful for transporting goods and carrying passengers in the deserts That is why camel is called as Ship of the desert Do you know this Agricultural activities are found around the Oasis Bajra jowar maize sesame dates and chillies are grown here There are some salt lakes in these deserts known as playas For example Sambhar Didwana and Sargol lakes The Sambhar lake is the largest salt lake in India Know this You have learnt that the factors of environment and climate have an effect on art and architecture There are big and beautiful palaces built by experts which are the best examples of rare architecture in the desert Jaipur Ajmer Pushkar and Mt Abu are places famous for such architecture in Rajasthan Rivers of India There are many river systems in India They are one of the natural resources There is diversity in their origin direction of flowing and volume of water Thus the rivers of India can be classified into two groups-rivers of North India and rivers of South India The Rivers of North India The major river systems of North India are the Indus the Ganga the Brahmaputra and their tributaries Most of them rise in the Himalayan mountains They are perennial rivers The northern plains are fertile due to the deposition of alluvium carried by the rivers of North India They are best for agricultural activities Famous ancient historic and pilgrim centres are situated on the banks of these rivers For example Delhi Agra Varanasi The Rivers of South India These rivers can be divided into the east-flowing and the west-flowing rivers The important east-flowing rivers are the Mahanadi the Godavari the Krishna the Kaveri the Palar and the Pennar They flow south east and eastwards and join the Bay of Bengal The important west flowing rivers are the Narmada the Tapi the Sharavathi the Kali the Netravathi the Zuari and the Periyar They flow westwards and join the Arabian Sea These rivers are short and swift suitable for the generation of hydro-electricity as they have rapids and waterfalls In recent years the rivers specially the Ganga-Yamuna rivers have been heavily polluted which has affected their purity The Climate of India You have already practiced marking the Havaguna Nakshe weather map You have also learnt how to understand the daily weather conditions What do the following pictures indicate India has a tropical monsoon type of climate The term monsoon is derived from the Arabic word Mousim meaning periodic Thus the speciality of the climate of India is that it changes from one season to another Hence we can see the diversity in the climate of India There are seasons in India-winter season summer season south west monsoon season and retreating monsoon season The weather changes from time to time during the day Sometimes it is cool another time it is hot and sometimes it is cloudy Think Why is it so The dry air the changing monsoon winds and the natural hazards like cyclones adversely effect the climate of India Consequently we find the sudden changes taking place in the climate The climate of India can be classified into distinct seasons They are Seasons Duration months Winter December January February Summer March April May South-West monsoon Rainy season Kharif June July August September Retreating monsoon Rabi season October November Identify the direction of South-West South-East North- East and North-West on the map of India India receives heavy rain from the south west monsoon winds The movement of air over the earth's surface from high pressure area to low pressure area is called wind The winds which change their direction from one season to another are known as seasonal winds For Example monsoon winds Know this There are two rainy seasons in India They are South West Monsoon Season from June to September and Retreating Monsoon Season from October to November The Western coastal plains western parts of the Western Ghats and North-eastern states receive heavy rainfall Mawsynram in Meghalaya receives the highest rainfall in India Observe Drought occurs when there is a failure in timely rainfall There is no water for crops Livestock and other animals wander about in search of water and may die Due to lack of drinking water and excessive heat people are in distress and migrate to other places These are the effects of drought A challenge to you The earth is heating The ground water is dried up and there is melting of snow in the Himalayan mountains What are the reasons for this Think about it and discuss with your friends Diversity of plants and animals in India Read the instructions about how you have seen the animals and plants given below Mark to the applicable If not put mark Animals Actually seen Seen in pictures Never seen Instruction to the Teachers Use geo maps provide facility to the students to watch thick forest areas Facilitate to look at the forests of Assam Gir forest of Gujarat Vegetation of the Himalayan mountains forests of the Western Ghats the Eastern Ghats Anantha giri forests India has its own plant and animal resources There are thick monsoon forests grasslands thorny bushes scrubs evergreen forests and mangrove forests The deciduous forests are largely found in India They are known as monsoon forests There are animal and bird sanctuaries where elephants tigers lions cheetas bisons deer peacocks and various birds are found They are the major natural resources of India Remember The forest areas in Malnad or Sahyadris reserved forests of Nagarahole Bandipura and Bhadra are the main natural resources of Karnataka Do you know this In order to conserve the biodiversity census work of the biodiversity is under progress Project work y To show the physical features of India prepare a model of the landform of India under the guidance of your teacher Required materials cardboard clay cotton gum sand red soil water colour Collect information about Salumarada Thimmakka Nagesh Hegde and Dr Madhava Gadgil Children recall what you have studied in this unit Isn't the natural environment of India beautiful We should appreciate its diversity India's climate needs to be appreciated We should protect our resources and prevent their destruction through harmful human activities LESSON OUR INDIA-POLITICAL AND CULTURAL India our country has its own geographical historical political and cultural background It has a rich heritage History has recorded that India was ruled for many centuries by several foreign rulers Among the Europeans who came to India the British ruled for a long period of years As a result of the fight for freedom from the British rule India became an independent country on th August Until then India did not have a definite boundary But after independence it has a definite boundary At present India is one nation with the union of states Let us be proud of our great country-India Let us know about India After studying this lesson you know about the geographical location of India in the world understand the latitudinal and longitudinal extent of India know about the neighbouring countries and water bodies surrounding India identify the states and union territories on the map of India and name them understand about Unity in diversity of India know the significance of the national emblems understand the diversity of India's art literature and culture Let us take an oath for our country All stand up India is my country We Indians are brothers and sisters I respect my country I shall protect its varied resources and rich heritage I am proud of my country Location of India Let us learn about the geographical location of our great India If anybody asks for your home address would you not give the name of your village town city its taluka district state and country Also you would give your post office pin code In this manner you can find out in which part of the world India is located Observe this map Russia Mongolia Kazakhstan Turkey Afghanostan Iran Iraq Saudi Arabia Africa Japan Korea China Srilanka Thailand Myanmar Pakistan indonesia Philippines Arabian Sea Bay of Bengal Pacific ocean India is situated in the southern part of Asia which is the largest continent in the world Latitudinally India extends from o N to o N latitude and longitudinally it extends from o E to o E longitude See map of India page It shows that India lies entirely in the Northern Hemisphere and is at the centre of the Eastern Hemisphere The Tropic of Cancer oN a special latitude passes through the middle of the country It divides India into almost two equal parts North India and South India Hence India has tropical climate in the southern part of it and subtropical climate in the northern part Know this A set of imaginary lines drawn on the globe from west to east are called Latitudes They are measured in degrees There are o north and o south latitudes from the equator A special latitude which divides the earth into two equal halves is called Equator o The half of the earth to the north of it is called Northern Hemisphere and to the south of it is called Southern Hemisphere The special latitudes are the Equator o the Tropic of Cancer o N the Tropic of Capricorn o S the Arctic circle o N and the Antarctic circle o S Longitudes are imaginary lines drawn on the globe from the north pole to the south pole They are also known as meridians The longitude that passes through Greenwich in England is called the Prime Meridian o The half part of the earth to the east of Prime meridian is called Eastern Hemisphere and to the west of it is called Western Hemisphere There are o of east longitudes to the east and o to the west of Greenwich Meridian There is a relationship between longitude and time The latitudes and longitudes help to understand the position distance and direction on the earth's surface India is the th largest country in the world with respect to area and the second populous nation after China Know this Area of India square km Population of India crore census The southern most point of India Indira point The northern most point of India Indira Col The western tip of India Ghuar Mota The eastern tip of India Kibithu India and its Neighbouring Countries The neighbouring countries of India are Pakistan and Afghanistan to the north-west Nepal Bhutan and China are to the north Bangladesh and Myanmar to the east and to the south east is Srilanka It is an Island and it is separated from India by Palk Strait and the Gulf of Mannar Frontiers of India Look here Now let us look at the political map of India In this map let us study how the states islands and water bodies are distributed Peninsular India is surrounded by the seas and ocean and has km long coastline This helps the growth of foreign trade shipping fishing and shipbuilding The water bodies which surround India are the Bay of Bengal in the east the Arabian Sea in the west and the Indian Ocean in the south The Andaman-Nicobar Islands are in the Bay of Bengal and the Lakshadweep Islands are in the Arabian Sea Observe the map of India where you can locate the water bodies surrounding India on three sides Such a landform is called a peninsula So South India is a peninsular A piece of land surrounded by water on all sides is called an island The Andaman-Nicobar and Lakshadweep are the islands of India Activity Take the map of Asia or an Atlas With the help of this mark the neighbouring countries of India on an outline map of Asia and write here Administrative Divisions of India Look at the map of India once again You can see the state boundary on the map But there was no boundary line on the earlier maps because as mentioned earlier before independence India was ruled by several native dynasties and external forces The country was fragmented into hundreds of small princely states After independence in order to carry on smooth administration the boundary lines of the states were reorganised The States Reorganization Act of was a major reform of the boundaries of the states of India on the basis of languages There are a large number of languages in India This indicates the diversity of languages Of these languages have been recognised as official languages and are printed on Indian currency Know this We use a language in our day to day activities Understand the feelings of others and maintain harmony India is the th largest democratic country in the world It is divided into states and union territories and one National Capital Territory which is Delhi Since the states are divided on the basis of languages it becomes easy to understand their environment economic cultural and regional traditions Every state contributes its speciality towards the building of a great India With the help of a map let us learn about the different states Activity With the help of a map prepare a chart including the States and Union Territories their capitals and mother tongue Then display it in the classroom The Government of India is officially known as Central Government It is the governing authority of the country's states and union territories Its main offices are located in New Delhi the capital of the country The administration of the states is managed by the states themselves This system is called State Government Every state has its own capital for the purpose of administration Then Which is the capital city of Karnataka state The union territories are ruled directly by the Central Government They do not come under any state The Governor appointed by the President of India is the administrator for the union territories There are union territories They are Diu- Daman Dadra Nagara Haveli Chandigarh Lakshadweep Puduchery Andaman and Nicobar islands Locate them on the map Know this The administrative divisions of Puduchery are Puduchery Mahe Yanam and Karaikal districts New Delhi is the national capital of India Chandigarh is the capital for both Punjab and Haryana states Activity Observe the relationship of first two words In the same way write the fourth suitable word for the third word Example India Delhi Karnataka Bengaluru Kerala South Kashmir India Peninsula Andaman Union Territory States Bay of Bengal East Arabian Sea India is a land of many religions Hence people follow variety of customs Hinduism Islam Christianity Sikhism Buddhism and Jainism are the major religions of India Besides followers of other religions are also found in the country Thus India is a land of many religions Project work There is also diversity in the culture of our state Prepare a project on the basis of specialities in culture found in North Karnataka South Karnataka Coastal plain and Malnad region collect facts about food clothes festivals folklore games art crops important celebrations rivers Know this People belonging to different religions live in the same street road with love and affection The people of all religions travel together in the bus train aeroplane People of various religions participate in one another's religious festivals and functions and greet each other The people belonging to different religions participate in the urusu fairs festivals and processions with devotion and excitement Respecting all religions living together in peace and having the feeling that we are all indians is integrity Know this In our country there is diversity in landforms river system climate types of soils plants and animals natural resources and methods of agriculture Our occupations religions caste systems languages food habits dress customs and regional culture also have diversity But we live together as people of one country This is known as Unity in diversity Do this Wear the costume of different states for your school functions and exhibit integrity Once in a week sing a song of good will with your friends National Emblems Name the national festivals of India Do we not hoist the National Flag on national festivals What are the colours of our National flag The National Flag is one of the national symbols of our country It is a horizontal rectangular tricolor Tiranga of saffron white and green Saffron stands for courage and sacrifice white colour symbolises peace and purity and green is the symbol of fertility The Ashoka Chakra is at the centre of the flag It is the symbol of progress and movements Our national flag represents India and has a special recognition in the international level Do you know this y Our national flag was initially manufactured at Garaga a small village in Dharwad district Now Karnataka Khadi Gramodyoga Samyukta Sangha based in Hubballi is the only licensed manufacturer of the national flag and is the supply unit for India Namma Baavuta Erutihudu Harutihudu Nodu namma baavuta Thorutihudu hodedu hodedu baaninagala patapata Kesari bili hasiru mooru Banna naduve chakravu Satyashanti tyagamurthy Gandhi hidida charakavu Intha dwajavu namma dwajavu Nodu haarutiruvudu Dwajada bhakti namma shakti Naadagudiya merevudu Kempukirana tumbi gagana Honnabannavaagide Nammanaada gudiyanoda Nodiranna hegide Sing this poem in group Meaning The poem speaks about the splendour of our national flag and the essence of its grandeur It depicts the truth peace and sacrifice of great leaders like Gandhiji It inculcates a sense of devotion in its patrons and gives strength to build our nation stronger Look here This is the picture of a monolith pillar at Saranath The lion seal that you notice here has been adopted as the National Emblem of India This pillar was installed during the reign of Ashoka the Great in North India The four facing lion imprint is our National Emblem You can observe this national emblem on the coins and currency notes Our emblems are the symbols of identity and heritage of India You sing the National Anthem during the school assembly Is it not so Who has written it Understand the theme of our national anthem It represents the diversity and regionalism of India While you are singing this national anthem you feel patriotic Do you know this The National Anthem of India is taken from the first few stanzas of the poem written by Rabindranatha Tagore Observe When the Indian sports persons win medals at the international sports competition they are honoured by being wrapped with the National Flag and the National Anthem is sung In the Olympic games the badminton player P V Sindhu won the silver medal and wrestling player Sakshi Malik won the bronze medal On that occasion they were honoured by the hoisting of the National Flag When the Indian soldiers sacrifice their life for the nation they are buried with full state honours Know this The National Flag National Emblem and National Anthem are our National symbols Art Music and Literature Who does not like dancing Every body likes it Is it not so Culture and art differs from place to place Every state is identified by its own dance style It is based on the culture of that locality Dance styles can help in spreading the glory of India's heritage in foreign countries Music and Literature India is rich with litterateurs great artist achievers saints and monks and social reformers Every state contributes its own music literature art sports cinema science and technology The Government of India rewards great personalities by awarding Padmashree Padmabhushana Padmavibhushana and Bharath Ratna to acknowledge their achievement in their concerned field Wherever we are however we are we should cultivate patriotism We should all come together in the name of our motherland when needed India has become an independent country because of its integrity nonviolence and sacrifice Let us develop India and make it a strong nation at the global level It is the responsibility of every Indian to make India a strong nation Mera Desh Mahan Kalaburagi Division Kalaburagi Division has six districts They are Kalaburagi Bidar Ballari Raichur Koppala and Yadagir The Kalaburagi division has the lowest place with regard to literacy per capital income yield per hectare and life expectancy in the state In order to understand the reasons for this backwardness the government of Karnataka had formed a High Power Committee on Redressal of Regional Imbalances under the chairmanship of Dr Nanjundappa in As per its report the least developed part of Karnataka state is Kalaburagi Division In order to provide special grants to the districts of this division the central government accorded special status to this division under article J of the constitution History Stone Inscription Every district of this division has rich ancient history Pre-historic relics can be seen here In the beginning of the historical period this area was under the rule of Mauryas Then it became part of Shatavahana rule Many inscriptions of Ashoka are found here During th century Rashtrakuta Kings ruled here Manyaketa the capital city of Rashtrakutas is the present day Malakheda of Kalaburagi district After them Kalayana Chalukyas ruled over this area BasavaKalyana was their capital city Hampi of Ballari district was the capital city of Vijayanagara Kings The historic Vachana movement led by Basavanna took place in Basavakalyana which is part of Kalaburagi Division Later during medieval period the Bahamani Kings came to power Kalaburagi was their capital city After the decline of Bahamani and Vijayanagara rulers Kalaburagi came under the rule of the Hyderabad Nizam The Hyderabad became part of independent India in During the reorganization of states in Kalaburagi Bidar and Raichur districts which were part of Hyderabad Nizam were added to Karnataka state Kalaburagi is the headquarters of Kalaburagi Division Ballari which was part of Madras State was added to Karnataka state Many Palegaras became powerful after the decline of Vijayanagara and Bahamani sultans Among them Palegaras of Harapanahalli Sandur Jarimale and Surapura are well known After the death of Krishnappa Nayaka of Surapura his son Venkatappa Nayaka came to power As he was aware of the first war of Indian Independence he waged war against the British But the British captured Venkatappa Nayaka and imprisoned him British gifted Surapura to Hyderabad Nizam Like this Bidar Kalaburagi and Raichur became part of Hyderbad Nizam’s state They were merged into Karnataka in The war for the Liberation of Hyderabad Karnataka When India attained independence the Hyderabad Nizam was not ready to integrate his Kingdom with India This enraged the common people who launched agitation against the Nizam The leadership was provided by Swami Ramanandathirtha Sardar Sharanagowda Inamdar Shivamurthy Alavandi Shiruru Veerabhadrappa Prabhuraja Patil Sanganala Pundaleekappa were leading the agitation against the Nizam The government of Nizam started harassing the common people The people revolted against the private army of the Nizam known as Razaks The central government of India undertook direct action against the Nizam and annexed it to India on September th Then Sardar Vallabhabai Patel was the Home Minister and Pandit Jawahar Lal Nehru was the Prime Minister of India Natural resources The important rivers of this division are Bhima Tungabhadra Krishna Mullamari and Bennetora Karanja dam is a boon to Bidar district Red black and alluvial soils are found in this division Paddy is the major crop of Koppala and Raichur district Sugarcane is the major commercial crop The other major crops are cotton foxtail millet horsegram and pulses The forest is sporadic in this division Dense forest is present in the Sandur taluk of Ballari district Bidar has the most sporadic forest and Koppala has the lowest forest cover The minerals available in this division are Silver Silica Gold Raichur district Iron ore limestone Manganese ore Ballari Granite stone is available in all the districts of this division This division is not rich from natural resources perspective Tungabhadra Dam provides irrigation facilities to Raichur and Ballari districts of this division Basavasagara dam built across river Krishna provides irrigation facility to Raichur and Kalaburagi districts Karanja project provided irrigation facilities to Bidar district Forests Wildlife This division is a forest deficit division There are no big wild animals here Langur Deer Fox Bear Wolf Wild dogs are found in this division Daroji Bear Sanctuary is in Ballari Deers are there in Raichur district Agriculture and Industries Agriculture is the main occupation in this division The average rainfall is less Crops are grown according to the rains As the average rainfall is less the division is prone to droughts often Hence the districts of this division are called as Drought Prone districts Iron and Steel industries Sugar industries Cement industries and thermal power plants are the major industries of this division These have provided employment to people here The Bidari art of Bidar is very famous Ballari and Koppala have larger Iron and Steel industries Similarly Yadgir and Kalaburagi have huge cement industries The tourism of this place is slowly picking up Hampi Tungabhadra dam Sannathi of Kalaburagi district Khwaja Bhande Nawaz Dargah the fort of Bidar Basava Kalyana Hatti gold mine of Raichur are the major tourist centres of the division Hatti gold mine of Raichur district produces the highest gold in India Art Literature Music Folklore Theatre and Dance Though the division is poor economically it is very rich in literature music folklore dance and other aspects The history of literature of Kalaburagi division extends to ancient times as well We should not forget the first literary work in Kannada Kaviraja Marga was written during the reign of Rashtrakutas The Adi Kavi Pampa wrote Vikramarjuna Vijaya under the patronage of the King Arikesari The three Gems of Kannada literature Pampa Ponna and Ranna are from this division The writer of first Grammar book Shabdhamani Darpana Keshiraja is from this division Vachana Movement The leading social reform movement of twelfth century Karnataka the Vachana Movement took place in Kalyana of Kalaburagi division Many Vachanakaras like Basavanna Allamaprabhu Akkamahadevi Jedara Dasimaiah Siddarama are from Kalaburagi division Vachana movement launched a war against untouchability Many men and women who belonged to suppressed castes wrote Vachanas as part of this movement Daasa Sahitya Raichur district of Kalaburagi division is the land of Daasa Sahitya The Daasakoota was formed under the leadership of Shri Vyasaraya It rejected the concepts of profane and sacred Keerthanas were written by Kanakadasa Purandaradasa and Raghavendratheertha They criticized the caste system in their keerthanas They have also criticized the ego emerging out of money mindedness Philosopher Poets Tatva Padakaararu The poets who were influenced by the Vachana movement Dasa Literature and ancient poetry wrote spiritual poems The songs written by folklore artists fakirs and other saints can be called as Philosophical lyrics tatva padagalu These lyricists fought against the evils of caste system during th and th century Karnataka They have also made fun of liars and mad seeking of money Chennur Jalal Saab Hanumanthavva have written good lyrics Many illiterates have constructed lyrics and sung them During the modern period the literature of Kalaburagi was enriched by many writers They are Siddaiah Puranik Jayateertha Rajapurohit Shantarasa Pandit Tharanath Beechi Mudenur Sanganna Simpi Linganna Shylaja Chadachan Jayadevi thayi Ligade Chenanna Valikara Jambanna Amarachintha and many others Kalaburagi division has contributed immensely to the field of music Musicians like Siddarama Jambaladinni Pt Tharanath Gazal Gundamma Subhadramma Mansoor and others contributed to music S M Pandith of this division is famous in the field of painting Doddata Sannata Togalu Bombe are active in folklore theatre Belagal Veeranna is known person in the field of Togalu Bombe theatre Nandi Kunitha Alavai Kunitha Choudammana Kunitha Lambani Kunitha Kolata Veeragase Durga-Muragi and others are the folk dance forms Karadi Majalu Killekyathara Aata Hagalu Vesha are part of folk art Bidari art of Bidar toys of Kinnala and blankets of Koppala are the traditional arts Education and Health The most educationally backward districts of our state Raichur and Yadagir belong to this division The literacy rate the key indicator to education is lowest here Recently there are improvements in this area Gulbarga University and Central University are in Kalaburagi city of this division Kannada University is in Hampi Shrikrishnadevaraya University is in Ballari and Agriculture University is in Raichur of this division Bidar has Animal Husbandry and Fisheries University There is a Buddha Vihara in Kalaburagi Medical colleges are there in Ballari Kalaburagi Bidar and Raichur of this division Every district has a district hospital Health sub centres are there to provide health care facilities to the rural population There is a development in the field of education and health A big ESI hospital is also there Cultural Heritage As already said the Kalaburagi Division is culturally rich though it is poor in economical aspects The districts of Kalaburagi Division have contributed more in the field of art music painting theatre folklore dance and other performing arts This division had four important ancient dynasties of Karnataka They are Rashtrakoota Kalyana Chalukyas Vijayanagar and Bahamani Kings These dynasties have encouraged art and literature This division is known for professional theatre Cottage industries of Bidari art of Bidar toys of Kinnala blankets of Koppala are there in this division The fort of Bidar monuments of Hampi Basava monuments of Basava Kalyana Khwaja Bandhe Nawaz Dargah of Kalaburagi and monuments of Sannathi are the fine examples of architecture Freedom Fighters While the people from other parts of Karnataka participated in the freedom struggle and Karnataka Integration Movement the people of Kalaburagi division had to participate in agitation against the Hyderabad Nizam’s rule apart from the two above mentioned struggles Two developments with regard to freedom struggle deserve mention here The first is the library movement aimed at instilling national spirit and the second is that of opening national schools to educate children Four national schools were established here They are Nutan Vidyalaya Kalaburagi Usmania National School Chincholi Vidyananda Gurukula Kukanoor Hamdard National School Raichur The national spirit in this division was the result of movements like Arya Samaj and Vandematharam Kalyan Shetty of Maregou built Tarun Sangh to take part in freedom struggle Chandrashekar Patil of Maregou led it as its president Shri Ramanandatheertha of this division is the prominent freedom fighter Apart from him thousands of people had joined freedom struggle Sardar Sharanagowda Inamdhar was the prominent person in the struggle Liberation from Nizam s rule Movement The Razakars the private army of Nizam harassed the people of Kalaburagi inhumanly People resisted them ferociously Though India got independence on August the Kalaburagi Division became independent on September when Nizam kingdom was annexed to India The Uniqueness of the districts of this Division Though the division had four districts in the beginning now the total number of districts is six In the district of Raichur was divided to create Koppala district And in the year Kalaburagi district was divided to create Yadagir district The Islamic art flourished during the reign of Bahamani rulers The district has many ancient monuments and Sannathi is the most famous of them There are many Buddha vihara monuments Manyakheta is on the banks of river Kagina Kalaburagi district This is a border district It is said to have been in existence since th th century CE It was the capital city of Bahamani rulers during th century CE This district was divided in to create Yadagir district The major crops of this district are Pulses Maize Cotton and horticultural crops The longest cannon in the world measuring twenty seven feet belonging to Bahamani period is in this district The fair of Sharanabasaveshwara temple of Kalaburagi city attracts thousands of devotees every year Similarly the Urus of Khwaja Bandhe Nawaz Dargah attracts thousands of devotees The Gumbazes of this district have paintings on them painted using natural dyes The fort built by Bahamani rulers in CE is attractive Recently Siddartha Buddha Vihara has been built in Kalaburagi which was inaugurated by Tibetan leader Dalai lama Ganagapur the Dattathreya centre is on the banks of river Bheema a pilgrimage centre The district has two universities Kalaburagi University and Central University There is fifty two feet pillar in Sedam taluk which is called Bananthi Kamba This pillar is not fixed into the ground One can pass a thin cloth across its base Marathur is another historical place of this district It is the birth place of Vignaneshwara who wrote Hindu Samhithe There are many cement factories in this district Yadagir district This is a small district with three taluks Yadagir Surapura and Shahapura This district was established in the year This area was ruled by Shatavahanas Chalukyas Rastrakutas Adil shahi and Nizam The rare mineral Uranium is available here The processed Uranium is used for electricity production and for military purpose also Core Green Sugar and Fuels private Limited is the biggest factory of this district This is a useful industry It produces sugar electricity organic manure and industrial chemicals The mountain range in Shahapura taluk appears like sleeping Buddha Bidar district This district has a rich history It was ruled by Mauryas Rashtrakutas Chalukyas kalchuri kakatiya Khilji Bahamani and Baridshahi kings This forms the Northern most tip of Karnataka and a border district Rainfed agriculture is practiced here Manjra Karanja Mullamari Chulakinala are the major rivers that flow here Kalyana the centre where the social reformer Basavanna worked is here It is said that Gurunanak the Sikh guru visited Bidar There is a huge Gurudwara and it is called as Gurunanak Jhira A sacred place called Narasimha Jharni is here This district has a forest cover of sq kms This forest is divided into reserve forest protected forest and open forest A big medicinal garden has been established to grow medicinal plants There is a spacious fort in the middle of Bidar city Many separate buildings are there in this fort of which Rangeen Mahal is of prominence This was the capital city of Bahamani rulers after CE Huge arches Masjids and flower gardens are the biggest attraction of this city It has a unique water distribution system Raichur District Raichur district is called Doab region as it falls between two rivers River Tungabhadra flows to the South whereas River Krishna flows to the North of Raichur It is called as a Granary of Paddy There are more than hundred rice mills here Food products are exported to European countries from here A cold storage facility of five thousand tons has been established It is known for poultry The Thermal Power Plant of Raichur produces nearly of the electricity consumed by Karnataka state The railway line that passes through Raichur connects every part of the country The railway line c o n n e c t s H y d e r a b a d Mumbai Chennai and Bengaluru An inscription of Ashoka has been found at Maski of Raichur This proves that this area was a developed area during ancient times also Agriculture is the major occupation of people here Sindhanur and Raichur taluks of this district are developed taluks Lingasuru taluk is a moderately developed taluk whereas Devadurga and Manvi taluks are the most backward taluks Koppala District Koppala city is called the Kashi of Jains This is a sacred place of Jains Inscriptions of Ashoka are found in Gavimutta and Palkigundu Bheemarao a soldier from Mundaragi of Koppala had participated in the first Indian Freedom Struggle He became a martyr Paddy Maize Cotton Sorghum and wheat are the crops cultivated in this district The climate and soil of this district suits horticultural crops Mango Sapota Pomegranate Banana and Grapes are grown in huge quantities This district has least forest cover and one can safely say there are no wild animals here Bruhath Mahadeva temple a huge temple built by Kalyana Chalukyas is in Itagi It is called as the Emperor of temples Kinnala which is few miles away from Raichur city houses artists who produce world renowned Kinnala Wooden Toys Artisans of this art have preserved this art form A dam is built across river Tungabhadra at Munirabad here Anegondi the first capital city of Vijayanagar Rulers is in Koppala Recently many Iron and Steel Industries have been established in this district The Kannada of Koppala is called as Thirulgannada Ballari district Hampi the capital city of Vijayanagar Kings is in Ballari This empire ruled from CE to CE There are many places in this district that is part of mythological stories of Ramayana and Mahabaratha Kanakachala temple is in Kanakagiri Ballari is a goddess found in Durgamma temple of Ballari city It is said the name Ballari came from this Goddess During British period this district was part of Madras State It was integrated into Mysuru State in after independence Later it was added to Kalaburagi Division in Numerous monuments are there in Hampi Ugranarasimha Hazara Rama temple Kamalmahal Virupaksha Temple attracts thousands of tourists every year Apart from these Kumaraswamy temple of Sandur Mallikarjuna Temple of Kuruvatti and Kalleshwara temple of Bagali are famous A thermal Power Plant is established near Ballari city Toranagal of this district that is emerging as a major industrial hub National Mineral Development Corporation NMDC present in Donimalai is a major public sector enterprise engaged in mining of iron ore Ballari is a district of historical prominence Tungabhadra irrigation project has revolutionized agriculture The Iron and Steel industries of Toranagal are the symbol of modernization The district has two universities Kannada University of Hampi and Vijayanagara Krishnadevaraya University The four districts of this division were in Bombay region till They were integrated into Karnataka during reorganization of states process Dharwad district of this division was divided in to form Haveri and Gadag districts Vijayapura district was divided to form Bagalkote district This division has seven districts They are Belagavi Dharwad Haveri Gadag Vijayapura Bagalkote and Uttara Kannada History This area was ruled by Mauryas and Shatavahanas Banavasi of this division was the capital of Kadambas Badami the capital of Chalukyas is in this division World famous temples are there in Pattadakallu Badami and Aihole Badami caves have wonderful idols Basavanabagevadi Kudalasangama were the centres of Vachana movement The final abode of Basavanna the leader of Vachana Movement is in Kudalasangama of this division Rashtrakutas and later Bahamani rulers ruled this place The districts of Belagavi division have played a prominent role in the Indian freedom movement Rani Chennamma of Kittur fought against the British in CE This is a historical incident Sangolli Rayanna s struggle is an unforgettable one The National Convention of Indian National Congress was held at Belagavi under the presidentship of Mahatma Gandhi in CE Tax denial movement took place in Uttara Kannada district The districts of this division were part of Bombay state They were integrated into Karnataka during In the beginning there were only four districts With the creation of new districts by dividing these four districts now the total number of districts are seven Vijayapura Uttara Kannada and Belagavi are the border districts Natural Resources This division is rich in natural resources It has rivers dense forests mineral deposits fertile soil and power generation units Krishna Malaprabha Ghataprabha Bheema Kali and Tungabhadra are the major rivers of this division There are beautiful waterfalls in the course of these rivers Gokak Waterfalls Magodu waterfalls Devamala waterfalls Apsarakonda waterfalls are the scenic spots This division has good tourist opportunities Anshi National Park is on the banks of river Kali Dandeli wildlife sanctuary is also there Attiveri Bird Sanctuary is another beautiful place Iron ore is available in Bagalkote of this division Another raw material available in this division is Limestone Quartz stone is available in plenty Ilkal has huge granite stone deposits and granite is exported from here Forests Wildlife Belagavi Uttara Kannada and Dharwad districts of this division have dense forest Evergreen forests are here These forests are found in tropical climate and remain green throughout the year There is no drought here Reserve protected and open forest are here Forest forms the of Uttara Kannada district Elephant Bison Deer Tiger Leopard Bear Wild cat and other wild animals are there Rosewood Sandalwood Matti Nandi Teak and other valuable trees are found in this division Minor forest produce are the livelihood of the tribal communities of this division Agriculture and Industries This division has Black and Red soil Paddy Cotton Maize Pulses Wheat Groundnuts Pearl millet Chilly are the major crops of this division Jaggery of Mahalingapura Dried Chilly of Byadgi and Cashewnuts are the major products Malaprabha Irrigation Project and Upper Krishna Irrigation Project are major irrigation projects Kali Varada Sharavathi Doni Bheema are the major rivers Fishing is the major occupation of Uttara Kannada district There are many fish processing units here Cashewnut is another major agricultural product and there are many Cashewnut processing units Kaiga Kadra Supa Kodasahalli and Nagajari are the centres of power generation Vijayapura and Bagalkote districts are known for their horticulture crops Grapes are grown more in these districts Many grape processing units are there Pomegranate Orange Sapota Mosambi and other fruits are grown here Haveri is a centre for improvised seed production It has many national seed production centres Guledagudda is known for its blouse pieces Hubballi Belagavi Balgalkote Gadag and Haveri are emerging as the major industrial centres Many granite processing units are there in Ilkal Art Literature Music Folklore Theatre and Dance All the districts of this division are famous for various fine arts Dharwad is the home for many internationally popular Hindustani singers Bharat Ratna Pt Bhimsen Joshi Pt Mallikarjun Mansoor Balekhan Sitar Vidushi Gangubai Hangal Pt Venkatesh Kumar Pt Basavaraja Rajaguru and others are from Dharwad Many poets who composed poems in Kannada during Medieval period are from this division They are Ranna Nagachandra Nayanasena Kumaravyasa Chamarasa Basavanna Kanakadasa and Shishunala Sharif The father of Vachana Studies P G Halakatti Rev Kittel Bhoosanoormutt V K Gokak Jnanapita awardees Da Ra Bendre Chandrashekara Kambar and Girish Karnad; Dinakara Desai Basavaraj Kattimani M M Kalburgi and Adya Rangacharya Sriranga are from this division These writers have enriched the modern literature Folklore singer Hukkeri Balappa Nadoja Sukri Bommanagowda and others have earned laurels for their achievement Shrikrishna Parijata Badaguthittu Yakshagana Sannata Doddata and other theatre forms have evolved here Appalal Jamakandi Koujalagi Ningamma Lokapure Deshpande and others have shone in acting Education and Health Dharwad Belagavi and Vijayapura are the educational centres of this division Karnataka University is in Dharwad Hubbali has Karnataka Law University Belagavi has Rani Chenamma University and Vishveshwaraiah Technical University Vijayapura has Karnataka State Women’s University and Bagalkote has Horticulture University The literacy rates of the districts of this division are better placed Medical and Engineering colleges are there in Belagavi Hubballi Vijayapura and Bagalkote Kannada schools were started under the guidance of Deputy Chennabasappa during nineteenth century Many private institutions have contributed to the field of education Christian institutions have contributed a lot in the spread of education The Belagavi division has achieved a lot of progress in the health sector The population growth rate is at the least level But Child Mortality Rate and Maternal Mortality Rates are higher Women and Children suffer from anemia Rural areas have Primary Health Centres There are many sub health centres in villages Medical colleges are also running their own hospitals Cultural Heritage Belagavi Division has rich cultural heritage It has contributed a lot to Art Music Theatre and Literature Musicians of this division have achieved national and international acclaim Ganayogi Panchakshri Gavai has provided shelter to blind children and has encouraged their music education Pt Bhimsen Joshi has been awarded Bharath Ratna There are three Jnanapeetha award recipients in this division Hubballi is called as the Commercial Centre of Karnataka Byadgi is the market for Chilly Mahalingapura is for Jaggery and Vijayapura is for Grapes Belagavi division has achieved a lot in the field of professional theatre Monuments of this division are world famous Badami Pattadakallu and Aihole are the symbols of Karnataka’s heritage Tourism is growing exponentially Karwar of Uttara Kannada is emerging as the important base for Navy The dense forests of this division are home to many wild animals It is also the birth place of many rivers Numerous waterfalls are attracting tourists Sea beaches are other places of attraction Freedom Fighters As said earlier the struggle against British had started in Kittur of this division as early as nineteenth century Mylara Mahadevappa became a martyr for the freedom of India We shall not forget that freedom struggle started in Belagavi division Thousands of people from this division have participated in the freedom struggle and also have faced imprisonment Siddappa Kambali Aluru Venkatarao Na Su Hardikar Hardikar Manjappa Gangadhar Rao Deshpande R R Diwakar Nadoja Patil Puttappa and others have participated in the freedom movement Many had involved themselves in social reform along with freedom movement P G Halakatti who is also known as the father of Vachana was in journalism Mohare Hanumantharaya and Patil Puttappa motivated people to participate in freedom movement through their newspapers Districts In this section the uniqueness of every district of Belagavi division their agriculture industry and natural resources are explained Dharwad district Dharwad is known as the Cultural centre of Karnataka It is a land of literature music and education A sweet meat named Dharwad Peda is well known When this district was part of Bombay state Marathi was the official language But due to the forethought of education experts many Kannada schools were started during the early part of twentieth century Many industries belonging to Tata group are here Bhoruk Textile Mill is here Murudeshwara Ceramics industry has given employment to many Unkal lake is between Hubbali and Dharwad cities Kundagol a place which is few kilometers from Dharwad has played a pivotal role in the development of Hindustani Music It is the birth place of Savai Gandharva who had achieved marvellous achievements in Hindustani Music Haveri district This district was formed in Dharwad district was divided to form this district This is an agriculture based district of the labour force is dependent on agriculture This district grows improvised hybrid seeds on a large scale Farmers produce the seeds and sell them to the seed companies on the basis of pre-existing contracts with a fixed price Earlier more farmers were involved in agriculture using inorganic fertilizer insecticides and hybrid seeds Now most of them are moving towards organic agriculture and are using traditional seeds more There are many historical temples in this district Nagareshwara temple of Bankapura Malatesh temple of Devaragudda and Siddeshwara temple of Chalukya period attract the attention of more people The rock garden of Gotagodi has achieved international fame Here life size statues and idols are created It has been constructed by employing modern sculpture techniques The artist Solabakkanavar is the creator of this garden Haveri is home to writers and artists It is said the poet Sarvagna was born here Shishunala Sharif belonged to this place The birth place of Kanakadas Bada is in this district Ranebennur Wildlife Sanctuary is in this district There are many temples in Kaginele where Kanakadasa institution is housed Grasim industry is there in Kumarapatnam of this district Harihara Polyfibre industry is here Synthetic chemical industry is flourishing here Apart from this poultry farms are also there The demand for cold storages are high here Gadag district Gadag district was created by dividing Dharwad district in This is a major market for agricultural produce since olden days The history of this district can be traced back to th and th century CE The Veeranarayana temple and Thrikuteshwara temples built by Chalukyas are the Art and Architecture wonders There is a Jumma Masjid built two hundred years back here An attempt is being made to grow medicinal plants in Kappat Gudda a hill known for its biodiversity Karnataka Power Corporation has installed Wind Powered power generation units here The forest department is developing Magadi Bird Sanctuary A city corporation of Gadag Betageri is formed by joining Gadag and Betageri cities India’s first cooperative institution started one hundred years back in Kanaginahal The modern touch to cooperative movement was given by prudent K H Patil Kumaravyasa created poetry by remembering the Veeranarayana of Gadag The poetry written by Kumaravyasa Karnataka Bharatha Kathamanjari is famous as Kumaravyasa Bharatha Thonta Dharya Swamiji of Gadag is involved in social service Maize Groundnut Wheat Green gram and other pulses are grown in this district Fruits like Mango Pomegranate Grapes are grown here This district is the major market for food crops Many printing presses operate in Gadag The Gadag Cooperative Textile Mills of Hulakoti Shri Vijayanagara Sugar Factory of Ganagapura and Shri Someshwara Farmers cooperative Spinning mill are engaged in production Vijayapura District The world famous Golgumbaz is in Vijayapura This is called as Whispering Dome As we already know this area was under the Aadilshahi rule The reign of Adilshahi ended due to the invasion of Mughal Emperor Aurangzeb Later in CE it became part of Hyderbad Nizam In CE Marathas captured this from the Nizam It also ended in CE when the British took over it After the independence in it became part of Karnataka During the rule of Chalukya this was named as Vijayapura Delhi Sultans were invading this again and again Apart from this the Adilshahis had to fight with Vijayanagar Kings too Adilshahi kings built Golgumbaz in CE Based on the circumference of this dome it is considered as the largest dome in India and second largest dome in the world Ibrahim Roza is another beautiful building of Vijayapura It is compared with Tajmahal by many Ibrahim Adilshahi tried to bring harmony among Hindu and Muslim He was a famous poet In his book Kitabe Navaras he has written on Saraswathi and Ganapathi Many places related to Basavanna the leader of Vachana movement are in this district Basavakalyana his place of activity Kudalasangama is the confluence of Malaprabha and Krishna rivers Basavanna became one with God here The major occupation of Vijayapura is agriculture Maize Sorghum Green gram and Pearl Millet are the major crops of this district Sugarcane and Cotton are the major commercial crops Oil crops like Groundnut and Sunflower are grown here The climate is conducive for fruits cultivation Pomegranate Sapota Papaya and Watermelon are the fruits grown here Vijayapura is evolving as a good educational centre Karnataka State Women’s University is here There are many engineering and medical colleges here Bagalkote District Bagalkote district was created in by dividing Vijayapura district Badami the capital city of Chalukya is here Badami Aihole and Pattadakallu are called as the laboratory of temple architecture The temples here are formed by cutting the rocks and forming caves These have been identified as World Heritage Site Banashankari temple and Shivayoga temple of this district are popular Pallavas Vijayanagar Kings Adilshahi Rulers Nizam Marathas and Britishers have ruled over this place The blouse pieces of Guledagudda are famous The Muharram festival of Bilagi is well known The Hindustani singer and actress Ameerabai Karnataki is from Bilagi town The Mahantheshwara Mutt of Ilkal attracts thousands of devotees The Hazarath Syed Mutharza Dargah of this district is famous The Ilkal Saree is another important product of this district Jamakhandi was a state under the rule of Patavardhans Abubakar Dargah of Jamkhandi is well known Rabakavi and Banahatti are the known weaving centres Both handlooms and mechanized looms are active here Krishna Malaprabha and Ghataprabha rivers flow in this district The inflow of water in river Krishna was reduced when a dam came up at Koyna in Maharashtra This resulted in drought poverty and forced migration in this area The people wanted a barrage across river Krishna and put pressure on the government As nothing turned out positive of this the farmers formed a co-operative society and collected materials and money to build a barrage They built a barrage at Chikkapadasalagi This is the first barrage built by private people The Almatti Dam is famous in the name of Lalbahadur Shastri Minerals found in this district are Limestone Granite Red Granite and Dolomite There are many sugar factories and cement industries here Belagavi district Belagavi is the most famous border district of Karnataka It borders Goa and Maharashtra It was called as Venugrama which means bamboo village Halasi is the oldest village of this district A branch of Kadamba dynasty had it as its capital This area was ruled by Chalukya Rashtrakuta Devagiri Yadavas and Dehli Sultans The Britishers captured this by defeating Rani Chenamma in CE Later it was added to Bombay state As a result the influence of Marathas became more which has resulted in border dispute which is still alive The Veerabhadra temple of Yaduru on the banks of river Krishna is a popular temple The British had their military regiment stationed here permanently The Gokak Falls of this district is very famous The Gokak Mill has given employment to many Shantinatha temple of Shedabala which was built during twelfth century attracts more visitors The Yellammna Gudda is known for Renukadevi Goddess The district is evolving educationally Rani Chennamma University is here Vishveshwaraiah Technical University is housed here There are many engineering and medical colleges here This district is one of major industrial centres of Karnataka There are many Sugar factories here Hidalco industries Textile mills Leather industries Tata Power Unit and Hindustan Latex unit are housed in this district The Government of Karnataka has built Suvarna Soudha on the lines of Vidhana Soudha of Bengaluru here The Legislative body of the Karnataka Government holds one session in a year here Uttara Kannada District Uttara Kannada is a famous coastal district Karwar is its center Because of its strategic position the Government of India has built a large naval base here called as Seabird naval base The total forest cover of this district stands at Fishing is the main livelihood of people It has a huge tourism potential There are many attractive waterfalls in this district This district is divided into two based on its geographical nature the coastal area and the hilly area Karwar Ankola Kumta Honnavar and Bhatkal form the coastal area Sirasi Siddapura Yellapura Haliyala Joida and Mundagod form the hilly area This district receives yearly average rainfall of mm Evergreen forests are there Banavasi of this district was the capital of Kadambas Kadambas Chalukyas Rashtrakootas Hoysalas Vijayanagara Kings Marathas and the Britishers have ruled this area It is said that this place was a commercial centre since ancient times It is said that the Morocco tourist Ibn Battuta lived here The district was captured by Marathas in CE Later it became part of Mysuru state But the British took over it in CE The Britishers added this to the Madras State in the beginning but in CE added this to Bombay state This has been a trade centre for Arabs Dutch and Portuguese since ancient times Spices like Clove Pepper and Cinnamon were the major goods for trade The nobel winning author Rabindranath Tagore had once visited this place in CE He has written a chapter on his visit to Karwar in his autobiography The epic poet Pampa is from Banavasi of this district Kaiga Atomic Power Centre is established here Sugarcane Coca Cashewnut Paddy Banana Sapota are the major crops of this district The important ports of this district are Batkala Honnavara Karwara Thadi Belikeri Konkani language is used here along with Kannada Aghanashini Sharavathi Kali Gangavati are the major rivers that flow in this district Introduction In this lesson the achievements of the famous kings from Shatavahana Kadamba Ganga Chalukya Pallava Chola Rashtrakuta Kalyana Chalukya and Hoysala Dynasties are described The contribution of these dynasties to art architecture religion literature education economic and social fields is also discussed Competencies To recall the achievements and contributions of Gautamiputra Shatakarni and Shatavahanas To appreciate the adventures and contributions of Mayurvarma and Kadambas To know the contributions of Durvineeta and Gangas To know the contributions of Pulikeshi and Chalukya To know the military and cultural contributions of Chalukyas and Pallavas To appreciate the military and cultural achievements of Rashtrakuta kings To relish the art and architecture of Kalyana Chalukyas and Hoysala Shatavahanas The most important dynasty that ruled in South India is Shatavahanas after Mauryas Shatavahanas are believed to be Kannadigas and the names of these kings are said to be in Kannada For example Hala Pulanvi Naganika The capital of Shatavahanas is Paithan or Prathisthan of Maharashtra The greatest king of this dynasty was Gautamiputra Shatakarni He brought back the glory of Shatavahanas which was on brink of decline Gautamiputra Shatakarni He defeated many foreign dynasties like Shaka Yavana Pahlava He reprinted his name on the coins of Shaka s Nahapana His empire was extended to the regions of Konkan Saurastra Malwa Bihar He was given the title Thrisamudratoya Peethavahana The one who has a horse for riding that has drank the water of three seas The contributions of Shatavahanas Religion They followed Vedic religion As per the information in an inscription it is known that they were worshipping the God Pranaveshwara of Talagunda in Shivamogga district They extended their patronage to Buddhists also They built Buddhist religious centres in Nasik Karle Kanheri and Amaravathi During their period worship of Gods like Ganesha Vishnu and Surya were in practice Literature and Education Prakrit was the administrative language of Shatavahanas Their inscriptions are also in Prakrit language and Brahmi script King Hala wrote a book called Gaatha Saptasati in Prakrit Gunadhya wrote Vaddakatha and Sarvavarma wrote Kaatantra Vyakarana Agraharas were established to provide education Talaagunda Sthanakundur of Shivamogga district was a major educational centre Architecture Shatavahanas have contributed a lot to the field of architecture Many chaityas viharas and stupas were built in this period Chaitya is a prayer hall of Buddhists Vihara is a place where Buddhist monks stay Big rocks were cut to create Chaityas and Viharas The Chaitya at Karle of Maharastra is big and beautiful Rock cut Viharas are next to the Chaitays A whitemarble Stupa at Amaravathi of Andhrapradesh is known for its artistic carvings The architectural creations of Shatavahanas can be found in Kanaganahalli of Kalaburagi district and Banavasi of Uttara Kannada district Trade and Towns The period of Shatavahanas enjoyed economic prosperity The main reason for this is the trade that took place within the country and outside the country Many towns of the empire were the centres of trade The towns were called as Nigamas Paithan Karle Kanheri Junnar and Nasik of Maharashtra Dhanyaketa of Andhrapradesh and Vyjayanthi of Uttara Kannada district were the main centres of trade The towns had societies named Shreni They were the groups formed by professionals and traders to protect their interests For example the Dhaanik Shreni was society of grocery merchants Similarly smiths potters and others had their own societies Each Shreni had a senior who was called as Shresti The Shrestis were usually rich One such Shresti had built a Chaitya at Karle Bullock carts horses and donkeys were used for inland cargo movement The foreign trade was through the ports on the West and East coasts of the Empire There were trade links with Rome during Shatavahana period You should know this Banavasi known as Vaijayanthi was the regional capital of Shatavahanas Prakrit was the popular language Shatavahanas rule started over years ago and lasted for four Centuries Kadambas Kadamba is the first Kannada dynasty of Karnataka After Shatavahanas Kadambas prospered in the North East Karnataka The founder of Kadamba dyansty is Mayur Varma Banavasi of Uttara Kannada district was the capital of Kadambas The emblem of this dynasty was a lion Mayur Varma He was a Brahmin and had been to Kanchi for his higher education There he was insulted by a Pallava military officer Mayur Varma felt so offended that he decided to become a Kshatriya He gathered the tribal people and attacked Pallavas Finally the King of Pallavas accepted Mayur Varma as King and gave away many places of Karnataka to him to rule Mayur Varma got the Chandravalli Lake repaired near Chitradurga Kakusthavarma is famous among all the Kadamba rulers that ruled after Mayur Varma Halmidi inscription belongs to his reign This is first know inscription in Kannada till now It is said that Kakusthavarma had marital relationship with the Guptas of North India Contributions of Kadambas Religion They were shaivas and worshiped Pranaveshwar of Talagunda as well as Madhukeshwara of Banavasi Pranaveshwar linga of Talagunda is the most ancient Shivalinga of Karnataka Kadambas respected Buddhism and Vaishnava religions Thereby they established religious tolerance Literature and Education Prakrit Sanskrit and Kannada were used Kannada was only a spoken language and was gradually developed into a literary language This change can be seen in Halmidi inscription Agraharas and Ghatikasthanas were educational centres Talagunda was a famous Agrahara and Kanchi was a famous Ghatikasthana Architecture Jain basadi of Halasi Shankaradeva temple of Banavasi are the famous constructions of Kadambas and depict their architectural style Gangas When the Kadambas were ruling in North-West of Karnataka Gangas prospered in South Karnataka They belonged to an agricultural community They ruled Karnataka for a long duration for about years Kolar Kuvalalapur and Talakadu Talavanapura were their capitals Konkanivarma was the founder of this dynasty A royal elephant was their emblem Durvineeta was the famous king among the Gangas Emblem of Gangas He ruled about years ago He was a brave warrior and also a scholar His mother Jeshtadevi belonged to the Punnata dynasty Because there were no male children in Punnata dynasty Durvineeta became the heir for that empire too He defeated the neighbouring kings and expanded his empire He built many lakes for the purpose of irrigation He was a scholar in Sanskrit and Kannada languages He wrote the criticism for Sanskrit poet Bharavi s Kiratarjuniya s th sarga He translated Gunadhya s Vaddakatha into Sanskrit Sreevijaya has mentioned in Kavirajamarga that Durvineeta was a famous Kannada prose writer Kavirajamarga is the first available book in Kannada After Durvineeta Shreepurusha Rachamalla and others ruled Karnataka Shreepurusha also built many lakes like Durvineeta Among them the most famous one is the big lake at Kunigal Mudal Kunigalkere famous folk song is based on this lake After Shreepurusha Rachamalla ruled Karnataka His minister Chavundaraya got the world-famous Gommateshwara statue built at Shravanabelagola of Hassan district He also built a basadi there in his name The contributions of Gangas Religion Ganga rulers encouraged Jain as well as Vedic religions Some kings accepted Vaishnava religion Buddha Kalamukha and Lokayatha sects of religions existed during the period of Gangas Literature Some of the Ganga rulers were scholars Durvineetha was a famous Sanskrit and Kannada scholar Shreepurusha wrote Gajashastra Ganga s minister Chavundaraya wrote Chavundaraya Purana’ Architecture and sculpture Gangas contributed a lot to architecture and sculpture Kapileshwara of Manne Nelamangala Taluk Pataleshwara of Talakadu Kolaramma of Kolar Jain basadi of Shravanabelagola Panchakuta basadi of Kambahalli Nagamangala Taluk are the examples of Ganga architecture The feet monolith statue of Gommateshwara at Shravanabelagola is the greatest contribution of Gangas in the field of sculpture Chalukyas of Badami For about two centuries Chalukyas of Badami ruled in Karnataka Badami Vatapi of Bagalkot district was the capital of Chalukyas Boar Varaha was the royal emblem of Chalukyas Immadi Pulikeshi is the famous king among the Chalukyas Immadi Pulikeshi Immadi Pulikeshi is the bravest king among Chalukyas Though he was the heir of his father’s kingdom he had to fight with his uncle Mangalesh to get it He started a conquest to expand his kingdom Kadambas and Gangas surrendered to Pulikeshi Rashtrakutas who were his feudals rebelled against him but he defeated them Then he defeated Lata Malwa and Gurjaras at the north and proceeded towards Gujarat In East kings from Vengi Kalinga and Kosala surrendered to him He defeated the Pallavas of Kanchi in the south Crossing the Cauvery river he made contracts with Cholas Cheras and Pandyas His famous war with Harshavardhana who was a prominent king in northern India has historical importance This war took place on the banks of river Narmada In this severe war Pulikeshi defeated Harshavardhana Because of this he received the titles Parameshwara and Dakshinapatheshwara Like this he had conquered many kingdoms in all four directions and expanded his kingdom His kingdom spread from the Arabian Sea to the Bay of Bengal His fame had spread beyond India He had sent a commission to the Persian king Khusru In response to this Khusru had sent an ambassador to the court of Pulikeshi The painting at the first cave of Ajantha is said to be of Pulikeshi welcoming the ambassador of Khusru Contributions of Badami Chalukyas towards architecture and sculpture Badami Aihole Pattadakallu and Mahakutas are the major centres of Badami Chalukyas architecture There are cave temples in Badami and Aihole Ladkhan temple Durga Surya temple Meguti temple Huchchamalli temple are the famous temples at Aihole that represent Badami Chalukyas architectural style Aihole is called The cradle of Temple Architecture At Badami caves the embossed statues of Nataraja and Vishnu are wonderful You should know this Among the temples of Aihole Ladkhan temple is the most famous one It’s a temple of Lord Shiva A saint called Ladkhan stayed here some years ago and thereby it got this name The Sun temple here is also called Durga temple Because it is in the premises of a fort it is also called the Fort temple Fort is called Durga in Kannada Among the temples of Pattadkallu Virupaksha temple is very beautiful and big Mallikarjuna temple is another important one It is said that the crowning ceremony of the Chalukya kings took place in Pattadakallu It is considered as a World Heritage Site World Heritage Centre Some of the rare wonderful historical places are listed by UNO United Nations Organisation and are declared as World Heritage Sites Special attention is given to preservation of these places In Karnataka Hampi and Pattadakallu belong to this list PALLAVAS Pallava dynasty is one of the famous dynasties of south India Kanchi of Tamilnadu was the capital of Pallavas They ruled for about years Narasimhavarman is the most famous king among the Pallavas Narasimhavarman Narasimhavarman had the title Mahamalla He invaded Chalukyas and defeated Immadi Pulikeshi of Badami To mark this event he assumed the title Vatapikonda Narasimhavarman developed Mamallapura Mahabalipura a port town as a beautiful town Contribution of Pallavas to Sculpture The contributions of Pallavas in the field of sculpture are very precious There are seven stone chariots of Narasimhavarman’s period at Mahabalipuram In Mahabalipuram there is also an embossed sculpture called Gangavathara which shows Bhagiratha bringing the river Ganga to the earth after penance This is a famous embossed sculpture Pallavas built very big temples One of them is the temple of Lord Shiva built on the beach of Mahabalipura Two more famous temples of Pallavas are Kailasanatha temple and Vaikunta Perumal temple of Kanchi CHOLAS Cholas ruled South India for about four centuries as the supreme political rulers Tanjavuru of Tamilnadu was the capital of Cholas Rajaraja Chola and Rajendra Chola were the famous kings of Chola dynasty Rajaraja Chola He was a brave and efficient administrator His Empire included all those areas towards the south of river Tungabhadra Srilanka and Maldive islands He had a powerful land army and navy Bruhadeshwara temple is the contribution of Rajaraja Rajendra Chola He was the son of RajarajaChola His conquest of North India was his prominent achievement In memory of this conquest he assumed the title Gangaikonda He also built a new capital by name Gangaikonda Cholapuram and built a very big temple of Shiva For the purpose of irrigation to the capital he built a tank called Cholagangam He also won the Shreevijaya kingdom of Sumatra Asia and this was another of his famous achievement Literature The period of Cholas was a golden period for Tamil literature and culture Devotional literature reached its height during this period PeriyaPuranam finds an important place in devotional literature Kamba Ramayana was written by Kamban during this period is popular even now Rural administration Rural administration of Cholas was ideal Administration was done by the respective Gramasabhas The members of Gramasabhas were elected Committees of a few members were formed and definitive functions were assigned to them These committes had to give account of their expenditures The ineligible members were kept out of Gramasabha The rural administration of Cholas was similar to the present Panchayat system British officers who were in India appreciated the efficient administration of Cholas They have described the villages of Cholas as small republic states Architecture and Sculpture Cholas have contributed a lot to the field of architecture and sculpture Statue of Nataraja and Kalingamardhana Nruthya made in bronze are the precious gifts to Indian Sculpture Bruhadeshwara temple of Tanjavur is a world famous Chola architectural display It was built a thousand years ago The tower of the sanctum santorum of this temple is feet high This is the biggest and highest temple in India It has been accorded the status of World Heritage Site Another big temple of Cholas is the Shiva temple at Gangaikonda Cholapuram On the occasion of the completion of thousand years of the construction of Bruhadeshwara temple Reserve Bank of India has brought out a rupees coin RASHTRAKUTAS When Chalukya Empire declined Rashtrakutas reign started The word Rashtrakuta brings the memory of Kavirajamarga Pampa and Kailasanatha temple of Ellora Kavirajamarga This is the first available book in Kannada we have come across it while studying Durvinitha of Gangas It is a book of criticism It was written years ago during the reign of Amoghavarsha Nrupatunga It was written by Shrivijaya This is the oldest Kannada literary work till today A book of criticism analyses the language style metre Pampa Pampa is a great Kannada poet He wrote epic poetry in Kannada for the first time Therefore he is called Adikavi the first poet of Kannada The poetries written before Pampa are not yet available Pampa was in the court of Arikesari of Vemulawada Arikesari was a feudal king of Rashtrakutas Pampa has written two famous poems namely Adipurana and Vikramarjuna vijaya Vikramarjuna vijaya is also called Pampa bharatha and narrates the story of Mahabharatha This has influenced the other poets very much Ponna who belonged to the same period is also a famous poet of Kannada literature Ellora and Elephanta The Kailasa temple of Ellora is built by cutting a hundred feet tall single rock Krishna-I a Rashtrakuta king built it We cannot see such a wonderful architecture anywhere else in the world It is a feast to eyes Among the statues there Ravana lifting the kailasaparvatha is very beautiful Many parts of present Maharashtra belonged to Rashtrakuta empire Ellora and Elephanta caves are in Maharashtra We can see the grandeur of Rashtrakuta sculpture in Elephanta cave temple Elephanta is a small island near Mumbai port where one can see the huge and wonderful statue of three faced Maheshamurthy Famous Kings Dhruva is the first famous king of Rashtrakutas He made a conquest over north India His son was Govinda-III Govinda-III Govinda III is the most famous among the Rashtrakutas He had mastered complete South India He stretched his military power till the valleys of Himalaya His achievements are mentioned in the inscription of that time It is mentioned that his war elephants tasted the water of river Ganga Amoghavarsha Nrupatunga Nrupatunga is the son of Govinda-III He was coronated when he was only years old He ruled for more than sixty years He himself was a great scholar and he had Shrivijaya another scholar in his court Nrupatunga was much interested in the welfare of his subjects He built Manyaketa city present Malakheda of Kalaburagi district and this became the capital of Rashtrakutas A traveller from Arabia Sulaiman has described that Rashtrakuta Empire was one of the four large empires of the world The remaining are Roman Arab and Chinese empires Krishna-III During the reign of Krishna-III the Rashtrakuta empire attained a very important position in Indian politics Krishna defeated the Cholas and stretched his empire till Rameshwaram There he built a pillar of success and a temple He defeated Pandyas and Cheras He collected ransom from the king of Simhala He did his conquest even in north India A famous poet called Ponna was given shelter by Krishna After Krishna-III the Rashtrakuta empire started declining Religion Rashtrakutas were Vaidikas and followed Shaiva and Vaishnava trends Inscriptions give information about Rashtrakuta kings giving donations to Buddhism at Kanheri Even Jainism was very popular at that time Amoghavarsha encouraged Jainism very much Because Rashtrakutas had trade relations with Arab Islam religion was popular in coastal areas Rashtrakutas appointed Muslim officers in their court Religious tolerance was maintained by Rashtrakutas CHALUKYAS OF KALYANA After the decline of Rashtrakutas the Chalukyas once again gained power and made Basavakalyana near Bidar as their capital Because of this they are called Kalyana Chalukyas Thailapa II is the first king of this dynasty Vikramadithya-VI is the famous king of Kalyana Chalukyas Vikramadithya-VI He ruled for a long time and the Chalukya Empire progressed a lot during his reign He started Chalukya Vikramashake in memory of his power He gave shelter to many scholars One of them was Pandit Bilhana who wrote Vikramankadeva charitha This is the biography of Vikramadithya Vignaneshwara was another famous scholar who wrote Mithakshara samhite this gives description about Hindu law system Someshwara-III He was the son of Vikramadithya He was interested in literature and arts He wrote a famous Sanskrit encyclopedia called Manasollasa It deals with different aspects of life As Someshwara was a great scholar he was called Sarvagna Chakravarthy but during his time the size of the kingdom got reduced Literature Kannada literature was encouraged much by Kalyana Chalukyas Ranna who had the title Kavi Chakravarthy wrote SahasabhimaVijaya or Gadhayuddha Pampa Ponna and Ranna are called Ratnathrayas Three diamonds of Kannada literature Vachana literature is the special contribution of Kalyana Chalukyas Vachanakaras wrote vachanas in simple Kannada Jedara dasimmaiah Basavanna Allamaprabhu Akkamahadevi Channa Basavanna Siddarama Madiwala Machaiah Sule Sankavva were the famous Vachanakaras Architecture Lakkundi Itagi Bagali Bandalike Balligavi were the architecture centres of Kalyana Chalukyas They were also centres of fine arts Mahadeva temple of Itagi Koppala district is the best example of Kalyana Chalukyas architecture One of the inscriptions says that it is the emperor of temples The architecture of Kalyana Chalukyas influenced Hoysala architecture HOYSALAS Hoysalas ruled vast empire including South Karnataka and Tamilnadu for more than three centuries In the beginning Belur and later Dwarasamudra were their capitals Dwarasamudra is now called Halebidu Sala was the founder of Hoysala dynasty Sala killing a tiger is the royal emblem of Hoysalas Among Hoysalas Vishnuvardhana and Ballala-III are famous kings Vishnuvardhana defeated Cholas and Pandyas and conquered their regions He was a Jain but later on accepted ShriVaishnava sect His queen Shantala continued to be in Jain religion She was famous as Natya Saraswati Vishnuvardhana who was tolerant towards religion encouraged both Shaiva and Jaina religions Ballala-III He was the last famous king of Hoysala dynasty He ruled for fifty years During his time Sultans of Delhi attacked southern states very often They destroyed the temples and looted the wealth Because of their attacks many famous dynasties of South India including Hoysalas disappeared Ballala-III had to face this disaster alone The Sultan of Madurai who was the representative of Delhi Sultans increased his cruelty Ballala was old but still continued to fight with Sultans He was killed by Sultan After him his son Ballala-IV came to power but died very soon Thus Hoysala dynasty ended years ago Architecture The contribution of Hoysalas to architecture and sculpture is incomparable Hoysala temples are famous for fine carvings The common features of these temples are They are built on a star shaped basement The Navrang pillars inside the temple are very smooth On the outside wall of the temple episodes of mythology are depicted The famous temples of Hoysala are Hoysaleshwara of Halebidu Channakeshava of Belur Keshava of Somanathapura are important Vishnuvardhana built the most attractive Channakeshava temple in memory of his victory over Cholas The sculptors who built it are Dasoja of Balligavi and Nadoja of Gadag The Salabhanjikes or Madanikes are very attractive Keshava temple of Somanathapura is also very attractive Kuvempu has written a poem Bagilolu Kaimugidu in its praise He says that The temple is not only a temple; it’s a web of art Hence Oh Traveller enter it with folded hands at the entrance Literature Janna Harihara and Raghavanka are the famous poets of Hoysala period Janna wrote Yashodara Charithe Harihara wrote Girija Kalyana and Raghavanka wrote Harishchandra Kavya Harihara started a new form of poetry called Ragale Andaiah wrote Kabbigara Kavya in pure Kannada Introduction Understanding the history of smaller regions is as important as the study of kingdoms and empires of Karnataka mainly for two reasons the regional history touches the people more closely and it helps us to get a comprehensive view of Karnataka history Keeping this in mind this lesson takes up regional history of Kodagu Kittur Tulunadu and Hyderabad Karnataka Competencies Understanding the important events in the history of Kodagu Appreciating the courageous fight of Rani Chennamma of Kittur and her follower Sangolli Rayanna against the British Understanding the history culture and contributions of Tulunadu Appreciating the revolts of the people of Hyderabad Karnataka against the British the local zamindars and the Nizam Kodagu Kodagu district lies on the slopes of the Western Ghats Most people in the district speak Kodava and Arebashe languages River Kaveri is the lifeline of Karnataka It takes birth at Talakaveri in Kodagu Talakaveri is worshipped by lakhs of people Kodagu is rich in forest wealth The Nagarahole National Park is in Kodagu The Haleri Dynasty The Haleri Dynasty is the major dynasty that rules Kodagu In the beginning of th century Veeraraja founded this dynasty Later Mudduraja built Muddurajakeri and made it his capital Muddurajakeri became Madikeri Kodagu was ruled by Hyder Ali and Tippu Sultan during the second half of th century During this time Veeraraja of Kodagu was the prisoner of Tippu Sultan After escaping from Tippu Sultan Veeraraja regained his Kingdom with the help of the Britishers After the death of Tippu Sultan the Kings of Kodagu and Britishers remained in good terms Kodagu and the British Later on the British captured Kodagu and deported Chikkaveerarajendra from Kodagu and started their direct rule They divided Kodagu by making Amarasulya which was part of Kodagu a part of Canara district The Revolt of Amarasulya Since the peasants of Amarasulya found it hard to bear the heavy burden of land tax they rose in an armed revolt against the British They resolved to drive out the British from Kodagu The revolt which broke out in is known as the Amarasulya revolt The rebels held Sulya Puttur Kasaragod and Mangaluru for thirteen days However the British succeeded in suppressing the revolt and sent several rebels to the gallows The main leaders of the revolt were Puttabasappa Kalyanaswami and Guddemane Appayya Gowda Freedom struggle in Kodagu The Nationalists of Kodagu actively participated in freedom struggle After Independence for a while Kodagu remained as a separate State In Kodagu was merged with Karnataka Two outstanding sons of Kodagu Kodagu is known outside India mainly on account of its illustrious son General Kodandera Madappa Cariappa During the British rule Cariappa was the first Indian General of the Indian Army He was also the Chief of Indian Army Navy and Air Force of Independent India Known for his administrative acumen courage and bravery he was the recipient of the highest rank Field Marshal Another great patriot of Kodagu was General Kodandera Subbayya Thimmayya He brought victory to the nation in the war between India and Pakistan These are the two outstanding sons of Kodagu Though Kodagu is generally identified with its military prowess it is also well-known for sports adventure folklore and scenic beauty Kittur Kittur of Belagavi district was a powerful state two centuries ago It was known for its agriculture and commerce Rani Chennamma Rani Chennamma of Kittur was the younger wife of Mallasarja the Desai of Kittur Both Mallasarja and his son died Rani Chennamma adopted Shivalinga Sarja and started administering Kittur The Collector of Dharwad Thakeray objected to the adoption as improper He recommended the British Government to take over the administration of Kittur On hearing this Chennamma became extremely angry She opposed the British policy of suppressing Kittur and decided to fight for the freedom of her land Thakeray with an army of soldiers attacked Kittur A fierce battle took place Chennamma led her army and fought valiantly The British army was shattered and Thakeray hit by a bullet died in the battle The British army after a while besieged the fort of Kittur Though Kittur had an army of just soldiers Rani fought against the huge British army for three days Mean while a few traitors of Kittur betrayed her Thus Kittur was defeated Chennamma was taken captive and imprisoned at Bailahongal She continued to be in the prison for five years secretly guiding and inspiring the people to carry on the freedom struggle Rani Chennamma has earned immortal fame as the first Indian woman to have fought against the British in India The valiant queen is remembered through folk songs which are sung even today Sangolli Rayanna Sangolli Rayanna was a loyal follower of Rani Chennamma A brave freedom fighter he emerged from the rank of common people After Chennamma’s imprisonment he assumed the leadership of Kittur province and organised an army He attacked British offices and looted their treasuries Adept in guerilla warfare Rayanna was like a frightening dream to the British As the British could not defeat him they resorted to foul means They bribed a few persons who turned traitors They captured Rayanna by deceit and handed him over to the British Soon Rayanna and his associates were hanged Before being hung Rayanna fell at the feet of his mother Kenchavva who had come to see him for the last time and got her blessings Then he walked to the scaffold and with a smile on his face embraced death All the martyrs were buried nearby After the death of Sangolli Rayanna several others continued the revolt of Kittur One of Rayanna’s followers Bichhugatti Channabasappa planted a seedling of banyan tree on the grave of Rayanna For many years thereafter it is said that Channabasappa remained near the grave as a bairagi The banyan tree that he planted is seen even today After Rayanna many young people continued the spirit of Kittur’s revolt Tulunadu In ancient times the part of coastal Karnataka was called Tulunadu It comprised more or less the present Dakshina Kannada and Udupi districts In the Puranas the western coast is referred to as Parashurama Kshetra Most people of Tulunadu speak Tulu language A number of people also speak Kannada Konkani and Byari languages During historical times Tulunadu was ruled by the Kadambas the Alupas the Hoysalas the Vijayanagara and other smaller dynasties The Alupa rule was the longest Udyavara Udayapura Mangaluru Mangalapura Barakuru and other places were the capitals of Tulunadu Abbakka Rani th Century of the Chauta family had fought with the Portuguese and defeated them Religions Most of the rulers of Tulunadu were Jains Others followed Buddhism Jainism Hinduism Veerasaivism Natha Pantha Islam and Christianity The two popular forms of worship in Tulunadu are the Naga and Bhuta worships The founder of the Dvaita Philosophy sect Madhvacharya belonged to Tulunadu Sri Manjunatha temple at Kadri in Mangaluru is an ancient temple of Tulunadu By starting educational institutions the Christians have made their contributions in the field of education They started printing press in Mangaluru The Kannada dictionary compiled by Ferdinand Kittel was printed at the Basel Mission Press in Mangaluru A German by name Manner compiled a Tulu dictionary Foreign missionaries were the earliest to propagate their religion in Tulunadu Later their work was continued by the Indian missionaries There are several impressive churches in Tulunadu From ancient times Tulunadu had commercial contacts with Arabia As a result Islam began to spread here Muslims have built several attractive mosques Architecture and sculpture At Kadri Manjunatha temple there is a huge bronze statue of Avalokiteshvara which is about a thousand years old The Thousand-Pillared Basadi the gigantic Gommata statue at Karkala Venur and Dharmasthala represent Jain culture The popular daivas of Tulunadu are Koti-Chennayya whose shrine is called the Garodi Folklore Kambula Kambala cock fight and chenne are some of the folk sports and games Yakshagana and Talamaddale are the famous ancient arts of Tulunadu British rule in Tulunadu The British rule in coastal region commenced from the beginning of the th century The coastal region was then called Canara district Later the Canara district was divided into North Canara northern part and South Canara southern part districts Freedom Struggle Inspired by Mahatma Gandhi the people of Tulunadu actively participated in the freedom struggle The foremost among the freedom fighters were Karnad Sadashiva Rao and Attavara Yellappa Called as the Deshabhakta Karnad Sadashiva Rao rendered unforgettable service to the cause of the Harijans He offered meals to the Harijan children in his home He sacrificed everything for the freedom of his motherland Born in Mangaluru Attavar Yellappa a London returned Barrister was a Member of the Council of Ministers of the Azad Hind government founded by Nethaji Subhash Chandra Bose He was a military officer for fifteen years in Nethaji’s Indian National Army Kudmul Ranga Rao led a social reform movement for the upliftment of the Harijans He actively worked for the education of the Harijan girls and removal of untouchability While in Mangaluru Gandhiji saw the social activities of Kudmul Ranga Rao and appreciated them In the field of Banking the record of Tulunadu is remarkable Canara Corporation Syndicate Karnataka and Vijaya Banks were established here prior to the attainment of Independance Thousands of branches of these banks spread over the length and breadth of the country have made a special contribution to India's economic growth They have also created thousands of job opportunities In the North and South Canara districts were merged with Karnataka State Prior to this South Canara was under the Madras Presidency Udupi district was later created out of South Canara district Hyderabad-Karnataka Revolts of the Bedanayakas After the decline of Vijayanagara the Bedanayaka paleyagars became dominant in Hyderabad-Karnataka They were brave warriors After they revolted against the British several times Causes Exploitation by the local zamindars Oppression by the British and the passing of the Arms Act and the Forest Act Provoked by the oppressions the local rulers the paleyagars and common people revolted After there were more than twenty-five revolts In most of these the Bedanayakas played a major role The aim of the revolts was to drive out the British The revolt of the Bedanayakas of Halagali Halagali is a village in Mudhol taluk of Bagalkot district Well-known for its wrestlers even today the village rose to fame during the Freedom Movement In Halagali most of the villagers were Bedanayakas who possessed arms for hunting and self-defence The Arms Act passed by the British in had put a condition that the Indians could own arms only with the prior permission of the Government The brave and self-respecting Bedanayakas could never accept such a condition In order to impose the condition the British resorted to force The leaders who fought valiantly against the British were Jadaga Baala Rami and others In the conflict several died taken captives and hanged Though the revolt was suppressed it occupies a permanent place in the history of Freedom Struggle Rami Rami was a valiant Bedanayaka woman who actively participated in the revolt She shot dead three British soldiers and became a martyr Sindhura Lakshmana Sindhura Lakshmana was a remarkable leader who fought against the British Lakshmana was born in Sindhura village of Jat taluk in Sangli district His parents were Bedara Sabu and Narasavva His tomb is at Bilagi Sindhura village was under the firm hold of the local Inamdar Gowda Lakshmana openly challenged him Soon he became the enemy of the British Lakshmana was plundering money from the rich and the British treasury and distributing it to the poor He was also helping the oppressed Meanwhile the village assembly accussed him of robbery Greatly hurt Lakshmana went into hiding The British tried their best to capture him on charge of murdering a police officer Later in an encounter he was shot dead A martyr Sindhura Lakshmana will be ever remembered in history as a revolutionary who passionately fought for freedom The Nayakas of Surapura Surapura in Yadgiri district was a settlement of the brave Bedanayakas After the death of Krishnappa Nayaka the ruler of Surapura Venkatappa Nayaka a boy of eight years became his successor The Nizam and the British were waiting for an opportune time to annex Surapura to their territories Though Venkatappa Nayaka received English education the love of independence and patriotism were deep-rooted in him Meanwhile strong waves of the First War of Independence also began to reach Surapura Venkatappa Nayaka immediately decided to join the war The young ruler received support from Mundargi Bhimaraya Baba Saheb of Naragund and others The British army laid siege to the fort of Surapura A terrible fight ensued On the second day a senior officer of the British army died in the battlefield This was a setback to the British Hence the British decided to take the fort by fraud An important officer of the Nayaka revealed to the British the secret approach to the Surapura fort thereby helped them to gain victory Venkatappa managed to escape to Hyderabad His aim was to recruit more soldiers with the help of the Nizam But Salar Jung the Nizam’s Prime Minister expecting some reward from the British made Venkatappa Nayaka a captive and handed him over to the British The British awarded a death sentence to Venkatappa Nayaka Later the punishment was reduced to four years of imprisonment When under captivity Venkatappa Nayaka was shot dead by the British Not only this the British spread the rumour that it was a suicide on the part of Venkatappa Nayaka He was at that time Thus the life of an extraordinary freedom fighter who sacrificed everything for his motherland ended The British transferred Surapura to the Nizam as a reward Thus Kalaburagi Bidar and Raichur were merged with the Hyderabad Princely State Struggle for Liberation of Hyderabad-Karnataka The Struggle for liberation in Hyderabad-Karnataka is a shining example of a glorious revolt of the people against an oppressive and anti-people ruler It is also a saga of remarkable sacrifice and courage Prior to there were kingdoms big and small under the British They were called the princely states Hyderabad was the largest among the princely states Background of the struggle The condition of the Hindus was extremely miserable in Hyderabad state No religious festival could be celebrated by them in public Education was neglected in the state Everywhere Urdu dominated and Kannada language and literature received a great blow The Nizam brought into force rules called the kalagapti which took away the fundamental freedom of the people Course of the struggle One of the popular leaders of the freedom struggle in Hyderabad was Swami Ramananda Tirtha He travelled all over Hyderabad state organising peaceful satyagraha Another famous leader was Hardikar Manjappa He was popularly known as Gandhi of Karnataka He undertook such constructive programmes as khadi prohibition and removal of untouchability and popularised them Vande Mataram movement In the meantime the Government banned the singing of Vande Mataram It was Ramachandra Rao a brave leader who led the struggle against the ban He was popularly called Vande Mataram Ramachandra Rao Soon the Vande Mataram movement began to spread rapidly Thousands of those who sang Vande Mataram were imprisoned In the liberation struggle the Arya Samaj played a prominent role The Muslim fundamentalists formed an organisation known as Ittehad-ul-musalmeen Under the leadership of Kasim Rizvi it followed the policy of terrorism In the Hyderabad state the Congress Party had been banned The Congress demanded that Hyderabad should merge with the Indian Union On August the people decided to hoist the Indian National Flag in Hyderabad The Nizam’s government imposed more restrictions on the people At the same time the Razaks started looting and killing the people in the state They enjoyed the support of the Nizam In spite of the terror let loose by the Razaks Vande Mataram was heard all over the state Sharanagowda Inamdar It was Sharanagowda Inamdar the young leader who organised the under- ground activities by enroling the youths They made lightning attacks on the Razaks As a result many villages were freed from the atrocities of the Razaks The people called Sharanagowda as Sardar out of great respect On account of the atrocities of the Razaks lakhs of people left Hyderabad state and migrated to the nearby territories of the Indian Union Thousands of young men set up camps along the borders of Hyderabad state and carried on armed struggle against the Razaks Even after India attained Independence Hyderabad state did not join the Indian Union The terrorist activities of the Razaks were continuing Finally the Government of India authorized the Union Home Minister Sardar Vallabhabhai Patel to resolve the problem of Hyderabad As directed by the Home Minister the Indian Army units entered Hyderabad on September The Nizam seeing no way out surrendered Immediately the Hyderabad state was merged into the Indian Union In elections to the Lok Sabha were held in Hyderabad Province and the people elected their representatives for the first time Swami Ramananda Tirtha the most beloved leader was elected from Kalaburagi Constituency Introduction Between the th and th centuries many religious and social reform movements were witnessed in India These were led by religious leaders who aimed at regeneration of religious and social life of the people In this lesson the life teachings and reforms of Shankaracharya Ramanujacharya Basaveshvara and Madhvacharya who were in the forefront of the reform movements have been briefly stated Competencies Understanding the teachings and reforms of the religious leaders Appreciating the importance and relevance of their reforms The saints of India have not only guided the people through their teachings but also undertook active religious and social reforms Their reforms eradicated ignorance and evil practices among the people Their impact is felt even at present Sri Shankaracharya Shankaracharya was born at Kaladi in Kerala An extraordinary boy by the time he was eight he had studied the four Vedas Shivaguru and Aryamba were his parents He propounded Advaita philosophy Shankaracharya's Contributions He established four monasteries mutts at Badari Uttarakhand Dwaraka Gujarat Puri Odisha and Sringeri Karnataka These served as Dharmic centres for uniting Indians Shankara wrote Ananda Lahari and Soundarya Lahari Among all his hymns Bajagovindam is very popular All these achievements were achieved by Shankaracharya in a life span of years Sri Ramanujacharya Ramanujacharya was born at Sriperambudur near Chennai He studied religious scriptures shastras at Kanchi His parents were Keshava Dikshit and kantimathi He propounded Vishishtadvaitha philosophy Ramanujacharya travelled to different parts of India and spread Srivaishnavism the religious sect founded by him He declared that salvation mukti can be attained through devotion bhakti and surrender prapatti to God The Hoysala ruler Vishnuvardhana welcomed him to his kingdom Reforms of Ramanujacharya Ramanuja condemned casteism He enabled people from lower classes to enter temple in Melukote Ramanujacharya lived for one hundred and twenty years Sri Basaveshwara The role of Basaveshwara in the social and religious reforms in Karnataka was indeed revolutionary He hailed from Basavana Bagewadi in Vijayapura district Refusing to undergo upanayana ceremony he was given linga diksha After his early schooling he went to Kudalasangama for further studies His parents were Maadarasa and Madalambike and belonged to Bagewadi Agrahara He propounded Shakthivishishtadvaitha philosophy Basaveshwara became the Treasury officer of the Kalachuri dynasty’s Bijjala King who was ruling from Kalyana He started sharing his revolutionary thoughts in Kalyana Traditionalists opposed these ideas Pained by these oppositions Basaveshawara left Kalyana and went to Kudalasangama It is believed that he became one with the God Ikya there Reforms of Basaveshwara Basaveshwara aimed at building the society on a casteless basis Work is Worship Kayakave Kailasa was one of his important teachings Basaveshwara condemned caste system idol worship and yajna-yagas He stated that one’s body is itself a temple By upholding the greatness of women he gave self confidence to womanhood which had lost its voice Basaveshwara started an assembly known as Anubhava Mantapa which served as a forum for the Vachanakaras Basaveshwara composed more than a thousand vachanas which concluded with the word Kudalasangamadeva Kayaka means work done with total dedication Bhakthi Sharing the outcome of the Kayaka equally is called as Dasoha Basaveshwara aimed at instilling a culture of work in people Vachana literature The vachana is a distinct literary form The vachanas can be read like prose or sung like poems The vachanas were also composed by Jedara Dasimayya Allamaprabhu Channabasavanna Akka Mahadevi and others These sharanas came from different communities The thoughts expressed in vachanas are relevant in the present Sri Madhvacharya Madhvacharya was born at Pajaka Belle village near Udupi Madhva's parents were Madhyagheha Bhatta and Vedavati He propounded Dvaita philosophy Madhvacharya toured different parts of India twice for the purpose of spreading his teachings He worshipped Lord Vishnu Reforms of Madhvacharya Madhvacharya composed a total of works in Sanskrit like Githa-thaathparya Nirnaya Mahabharatha thaathparya Nirnaya and others He established eight monasteries Ashtamutts at Udupi He preached a simple path of Bhakti Apart from Ashta mutts eight mutts Uttaraadi Mutt Vysaraya Mutt and Raghavendra Mutt are the centers of Madhava Philosophy Introduction The Rajput dynasties played an important role in Indian history from to CE This Lesson describes the contributions of the Rajput Age to art architecture and literature It also briefly narrates the history of some prominent Rajput dynasties such as the Gurjara Pratihara the Pala the Chauhan and the Guhila besides social and economic conditions of the Age Competencies Understand some of the important achievements of the Rajput dynasties Appreciate the contributions made by the Rajput dynasties to art architecture and literature Mark the historical places of the Rajput Age on the map Who are Rajputs Rajputs are known for their valour and adventurous spirit The Rajputs who were warriors claim their descent from the ancient Kshatriya dynasties such as Suryavamsha and Chandravamsha The Rajputs ruled over a period of years in North India This was a glorious period in the history of India They fearlessly fought against the invasions of the Arabs the Turks the Afghans and the Mughals Rajput Dynasties Several Rajput dynasties played an important role in Indian history The prominent Rajput dynasties namely the Pala the Pratihara the Paramara the Chauhan the Gahrawal the Guhila and the Solanki are among thirty six royal families Among these the achievements of the Pratiharas the Palas the Chauhans and the Guhilas are analysed in this unit The Pratihara Pratiharas were ruling from Avanti Ujjayini in Madhya Pradesh The famous ruler of the dynasty was Nagabhata The credit for defending India from the Arab invasion goes to Nagabhata He built a vast empire King Bhoja was a great ruler of the dynasty and also a good writer He captured the famous city of Kannauj He defeated the Palas of Bengal The Arab traveller Sulaiman who visited the kingdom stated that King Bhoja was a noble king the enemy of Arabs and commanded an efficient cavalry The Palas The Palas ruled for about four centuries Dharmapala was the most competent ruler of the dynasty His kingdom was one of the notable republican states of North India The conquest of the famous city of Kannauj was his memorable achievement The Pala dynasty was overthrown by Vijayasena a ruler of Karnataka origin and established Sena dynasty The Palas were the followers of Buddhism They patronised Hindu Dharma They showed special interest in the spread of education They founded the universities of Uddandapura and Vikramshila The Chauhans Prithviraj III was the well-known ruler among the Chauhans He ruled from Delhi The fascinating story of PrithvirajChauhan marrying Samyukta the daughter of Jayachandra the king of Kannauj has been narrated in several literary works of the period Samyukta was known for her bewitching beauty There was enmity between Jayachandra and his relative Prithviraj Jayachandra had not invited Prithviraj for the swayamvara of Samyukta He placed a statue of Prithviraj at the entrance of the palace in order to project him as a palace guard and insult him Samyukta who was deeply in love with Prithviraj ignored all the princes assembled for the swayamvara went to the palace gate and garlanded the statue of Prithviraj Prithviraj who was hiding all the time behind the statue carried her away on his horseback to his palace and married her This episode intensified the enmity between the two royal families When Mohammad Ghori invaded India Prithviraj opposed him He garnered the support of several Rajput rulers against the common enemy However Jayachandra of Kannauj refused to join him In the battle that took place Prithviraj defeated Mohammad Ghori But he granted him mercy and let him off Next year Mohammad Ghori challenged Prithviraj In the second battle that ensued Prithviraj was defeated and killed Soon Delhi was captured by Mohammad Ghori This paved the way for the establishment of the rule of the Sultans of Delhi Prithviraj was known for his chivalry and valour Chand Bardai’s Prithviraj Raso is an epic which expounds his prowess The Guhilas Guhilas Guhilots belonged to a lineage of great warriors Khommana a ruler of the dynasty defended his kingdom from the Arab military expedition and conferred on himself the title of BappaRawal Another notable ruler of the dynasty was Rana Kumbha who fought against the Sultans of Delhi and defended his kingdom He built forts to safeguard his kingdom He erected a magnificient Vijaya sthambha at Chittorgarh These are some of the notable achievements of Rana Kumbha The well-known ruler among the Guhilas was Rana Sanga or Rana Sangram Singh He was a hero of hundred battles who bore scars of war on his body He constantly fought against the Sultans of Delhi THE CONTRIBUTIONS OF RAJPUTS Economic conditions The Arab merchants had more foreign trade than any other nation with India Spices cotton silk fabrics perfumes and costly diamonds were exported Horses were imported from Central Asia and Arabia The income of the kingdom was mostly spent on building forts and temples This provided employment to the thousands of people Social conditions There were several social classes in society These were based on hereditary professions Women were held in high esteem They had studied literature Sanskrit language and experts in dance music painting and embroidery work Child marriage and sati prevailed Pushkar the centre of worship of Brahma near Ajmer was an important place of pilgrimage The camel fair which was annually organised is famous even now Literature Sanskrit literature flourished during the Rajput Age Gujarati Hindi and Rajasthani languages developed Chand Bardai’s Prithviraj Raso is a famous Hindi work of the period Many of the Rajput rulers were themselves scholars They patronised poets Jayadeva who wrote Gita Govinda was in the court of the Sena rulers The Rajput dynasties supported Nalanda Kashi Vikramashila Ujjayini and other ancient higher centres of learning Art and Architecture The contributions of the Rajput Age to art and architecture is quite rich Their beautiful temples magnificent palaces and formidable forts have survived even now Kandariya Mahadeva temple at Khajuraho and Dilwara temple at Mount Abu are renowned temples Gulabi Nagar Pushkar Hawa Mahal at Jaipur and huge palaces at Udampur are the fine specimens of palace and fort architecture The Gwalior fort in Madhya Pradesh is unique among the Indian forts This gigantic fort has been described as the pearl among the Indian forts Rajputs encouraged wall-paintings and miniature paintings The paintings were done on the walls of palaces temples inner chambers of the forts and on the books as decoration Now-a-days we are using CE Common Era and BCE Before the Common Era synonymously with AD Anno Domini year of our Lord and BC Before Christ This change has occurred from a secular point of view Introduction In this chapter the meaning of Government types of government are discussed Governments like Democratic government Dictatorial government and the Communist government are explained Competencies Understanding the meaning of government Understanding the types of government Understanding the democratic government Understanding the dictatorial government Understanding the communist government Understanding the differences between the three types of Governments Meaning of Government In order to ensure comfortable and happy life to people of a nation a systematic administration is needed An organization that has the legal sanction to run the administration is called Government This institution has the responsibility to formulate laws and implement them in order to ensure order and peace in the life of the citizens Types of Government There are many types of governments The following are the important types Democratic government Dictatorial government Communist government Democratic government Democratic government is a type of government Democratic government functions through the elected representatives of the people Since people rule themselves through their representatives this is called as People’s Government The freedom that people have to choose their representatives is the basic trait of democracy Democracy is a system that ensures individual freedom freedom of expression and freedom of forming associations It also facilitates the relationship between the individual and the state Abraham Lincoln has said Democracy is a government of the people by the people and for the people There are three organs in the Government Legislature Executive Judiciary Legislature forms the laws the executive implements the formed laws The Judiciary deals with issues of justice Fundamental Principles of Democracy Freedom Freedom is the basic tenant of democracy Citizens have the freedom to participate in governance express their opinions and travel in the nation They also have the right to participate in social functions and gatherings They also have many other freedoms Equality Democracy is based on the belief that all are equal It facilitates equal opportunity for all It considers all equal irrespective of caste creed race language sex and financial status like poor and rich Fraternity Fraternity means all are one irrespective of differences like language caste creed religion race and other things The sense of oneness is fraternity Democracy fosters fraternity Welfare of all Democracy aims at establish ing a welfare state where the citizens can achieve political economical and social development Government of the people Democracy is a government by the people The representatives elected by the people in the elections that are held as per schedule run the government The administration is run in accordance to the will of the people If the elected representatives fail to run the administration as per the will of the people they would lose power in the next election Majority Government In a democratic system many political parties contest in the elections Among them the party which gets the highest number of representatives forms the government and run the administration Opportunity for public Criticism Democracy ensures freedom of speech and expression Therefore the people have the right to review and criticize the policies and programmes of the government Therefore the government needs to manage the work properly Moreover the democracy gives importance to public opinion Decentralization of power Decentralization of power is another principle of democracy The power is distributed among the central state and local self governments The centralized administration fails to grasp the needs of people at local levels And also people cannot have their voice heard in the centralized systems Adult Franchise System Elections are inevitable to form the democratic government Elections are held on the basis of adult franchise Citizens who are years of age and above take part and vote in the elections Democracy aspires for a better government through this method Apart from these there are many other features of democracy Dictatorial Government The power of the entire state is concentrated in one individual or with a group of individuals in this form of government The will of one individual or one group is the principle of a dictatorial government While Democracy upholds freedom the Dictatorial governments reject it The administration is run in accordance to the whims and fancies of the ruler His wish becomes the law In this type of government all social economical religious and other principles are nothing but the orders of the ruler Citizens have no right to oppose it or criticize it There would be law that makes mandatory to fulfill the needs and wishes of the citizens The dictator's wish is final in questions of lawful or unlawful issues One can see dictatorial rules in the world from time to time It was present in th century Europe and in countries like France Spain Russia and England during th century Features of dictatorial government Single party single leader and single political agenda In a dictatorial system there is an opportunity only for one party It is the party of the dictator Other political parties associations and institutions are not allowed to function They are cancelled in this system Those who oppose the dictator will be suppressed without mercy a Single leader The government is run by a single leader Complete faith is expected in the dictator The dictator represents the unity of the country The dictator takes deci sions in all the matters His decision is final b Single political agenda There is a single political agenda for the complete nation It is the agenda of the party that belongs to the dictator In accordance to the agenda the administration of the dictator runs No individual freedom In dictatorial system in dividuals will not have any rights or freedom The respect towards the law is considered as equal to individual freedom The citizens will have no right to form associations organize meetings and express their will They have no right to criticize the administration The citizens have to accept and approve the administration of the ruler Glorification of Nationalism Nationalism is given extreme importance in dictatorial government It seeks to increase the sense of nationalism in the people It expects people to undergo any sacrifice for the sake of the country Totalitarianism The dictatorship is totalitarian and it regulates the social political economic educational and cultural factors There should be nothing against the government and everything should be in favour of the nation Racial Superiority The dictatorship accepts the racial superiority It believes that their race is superior to the races living in other nations For example Hitler believed that the German race was superior to the races living in other nations The dictatorship is against the democratic system The Second World War is the result of dictatorship Most of the modern nations are adopting the democratic system Communist Government The communist government is a government that believes in the principle that all basic means of production like land labour and capital belongs to the community And it also believes that one should work as per his capacity and one should get as per his needs There is no provision for private property in this government Communism is based on the principle of equality and seek to foster a society that has no discrimination based on caste creed rich and poor According to Communist philosophy Private property widens the differences between poor and rich and leads to struggles between the rich and the poor Finally the working class majority wins in the struggle After this a society that has no discrimination forms Here the culture of all working for all leads to happiness of all This system of government was advocated by Karl Marx the German Philosopher Features of Communism The communism has certain features Community Owns the Property If the means of production like land labour and capital are in the hands of private individual the exploitation starts Hence all the means of production are to be owned by the community All should work as per their capacities And all should get as per their needs This is the principle of communism Equality In communism every citizen is equal in all the ways It treats everyone equal without discriminating on the basis of class caste religion and race Classless Society There are no rich and poor classes in communism Therefore it creates the classless society The principle of communism is that there should be only working class Power to Workers The existence of private owner ship leads to exploitation in the name of profit which in turn creates class system There would be struggle between the rich and poor which would ultimately give the power to the working class Revolutionary Change The social system is changed drastically in a short period of time Then equal political economic and social benefits are given to everyone equally Everyone can lead a comfortable and happy life In nut shell communism is government in favour of human beings Every citizen can lead an exploitation free life The Union Government The structure and functions of the Legislature and the Executive of the Union Government Central Government have been introduced In addition the qualifications and functions of a Member of Parliament; the power and functions of the President and the Prime Minister; and the composition and functions of the Cabinet have also been explained Competencies Understanding the structure and functions of the Union Government Analysing the structures of the Legislature and Executive and their powers Understanding the functions of the Lok Sabha and the Rajya Sabha Understanding the powers of the President and the Prime Minister The Union of India The Union of India consists of twenty-nine States and Six Union Territories The Union Government is called the Central Government The Central Government has three organs Legislature The function of this organ is to make laws Besides it checks the Executive Executive This organ implements the laws through the administration Judiciary This organ gives judgements Union Legislature The Union Legislature is called the Parliament The Parliament of India consists of the President of India and the two Houses The two Houses are the Lok Sabha and the Rajya Sabha The sessions of the Parliament are held in the Parliament House at New Delhi Here the Members of the Parliament discuss on various issues and make laws which are applicable to the whole of India Lok Sabha The Lok Sabha is the Lower House of the Parliament The Members of the Lok Sabha are directly elected by the citizens who are above the age of The maximum number of seats in the Lok Sabha is Members of the Lok Sabha The Lok Sabha Members are elected for a term of five years They should have the following qualifications To become a Member of the Lok Sabha one should be a citizen of India They must be at least years of age They should not have been sentenced to imprisonment They should not be insolvent i e not having enough money to pay one’s debts Lok Sabha Speaker The Members of the Lok Sabha elect one among themselves as the Speaker The powers and functions of the Speaker are deciding the matters that needs to be discussed in the House; maintaining the discipline and dignity of the House; and conducting the discussion in a proper manner and taking decisions Rajya Sabha The Rajya Sabha is the Upper House of the Parliament The maximum number of seats in the Rajya Sabha is The Members are not directly elected by the citizens Members are elected by the Members of the State Assemblies The remaining Members are nominated by the President of India Members of the Rajya Sabha To become a Member of the Rajya Sabha one must not be less than years of age The term of the Rajya Sabha Members is six years The Vice President of India is the Chairman of the Rajya Sabha Rights of the Members The Members of the Lok Sabha and the Rajya Sabha are called M Ps Members of Parliament The Members enjoy freedom of speech in the Parliament The opinions expressed by them in the Parliament cannot be questioned in a court of law The Role and function of the Leader of the Opposition The Leader of the Opposition occupies a respectable place His role and functions are pointing out the lapses if any on the part of the Government; reviewing the policies and programmes of the Government; and giving timely advice to the Government Cabinet and administrators The Powers and Functions of the Parliament The important powers and functions of the Parliament are as follows Legislative powers The main function of the Parliament is to make laws Whenever necessary the Parliament can also amend or revoke the existing laws The main function is to make the Council of Ministers including the Prime Minister accountable to it If the functions and behavior of the council of ministers is not conducive remove it through no-confidence motion is another important function of the parliament Financial powers The Financial Bill must be presented and discussed first in the Lok Sabha The Union Government cannot collect taxes or spend money without the approval of the Parliament Thus the Parliament has full control over the financial matters of the country Administrative powers The Ministers are responsible to answer the questions asked by the members of the Parliament The members can criticize the omissions and commissions of the ministers in the house Authority to amend the Constitution The Parliament has the power to amend the Constitution The Union Executive The Union Executive is composed of the President Prime Minister and his Council of Ministers President The President is the head of the Indian Republic He is called the first citizen of the country His official residence is the Rashtrapati Bhavan The elected Members of both the Houses of Parliament and Members of the Legislative Assemblies of all States elect the President of India A person must have completed years of age to become the President of India He must possess all the qualifications necessary to become a Member of Lok Sabha His term of office is five years Powers The President appoints the Leader of the majority party in the Lok Sabha as the Prime Minister On the advice of the Prime Minister he appoints the other Ministers The Assent of the President is necessary for any Bill to become an Act The Supreme command of the Defence Forces is vested with the President He has the power to declare war or peace The President has the power to appoint the Judges of the Supreme Court and the High Courts He has the power to grant pardon or confirm the punishment Vice-President The Members of both the Houses of Parliament elect the Vice-President The Vice-President must be over years of age and should have all the qualifications that are required to become President His term of office is five years He is the Chairman of the Rajya Sabha He will discharge the functions of the President during the absence of the President The Prime Minister Importance of the Prime Minister The Prime Minister plays an important role in the Parliamentary system of Government He has the prime responsibility of protecting the national security The powers and functions of the Prime Minister are He is the Leader of the Lok Sabha He allocates the portfolios of the ministers He has the power to reshuffle the Cabinet He has the power to recommend the appointments of ministers to various departments to the President He has the power to recommend the removal of the Ministers to the President Let’s know The magnificent structures such as the Parliament House Rashtrapati Bhavan and others in New Delhi were built during the British period The construction of Rashtrapati Bhavan which has chambers was completed in The State Government The organs of the State Government the Legislature the Executive and the Judiciary are introduced The Bicameral system and the importance of the Lower House and Upper House have been explained The qualifications and functions of the Legislators and the qualifications and powers of the Governor have been described Competencies Understanding the structure and functions of the State Government Understanding the qualifications and powers of the Governor and the powers and functions of the Chief Minister The state have their own governments Though their extent of power is limited they have autonomy in their matters The states are formed on the basis of languages The state of language of Karnataka is Kannada Our constitution has laid down uniform system of administration in all states The state governments have similar government structure of the Union Government of India The State Legislature The three organs of the State Government are the Legislature Executive and Judiciary The State Legislature is composed of the Governor and the legislature The Legislature makes the laws Legislative Assembly Lower House Composition The Legislative Assembly Lower House is the House of the elected representatives of the people There are seats in the Karnataka Legislative Assembly The Members of the Legislative Assembly M L As elect one among themselves as the Speaker of the House The M L As are elected for a term of five years However the Assembly is not a permanent body The qualifications of the Members of the Assembly are as follows Should be a citizen of India Should not be less than years of age Should not hold any office of profit under the Government Should not be an insolvent The powers and functions of the Legislative Assembly are The Legislative Assembly is in reality the Legislature of the State In all financial matters the decision of the Assembly is final The Council of Ministers is responsible to the Assembly When the majority of the Members of the Assembly find the Government policies unsatisfactory they may through a No-confidence motion make the Council of Ministers resign The Members participate in the election of the President of India Legislative Council Upper House Composition The membership of the Legislative Council is not more than one-third of the membership of the Legislative Assembly The number of Members in the Karnataka Legislative Council is A few Members are nominated by the Governor Others are elected by the Members of the Legislative Assembly Local Bodies Registered Graduates and Teachers The M L Cs are elected for a term of six years They should not be less than years of age The State Executive The State Executive consists of the Governor of the State the Chief Minister and his Council of Ministers Generally its composition and functions are similar to the Union Executive The Governor The Governor is the Constitutional Head of the State Executive But in actual working the Chief Minister is the chief executive The President nominates the Governor whose term of office is five years Qualifications of the Governor Should be a citizen of India Should have completed years of age Should not be a Member of either Parliament or State Legislature Powers of the Governor The Governor appoints the Chief Minister and on his advice appoints the rest of the Ministers The bill approved by the legislative houses needs the Assent of the Governor to become a Law When the President dissolves the State Government and imposes the President’s rule in the State and the Governor takes charge of the administration of the State The Chief Minister The Chief Minister is the Head of the State Government The Governor appoints the leader of the party or the group that gains majority in the election for legislative assembly as the Chief Minister The Chief Minister’s powers and functions The Governor appoints the Ministers on the advice of the Chief Minister The Chief Minister has the power to allocate the Departments to the Ministers or change the Departments The Chief Minister has the power to drop the Ministers He plays an important role in maintaining good relationship between the Centre and the State Our Judiciary The qualifications and the functions of the Chief Justice of the Supreme Court and the Chief Justice of the High Court; and the functions of the Subordinate Courts and the Lok Adalat are explained Competencies Understanding the role of the Judiciary in the administration of the State Understanding the Indian Judicial system Understanding and Collecting information about courts at different levels The independent system that interprets law and passes its judgment is called Judiciary Law and Judiciary play an important role in administration of the state The functions of the courts The courts interpret the laws framed by the Legislature They give judgments relating to disputes between individuals; and between individuals and the Government They perform the important task of protecting the life property dignity and rights of the citizens The courts are not controlled by either the Legislature or the Executive; they function impartially and independently The Supreme Court Under our Constitution we have a common judicial system for the entire country This promotes national unity The highest court of law in India is the Supreme Court It consists of the Chief Justice of India and other Judges They are all appointed by the President of India The Supreme Court is in New Delhi The High Courts The High Court is the highest court of law in a State The High Court of Karnataka is in Bengaluru It consists of the Chief Justice and other Judges There are High Courts in our country Qualifications of a High Court Judge Must be a citizen of India; Must have served under the Indian Judiciary for at least ten years; or Must have served as an advocate of the High Court for ten years Introduction In this chapter the meaning and definition of human rights its importance and types of human rights are provided Competencies Understanding the meaning of human rights Understanding the importance human rights Understanding different types of human rights Understanding the Children rights Meaning and Importance of human rights The Human Rights are the opportunities provided for an individual to live a life of dignity and have space to evolve as individual The opportunities provided for an individual to live with equal opportunity freedom to express with dignity is called Human Rights All human beings are eligible for independent living and they can never be restricted for any reason The Human Rights concept evolved along with the Human Rights Rights are necessary for a human being to live as a full individual To lead a life of dignity is a basic right Moreover the human rights are non discriminatory The Human Rights gained importance along with the increase in democratic governments of the world Many countries of the world included the Fundamental Rights in their Constitution in order to protect Human Rights With this development the Citizens got an opportunity to experience fundamental rights Later due to two world wars the human rights were violated and the exploitation for socio economic and political reasons became more This made the governments to form standardized yardsticks to provide a life of dignity to their citizens As a result of this process the General Assembly of the United Nations Organization UNO accepted the Human Rights that were prepared by experts in the field on December Types of Human Rights The Human Rights approved by the UNO accepts that human beings are born free with dignity to live irrespective of race religion language colour of the skin and others No discrimination can be made on these issues There should be a feeling of fraternity in one No human being can appoint another human being as his slave No one can be subjected to inhuman punishment and torture No one has the liberty to arrest imprison and deport another person Every individual has a right to have his opinion and the freedom of expression All individuals have the right to have rationality consciousness and religious freedom One has the right to change his religion in accordance to this faith All have the right to meet peacefully and create associations No one can force others to join an association All have the right to participate in the government of their land either directly or indirectly Right to Employment Everyone has the right to have equal pay duration of work paid leave and rest And also have the right for food shelter cloth health protection and necessary social services All have the right for free and com pulsory primary education Child Rights The Child Rights are included under the Human Rights All children need certain facilities naturally Every child has the right to spend its childhood with its parents and have physical protection food education and health facilities as its right The children have the right to have civic rights without any discrimination based on physical disabilities religion race colour of the skin and sex Indian Constitution has mandated compulsory and free education for children below the age of fourteen A situation where children stay out of school and engage in labour is a violation of Child Rights Child labour is a violation of Human Rights Whether the labour is paid or unpaid it becomes child labour The Child Labour Prohibition Act According to this Act a child below the age of fourteen years age cannot be employed in any kind of labour Any person who hires such children for labour is liable for im prisonment of one year or fine or both Major employments which are prohibited under Child labour system Works and civil works related to railways automobile workshops and garages looms mines units dealing hazardous chemicals and explosives hotel and bars entertainment places circus glass making units beedi making polish works carpet weaving and units that produce cement gums paint match boxes crackers soaps lead mercury tyre and insecticides It is punishable crime to use children in these units of production Protection of Human Rights The Human Rights Women Rights and Child Rights are crucial for healthy human life Since human rights are violated often measures are needed to protect them International Human Rights Commission at international level National Human Rights Commission at National level and State Human Rights Commission at state level are monitoring human rights violations and protecting them As a complement to this a healthy environment is needed for all to lead a good life Only healthy natural environment can ensure food water shelter and health of all Hence the UNO declared that the Protection of Environment is also a Human Right in the year It is the duty of the governments to implement this right effectively Introduction Study of location extent and physical setting Physiographic and climatic divisions Natural vegetation farming dairying and fishing Mineral and industries Population growth distribution and density of Europe Competencies Understanding the location size and physical setting of Europe Identifying the physical and climatic divisions of Europe Understanding the influence of climatic regions on natural vegetation Knowing how the minerals determine the industries of Europe Interpreting the factors affecting the uneven distribution density and migration of population Introduction Europe is one of the most densely populated and urbanized continents of the world It is also a prosperous and highly industrialized continent In area it ranks sixth among the continents It has a complex and diverse physical setting and socio-cultural and political situation Europe has large and small countries Location Extent and Physical Setting Location Europe lies between West and East longitude and from North to North latitude Extent Europe including the European portion of Russia is the second smallest continent with a total area of million Km It is about three times the size of India This continent occupies about of the Earth’s surface but it has a quarter of the world’s total population Physical Setting Europe is a peninsula of Asia Water bodies surround Europe on three sides to the north is the Barents Sea to the west is the Atlantic Ocean and to the south is the Mediterranean Sea To the east of Europe lies the continent of Asia which is separated from it by the Ural mountains the Caucasus mountains and the Caspian Sea To the south of it lies Africa The above mentioned boundaries are not barriers between the Asia and Europe Hence together Asia and Europe are known as Eurasia Physiography The physiography of Europe is unique The western and southern parts are mountainous characterized by snow covered peaks gorges valleys plateaus and plains But the eastern part of the continent consists largely of a stable platform with limited change in relief The highest point of Europe is Mt Elbrus mt in the Caucasus mountain The lowest point of the continent is the shore of the Caspian Sea which is meters below sea level Actually Europe is a large peninsula of the Asiatic land mass It has numerous peninsulas such as the Scandinavian the Iberian the Jutland the Balkan Peninsula Thus very often Europe is known as the ‘Peninsula of Peninsulas’ Europe has a highly indented irregular coastline of km which is longer than that of Asia Thousands of islands lie off the coast of the continent Two of the largest islands are Britain and Ireland Other important islands are Shetland Foeroes Orkneys Sicily Sardinia Corsica Crete and Channel island Physiographic Divisions On the basis of topography the continent of Europe is generally divided into four major divisions They are The Northwestern Highlands The North European Plains The Central Uplands The Southern Mountains The Northwestern Highlands This region includes the oldest mountains located in Finland Sweden Norway and extending to Britain and Iceland These are really the relic mountains which have undergone glacial erosion and become low mountains They are made of ancient rocks The general elevation is m in Scandinavia and m in Ireland and Scotland Goldho Piggen m in Norway is the highest peak in Northern Europe The Ben Nevis m in Scotland and Snowdon m in Wales are the other peaks This region has gentle slope in the north and are crossed by many rivers The North European Plains It is also known as the Central Lowlands It extends from the Ural Mountains in the east to the Atlantic Coast in the west It occupies a greater part of Europe It includes European Russia Poland Northern Germany the Netherlands Holland Denmark Belgium Northern France and the eastern parts of England It is broad in the east and narrow in the west In the Netherlands and Belgium some parts of this plain are below sea level It is a depositional plain formed by the deposition of sediments brought by various rivers This region is not flat like the Indo-Gangetic plain of India In certain places there are gently rolling areas and at other places it is broken by low mountain chains and hills It has some of the world s most fertile farmlands The Central Uplands This upland consists of old rocks eroded old mountains hills and high plateaus Their average height is not more than mt above the sea level The uplands extend from Ireland in the west to Russia in the east They include the Meseta plateau in Spain and Portugal the Massif Central and Vosges in France the Black Forests in Germany and several low ranges in Czech and Slovakia Republics Some parts of this region are forested Most of the land is rocky and has poor soil for farming But river valleys provide the best farm lands The Southern Mountains They are also known as the Alpine Mountain System It includes several mountains the Sierra Morena in Spain as well as the Pyrenees which form the boundary between France and Spain These mountains run parallel to one another from the Atlantic Coast in the west to the Caspian Sea in the east They are young folded mountains like the Himalayas The famous Alps are the most important Mount Blanc is the highest peak m in the Alps The Alps cover parts of Southeastern France Northern Italy most of Switzerland and a part of Germany Austria and Slovania The Apennines cover much of Italy the Dinaric Alps cover Croatia Bosnia and Yugoslavia and the Balkans of Bulgaria the Carpathians are in Northern Slovania Climatic Regions and Natural Vegetations Most of the continent of Europe has Temperate Climate The main factors affecting the climate are latitude relief winds and position However the winds that blow across the continents from the Atlantic Ocean have great effects on the climate of the continent This is because of the Gulf Stream a warm ocean current and also the strong westerlies In general Northern Europe has longer but colder winter and shorter but cooler summers than Southern Europe The winters are also longer and colder and the summers are shorter and hotter in the east than in the west Climatic regions Europe can be divided into four climatic regions Maritime Northwest Europe This climatic region extends from the coast of Norway to northern Spain and inland towards Central Europe The mild winters cool summers and ample rainfall cloudy and foggy days are the main characteristics of this type of climate There is moderate temperature in both summer and winter C and C and well distributed rainfall cm Continental Climate This climate mainly prevails in Poland Slovakia Czech Republic Hungary Romania and Bulgaria This climate is characterized by cold winters and warm summers C and C The average rainfall is cm Rainfall is maximum in early summer as convectional rain Mediterranean climate This type of climate is characterized by hot dry sunny summers and mild winters with some rain The average winter temperature is C and summer temperature is C The average annual rainfall varies from to cms This type of climate is mainly found in southern-most part of Europe adjoining the Mediterranean Sea Mountainous Climate The Alps and Caucasus mountains have this type of climate It is controlled by altitude angle of the sun rays and winds The temperatures range from c in winter to C in summer The average rainfall is cm on the leeward side and above cms on the windward side of the mountains At high altitudes the temperature is below freezing point Natural Vegetation Europe has been occupied by man for a long time and is very densely populated Hence the natural vegetation has been almost entirely removed except in the higher and more unfavourable areas There are six types of vegetation in Europe as given below Tundra vegetation consists of lichens and mosses It occupies a narrow zone in Iceland and northern parts of Norway Sweden and Finland Vegetation of similar type is found at higher altitude in the Alps and northern Urals Taiga forests is also called Coniferous It occurs mainly in high latitudes covering Norway Sweden and Finland Only a few varieties of trees are found here e g Scots pine spruce and larch They are cone shaped trees and have needle-shaped leaves Mixed forests are found in the south central regions These include deciduous and coniferous trees The main species are oak ash elm poplar willow beech Mediterranean vegetation is common along the Mediterranean Sea coast This is broad leaf evergreen type The trees do not shed their leaves in autumn Trees of this type include the cork oak olive laurel Grasslands are found in the areas south of the deciduous forests e g in Hungary Bulgaria Romania and European Russia It is scattered wooded and steppe type grass Alpine vegetation covers the highlands of Southern Europe such as the Alps Pyrenees Balkan Carpathian and the Dinaric mountains Farming Dairying and Fishing Farming Agriculture is still a very important occupation in Europe even after industrialization The continent is fortunate in having a vast level fertile and well irrigated land The climatic condition is also favourable for agriculture Most of the countries have more than of their land under farming except the Scandinavian countries The average size of holdings in Europe is hectares Mixed farming is practised in West European countries It involves the cultivation of crops and the keeping of livestock The arable land is used for growing fodder crops for cattle poultry farming piggery and the growing of a variety of fruits and vegetables The cultivation of food grains is also very important Intensive farming is practised In southern Europe because of Mediterranean climate the type of farming is different There is a combination of cereals fruits vegetables and livestock farming Depending upon a vast market specialized type of farming has developed The agriculture is commercial and well organised near densely populated urban areas On the whole less than of the people are engaged in agricultural activities Depending upon relief soil and climatic conditions the availability of market and farm labour a great variety of crops are grown in different parts of Europe Wheat is the important staple food crop of Europe The Paris basin the great plains of Europe the plains of Hungary the lowland countries and the Po river basin in Italy are the main wheat producing areas of Europe Maize is the second major cereal crop of Europe France Romania Italy Hungary Germany and Spain are the major producers of maize Rye is another food crop which is largely used for making bread and liquor The leading producers of rye are Poland Germany Czech and Slovakia Republics Europe is an important producer of barley It is used as food grain feed for cattle and for liquor Oats is also grown in some nations Rice is grown to a small extent as a summer crop Sugar beet and potatoes are the two root crops of Europe Sugar beet is used both for the production of sugar and as fodder for cattle Potatoes grown mainly in the plains of Central and Eastern Europe Europe is leading producer of potatoes in the world Flax is the fibre crop of Europe Fruits such as grapes apples figs oranges lemons plums pomegranates chestnut are grown on the hill slopes Bulgaria is famous for roses vegetables and horticultural crops Dairying It is highly organised in the mixed farming system of Europe The cool humid climate dense urban population good means of rail and road transportation great bio-technological development refrigeration mechanization of commercial dairying and ample pastures have encouraged the development of dairying in Europe Dairying is greatly developed in Denmark the Netherlands Switzerland Germany and Britain But Denmark is more important for dairying The European countries export their dairy products e g cheese condensed milk butter chocolate Fishing Throughout history fish has been an important part of European diet Fishing is particularly important in the shallow seas The main fishing grounds are near North West Europe They extend from northern part of Arctic circle to Mediteranian sea The most intensively fishing region is the North Sea and the countries include Norway Britain Denmark Sweden and Germany The two most famous fishing grounds of the North Sea are the Dogger Bank and the Great Fisher Bank The people of Norway are great fishermen Seals and whales are caught in the polar regions Norway is the largest producer and exporter of fish in Europe The shortage of farm land and food grains have encouraged fishing in Europe Minerals Europe has a variety of minerals and power resources Europe produces a large amount of iron ore Nearly all European countries have iron ore reserves It has ore resources of the world France Germany Spain Britain and Sweden are the outstanding iron ore producing countries Copper is mainly produced in Bulgaria and Poland Europe is poor in petroleum and natural gas The major oil producing areas of Europe are the North Sea France Italy the Netherlands and Germany Coal is the major source of power in Europe Its deposits are found all over the continent except in Scandinavian and the Mediterranean countries High quality of bituminous coal is found in European Russia Germany and Britain Bauxite and Potash are also found in same places Important Industries Iron and Steel Industry Modern age is the age of iron and steel This heavy industry produces iron and steel which is basic for a large number of subsidiary industries The important iron and steel producing areas are Germany Ruhr Saar Weser river basins and Berlin area; Britain Black country Sheffield North-eastern Coastal and South Wales area; and France Lorraine North Western and Eastern border areas and upper Silesia of Poland Po Valley and Lombardy plain of Italy Cotton Textile Europe has also developed many agro based industries Cotton textile industry is one of them It is widely distributed throughout Europe using raw cotton which is imported from other countries Britain is the birth place of modern cotton textile industry Lancashire Cheshire and Derbyshire are important centres of cotton textiles Germany and France are other major producers of cotton textiles Britain Germany France Belgium and Italy are famous for high quality silk and woollen textiles and synthetic fibres Ship building This is a branch of heavy engineering and essentially an assembling industry The main favourable factors for ship building are technological excellence good harbour sites industrial progress Germany is Europe’s leading ship building country Sweden Britain and France are the other ship building countries of Europe Automobile Industry The industry includes manufacturing of cars trucks buses scooters and any other vehicles which are run with a motor engine Automobile industry is an assembling industry It is highly technical and expensive industry Germany France Italy and Britain are the major producers of automobiles in Europe Major Industrial Regions of Europe There is a sort of triangle in which the major industries of Europe are located It is known as the Industrial Heart of Europe This triangle extends from the North Sea to the middle of Poland and from the Po valley of Italy in the South to Sweden in the north Following are the industrial regions of Europe The Industrial Regions of Britain The Western Triangular Industrial Region The Paris Industrial Region known as the Industrial Heart of Europe The Lorrain-Saar Industrial Region The Upper Rhine Region Eastern Germany to North-West Czech and Slovakia The Upper Silesia includes Western Poland and middle part of Czech Republic area Southern Scandinavia consists Stockholm Northern Italy situated in Po Valley Population The population of Europe is quite large as compared to its size It has of the world’s land area excluding Russia but has one fifth of the world’s population Its total population is million The population is mostly urban Distribution The pattern of population distribution in Europe is not uniform The most populous countries are Germany Britain Italy and France Northwest Europe has low density of population The Alps Caucasus and the semi dry land of the South Eastern parts are also sparsely populated The densely populated countries among the countries of Europe are Belgium Luxemburg the Netherlands This is due to industrialization transportation facilities natural resources and technological progress Growth European countries are characterized by low and declining growth of population The growth rate varies from place to place Migration During the last years some Europeans have left for the other countries And the people of other countries have migrated to Europe for various reasons and settled here After the Second World War people from other continents and countries started immigrating to the Britain Most of the immigrants have been Italians Germans had migrated to many countries before the Second World War Germans can be seen as a minority in Poland Hungary Romania Czech and Slovakia Republics and Yugoslovakia Density The average density of population in Europe is persons per km The Density of Population varies in Europe High developed netherland contents persons per km It is only persons per km in Iceland High density of population is found in lowlands of North Europe The most densely populated areas in Europe are the industrial districts Belgium and German coal fields the Greater London the Netherlands the Rhine Valley North Italy and the coastlands of Spain The sparsely populated areas are Central France mountainous areas Balkan belt and the highlands of Scotland New terms Alpine Alps automobiles flax foggy maritime Massif Meseta migration peninsula textiles Let's know Scandinavia region of North Europe usually defined as comprising of Norway Sweden and Finland Britain or Great Britain is the largest island in Europe comprising of England Scotland and Wales With Northern Ireland it constitutes the United Kingdom UK For more than years Europe has been the heart of the world Black Forest is not a forest it is a mountain region in southwestern Germany Its name comes from its dark interior the higher parts being thickly forested Discuss in groups and answer What is the geographical location of Europe Europe is known as a Peninsula of Asia Why Name the physiographic divisions of Europe Mention the names of important mountains and peaks in Europe What are the major climatic regions of Europe Mention the major types of natural vegetation of Europe Name the countries which are famous for dairying in Europe What are the staple food crops of Europe Mention the major fishing grounds in Europe Mention the important minerals in Europe Introduction Study of location extent and physical setting of Africa Physiography of the continent Water resources Rivers Climate natural vegetation and animal life Agriculture and industries Precious minerals Growth distribution and density of population Competencies Understanding the location size and physical setting and physical divisions of Africa Highlighting the major river systems climatic regions natural vegetation and animal life of Africa Describing agriculture industries and precious minerals Knowing the growth distribution and density of population Introduction Africa is the second largest continent after Asia It is also second in respect to population It was called dark continent not because of the predominance of black people Negroes but because of the obstacles to explorate its interior The plateau rim extends to the coast and in the north the Sahara desert was a forbidable obstacle to reach the interior There are countries in Africa Location Extent and Physical Setting Location Africa lies between North and South latitude and West and East longitude It is very interesting to note that the Equator almost passes through the centre of Africa Hence it is known as the Central Continent Both the Tropic of Cancer and the Tropic of Capricorn passes through Africa The prime meridian cuts across Africa on its western side Extent The total area of Africa is million km The continent measures about km from north to south and about km from east to west Its northern extremity is Al-Ghiram point Tunisia while its southern-most point is Cape Agulhas South Africa Physical Setting Africa is bounded on the west by the Atlantic Ocean on the north by the Mediterranean Sea on the east by the Red Sea and the Indian Ocean In the northeast Africa is joined to Asia by Sinai Peninsula though it is now separated by the Suez Canal Africa is separated from Europe by the Strait of Gibraltar and the Arabian Peninsula by the Red sea The coast line of Africa is Km long Physiography The physiography of Africa is largely a reflection of its geological structure The whole continent can be considered as a vast plateau made of ancient crystalline rocks It rises steeply from narrow coastal fringe Hence it is difficult to enter the interior of the continent The plateau is higher in the southeast and slopes gently towards northeast When compared to its size Africa has fewer high mountains and fewer lowlands than any other continents The coast line of Africa is almost straight and it includes a few large basins estuaries and natural harbours There are no bays and inlets that cut deeply into the coast The Great Rift Valley A flat-bottomed valley formed by the sinking of the land between two normal faults or deep slopes is called Rift Valley The rift valley of Africa Map is long km and therefore known as the Great Rift Valley It is in Y-shaped and is one of the most striking and distinct topographical features of Africa It stretches from Mozambique in the south through Malawi Tanzania Kenya and Ethiopia into the Red Sea Gulf of Aquaba the Dead Sea the Sea of Galilee and ends in the Valley of Jordan in Syria The Basins of Africa There are five important basins in Africa They are as follows The Sudan basin is drained by the White Nile and Blue Nile rivers This is world’s most extensive marshland known as Sudd The Chad basin is occupied by Lake Chad This basin is a swampy area and the Sahara desert encroaches upon it The Djouf basin consists of Western Sahara Desert and is found along Mauritania-Mali boundary It is drained by River Niger The Congo Zaire basin is a great structural basin and occupied by a plateau River Congo and its tributaries flows across it It is a forested area The Kalahari basin is mostly a desert and steppe area It is surrounded by plateau rims Lakes Africa has numerous lakes of great economic potential There are eight large lakes These lakes are of aesthetic attraction to the tourists The largest and deepest lakes are found in East Africa These lakes are generally associated with the Great Rift Valley Lakes Albert Edward Kivu Tanganyika and Nyasa lie to the west of the rift valley And lakes Rudolf Turkana Natron and Eyasi are to the east of the rift valley Lake Tanganyika is the second deepest lake in the world It is about m deep Lake Victoria which lies between the two limbs of the Great Rift Valley is the largest lake of Africa with an area of km River Nile has its source from it Mountains The continent of Africa does not have many mountains However some small ranges break the monotony of the flatness of Africa Atlas Range Drakensberg and Kilimanjaro range are major mountains of Africa Atlas range These are fold mountains like the Himalayas and a continuation of the mountains of southern Europe They stretch across parts of Algeria Morocco and Tunisia Its highest peak is Mt Toubkal Drakensberg mountain They are found along the southeastern coast They are not true mountains but the tilted edge of the plateau Kilimanjaro range It is inEast Africa It has the highest peak of Africa with a height of m Although situated close to the Equator its peak is always snow covered because of its great height Besides these the Ahaggar the Tibesti the Ruwenzori the Cape range and the east African mountains are other mountain ranges in Africa The highest point of Africa is Mt Kilimanjaro and lowest point is Lake Assal Djibouti Isthmus of Suez A narrow strip of land joining two large landmasses is called Isthmus The isthmus of Suez is very important It lies between the Mediterranean Sea and the Red Sea linking the continents of Africa and Asia It is located in Egypt Africa and the famous Suez Canal is cut through it This is the biggest man made canal linking the Mediterranean Sea and Red Sea The suez canal is one of the busiest ocean routes in the world and connecting Europe with Asia by short distance Water Resources Rivers of Africa The river systems of Africa have their its own peculiarities Most of the rivers have cut deep gorges in their upper courses There are water falls rapids Many rivers are nonperennial due to seasonal variations in rainfall This makes river navigation difficult Few rivers are perennial Inland rivers are many Africa has four mighty rivers the Nile the Congo the Niger and the Zambezi the Senegal the Orange and the Limpopo are the other important rivers of Africa The Nile The Nile is the longest river in the world with a length of km It originates in Lake Victoria as White Nile flows northwards through the Sahara Desert and empties into the Mediterranean Sea The basin of the Nile is very fertile It provide life for millions of people who use its water for irrigation Its major left bank tributary is the Al-Ghazal and the largest right bank tributaries are the Sobat Blue Nile and Atbara The Blue Nile rises in Lake Tana in Ethiopia and joins the White Nile at Khartoum Among the dams constructed across river Nile the longest is the Aswan dam The Nile forms the world’s famous delta The Congo Congo Zaire is the second longest river in Africa The people of Africa call it by different names At its head waters it is called Luapula and elsewhere it is known as Lualaba It flows for about km across the middle of Africa through the huge equatorial forest It empties into the Atlantic Ocean without creating a delta It has the famous Livingstone Falls The Niger It is the third longest river in Africa The source of this river is in the highlands on the West Coast It also empties into Atlantic Ocean It is non-perennial river It is about km long The Zambezi It is the fourth longest river in Africa and one of the major rivers in the southern part of Africa It rises in central Africa and flows southeastwards It empties into the Indian Ocean It has numerous rapids and waterfalls along its course The most spectacular of which is the Victoria Falls The river flows through many deep gorges of which Kariba Gorge is the most famous This river is about km long The Senegal river rises in the Fouta Djallon plateau of Guinea Then it flows northwestward for about km and joins the Atlantic Ocean It marks the border between Mauritania and Senegal Climate Natural Vegetation and Animal Wealth Climate Africa is called central continent It lies both in the Northern and the Southern hemisphere The Equator passes through the middle of the continent and divides Africa into two parts Because of the direct rays of the sun the climate of Africa is predominantly tropical A number of factors influence the climate of Africa i e ocean currents the absence of mountains east-west extent and location The cold ocean currents that flow along the western Sahara Canaries current and on the western coast of the Kalahari Benguela currents modify the temperature of the adjoining coastal lowlands These two cold currents do not pick up much moisture But the southeast coast is washed by the warm Mozambique current would carry more moisture and causes rainfall The absence of high mountains and other weathers divides permit the free circulation of tropical air Hence change in climate occurs very gradually Rainfall also plays a dominant role in Africa’s climate Rainfall is heaviest along the Equator Here the mean annual rainfall exceeds cm and decreases away from the Equator In the Sahara the Kalahari and the Namibia deserts the rainfall is only cms whereas Cameroon is the wettest place of Africa with cm of rainfall Climatic Regions On the basis of climatic condition Africa can be divided into eight climatic zones They are given below The Wet Equatorial Climatic Region The Savanna Type Climatic Region The Tropical Desert Climatic Region The Mediterranean Climatic Region The Temperate Grassland Type The Highland Climatic Region Humid Sub-tropical Climatic Region Dry winter Subtropical Region The Wet Equatorial Climatic Region It is found in the low lands on either side of the Equator and extends from the Congo basin to Guinea The climate of this region is hot and wet throughout the year There is heavy downpour of rain every afternoon Rain is of convectional type Hot and humid conditions result in unpleasant climate The Savanna Climatic Region It covers parts of Somalia Ethiopia Sudan Chad and Niger Because a large area of Sudan is in this region it is also known as Sudan type It has high temperature and heavy rainfall in summer Temperature is lower in the eastern highlands than in the lowlands The Tropical Desert Africa’s Northern and Southern hemispheres have deserts In this region summers are hot and winters are cool There is great difference between day and night temperature than between summer and winter seasons Climate is too dry Rainfall is scanty There are rarely any clouds The Mediterranean Climatic Region Northern coast and southern tip of Africa has this type of climate It includes Morocco Northern Algeria and Cape Province It is hot and dry in summer and wet in winter This is the only climatic region which gets rain only in winter The Temperate Grassland Region It is also known as High Veldts In Dutch Veldts means field It is situated in the interior of South Africa Because of the distance from the sea it experiences great difference between the summer and the winter temperature Summers are hot and winters are cold both seasons have scanty rainfall The Highland Region This region is found in the Ethiopian highland and East Africa Due to high elevation the climate is cooler in this region Rainfall is scanty and occurs mainly in summer Humid Sub tropical Region It is situated along the Drakensberg mountains and extends upto the coast including Madagascar Summers are very hot and rainy where as winters are wet and dry Dry Winter Sub tropical Region It is found in South east Africa Summers are hot and wet whereas winters are mild and dry Rainfall is similar to that of the Wet Equatorial Climate But temperatures are modified by altitude and frost Natural Vegetation There is great diversity in the natural vegetation of Africa because of differences in climate soil topography and interference of human beings In many parts of the continent natural vegetation has been modified by human interference Most of the forests and grasslands have been cleared and burned for many purposes So at present in Africa natural vegetation is not all natural Due to the hot and wet climatic conditions the Equatorial region has dense forest Trees grow to greater heights The salient characteristics of Equatorial evergreen forests are its broad leaves and epiphytes Individual species of trees are scattered but among them are valuable tropical hardwood tree such as rubber rose wood ebony cinchona oil-palm teak and silk cotton Mangrove swamps clog many estuaries To the north and south of the Equatorial evergreen forests are the Savannas with their acacia trees and baobabs As a rainfall decreases the Savannas give way to scrubby grassland thorn bush and eventually in the Mediterranean climatic zone to pine juniper cork cedar and olive trees Mountain vegetation is found in the higher parts of the plateau and desert vegetation is mainly found in the Sahara and the Kalahari deserts The Karoo area of South Africa is famous for shrub land A special type of vegetation called Sudd means barrier is found in the river valleys of the Nile and other rivers Animal Wealth Africa is best known for the enormous diversity and richness of its wild life This is due to the great variation in climatic conditions soils relief features forests and land connections with Asia and Europe The rain forest is the home of many animals Chimpanzee a variety of monkeys Gorillas Bison Leopard and other hoofed animals are found here Crocodiles and Hippopotamus are found in rivers swamps and bright colourful birds e g kingfishers ostrich shoebill eagles are commonly found here The zebras wilder beasts giraffes rhinoceros elephants impala cheetahs and African lions are found in the tropical grassland A large number of aquatic life is also found in Africa In desert areas scorpions lizards desert fox various kinds of insects donkeys horses and addax are found The camel is the most important and the best known desert animal It is often called the ship of the desert Ostrich This is the native species of South Africa Ostrich found in the plains and the Kalahari desert and is the largest living bird Its egg is large It cannot fly But it is the fastest running bird It is the only bird that has only two toes on each foot Agriculture and Industries Agriculture is one of the most important economic activity in many countries of Africa Nearly per cent of the work force is engaged in agriculture Other than the Equatorial region agriculture in most of the countries of Africa is of subsistence type The use of modern gadgets like machines chemical fertilizers and pesticides is limited Most of the agricultural activities are done by manual labour The yield per hectare is also low The staple food crops occupy most of the cultivated areas Maize millets rice cassava sweet potato peanuts and starch crops dominated the cropping pattern Plantation agriculture is important in the countries with Equatorial climate Coffee for example is a major export item of Burundi Cocoa of Cote-D-Ivoire Ghana and peanuts of Gambia Other major cash crops includes cotton sugarcane banana tea oil-palm tobacco and citrus fruits These are produced on large estates and plantations The countries of Sahel Senegal Mauritania Mali Niger Chad Northern Sudan Ethiopia and Somalia frequently suffer from droughts and starvation Africa has large varieties of fruit crops In the tropical and Mediterranean regions citrus fruits like olives lemon orange grapes are common In East Africa cashew trees are grown Zanzibar islands and Tanzania are the largest producers of cloves Maize is the only cereal which is important here Rice and sugarcane are grown in small areas Cash crops like coffee palm tree groundnut are grown in Central Eastern and other parts of Africa Coffee has been cultivated in Ethiopia for thousands of years Egypt produces good quality cotton Commercial cattle rearing is most advanced in the areas of European settlements such as South Africa Kenya and Zimbabwe Africa possesses about of the total cattle population Reasons for the backwardness of agriculture in Africa are old methods of farming which is purely subsistence in nature outdated implements illiteracy tribalism lack of capital and foreign investment Industries Reasons for poor development The continent of Africa is rich in water forest and mineral resources But the distribution of these resources is however not uniform The economy of most of the countries is agrarian in character The process of industrialization is slow In fact up to the middle of the last century the resources of Africa used to be drained from Africa by the Europeans This is the major reason for the poor development of industries The countries in which the process of industrialization has accelerated during the few decades are Zimbabwe Nigeria Egypt Algeria and South Africa The inadequacy of infrastructural facilities insufficient capital technology unskilled labour force a small purchasing power and political turmoil are the main barriers in the development of the industrial sector in most of the African countries After achieving independence most of the African countries have concentrated on light industries including textile pharmaceuticals food processing leather products and beverages Heavy industries including manufacture of petro-chemicals iron and steel rubber products and cement are concentrated in South Africa There are integrated iron and steel plants in Algeria Tunisia Egypt and Zimbabwe Other industries of Africa include electric motor transport equipments tractors and battle aeroplane assembling Precious Minerals Gold and Diamond Africa is very rich in minerals It is the world’s largest producer of diamond gold and platinum Diamonds Nearly of the diamonds found in the world come from Africa Botswana Zaire and South Africa are the producers The other leading producers of diamond are Angola Namibia and Ghana Diamonds are divided into two types Gem diamonds and industrial diamonds Industrial diamonds are mainly used for abrasive purposes and cutting tools Gold South Africa has about half of the gold reserve of the world The main area is Witwatersrand Transvaal and in Orange Free State More than of the world’s gold production comes from South Africa Zimbabwe and the Democratic Republic of Congo Population Growth Distribution and Density Africa is considered as the birth place of human beings and the use of tools According to the anthropologists and scientists the Homosapiens appeared for the first time in the continent of Africa to the east of Lake Victoria in Kenya and Ethiopia At present Africa has people of diverse races and ethnic groups In fact Africa contains mostly Negroid race and its sub groups It has also many different people of Negroids and their languages and cultures Nearly million people live in Africa Nigeria Egypt Ethiopia Zaire and South Africa are the most populous states The death rate has declined in most of the countries of Africa during the last few decades due to improvement of food and medical facilities and sanitary conditions But the birth rate is fairly high Consequently there is explosion of population The population of Africa is now increasing at a rate equal to or perhaps slightly above the average for the world as a whole In some of the countries like Ethiopia Somalia Chad Niger Mali the life expectancy is even less than years The outstanding feature of the population of the continent is that it is most unevenly distributed The highest densities occur along the coast of the Gulf of Guinea in the lower valley of river Nile Egypt in the highlands of East Africa and Madagascar along the northern coast and in the urban and mining areas of South Africa Zimbabwe and Zaire The lowest densities are found in the deserts high mountains and thick equatorial forests In the deserts of Sahara Liberia and Algeria the density of population is persons per km The People of Africa belong to four groups Pygmies Bushmen and Masai who live to the South of Sahara desert The Arabs who live in North Africa The Indians who live in South Africa and East Africa The Europeans who live in the fertile land of river basins Let's know Though the Nile river flows mostly in the Sahara Desert the water never dries up in its course because of plenty of rain in its catchment areas The Sahara is the largest desert in the world covering northern part of Africa The highest temperature recorded has been c in El Azizia Libya Addax is a kind of antelope with long and twisted horns It never drinks water It gets water from the plants and the food its eats The Baobab tree is a bottle shaped tree The trunk of this tree is swollen to store water It can store water from litres Thirsty travelers often drink waters from this tree Africa produces of the world's coffee More than of world cocoa is produced by Africa Pygmies are among the shortest people in the world They live in the Congo basin Africa has the highest fertility rate and the lowest life span in the world There are more than languages in Africa Africa is rural in nature It is the least urbanized Continent What did you eat at home today Find out what your friend ate today Did you eat the same kind of food yesterday and today We all eat different kinds of food at different times isn’t it Activity Ask your friends in the school about the items they would be eating during a day See if you can also get this information from friends staying in different states of India List all the items in your notebook as given in Table for as many friends as possible There seems to be so much variety in the food that we eat What are these food items made of Think about rice cooked at home We take raw rice and boil it in water Just two materials or ingredients are needed to prepare a dish of boiled rice On the other hand some food items are made with many ingredients To prepare vegetable curry we need different kinds of vegetables salt spices oil and so on Activity Choose some of the items you listed in Table and try to find out what ingredients are used to prepare these by discussing with your friends and elders at home List them in Table Some examples are given here Add some more items to this list Activity Let us take the food items listed earlier and try to find out where they come from the ingredients and their sources Some examples are shown in Table Fill in the blanks in Table and add more examples to this list What do we find Do we find some ingredients common for different food items Discuss in class So where do these ingredients come from It may be easy for us to guess the sources of some of the ingredients that we listed in Table Fruits and vegetables for instance a Where do they come from Plants of course What are the sources of rice or wheat You may have seen paddy or wheat fields with rows and rows of plants which give us these grains And then there are food items like milk eggs and meat which come from animals b flowers dipped in rice paste and fried Try it Some plants have two or more edible eatable parts Seeds of mustard plants give us oil and the leaves are used as a vegetable Can you think of the different parts of a banana plant that are used as food Think of more examples where two or more parts of a single plant are used as food What do we conclude from Activity Plants are the sources of food ingredients like grains cereals vegetables and fruits Animals provide us with milk meat products and eggs Cows goats and buffaloes are some common animals which give us milk Milk and milk products like butter cream cheese and curd are used all over the world Plants are one source of our food Which parts of a plant We eat many leafy vegetables We eat fruits of some plants Sometimes roots sometimes stems and even flowers Have you ever eaten pumpkin Paheli wants to know if any of our food comes from sources other than plants and animals Activity From all the food items you have listed in Table choose those items whose ingredients are obtained from plants Which part of a plant Identify these and list the food items and plant parts as shown in Table Activity Take some dry seeds of moong or chana Put a small quantity of seeds in a container filled with water and leave this aside for a day Next day drain the water completely and leave the seeds in the vessel Wrap them with a piece of wet cloth and set aside The following day do you observe any changes in the seeds covered with a wet cloth The next day see if the seeds have sprouted After washing these sprouted seeds you can eat them They can also be boiled Add some spices and get a tasty snack to eat Do you know where honey comes from or how it is produced Have you seen a beehive where so many bees keep buzzing about Bees collect nectarnectar nectar sweet juices from flowers convert it Do not try to taste unknown plants around you to see if they are edible Some plants could be poisonous A small white structure may have grown out of the seeds If so the seeds have sprouted sprouted sprouted and If not wash the seeds in water drain the water and leave them aside for another day into honey and store it in their hive Flowers and their nectar may be available only for a part of the year So bees store this nectar for their use all through the year When we find such a beehive we collect the food stored by the bees as honey You will then surely be aware of the food the animal eats What about other animals Have you ever observed what a squirrel pigeon lizard or a small insect may be eating as their food Activity Several animals are listed in Table For some of them the type of food they eat is also given Fill in the blanks in the table Activity Have a look again at Table and group the animals entered here as follows Place animals which eat only plants or plant products in Group These are called herbivores There are some animals which eat other animals Place these in Group These animals are called carnivores Do you find some animals which eat both plants and animals Place them in Group These are called omnivores Prepare a table as in Table and enter these separately in the three columns as shown Paheli wants to know where you would place human beings while filling Table We know that there are many amongst us who do not get sufficient There is a lot of variation in the food eaten in different regions of India The main sources of our food are plants and animals Animals which eat only plants are called herbivores Animals which eat only animals are called carnivores Animals which eat both plants as well as other animals are called omnivores food We need to find ways by which more food can be produced in the country That will not be enough; we will need to find ways to ensure that this food is made easily available to each one of us SUGGESTED PROJECTS AND ACTIVITIES You must have seen a garden lizard around your home Next time when ever you see it observe carefully and find out what it takes for food Is the food different from that of a house lizard Make a list with pictures when possible of food items generally taken by people of different regions of India Place these on a large outline map of India to display in your classroom Find out the names of plants that grow in water and which are eaten as food In Chapter you will find out ways of measuring length of curved lines In your mathematics classes you will learn to prepare bar graphs After you learn these try the following interesting project Prepare some sprouts of moong as discussed in the chapter Wash them in water everyday and drain all the water Let them grow for a week until the whole of the seeds grow into young plants Measure the lengths of the sprouts everyday using a string Take care that they do not break Prepare a bar graph of the number of sprouts having lengths in different ranges Chapter we made lists of the food items that we eat W e also identified food items eaten in different parts of India and marked these on its map A meal could consist of chapati dal and brinjal curry Another may be rice sambar and a vegetable preparation of lady’s finger bhindi Yet another meal could be appam fish curry and vegetables curd butter milk and pickles Some examples of meals from different regions are given in Table Select food items you depicted on the map in Chapter Add some more meals to this list and enter these in Table Sometimes we may not really have all this variety in our meals If we are travelling we may eat whatever is available on the way It may not be possible for some of us to eat such a variety of items most of the time There must be some reason though why meals usually consist of such a distribution Do you think that our body needs different kinds of food for some special purpose We know that each dish is usually made up of one or more ingredients which we get from plants or animals Activity Our meals usually have at least one item made of some kind of grain Other items could be a dal or a dish of meat and vegetables Testing for starch ingredients contain some components that are needed by our body These components are called nutrients nutrients nutrients The major nutrients in our food are named carbohydrates proteins fats vitamins and minerals In addition food contains dietary fibres and water which are also needed by our body Do all foods contain all these nutrients With some simple methods we can test whether cooked food or a raw ingredient contains one or more of these nutrients The tests for presence of carbohydrates proteins and fats are simpler to do as compared to the tests for other nutrients Let us do these tests and record all our observations in Table For carrying out these tests you will need solutions of iodine copper sulphate and caustic soda You will also need a few test tubes and a dropper Try these tests on cooked food items as well as raw materials Table shows you a way to record the observations from these tests Some food items are given in this table You can conduct the tests either with these or any other available food items Do these tests carefully and do not try to eat or taste any chemicals If the required solutions are not available in readymade form your teacher can prepare them as given in the box Let us begin by testing different food items to see if they contain carbohydrates There are many types of carbohydrates The main carbohydrates found in our food are in the form of starch and sugars We can easily test if a food item contains starch Activity Take a small quantity of a food item or a raw ingredient Put drops of dilute iodine solution on it Observe if there is any change in the colour of the food item A blue-black colour indicates that it contains starch Repeat this test with other food items to find out which of these contain starch Enter all your observations in Table Take a small quantity of a food item for Testing for protein Table Nutrients present in some food items testing If the food you want to test is a solid you first need to make a paste of it or powder it Grind or mash a small quantity of the food item Put some of this in a clean test tube add drops of water to it and shake the test tube Now using a dropper add two drops of solution of copper sulphate and ten drops of solution of caustic soda to the test tube Shake well and let the test tube stand for a few minutes What do you see Did the contents of the test tube turn violet A violet colour indicates presence of proteins proteins proteins in the food item Now you can repeat this test on other food items fats and carbohydrates are also called ‘energy giving foods’ and Proteins are needed for the growth and repair of our body Foods Take a small quantity of a food item Wrap it in a piece of paper and crush it Take care that the paper does not tear Now straighten the paper and observe it carefully Does it have an oily patch Hold the paper against light Are you able to see the light faintly through this patch An oily patch on paper shows that the food item contains fat fatfat fat The food items may sometimes contain a little water Therefore after you have rubbed an item on paper let the paper dry for a while If there were any water that may have come from food it would dry up after some time If no oily patch shows up after this the food item does not contain any fat What do these tests show Are fats proteins and starch present in all the food items that you tested Does a food item contain more than one nutrient Do you find any food item that does not contain any of these nutrients We tested food items for three nutrients carbohydrates proteins and fats There are also other nutrients like vitamins and minerals minerals minerals that are present in different food items Why do we need all these nutrients Carbohydrates mainly provide energy to our body Fats also give us energy In fact fats give much more energy as compared to the same amount of carbohydrates Vitamins help in protecting our body against diseases Vitamins also help in keeping our eyes bones teeth and gums healthy Vitamins are of different kinds known by different names Some of these are Vitamin A Vitamin C Vitamin D Vitamin E and K There is also a group of vitamins called Vitamin B-complex Our body needs all types of vitamins in small quantities Vitamin A keeps our skin and eyes healthy Vitamin C helps body to fight against many diseases Vitamin D helps our body to use calcium for bones and teeth Foods that are rich in different vitamins are shown in to Minerals are needed by our body in small amounts for proper growth of body and to maintain good health Some sources of different minerals are shown in Most food items usually have more than one nutrient You may have noticed this while recording your observations in Table However in a given raw material one particular nutrient may be present in much larger quantity than in others For example rice has more carbohydrates than other nutrients Thus we say that rice is a carbohydrate rich source of food Besides these nutrients our body needs dietary and water Dietary fibres are also known as roughage Roughage is mainly provided by plant products in our foods Whole grains and pulses potatoes fresh fruits and vegetables are main sources of roughage Roughage does not provide any nutrient to our body but is an essential component of our food and adds to its bulk This helps our body get rid of undigested food Our body also prepares Vitamin D in the presence of sunlight Nowadays insufficient exposure to sunlight is causing Vitamin D deficiency in many people what we need for a balanced diet would depend on the amount of physical work that we do Prepare a chart of whatever you eat over a period of a week Check whether all the nutrients mentioned are present in one or the other food items being eaten within a day or so Pulses groundnut soyabean sprouted seeds moong and Bengal gram fermented foods South Indian foods such as idlis a combination of flours missi roti thepla made from cereals and pulses banana spinach sattu jaggery available vegetables and other such foods provide many nutrients Therefore one can eat a balanced diet without expensive food materials Eating the right kind of food is not enough It should also be cooked Water helps our body to absorb nutrients from food It also helps in throwing out some wastes from body as urine and sweat Normally we get most of the water that our body needs from the liquids we drink such as water milk and tea In addition we add water to most cooked foods Let’s see if there is any other source which provides water to our body Activity Take a tomato or a fruit like lemon Cut it into small pieces Do your hands get wet while doing so Carefully observe whenever vegetables and fruits are being cut peeled grated or mashed at your home Do you find any fresh vegetables or fruits that do not contain some amount of water We see that many food materials themselves contain water To some extent our body needs are met by this water Apart from this we also add water while cooking many food items The food we normally eat in a day is our diet For growth and maintenance of good health our diet should have all the nutrients that our body needs in right quantities Not too much of one and not too little of the other The diet should also contain a good amount of roughage and water Such a diet is called a balanced diet Do you think that people of all ages need the same type of diet Do you also Paheli wonders whether animal food also consists of these different components and do they also need a balanced diet properly so that its nutrients are not lost Are you aware that some nutrients get lost in the process of cooking and preparations If the vegetables and fruits are washed after cutting or peeling them it may result in the loss of some vitamins The skins of many vegetables and fruits contain vitamins and minerals Similarly repeated washing of rice and pulses may remove some vitamins and minerals present in them We all know that cooking improves the taste of food and makes it easier to digest At the same time cooking also results in the loss of certain nutrients Many useful proteins and considerable amounts of minerals are lost if excess water is used during cooking and is then thrown away Vitamin C gets easily destroyed by heat during cooking Would it not be sensible to include some fruits and raw vegetables in our diet Boojho thought that fats would be the best foods to eat all the time A katori bowl of fat will give much more energy than a katori of carbohydrate rich food isn’t it So he ate nothing but food rich in fats fried food like samosa and poori snacks malai rabdi and peda sweets Do you think he was right No of course not It can be very harmful for us to eat too much of fat rich foods and we may end up suffering from a condition called obesity obesity obesity A person may be getting enough food to eat but sometimes the food may not contain a particular nutrient If this continues over a long period of time the person may suffer from its deficiency deficiency deficiency Deficiency of one or more nutrients can cause diseases or disorders in our body Diseases that occur due to lack of nutrients over a long period are called deficiency diseases If a person does not get enough proteins in his her food for a long time he she is likely to have stunted growth swelling of face discolouration of hair skin diseases and diarrhoea If the diet is deficient in both carbohydrates and proteins for a long period of time the growth may stop completely Such a person becomes very lean and thin and so weak that he she may not even be able to move Deficiency of different vitamins and minerals may also result in certain diseases or disorders Some of these are mentioned in Table All deficiency diseases can be prevented by taking a balanced diet In this chapter we asked ourselves the reason why widely varying food from different regions had a common Table Some diseases disorders caused by deficiency of vitamins and minerals The major nutrients in our food are carbohydrates proteins fats vitamins and minerals In addition food also contains dietary fibres and water Carbohydrates and fats mainly provide energy to our body Proteins and minerals are needed for the growth and the maintenance of our body Vitamins help in protecting our body against diseases Balanced diet provides all the nutrients that our body needs in right quantities along with adequate amount of roughage and water Deficiency of one or more nutrients in our food for a long time may cause certain diseases or disorders distribution This distribution we find ensures that our meals have a balance of the different nutrients needed by the body SUGGESTED PROJECTS AND ACTIVITIES Prepare a diet chart to provide balance diet to a twelve year old child The diet chart should include food items which are not expensive and are commonly available in your area We have learnt that excess intake of fats is harmful for the body What about other nutrients Would it be harmful for the body to take too much of proteins or vitamins in the diet Read about diet related problems to find answers to these questions and have a class discussion on this topic Test the food usually eaten by cattle or a pet to find out which nutrients are present in animal food Compare results obtained from the whole class to conclude about balanced diet requirements for different animals Paheli and Boojho won the first prize in a Science Quiz competition held at their school They were very excited and decided to use the prize money to buy clothes for their parents When they saw a large variety of cloth material they got confused The shopkeeper explained that some clothes or fabrics were cotton and some were synthetic He also had woollen mufflers and shawls There were many silk sarees as well Paheli and Boojho felt very excited They touched and felt these different fabrics Finally they bought a woollen muffler and a cotton saree After their visit to the cloth shop Paheli and Boojho began to notice various fabrics in their surroundings They found that bed sheets blankets curtains tablecloths towels and dusters were made from different kinds of fabrics Even their school bags and the gunny bags were made from some kind of fabric They tried to identify these fabrics as cotton wool silk or synthetic Can you also identify some fabrics Activity Visit a nearby tailoring shop Collect cuttings of fabrics leftover after stitching Feel and touch each piece of fabric Now try to label some of the fabrics as cotton silk wool or synthetic after asking for help from the tailor Do you wonder what these different fabrics are made of When you look at any fabric it seems a continuous piece Now look at it closely What do you notice Activity Take out a yarn from a piece of cotton fabric Place this piece of yarn on the table Now press one end of the yarn with your thumb Scratch the other end of the yarn along its length with your nail as shown in Do you find that at this end the yarn splits up into thin strands You might have observed something similar when you try to thread a needle Many a time the end of the thread is separated into a few thin strands This makes it difficult to pass the thread through the eye of the needle The thin strands of thread that we see are made up of still thinner strands called fibres fibres fibres Fabrics are made up of yarns and yarns are further made up of fibres Where do these fibres come from The fibres of some fabrics such as cotton jute silk and wool are obtained from plants and animals These are called natural fibres Cotton and jute are examples of fibres obtained from plants Wool and silk fibres are obtained from animals Wool is obtained from the fleece of sheep or goat It is also obtained from the hair of rabbits yak and camels Silk fibre is drawn from the cocoon of silkworm For thousands of years natural fibres were the only ones available for making fabrics In the last hundred years or so fibres are also made from chemical Boojho has seen in the museums items like the one shown here These were worn by warriors He wants to know if these are made of some kinds of fibre substances which are not obtained from plant or animal sources These are called synthetic fibres Some examples of synthetic fibres are polyester nylon and acrylic Cotton Cotton Cotton Have you ever made wicks for oil lamps What do you use for making these wicks This cotton wool is also used for filling mattresses quilts or pillows Take some cotton wool pull it apart and look at its edges What do you observe The small thin strands that you see are made up of cotton fibres Where does this cotton wool come from It is grown in the fields Cotton plants are usually grown at places having black soil and warm climate Can you name some states of our country where cotton is grown The fruits of the cotton plant cotton bolls are about the size of a lemon After maturing the bolls burst open and the seeds covered with cotton fibres can be seen Have you ever JuteJute Jute Jute fibre is obtained from the stem of the jute plant It is cultivated during the rainy season In India jute is mainly grown in West Bengal Bihar and Assam The jute plant is normally harvested when it is at flowering stage The stems of the harvested plants are immersed in water for a few days The stems rot and fibres are separated by hand Field of cotton plants Ginning of cotton seen a cotton field that is ready for picking It looks like a field covered with snow From these bolls cotton is usually picked by hand Fibres are then separated from the seeds by combing This process is called ginning ginning ginning of cotton To make fabrics all these fibres are first converted into yarns yarns yarns How is it done You can try making cotton yarn yourself Activity Hold some cotton wool in one hand Pinch some cotton between the thumb and forefinger of the other hand Now gently start pulling out the cotton while continuously twisting the fibres Are you able to make a yarn The process of making yarn from fibres is called spinning spinning spinning In this process fibres from a mass of cotton wool are drawn out and twisted This brings the fibres together to form a yarn A simple device used for spinning is a hand spindle also called takli Another hand operated device used for spinning is charkha Use of charkha was popularised by Mahatma Gandhi as part of the Independence movement He encouraged people to wear clothes made of homespun yarn termed as khadi and shun imported cloth made in the mills of Britain To popularise and promote khadi the Government of India constituted a body called Khadi and Village Industries Commission in Spinning of yarn on a large scale is done with the help of spinning machines After spinning yarns are used for making fabrics There are many ways by which fabrics are made from yarns The two main processes are weaving and knitting In Activity you might have noticed that a fabric is made up of two sets of yarns arranged together The process of arranging two sets of yarns together to make a fabric is called weaving weaving weaving Let us try to weave some paper strips Activity Take two sheets of paper of different colours Cut square pieces of length and width equal to cm from each sheet Now fold both the sheets into half a and on the other as shown in b Cut both the sheets along the dotted lines and then unfold Weave the strips one by one through the cuts in the sheet of paper as shown in c d shows the pattern after weaving all the strips In a similar manner two sets of yarn are woven to make a fabric The yarns are much thinner than our paper strips of course Weaving of fabric is done on looms looms looms The looms are either hand operated or power operated Knitting Knitting Knitting Have you noticed how sweaters are knitted In knitting knitting knitting a single yarn is used to make a piece of fabric Have you ever pulled the yarn from a torn pair of socks What happens A single yarn gets pulled out continuously as the fabric gets unravelled Socks and many other clothing items are made of knitted fabrics Knitting is done by hand and also on machines Paheli wants to know if you have seen any fabrics that are made of the fibres on the outer covering of coconut What are these fibres normally used for Weaving and knitting are used for making different kinds of fabric These fabrics are used for a variety of clothing items Have you ever wondered what materials people used in ancient times for clothes It appears that in those times people used the bark and big leaves of trees or animal skins and furs to cover themselves After people began to settle in agricultural communities they learnt to weave twigs and grass into mats and baskets Vines animal fleece or hair were twisted together into long strands These were woven into fabrics The early Indians wore fabrics made out of cotton that grew in the regions near the river Ganga Flax is also a plant that gives natural fibres In ancient Egypt cotton as well as flax were cultivated near the river Nile and were used for making fabrics In those days stitching was not known People simply draped the fabrics around different parts of their body Many different ways of draping fabrics were used With the invention of the sewing needle people started stitching fabrics to make clothes Stitched clothes have gone through many variations since this invention But is it not amazing that even today saree dhoti lungi or turban is used as an un-stitched piece of fabric Just as there is a large variety in the food eaten all over our country a large variety exists also in fabrics and clothing items There is a variety of clothing material or fabric such as cotton silk wool and polyester Fabric Cotton Rolls Fibre Yarn Ginning Spinning Knitting Weaving Classify the following fibres as natural or synthetic nylon wool cotton silk polyester jute State whether the following statements are true or false a Yarn is made from fibres b Spinning is a process of making fibres c Jute is the outer covering of coconut d The process of removing seed from cotton is called ginning e Weaving of yarn makes a piece of fabric f Silk fibre is obtained from the stem of a plant g Polyester is a natural fibre Fill in the blanks a Plant fibres are obtained from and b Animals fibres are and From which parts of the plant cotton and jute are obtained Name two items that are made from coconut fibre Explain the process of making yarn from fibre Fabrics are made from yarns which in turn are made from fibres Fibres are either natural or synthetic Cotton wool silk and jute are some natural fibres while nylon and polyester are some examples of synthetic fibres Fibres like cotton and jute are obtained from plants The process of making yarn from fibres is called spinning Fabric from yarns is made by weaving and knitting SUGGESTED PROJECTS AND ACTIVITIES Visit a nearby handloom or powerloom unit and observe the weaving or knitting of fabric Find out if any crop is grown in your region for obtaining fibre If yes what is it used for India has been a major producer of cotton and its fabric India exports cotton fabrics and items to many other countries Find out how it helps us Do you know that famous Sufi Saint and poet Kabir was a weaver Find out about his life and teachings You can do an activity to identify the yarns of a fabric under the supervision of your teacher or parents Pull out six to eight yarns from the fabric Hold one end of the yarn with a tong and bring the other end over the flame of a candle Observe carefully Do the yarns shrink away from the flame Do the yarns melt or burn What type of odour is given off Note down your observations If these are cotton yarns they burn but do not shrink or melt The burning yarn gives an odour similar to burning paper The silk yarn shrinks away from the flame and burns but does not melt It has the odour of charred meat The wool yarn also shrinks and burns but does not melt It has a strong odour of burning hair The synthetic yarns shrink and burn They also melt and give out an odour similar to burning plastics We have seen that our food and clothes have so much variety in them Not just food and clothes there is such a vast variety of objects everywhere We see around us a chair a bullock cart a cycle cooking utensils books clothes toys water stones and many other objects All these objects have different shapes colours and uses Look around and identify objects that are round in shape Our list may include a rubber ball a football and a glass marble If we include objects that are nearly round our list could also include objects like apples oranges and an earthen pitcher gharha Suppose we were looking for objects that are edible We might include all the items that we have listed in Tables and in Chapter We might also find that some of those round shaped objects we just listed out are also in this group Let us say we wish to make a group of objects that are made of plastics Buckets lunch boxes toys water containers pipes and many such objects may find a place in this group There are so many ways to group objects In the above examples we have grouped objects on the basis of their shape or the materials they are made from All objects around us are made of one or more materials These materials may be glass metal plastics wood cotton paper mud or soil Can you think of more examples of materials Activity Let us collect as many objects as possible from around us Each of us could get some everyday objects from home and we could also collect some objects from the classroom or from outside the school What will we have in our collection Chalk pencil notebook rubber duster a hammer nail soap spoke of a wheel bat matchbox salt potato We can also list objects that we can think of but cannot bring to the classroom For example wall trees doors tractor road Separate all objects from this collection that are made from paper or wood This way we have divided all objects into two groups One group has the objects that are made from paper or wood while the other group has the objects that are not made of these materials Similarly we could separate the things that are used for preparing food Let us be a little more systematic List all objects collected in Table Try to identify the materials that each one is made of It would be fun to make this a large table collecting information about as many objects as possible It may seem difficult to find out the materials out of which some of these objects are made In such cases discuss with your friends teacher and parents to identify the materials Table Objects and the materials they are made of Activity Table lists some common materials You can also add more materials in Column that are known to you Now try and think of everyday objects you know that are made mainly of these materials and list them in Column Table Table Table Different types of objects that are made from the same What do we find from these tables First we grouped objects in many different ways We then found that objects around us are made of different materials At times an object is made of a single material An object could also be made of many materials And then again one material could be used for making many different objects What decides which material should be used SCIENCE Using a cloth tumbler for making any given object It seems that we need to know more about different materials Have you ever wondered why a tumbler is not made with a piece of cloth Recall our experiments with pieces of cloth in Chapter and also keep in mind that we generally use a tumbler to keep a liquid Therefore would it not be silly if we were to make a tumbler out of cloth What we need for a tumbler is glass plastics metal or other such material that will hold water Similarly it would not be wise to use paper-like materials for cooking vessels Appearance Materials usually look different from each other Wood looks very different from iron Iron appears different from copper or aluminium At the same time there may be some similarities between iron copper and aluminium that are not there in wood Activity Collect small pieces of different materials paper cardboard wood copper wire aluminium sheet chalk Do any of these appear shiny Separate the shiny materials into a group Now observe as the teacher cuts each material into two pieces and look at the freshly cut surface What do you notice Does the freshly cut surface of some of these materials appear shiny Include these objects also in the group of shiny materials Do you notice such a shine or lustre in the other materials cut them anyway as you can Repeat this in the class with as many materials as possible and make a list of those with and without lustre Instead of cutting you can rub the surface of material with sand paper to see if it has lustre Cutting pieces of materials to see if they have lustre We see then that we choose a material to make an object depending on its properties and the purpose for which the object is to be used So what are all the properties of materials that would be important for their usage Some properties are discussed here What disappears what doesn’t Materials that have such lustre are usually metals Iron copper aluminium and gold are examples of metals Some metals often lose their shine and appear dull because of the action of air and moisture on them We therefore notice the lustre only on their freshly cut sur face When you visit an ironsmith or a workshop look out for freshly cut surfaces of metal rods to see if they have lustre HardnessHardness Hardness When you press different materials with your hands some of them may be hard to compress while others can be easily compressed Take a metal key and try to scratch with it the surface of a piece of wood aluminium a piece of stone a nail candle chalk any other material or object You can easily scratch some materials while some cannot be scratched so easily Materials which can be compressed or scratched easily are called softsoft soft while some other materials which are difficult to compress are called hardhard hard For example cotton or sponge is soft while iron is hard In appearance materials can have different properties like lustre hardness be rough or smooth Can you think of other properties that describe the appearance of a material Soluble or Insoluble Activity Collect samples of some solid substances such as sugar salt chalk powder sand and sawdust Take five glasses or beakers Fill each one of them about two thirds with water Add a small amount spoonful of sugar to the first glass salt to the second and similarly add small amounts of the other substances into the other glasses Stir the contents of each of them with a spoon Wait for a few minutes Observe what happens to the substances added to water Note your observations as shown in Table Table Mixing different solid materials in water ecnatsbuS retawnisraeppasiD raeppasidtonseod tlaS niyletelpmocsraeppasiD retaw raguS dnaS klahC redwop tsudwaS You will notice that some substances have completely disappeared or dissolved in water We say that these substances are solublesoluble soluble in water Other substances do not mix with water and do not disappear even after we stir for a Boojho suggests that we also check if the liquids that we used in Activity mix well with some liquid other than water Paheli is curious to know whether gases also dissolve in water long time These substances are insolubleinsoluble insoluble in water Water plays an important role in the functioning of our body because it can dissolve a large number of substances Do liquids also dissolve in water Activity Collect samples of vinegar lemon juice mustard oil or coconut oil kerosene or any other liquid Take a glass tumbler Fill it up to half with water Add a few spoonfuls of one liquid to this and stir it well Let it stand for five minutes Observe whether the liquid mixes with water Repeat the same with other liquids as many different liquids as are available to you Write your observations in Table Table Solubility of some common liquids in water Some gases are soluble in water whereas others are not Water usually has small quantities of some gases dissolved in it For example oxygen gas dissolved in water is very important for the survival of animals and plants that live in water Objects may float or sink in waterwater water While doing Activity you might have noticed that the insoluble solids separated out from water You may have also noticed this with some liquids in Activity Some of these materials that did not mix with water floated to the surface of water Others may have sunk to the bottom of the tumbler right We notice many examples of objects that float in water or sink Dried leaves fallen on the surface of a pond a stone that you throw into this pond few We notice that some liquids get completely mixed with water Some others do not mix with water and form a separate layer when kept aside for some time Figure Some objects float in water while others sink in it drops of honey that you let fall into a glass of water What happens to all of these Boojho would like you to give him five examples each of objects that float and those that sink in water You might have played the game of hide and seek Think of some places where you would like to hide so that you are not seen by others Why did you choose those places Would you have tried to hide behind a glass window Obviously not as your friends can see through that and spot you Can you see through all the materials Those substances or materials through which things can be seen are called transparent Glass water air and some plastics are examples of transparent materials Shopkeepers usually prefer to keep biscuits sweets and other eatables in transparent containers of glass or plastic so that buyers can easily see these items On the other hand there are some materials through which you are not able to see These materials are called opaque You cannot tell what is kept in a closed wooden box a cardboard carton or a metal container Wood cardboard and metals are examples of opaque materials Do we find that we can group all materials and objects without any confusion as either opaque or transparent Activity Take a sheet of paper and look through it towards a lighted bulb Make a note of your observation Now put drops Transparent bottles in a shop Looking through opaque transparent or translucent material of some oil and spread it on the sheet of paper Look again towards the lighted bulb through that portion of the paper on which the oil has been spread Do you find that the bulb is more clearly visible than before But can you see clearly through the oiled paper Is everything on the other side of it visible Perhaps not The materials through which objects can be seen but not clearly are known as translucent Remember the oily patch on paper when we tested food items for presence of fats That was translucent too Can you think of some more examples of translucent materials We can therefore group materials as opaque transparent and translucent Paheli suggests covering the glass of a torch with your palm at a dark place Switch on the torch and observe the other side of the palm She wants to know whether palm of your hand is opaque transparent or translucent We learnt that materials differ in their appearance and the way they mix in water or other liquids They may float or sink in water or may be transparent opaque or translucent Materials can be grouped on the basis of similarities or differences in their properties Why do we need to group materials In everyday life we often group materials for our convenience At home we usually store things in such a manner that similar objects are placed together Such an arrangement helps us to locate them easily Similarly a grocer usually keeps all type of biscuits at one corner of his shop all soaps at another while grains and pulses are stored at some other place There is another reason why we find such grouping useful Dividing materials in groups makes it convenient to study their properties and also observe any patterns in these properties We will study more about this in higher classes Objects around us are made up of a large variety of materials A given material could be used to make a large number of objects It is also possible that an object could be made of a single material or of many different types of materials Different types of materials have different properties Some materials are shiny in appearance while others are not Some are rough some smooth Similarly some materials are hard whereas some others are soft Some materials are soluble in water whereas some others are insoluble Some materials such as glass are transparent and some others such as wood and metals are opaque Some materials are translucent Materials are grouped together on the basis of similarities and differences in their properties Things are grouped together for convenience and to study their properties Name five objects which can be made from wood Select those objects from the following which shine Glass bowl plastic toy steel spoon cotton shirt Match the objects given below with the materials from which they could be made Remember an object could be made from more than one material and a given material could be used for making many objects State whether the statements given below are True or False i Stone is transparent while glass is opaque ii A notebook has lustre while eraser does not Chalk dissolves in water A piece of wood floats on water SUGGESTED ACTIVITY You may have played a memory game with your friends Several objects are placed on a table you are asked to observe them for a few minutes go into another room and write down the names of all objects that you can remember Play this game with a difference Ask all the participants in the game to remember objects with some particular property while playing this memory game remember and write down the names of objects that were made of wood or objects that are edible and so on Have fun Separation of Substances Grain is separated from stalks while harvesting Milk or curd is churned to separate the butter As we learned in Chapter we gin cotton to separate its seeds from the fibre Perhaps you might have eaten salted daliya or poha If you found that it had chillies in it you may have carefully taken them out before eating Suppose you are given a basket containing mangoes and guavas and asked to separate them What would you do Pick out one kind and place them in a separate container right Seems easy but what if the materials we want to separate are much smaller Separating tea leaves with a strainer Butter is taken out by churning milk or curd But why would we need to separate substances like this at all is what Paheli wants to know Activity In Column of Table are given a few processes of separation The purpose of separation and the way separated components are used is mentioned in Column and respectively However the information given in Columns and is jumbled up Can you match each In our daily life there are many instances when we notice a substance being separated from a mixture of materials Tea leaves are separated from the liquid with a strainer while preparing tea than mango or guava Imagine you are given a glass of sand with salt mixed in it Impossible even to think of separating salt from this mixture by picking out grains of sand by hand process with its purpose and the way separated components are used We see that before we use a substance we need to separate harmful or non-useful substances that may be mixed with it Sometimes we separate even useful components if we need to use them separately The substances to be separated may be particles of different sizes or materials These may be in any three states of matter i e solid liquid or gas So how do we separate substances mixed together if they have so many different properties We will discuss some simple methods of separating substances that are mixed together You may come across some of these methods being used in day to day activities Handpicking Activity Bring a packet of food grain purchased from a shop to the classroom Now spread the grains on a sheet of paper Do you find only one kind of grain on the sheet of paper Are there pieces of stone husks broken grain and particles of any other grain in it Now remove with your hand the pieces of stone husks and other grains from it This method of handpicking can be used for separating slightly larger sized impurities like the pieces of dirt stone and husk from wheat rice or pulses The quantity of such impurities is usually not very large In such situations we find that handpicking is a convenient method of separating substances harvesting the crop Stalks are dried in the sun before the grain is separated from them Each stalk has many grain seeds attached to it Imagine the number of grain seeds in hundreds of bundles of stalk lying in the field How does the farmer separate grain seeds from those bundles of stalks One may pluck mangoes or guavas from the trees But grain seeds are much smaller than mangoes or guavas So plucking them from their stalks would be impossible How does one separate grain seeds from their stalks The process that is used to separate grain from stalks is threshingthreshing threshing In this process the stalks are beaten to free the grain seeds Sometimes this mixture on a plate or a newspaper Look at this mixture carefully Can the two different components be made out easily Are the sizes of particles of the two components similar Would it be possible to separate the components by handpicking Now take your mixture to an open ground and stand on a raised platform Put the mixture in a plate or sheet of paper Hold the plate or the sheet of paper containing the mixture at your shoulder height Tilt it slightly so that the mixture slides out slowly What happens Do both the components sand and sawdust or powdered leaves fall at the same place Is there a component that blows away Did the wind manage to separate the two components This method of separating components of a mixture is called winnowing Winnowing is used to separate heavier and lighter components of a mixture by wind or by blowing air Threshing threshing is done with the help of bullocks Machines are also used to thresh large quantities of grain Winnowing Activity Make a mixture of dry sand with sawdust or powdered dry leaves This method is commonly used by farmers to separate lighter husk particles from heavier seeds of grain The husk particles are carried away by the wind The seeds of grain get separated and form a heap near the platform for winnowing The separated husk is used for many purposes such as fodder for cattles SievingSieving Sieving Sometimes we may wish to prepare a dish with flour We need to remove impurities and bran that may be present in it What do we do We use a sieve and pour the flour into it Sieving allows the fine flour particles to pass through the holes of the sieve while the bigger impurities remain on the sieve In a flour mill impurities like husk and stones are removed from wheat before grinding it Usually a bagful of wheat is poured on a slanting sieve The sieving removes pieces of stones stalk and husk that may still remain with wheat after threshing and winnowing to separate pebbles and stones from sand Activity Bring a sieve and a small quantity of flour from home to the class Sieve the flour to separate any impurities in it Now make a fine powder of chalk pieces and mix it with the flour Can we separate the flour and the powdered chalk by sieving Sieving is used when components of a mixture have different sizes Sedimentation Decantation and Filtration Sometimes it may not be possible to separate components of a mixture by winnowing and handpicking For example there may be lighter impurities like dust or soil particles in rice or pulses How are such impurities separated from rice or pulses before cooking Rice or pulses are usually washed before cooking When you add water to these the impurities like dust particles Sieving You may have also noticed similar sieves being used at construction sites Pebbles and stones are removed from sand by sieving get separated These impurities go into water Now what will sink to the bottom of the vessel rice or dust Why Have you seen that the vessel is tilted to pour out the dirty water When the heavier component in a mixture settles after water is added to it the process is called sedimentation When the water along with the dust is removed the process is called decantation Let us find a few other mixtures that can be separated through sedimentation and decantation The same principle is used for separating a mixture of two liquids that do not mix with each other For example oil and water from their mixture can be separated by this process If a mixture of such liquids is allowed to stand for some time they form two separate layers The component that forms the top layer can then be separated by decantation Let us again consider a mixure of a solid and liquid After preparing tea what do you do to remove the tea leaves Usually we use stainer to remove tea leaves Try decantation It helps a little But do you still get a few leaves in your tea Now pour the tea through a strainer Did all the tea leaves remain in the strainer This process is called filtration filtration filtration Which method of separating tea leaves from prepared tea is better decantation or filtration Let us now consider the example of water that we use Do all of us at all times get safe water to drink Sometimes water supplied through taps may be muddy The water collected from ponds or rivers may also be muddy especially after rains Let us see if we can use some method of separation to remove insoluble impurities like soil from the water Activity Collect some muddy water from a pond or a river If it is not available mix some soil to water in a glass Let it stand for half an hour Observe the water carefully and note your observations Does some soil settle at the bottom of water Why What will you call this process Now slightly tilt the glass without disturbing the water Let the water from the top flow into another glass What will you call this process Is the water in the second glass still muddy or brown in colour Now filter it Did the tea strainer work Let us try filtering the water through a piece of cloth In a piece of cloth small holes or pores remain in between the woven threads These pores in a cloth can be used as a filter If the water is still muddy impurities can be separated by a filter that has even Separating two components of a mixture by sedimentation and decantation undissolved material soil mixture soil + water Fruit and vegetable juices are usually filtered before drinking to separate the seeds and solid particles of pulp The method of filtration is also used in the process of preparing cottage cheese paneer in our homes You might have seen that for making paneer a few drops of lemon juice are added to milk as it boils This gives a mixture of particles of solid paneer and a liquid The paneer is then separated by filtering the mixture through a fine cloth or a strainer Evaporation Activity Add two spoons of salt to water in another beaker and stir it well Do you smaller pores A filter paper is one such filter that has very fine pores in it shows the steps involved in using a filter paper A filter paper folded in the form of a cone is fixed onto a funnel The mixture is then poured on the filter paper Solid particles in the mixture do not pass through it and remain on the filter Heating a beaker containing salt water see any change in the colour of water Can you see any salt in the beaker after stirring Heat the beaker containing the salt water Let the water boil away What is left in the beaker In this activity we used the process of evaporation to separate a mixture of water and salt The process of conversion of water into its vapour is called evaporation The process of evaporation takes place continuously wherever water is present Where do you think salt comes from Sea water contains many salts mixed in it One of these salts is the common salt When sea water is allowed to stand in shallow pits water gets heated by sunlight and slowly turns into water vapour through evaporation In a few days the water evaporates completely leaving behind the solid salts Common salt is then obtained from this mixture of salts by further purification Folding a filter paper to make a cone Filtration using a filter paper Use of more than one method of separation We have studied some methods for separation of substances from their mixtures Often one method is not sufficient to separate the different substances present in a mixture In such a situation we need to use more than one of these methods Activity Take a mixture of sand and salt How will we separate these We already saw that handpicking would not be a practical method for separating these Keep this mixture in a beaker and add some water to it Leave the beaker aside for some time Do you see the sand settling down at the bottom The sand can be separated by decantation or filtration What does the decanted liquid contain Do you think this water contains the salt which was there in the mixture at the beginning Now we need to separate salt and water from the decanted liquid Transfer this liquid to a kettle and close its lid Heat the kettle for some time Do you notice steam coming out from the spout of the kettle Take a metal plate with some ice on it Hold the plate just above the spout of the kettle as shown in What do you observe Let all the water in the kettle boil off When the steam comes in contact with the metal plate cooled with ice it condenses and forms liquid water The water drops that you observed falling from the plate were due to condensation of steam The process of conversion of water vapour into its liquid form is called condensation Did you ever see water drops condensed under a plate that has been used to cover a vessel containing milk that has just been boiled After all the water has evaporated what is left behind in the kettle We have thus separated salt sand and water using processes of decantation filtration evaporation and condensation Paheli faced a problem while recovering salt mixed with sand She has mixed a packet of salt in a small Obtaining salt from sea water Evaporation and condensation amount of sand She then tried the method suggested in Activity to recover the salt She found however that she could recover only a small part of the salt that she had taken What could have gone wrong Can water dissolve any amount of a substance In chapter we found that many substances dissolve in water and form a solution We say that these substances are soluble in water What will happen if we go on adding more and more of these substances to a fixed quantity of water Activity You will need a beaker or a small pan a spoon salt and water Pour half a cup of water in the beaker Add one teaspoonful of salt and stir it well until the salt dissolves completely Again add a teaspoonful of salt and stir well Go on adding salt one teaspoonful at a time and stir After adding a few spoons of salt do you find that some salt remains undissolved and settles at the bottom of the beaker If yes this means that no more salt can be dissolved in the amount of water we have taken The solution is now said to be saturatedsaturated saturated Here is a hint as to what might have gone wrong when Paheli tried to recover large quantity of salt mixed with sand Perhaps the quantity of salt was much more than that required to form a saturated solution The undissolved salt would have remained mixed with the sand and could not be recovered She could solve her problem by using a larger quantity of water Suppose she did not have sufficient quantity of water to dissolve all the salt in the mixture Is there some way that water could be made to dissolve more salt before the solution gets saturated Let us try and help Paheli out Activity Take some water in a beaker and mix salt in it until it cannot dissolve any more salt This will give you a saturated solution of salt in water Now add a small quantity of salt to this saturated solution and heat it What do you find What happens to the undissolved salt in the bottom of the beaker Does it dissolve now If yes can some more salt be dissolved in this solution by heating it Let this hot solution cool Does the salt appear to settle at the bottom of the beaker again The activity suggests that larger quantity of salt can be dissolved in water on heating Dissolving salt in water Does water dissolve equal amounts of different soluble substances Let us find out Activity Take two glasses and pour half a cup of water in each of them Add a teaspoon of salt to one glass and stir till the salt dissolves Go on adding salt one teaspoon at a time till the solution saturates Record the number of spoons of salt that dissolved in the water in Table Now repeat the same activity with sugar Repeat this with some other substances that are soluble in water What do you notice from Table Do you find that water dissolves different substances in different amounts We have discussed a few methods of separating substances Some of the methods of separation presented in this chapter are also used in a science laboratory We also learnt that a solution is prepared by dissolving a substance in a liquid A solution is said to be saturated if it cannot dissolve more of the substance in it Handpicking winnowing sieving sedimentation decantation and filtration are some of the methods of separating substances from their mixtures Husk and stones could be separated from grains by handpicking Husk is separated from heavier seeds of grain by winnowing Difference in the size of particles in a mixture is utilised to separate them by the process of sieving and filtration In a mixture of sand and water the heavier sand particles settle down at the bottom and the water can be separated by decantation Filtration can be used to separate components of a mixture of an insoluble solid and a liquid Evaporation is the process in which a liquid gets converted into its vapour Evaporation can be used to separate a solid dissolved in a liquid A saturated solution is one in which no more of that substance can be dissolved More of a substance can be dissolved in a solution by heating it Water dissolves different amount of soluble substances in it SUGGESTED PROJECTS AND ACTIVITIES Visit a nearby dairy and report about the processes used to separate cream from milk You have tried a number of methods to separate impurities like mud from water Sometimes the water obtained after employing all these processes could still be a little muddy Let us see if we can remove even this impurity completely Take this filtered water in a glass Tie a thread to a small piece of alum Suspend the piece of alum in the water and swirl Did the water become clear What happened to the mud This process is called loading Talk to some elders in your family to find out whether they have seen or used this process c Separation of sugar from tea can be done with filtration d Grain and husk can be separated with the process of decantation Lemonade is prepared by mixing lemon juice and sugar in water You wish to add ice to cool it Should you add ice to the lemonade before or after dissolving sugar In which case would it be possible to dissolve more sugar THINGS TO SEE The winnowers painted by Gustav Courbet in Reproduced with permission from Museè de Beaus Arts Nantes France Changes Around us What a fun would it be if you suddenly get some magical powers to change things around you What are the things you would want to change Can some of the changes be grouped together How can we group various changes It might help if we find some similarities between them Activity Take a balloon and blow it Take care that it does not burst The shape and size of the balloon have changed Now let the air escape the balloon A balloon changes its size and shape on blowing air into it Activity Take a piece of paper and fold it as shown in You have changed the sheet of paper into a toy aeroplane You may have lots of fun in flying this plane Once you are tired of it unfold the paper again We do not have magical powers of course But we can still change a few things around us perhaps many things Can you list a few things you can change around you with no magic involved Many changes are taking place around us on their own In the fields the crops change from time to time Sometimes leaves fall from trees change colour and dry out The flowers bloom and then wither away Are any changes happening in your body Your nails grow your hair grows you grow taller and your weight increases as you grow Did you realise earlier that so many changes are taking place around you all the time Activity Take the same balloon which you used in Activity Blow it to its full size and tie its mouth with a string tightly Prick it with the pointed tip of your pencil Oops It burst Activity Take the same piece of paper which you used in Activity Draw an aeroplane on it and cut along its outline Activity Take some dough and make a ball Try to roll out a roti May be you are not happy with its shape and wish to change it back into a ball of dough again A ball of dough and a rolled out roti Now think about the three changes you observed in Activity and What do they have in common Was it possible to get the balloon back to its original shape and size Was the size of the paper same as before and after making an aeroplane Was it possible to get back the ball of dough again What do you conclude In each of the three activities is it possible to get back to the material with which we started our activity If the answer is yes it means that the changes occurring in these activities can be reversed Now let us repeat the same activities with a difference An aeroplane cut out of paper Activity Roll out a roti from the ball of dough again and bake it on a tawa Suppose you are asked the same three questions which you answered after Activity What would your answers be now We see that the changes which have occurred in the Activity and can not be reversed You use a pencil and an eraser With repeated use their shape and size change Can we reverse this change You must have seen a potter working on his wheel He shapes a lump of clay into a pot Can this change be reversed He then bakes the pot in an oven Now can this change be reversed Some common changes are given in Table Which of these changes do you think can be reversed We find that one way we can group changes is to see if they can be reversed We all have seen the tools which are used to dig the soil Have you ever seen how the iron blade in these tools is fixed to the wooden handle The iron blade of these tools has a ring in which the wooden handle is fixed Normally the ring is slightly smaller in size than the wooden handle To fix the handle the ring is heated and it becomes slightly larger in size expands expands expands Now the handle easily fits into the ring When the ring cools down it contracts and fits tightly on to the handle Such a change is also used for fixing the metal rim on a wooden wheel of a cart as shown in Again the metal rim is made slightly smaller than the wooden wheel On heating the rim expands and fits onto the wheel Cold water is then poured over the rim which contracts and fits tightly onto the wheel Take a small candle and measure its length with a scale Now fix it at a suitable place and light it Let it burn for some time Now blow out the candle and measure its length again Can the change in the length of the candle be reversed If we were to take some wax in a pan and heat it can this change be reversed Cart wheel with metal rim fixed to it Boojho has often noticed that road construction workers heat a black material tar for repairing a road He wants to know whether the change caused in tar by heating can be reversed Paheli wants to know if you have ever seen a blacksmith making some tools How does a blacksmith change a piece of iron into different tools A piece of iron is heated till it becomes red-hot It then becomes soft and is beaten into a desired shape What change has taken place in iron on being heated When we heat water in a pan it begins to boil after some time If we continue to heat further the quantity of water in the pan begins to decrease The water changes into its vapour In Activity Chapter you have observed that water vapour gets changed into liquid water when it is cooled We all have noticed melting of ice Ice melts when it is heated What does it change into Is it possible to change this water back into ice Let us observe some more changes Repeat Activity with an incense stick Wait till it burns away completely What are the changes that occur in the incense stick The stick burns to produce some new material These are ash and some gases We cannot see these gases but can sense them due to their pleasant smell Can this change be reversed And what about the change which occurred in the matchstick you used for lighting the candle or incense stick So far we have discussed the changes occurring in a given object or its material What about the changes that occur when two substances are mixed together In Chapter we dissolved salt in water Do you think a change occured in salt or in water Is it possible to reverse this change Wait in Chapter we learnt how to separate salt from its solution in water So can we say that the change due to dissolving salt in water be reversed Paheli asks if you have ever seen curd being set A small quantity of curd is added to warm milk The milk is stirred and is set aside for a few hours at a warm place In a few hours the milk changes into curd Can this change be reversed We find that a few ways to bring about a change in a substance could be by heating it or by mixing it with some other substance We also find that some changes can be reversed while some others cannot be reversed There must be many other ways of changing things around us It is possible that some of them could be reversed Thus changes around us could be grouped as those that can be reversed or cannot be reversed In higher classes you will learn more about the ways in which changes can be made and the way these can be grouped Some changes can be reversed and some cannot be reversed A change may occur by heating a substance or by mixing it with some other Getting to Know Plants Go outside and observe all the plants around you Do you see that some plants are small some very big while some are just patches of green on the soil Some have green leaves while some others have reddish ones Some have huge red flowers some have tiny blue ones while some have none We do see a variety of plants existing all around us near our homes in the school ground on the way to Parts of a plant the school in the parks and gardens isn’t it Let us get to know the different parts of any plant This will help us understand the differences between plants of different kinds Can you label the stem branch root leaf flower and fruit of the plant shown in Colour the parts of the plant Activity Look closely at the stem and branches of Plants much smaller than you Plants that are about your size and Plants which are much taller than you Feel their stem and try to bend them gently to see if they are tender or hard Take care that the stem does not break Hug the tall plants to see how thick their stems are We also need to notice from where the branches grow in some plants close to the ground or higher up on the stem We will now group all the plants we observed in Table Some examples are shown You can fill the Columns and for many more plants Fill Column later after studying the section Based on these characters most plants can be classified into three categories herbs shrubs and treestrees trees Plants with green and tender stems are called herbs They are usually short and may not have many branches a Some plants develop branches near the base of stem The stem is hard but not very thick Such plants are called shrubs b Some plants are very tall and have hard and thick stem The stems have branches in the upper part much above the ground Such plants are called trees c Based on the above characteristics can you now classify the plants listed by you and complete column in Table two trees shrubs herbs or creepers growing in your house or school Observe closely the stems of different plants around you Note down different Plants with weak stems that cannot stand upright but spread on the ground are called creepers creepers creepers while those that take support and climb up are called climbersclimbers climbers These are different from the herbs shrubs and trees Perhaps there are some plants in your school or at home that you take care of Write down the names of any structures parts borne by the stem Compare you observations with the that of your friends What do you find Stems bear leaves branches buds flowers and fruits Activity We would require a glass water red blue ink and a soft stem Pour water to fill one-third of the glass Add a few drops of red blue ink to the water Cut the base of the stem and put it in the glass as shown in Observe the set-up Does the colour appear in the stem You will find that the colour rises in the stem If this is kept for a longer period the colour Paheli wonders what kind of stem the money plant beanstalk gourd plants and grape vines have Do observe some of these plants How are these different from a herb a shrub or a tree Why do you think some of them need support to climb upwards Let us get to know the leaf better by taking its impression If you thought that leaves cannot sign here is an activity which will make you think again Activity Put a leaf under a white sheet of paper or a sheet in your notebook Hold it in place as shown in Hold your pencil tip sideways and rub it on the portion of the paper having the leaf below it Did you get an impression with some lines in it Are they similar to those on the leaf These lines on the leaf are called veins Do you see a prominent line in the middle of the leaf This is called the midrib midrib midrib The design made by veins in a leaf is called the leaf venation If this design is net-like on both sides of midrib the venation is reticulate In the leaves of grass you might have seen that the veins are parallel to one another This is parallel venation Observe the venation in as many leaves as you can without removing them from the plant Observe the leaves of some plants around you and draw them in your notebook Are all the leaves of same size shape and colour How are leaves attached to the stem The part of leaf by which it is attached to the stem is called petiole The broad green part of the leaf is called lamina names of some plants having reticulate and parallel venation Shall we now find out some of the functions of a leaf Activity We will require a herb two transparent polythene bags and thread Do this activity during day time on a sunny day Use a healthy well watered plant that has been growing in the sun Enclose a leafy branch of the plant in a polythene cover and tie up its mouth as shown in Tie up the mouth of another empty polythene cover and keep it also in the sun After a few hours observe the inner surface of the covers What do you see Are there any droplets of water How do you think they got there Don’t forget to remove the polythene bag after the activity Water comes out of leaves in the form of vapour by a process called transpiration Plants release a lot of water into the air through this process We will learn more about this in Chapter Midrib Veins Transparent polythene cover bag Green leaf Iodine solution Purplish coloured leaf evaporate In Chapter we noticed water changing into different forms in some of our activities Leaves also have another function Let us study this Activity We would require a leaf spirit a beaker test tube burner water a watch glass and iodine solution for this activity Take a leaf in a test tube and pour spirit to completely immerse the leaf Which part of the plant is in the soil Let us learn more about this part from the following activities Activity You would require two pots some soil khurpi for digging blade or a pair of scissors and water This activity is to be done in groups of students Select two plants of the same kind from an open ground and dig them out with roots Take care that their roots do not break Plant one of them in pot A a Cut off the roots from the Now place the test tube in a beaker half filled with water Heat the beaker till all the green colour from the leaf comes out into the spirit in the test tube Take out the leaf carefully and wash it in water Place it on a watch glass and pour some iodine solution over it What do you observe Compare your observations with those done in Chapter when you tested food for presence of different nutrients Does this mean that the leaf has starch in it In Chapter we saw that a slice of raw potato also shows the presence of starch Potatoes get this starch from their leaves and store it Leaves prepare their food in the presence of sunlight and a green coloured substance present in them For this they also use water and carbon dioxide This process is called photosynthesis Oxygen is given out in this process The food prepared by leaves ultimately gets stored in different parts of plant We have seen that the stem supplies leaf with water The leaf uses the water to make food The leaves also lose water through transpiration How do the stem and leaves get water That is where the roots come in Since the activity involves the use of spirit and heating it is advised that it is demonstrated by the teacher in the class Observe the plants after a week Are both plants healthy Both the plants are watered regularly but one is without roots isn’t it Does this activity help you understand an important function of the root Let us do an activity to study another function of root Activity We would require seeds of gram and maize cotton wool katori bowl and some water Take two katoris bowl Place some wet cotton in them Put or seeds of gram in one and maize in the other Keep the cotton wet by sprinkling water every day until the sprouts have grown into young plants After a week try to separate the young plants from the cotton holding the plant firmly to the soil They anchoranchor anchor the plant to the soil You have seen that there are different kinds of stems and leaves Do the roots also show a variety Let us find out Activity Now look at the roots of the gram plants you have pulled out from the cotton in the previous activity Do they look like the roots shown in a or those in b How about the roots of Was it easy to separate the cotton from the roots Why In Activity we could not pull out the plants from the soil right We dug them out This is because roots help in maize plant Write gram or maize in the blank spaces in the figure after matching the roots with the figures In what way are the roots of gram and maize similar In what way are they different There seem to be two different types of roots isn’t it Are there also other types of roots Let us find out Activity Go to an open ground where many wild plants are growing Dig out a few wash the soil off the roots and observe them For roots of the kind shown in All roots seem similar and these are called fibrous roots Separate the plants you have collected into two groups We have learnt that roots absorb water and minerals from the soil and the stem conducts these to leaves and other parts of the plant The leaves prepare food This food travels through the stem and is stored in different parts of plant We eat some of these as roots like carrot radish sweet potato turnip and tapioca We also eat many other parts of a plant where food is stored Boojho has a brilliant idea If he wants to know what kind of roots a plant has he need not pull it out He just has to look at its leaves are called sepals To see the inner parts of the flower clearly you have to cut it open if its petals are joined For example in datura and other bell-shaped flowers the petals have to be cut lengthwise and spread Which colour did you use for the flower in c Are all flowers colourful Have you ever seen flowers on grass wheat maize mango or guava Are those brightly coloured Let us study a few flowers These are the petalspetals petals Different flowers have petals of different colours FLOWER When choosing flowers to study avoid using marigold chrysanthemum or sunflower You will learn in higher classes that they are not single flowers but groups of flowers Activity We would require one bud and two fresh flowers each of any of the following datura china rose mustard brinjal lady’s finger gulmohur Also a blade a glass slide or a sheet of paper a magnifying glass and water out so that the inner parts can be seen clearly Remove the sepals and petals to see the other parts Study the carefully compare your flower with the illustration and identify the stamensstamens stamens and pistilpistil pistil in your flower Look at carefully It shows different kinds of stamens present in different flowers Can you recognise the two parts of the stamens in your flower How many stamens are there in your flower Draw one stamen and label its parts The innermost part of flower is called the pistilpistil pistil If you cannot see it completely remove the remaining stamens Identify the parts of the pistil with the help of Draw a neat labelled diagram of the pistil of your flower Let us now study the structure of ovaryovary ovary It is the lowermost and swollen part of the pistil We will cut this part to study what is inside a and b carefully to understand how to cut the ovary of a flower Style Cut the ovary in two different ways To prevent them from drying put a drop of water on each of the two pieces of the ovary you have cut Observe the inner parts of the ovary using a lens Do you see some small bead like structures inside the ovary They are called ovulesovules ovules Draw and label the inner parts of the ovary in your notebook Try to find out the names of as many flowers as you can by asking the gardener or any other person Remember not to pluck more flowers than you need Do all flowers have sepals petals stamens and pistils Are there flowers that do not have one or more of these Are there flowers which have parts other than these Did you find any flower which has no difference between sepals and petals Did you find any flower in which the number of stamens is different from the number of petals Do you now agree that the structure of the flower is not always the same The number of sepals petals stamens and pistils may also be different in different flowers Some of these parts may even be absent at times We have studied some features and functions of leaves stems and roots We studied the structure of different flowers We will learn about the function of flowers in higher classes Plants are usually grouped into herbs shrubs and trees based on their height nature of stem and branches The stem bears leaves flowers and fruits Leaf usually has a petiole and lamina The pattern of veins on the leaf is called venation It can be reticulate or parallel Leaves give out water vapour through the process of transpiration Green leaves make their food by the process of photosynthesis using carbon dioxide and water in the presence of sunlight Roots absorb water and minerals from the soil They also anchor the plant firmly in the soil Roots are mainly of two types tap root and fibrous root Plants having leaves with reticulate venation have tap roots while plants having leaves with parallel venation have fibrous roots The stem conducts water from roots to the leaves and other parts and food from leaves to other parts of the plant The parts of a flower are sepals petals stamens and pistil Correct the following statements and rewrite them in your notebook a Stem absorbs water and minerals from the soil b Leaves hold the plant upright c Roots conduct water to the leaves d The number of petals and stamens in a flower is always equal e If the sepals of a flower are joined together its petals are also joined together f If the petals of a flower are joined together then the pistil is joined to the petal Draw a a leaf b a taproot and c a flower you have studied for Table Can you find a plant in your house or in your neighborhood which has a long but weak stem Write its name In which category will you place it What is the function of a stem Which of the following leaves have reticulate venation Wheat tulsi maize grass coriander dhania China rose If a plant has fibrous root what type of venation do its leaves have If a plant has leaves with reticulate venation what kind of roots will it have Is it possible for you to find out whether a plant has taproot or fibrous roots by looking at the impression of its leaf on a sheet of paper What are the parts of a flower From the following plants which of them have flowers Grass maize wheat chilli tomato tulsi peepal shisham banyan mango jamun guava pomegranate papaya banana lemon sugarcane potato groundnut Name the part of plant which produces food Name the process In which part of a flower you will find the ovary Name two plants in which one has joined sepals and the other has separate sepals SUGGESTED PROJECT AND ACTIVITIES BECOME A LEAF EXPERT Do this activity with a number of leaves over a period of few weeks For every leaf that you wish to study pluck it and wrap it in a wet cloth and take it home Now place the leaf between the folds of a newspaper and place a heavy book on it You can also put it under your mattress or a trunk Take out the leaf after a week Paste it on a paper and write a poem or story about it With your leaf collection pasted in a book you can become an expert about leaves Names of plant parts are hidden in this grid Search them by going up down diagonally forward or backward Have fun Body Movements S it absolutely still Observe the movements taking place in your body Y ou must be blinking your eyes time to time Observe the movements in your body as you breathe There are so many movements that happen in our bodies When you are writing in your notebook which part of the body are you moving Or when you turn and look at your friend Different parts of your body move while you remain at the same place in these examples You also move from one place to another you get up and go to your teacher or to the school compound or go home after school You walk run skip jump and move from place to place Let us see how animals move from place to place by filling up Table after discussing with our friends teachers and parents Walk run fly jump creep crawl slither and swim these are only a few of the ways in which animals move from one place to another Why are there so many differences in the way that animals move from place to place Why is it that many animals walk while a snake slithers or crawls and a fish swims Let us look closely at some of our own movements to begin with before looking at all these varieties of movements in animals Do you enjoy doing physical exercise at school How do you move your hands and legs while doing different exercises Let us try some of the many movements our body is capable of Bowl an imaginary ball at an imaginary wicket How did you move your arm Did you rotate it at the shoulder in a circular movement Did your shoulder also move Lie down and rotate your leg at the hip Bend your arm at the elbow and the leg at the knee Stretch your arm sideways Bend your arm to touch your shoulder with your fingers Which part of your arm did you bend Straighten your arm and try to bend it downwards Are you able to do it Try to move the various parts of your body and record their movements in Table Why is it that we are able to move a few parts of our body easily in various directions and some only in one direction Why are we unable to move some parts at all Activity Place a scale length-wise on your arm so that your elbow is in the centre Ask your friend to tie the scale and your arm together Now try to bend your elbow Are you able to do it Did you notice that we are able to bend or rotate our body in places where two parts of our body seem to be joined together like elbow shoulder or neck These places are called jointsjoints joints Can you name more such joints If our body has no joints do you think it would be possible for us to move in any way at all What exactly is joined together at these joints Press your fingers against the top of your head face neck nose ear back of the shoulder hands and legs including the fingers and toes Do you get a feel of something hard pressing against your fingers The hard structures are the bones Repeat this activity on other parts of your body So many bones Bones cannot be bent So how do we bend our elbow It is not one long bone from the upper arm to our wrist It is different bones joined together at the elbow Similarly there are many bones present in each part of the body We can bend or move our body only at those points where bones meet There are different types of joints in our body to help us carry out different movements and activities Let us learn about some of them Ball and socket joints Activity Roll a strip of paper into a cylinder Make a small hole in an old rubber or plastic ball under supervision and push the paper cylinder into it as shown in You can also stick the cylinder on the ball Put the ball in a small bowl Does the ball rotate freely inside the bowl Does the paper cylinder also rotate Now imagine that the paper cylinder is your arm and the ball is its end The bowl is like the part of the shoulder to which your arm is joined The rounded end of one bone fits into the cavitycavity cavity hollow space of the other bone Such a joint allows movements in all directions Can you name another such joint you can think of recollecting the body movements we tried at the beginning of this section Pivotal Joint The joint where our neck joins the head is a pivotal joint It allows us to bend our head forward and backward and turn the head to our right or left Try these movements How are these movements different from those of our arm that can rotate a complete circle in its ball and socket joint In a pivotal joint a cylindrical bone rotates in a ring Hinge joints Open and close a door a few times Observe the hingeshinges hinges of the door carefully They allow the door to move back and forth Activity Let us look at the kind of movement allowed by a hinge Make a cylinder with cardboard or thick chart paper as shown in Attach a small pencil to the cylinder by piercing the cylinder at the centre as shown Make a hollow half cylinder from cardboard such that the rolled up cylinder can fit inside it easily The hollow half cylinder with the rolled up cylinder sitting inside it allows movement like a hinge Try to move the rolled up cylinder How does it move How is this movement different from what we saw with our constructed ball and socket joint We saw this kind of movement at the elbow in Activity What we have constructed in is different from a hinge of course But it illustrates the direction in which a hinge allows movement The elbow has a hinge joint that allows only a back and forth movement Can you think of more examples of such joints Fixed joints Some joints between bones in our head are different from those we have discussed so far The bones cannot move at these joints Such joints are called fixedfixed fixed joints When you open your mouth wide you can move your lower jaw away from your head isn’t it Try to move your upper jaw now Are you able to move it There is a joint between the upper jaw and the rest of the head which is a fixed joint We discussed only some of the joints that connect parts of our body What gives the different parts of the body their different shapes If you wanted to make a doll what will you make first Perhaps a framework to give the doll shape before making its outer structure isn’t it All the bones in our body also form a framework to give a shape to our body Bend your fingers Are you able to bend them at every joint How many bones does your middle finger have Feel the back of your palm It seems to have many bones isn’t it Is your wrist flexible It is made up of several small bones called carplescarples carples What will happen if it has only one bone This framework is called the skeletonskeleton skeleton How do we know that this is the shape of a human skeleton How do we know the shapes of the different bones in our body We can have some idea about the shape and number of bones in some parts of our body by feeling them One way we could know this shape better would be to look at X ray images of the human body Did you or anyone in your family ever have an X-ray of any part of your body taken Sometimes when we are hurt or have an accident doctors use these X-ray images to find out about any possible injuries that might have happened to the bones The X rays show the shapes of the bones in our bodies Feel the bones in your forearm upper arm lower leg and upper leg Try to find the number of bones in each part Similarly feel the bones of your ankle and knee joints and compare these with the X-ray images The human skeleton is composed of around bones at birth The number of bones in the skeleton changes with age It decreases to bones by adulthood after some bones have fused together Activity Take a deep breath and hold it for a little while Feel your chest bones and the back bone by gently pressing the middle of the chest and back at the same time Count as many ribs bones of the chest as possible Observe carefully and compare with what you feel of the chest bones We see that the ribs are curiously bent They join the chest bone and the backbone together to form a box This is called the rib cagerib cage rib cage There are ribs on each side of chest Some important internal parts of our body lie protected inside this cage Ask some friends to touch their toes without bending their knees Starting from the neck move your fingers downwards on the back of your friend What you feel is the backbone It is made up of many small bones called vertebrae The backbone consists of vertebrae The rib cage is joined to these bones If backbone was made up of only one long bone will your friend be able to bend Make your friend stand with both hands pressed to the wall and ask her to push the wall The backbone The skull is made up of many bones joined together It encloses and protects a very important part of the body the brain We discussed many bones and the joints of our skeleton There are bones on the back are prominent where the shoulders are They are called shoulder bones Observe carefully This structure is made of pelvic bones They enclose the portion of your body below the stomach This is the part you sit on some additional parts of the skeleton that are not as hard as the bones and which can be bent These are called cartilagecartilage cartilage Feel your ear Do you find any hard bony parts that can be bent There do not seem to be any bones here isn’t it Do you notice anything different between the ear lobe and the portions above it as you press them between your fingers observe a swollen region is the upper arm This is a musclemuscle muscle The muscle bulged due to contraction it became smaller in length Now bring your arm back to its normal position What happened to the muscle Is it still contracted You can observe similar contraction of muscles in your leg when you walk or run When contracted the muscle becomes shorter stiffer and thicker It pulls the bone Muscles work in pairs When one of them contracts the bone is pulled in that direction The other muscle of the pair relaxes To move the bone in the opposite direction the relaxed musle contracts to pull the bone towards its original position while the first relaxes A muscle can only pull It cannot push Thus two muscles have to work together to move a bone Are muscles and bones always required for movement How do other animals move Do all animals have bones What about an earthworm or a You do feel something in the upper parts of the ear that is not as soft as the ear lobe but not as hard as a bone isn’t it This is cartilage Cartilage is also found in the joints of the body We have seen that our skeleton is made up of many bones joints and cartilage You could feel bend and move many of them Draw a neat figure of the skeleton in your notebook We have learnt about the bones in our body and about joints that help us move in different ways What makes the bones move the way they do Let us find out Make a fist with one hand bend your arm at the elbow and touch your shoulder with the thumb Do you see any change in your upper arm Touch it with the other hand Earthworm Activity Observe an earthworm moving on soil in a garden Gently lift it and place it on a piece of blotting or filter paper Observe its movement Then place it on a smooth glass plate or any slippery surface Observe its movement now Is it different from that on paper In which of the above two surfaces do you find that the earthworm is able to move easily The body of an earthworm is made up of many rings joined end to end An This is called the shell and it is the outer skeleton of the snail but is not made of bones The shell is a single unit and does not help in moving from place to place It has to be dragged along Place the snail on a glass plate and watch it When it starts moving carefully lift the glass plate along with the snail over your head Observe its movements from beneath A thick structure and the head of the snail may come out of an opening in Movement of earthworm earthworm does not have bones It has muscles which help to extend and shorten the body During movement the earthworm first extends the front part of the body keeping the rear portion fixed to the ground Then it fixes the front end and releases the rear end It then shortens the body and pulls the rear end forward This makes it move forward by a small distance Repeating such muscle expansions and contractions the earthworm can move through soil Its body secretes a slimy substance to help the movement How does it fix parts of its body to the ground Under its body it has a large number of tiny bristles hair like structures projecting out The bristles are connected with muscles The bristles help to get a good grip on the ground The earthworm actually eats its way through the soil Its body then throws away the undigested part of the material that it eats This activity of an earthworm makes the soil more useful for plants SnailSnail Snail Activity Observe a snail in your garden or in field Have you seen the rounded structure it carries on its back SCIENCECIENCE CIENCE of plates joined together and that permits movement There are two pairs of wings attached to the body behind head The cockroaches have distinct muscles those near the legs move the legs for walking The body muscles move the wings when the cockroach flies Birds Birds fly in the air and walk on the ground Some birds like ducks and swans also swim in water The birds can fly because their bodies are well suited for flying Their bones are hollow and light The bones of the hind limbs are typical for walking and perching The the shell The thick structure is its foot made of strong muscles Now carefully tilt the glass plate The wavy motion of the foot can be seen Is the movement of a snail slow or fast as compared to an earthworm Cockroach Activity Observe a cockroach Cockroaches walk and climb as well as fly in the air They have three pairs of legs These help in walking The body is covered with a hard outer skeleton This outer skeleton is made of number bony parts of the forelimbs are modified as wings The shoulder bones are strong The breastbones are modified to hold muscles of flight which are used to move the wings up and down Fish Activity Make a paper boat Put it in water and push it with one narrow end pointing forward a Did it go into the water easily Now hold the boat sideways and push it into the water from the broad side b Are you able to make the boat move in water Have you noticed that the shape of a boat is somewhat like a fish The head and tail of the fish are smaller than the middle portion of the body the body tapers at both ends This body shape is called streamlined The shape is such that water can flow around it easily and allow the fish to move in water The skeleton of the fish is covered with strong muscles During swimming muscles make the front part of the body curve to one side and the tail part swings towards the opposite side The fish forms a curve as shown in Then quickly the body and tail curve to the other side This makes a jerk and pushes the body forward A series of such jerks make the fish swim ahead This is helped by the fins of the tail Fish also have other fins on their body which mainly help to keep the balance of the body and to keep direction while swimming Did you ever notice that under water divers wear fin like flippers on their feet to help them move easily in water How do snakes move Have you seen a snake slither Does it move straight Snakes have a long backbone They have many thin muscles They are connected to each other even though they are far from one another Muscles also interconnect the backbone ribs and skin The snake’s body curves into many loops Each loop of the snake gives it a forward push by pressing against the ground Since its long body makes many loops and each loop gives it this push the snake moves forward very fast and not in a straightline We have learned about the use of bones and muscles for the movements of different animals Paheli and Boojho have many questions in their sacks about the different movements in animals So must you be having many unanswered questions buzzing in your minds The ancient Greek philosopher Aristotle in his book Gait of Animals asked himself these questions Why do different animals have the body parts that they do have and how do these body parts help animals to move the way they do What are the similarities and differences in these body parts between different animals How many body parts are needed by different animals for moving from place to place Why two legs for humans and four for cows and buffaloes Many animals seem to be having an even number of legs why Why is the bending of our legs different from that of our arms So many questions and perhaps we have looked for some answers through our activities in this chapter and we need to look for many more answers Yoga For Better Health Yoga is an invaluable gift of the ancient Indian tradition The United Nations declared June as International Day of Yoga Yoga keeps a person healthy It helps in keeping the backbone erect enabling you to sit straight and not slouch Many postures in yoga require you to lift your own weight which help in making the bones strong and help ward off osteoporosis It also helps in relieving joint pain which is mostly observed in elderly people It tunes all muscles in the body and keeps them active It keeps the heart healthy and makes it work more efficiently Certain yoga postures should be performed under the supervision of a trained person Bones and cartilage form the skeleton of the human body It gives the frame and shape to the body and helps in movement It protects the inner organs The human skeleton comprises the skull the back bone ribs and the breast bone shoulder and hipbones and the bones of hands and legs The bones are moved by alternate contractions and relaxations of two sets of muscles The bone joints are of various kinds depending on the nature of joints and direction of movement they allow Strong muscles and light bones work together to help the birds fly They fly by flapping their wings Fish swim by forming loops alternately on two sides of the body Snakes slither on the ground by looping sideways A large number of bones and associated muscles push the body forward The body and legs of cockroaches have hard coverings forming an outer skeleton The muscles of the breast connected with three pairs of legs and two pairs of wings help the cockroach to walk and fly Earthworms move by alternate extension and contraction of the body using muscles Tiny bristles on the underside of the body help in gripping the ground Snails move with the help of a muscular foot THINGS TO THINK ABOUT We discussed the many movements our bodies are capable of Healthy bones muscles joints and cartilages are needed by the body for all these movements Some of us suffer from conditions that could make these movements not so easy In a whole class activity try to find ways that one would manage everyday activities if any one of our body movements was not possible In Activity for instance you tied a scale on your arm and disabled the elbow movement Think of other ways of restricting normal body movements and find ways that everyday activities could then be managed The Living Organisms Characteristics and Habitats P aheli and Boojho went on vacation to many places of interest One such trip took them to the river Ganga in Rishikesh They climbed the mountains of the Himalayas where it was very cold They saw many kinds of trees on these mountains oaks pines and deodars very different from the ones near their home on the plains In yet another trip they travelled to Rajasthan and moved on camels through the hot desert They collected different kinds of cactus plants from this trip Finally they went on a trip to Puri and visited the sea beach dotted with casuarina trees While recollecting all the fun that they had on these trips a thought struck them All these places were so different from one another some were cold some very hot and dry and some places so humid And yet all of them had many organisms living creatures of various kinds They tried to think of a place on Earth where there may not be any living creatures Boojho thought of places near his home Inside the house he tried the cupboards He had thought that there may not be any living organisms here but he found one tiny spider in the cupboard Outside the home too there did not seem to be any place he could think of that did not have living creatures Another thought that occurred to Paheli and Boojho was about the kinds of living organisms that were present in different locations that they had visited The deserts had camels the mountains had goats and yak Puri had some other creatures crabs on the beach and such a variety of fish being caught by the fishermen at the sea And then there did seem to be some creatures like ants that were present in all these different locations The kinds of plants found in each of these regions were so different from the plants of the other regions What about the surroundings of some kind or the other Paheli started thinking and reading about far away places She read that people have even found tiny living organisms in the openings of volcanoes SCIENCE in these different regions Were they the same Activity Let us start with a forest Think of all the plants animals and objects that can be found there List them in Column of Table List things animals and plants found in the other regions that are also shown in the table You can collect the examples scattered through this chapter to fill Table Discuss also with your friends parents and teachers to find more examples to fill the tables You can also consult many interesting books in libraries that talk of animals plants and minerals of different regions Try and include many plants animals and objects big and small in each of the columns in this table What kind of objects will we find that may not be animals or plants Perhaps parts of plants like dried leaves or parts of animals like bones We may also find different kinds of soils and pebbles Water in the oceans may have salts dissolved in it as discussed in Chapter There could be many more objects As we go through the chapter keep adding more examples to Table We will discuss the table as we travel through many more interesting places What do you find from the plants and animals listed in Activity Did you find a large variety in them Look at what you have entered in the column for the desert and the column for the sea in Table Did you list very different kind of organisms in these two columns What are the surroundings like in these two regions In the sea plants and animals are surrounded by salinesaline saline salty water Most of them use the air dissolved in water There is very little water available in the desert It is very hot in the day time and very cold at night in the desert The animals and plants of the desert live on the desert soil and breathe air from the surroundings The sea and the desert are very different surroundings and we find very different kind of plants and animals in these two regions isn’t it Let us look at two very different kind of organisms from the desert and the sea a camel and a fish The body structure of a camel helps it to survive in desert conditions Camels have long legs which help to keep their bodies away from the heat of the sand They excrete small amount of urine their dung is dry and they do not sweat Since camels lose very little water from their bodies they can live for many days without water Let us look at different kinds of fish Some of these are shown in There are so many kinds of fish but do you see that they all have something common about their shape All the ones shown here have the streamlined shape that was discussed in Chapter This shape helps them move inside water Fish have slippery scales on their bodies These scales protect the fish and also help in easy movement through water We discussed in Chapter that fish have flat fins and tails that help them to change directions and keep their body balance in water Gills present in the fish help them to use oxygen dissolved in water We see that the features of a fish help it to live inside water and the features of a camel help it to survive in a desert We have taken only two examples from a very wide variety of animals and plants that live on the Earth In all this variety of organisms we will find that they have certain features that help them live in the surroundings in which they are normally found The presence of specific features or certain habits which enable an organism to live naturally in a place is called adaptation Adaptation of organisms differ depending on their place of dwelling That is why a fish cannot live out of water and a camel cannot live in sea The place where organisms live is called habitat habitat habitat Habitat means a dwelling place a home The habitat provides food water air shelter and other needs to organisms Several kinds of plants and animals live in the same habitat The plants and animals that live on land are said to live in terrestrial habitatshabitats habitats Some examples of terrestrial habitats are forests grasslands deserts coastal and mountain regions On the other hand the habitats of plants and SCIENCE animals that live in water are called aquatic habitats Lakes rivers and oceans are some examples of aquatic habitats There are large variations among terrestrial habitats like forests grasslands deserts coastal and mountain regions located in different parts of the world The organisms both plants and animals living in a habitat are its bioticbiotic biotic components The non-living things such as rocks soil air and water in the habitat constitute its abioticabiotic abiotic components Are sunlight and heat biotic or abiotic components We know that some plants grow from seeds Let us look at some abiotic factors and their effect on seeds as they grow into young plants Activity Recall Activity in Chapter we made sprouts from moong and chana seeds When the seed turned into a sprout it is said to have germinated This is the beginning of life of a new plant Collect some dry moong seeds Keep seeds aside and soak the rest in water for a day Divide the soaked seeds into four parts Keep one part completely submerged in water for days Do not disturb the dry seeds and those submerged in water Keep one part of soaked seeds in a sunny room and another in a completely dark region like a cupboard that does not allow any light to come in Keep the last part in very cold surroundings say in a refrigerator or with ice around them Rinse them and replace the water every day What do you notice after a few days Do the seeds in all the five conditions germinate uniformly Do you find slower or no germination in any of these Do you realise that abiotic factors like air water light and heat are important for the growth of plants In fact abiotic factors are important for all living organisms We find that organisms exist in very cold as well as very hot climates isn’t it How do they manage to survive Adaptation is the method by which organisms get well adjusted to the climate There are some changes that can happen in an organism over a short period of time to help them adjust to some changes in their surroundings For instance if we live in the plains and suddenly go to high mountain regions we may experience difficulty in breathing and doing physical exercise for some days We need to breathe faster when we are on high mountains After some days our body adjusts to the changed conditions on the high mountain Such small changes that take place in the body of a single organism over short periods to overcome small problems due to changes in the surroundings are called acclimatisation These changes are different from the adaptations that take place over thousands of years Adaptation does not take place in a short time because the abiotic factors of a region also change very slowly Those organisms which cannot adapt to these changes die and only the adapted ones survive Organisms adapt to different abiotic factors in different ways This results in a wide variety of organisms in different habitats Let us look at some habitats understood the abiotic factors and the adaptations of animals in these habitats DesertsDeserts Deserts We discussed the abiotic factors of a desert and the adaptations in camels What about other animals and plants that are found in deserts Do they have the same kind of adaptations There are desert animals like rats and snakes which do not have long legs that a camel has To stay away from the intense heat during the day they stay in burrows deep in the sand These animals come out only during the night when it is cooler shows some typical plants that grow in a desert How are these adapted to the desert Activity Bring a potted cactus and a leafy plant to the classroom Tie polythene bags to some parts of the two plants as was done for Activity in Chapter where we studied transpiration in plants Leave the potted plants in the sun and observe after a few hours What do you see Do you notice any difference in the amount of water collected in the two polythene bags Desert plants lose very little water through transpiration The leaves in desert plants are either absent very small or they are in the form of spines This helps in reducing loss of water from the leaves through transpiration The leaf-like structure you see in a cactus is in fact its stem SCIENCECIENCE CIENCE stem is also covered with a thick waxy layer which helps to retain water in the tissues of cacti Most desert plants have roots that go very deep into the soil for absorbing water Mountain regions These habitats are normally very cold and windy In some areas snowfall may take place in winters There is a large variety of plants and animals living in the mountain regions Have you seen the kind of trees shown in also present on mountains They may have different kind of adaptations to survive on the mountains Animals living in the mountain regions are also adapted to the conditions there They have thick skin or fur to protect them from cold For example yaks have long hair to keep them warm Snow leopard has thick fur on its body a Snow leopard b yak and c mountain goat are adapted to mountain habitats If you live in a mountain region or have visited one you may have seen a large number of such trees But have you ever noticed such trees naturally growing in other regions How are these trees adapted to the conditions prevailing in their habitat These trees are normally cone shaped and have sloping branches The leaves of some of these trees are needle-like This helps the rainwater and snow to slide off easily including feet and toes This protects its feet from the cold when it walks on the snow The mountain goat has strong hooves for running up the rocky slopes of the mountains As we go up in the mountainous regions the surroundings change and we see different kinds of adaptations at different heights Grasslands A lion lives in a forest or a grassland and is a strong animal that can hunt and kill animals like deer It is light brown in colour Look at the picture of a lion and that of a deer How are the eyes placed in the face for these two animals Are they in the front or on the side of the face Lions have long claws in their front legs that can be withdrawn inside the toes Do the features of a lion help it in any way to survive It’s light brown colour helps it to hide in dry grasslands when it hunts for preyprey prey animals to eat The eyes in front of the face allow it to have a correct idea about the location of its prey A deer is another animal that lives in forests and grasslands It has strong teeth for chewing hard plant stems of the forest A deer needs to know about the presence of predatorspredators predators animals like lion that make it their prey in order to run away from them and not become their prey It has long ears to hear movements of predators The eyes on the side of its head allow it to look in all directions for danger The speed of the deer helps them to run away from the predators There are many other features of a lion a deer or other animals and plants that help them to survive in their habitat Some Aquatic Habitats OceansOceans Oceans We already discussed how fish are adapted to live in the sea Many other sea animals have streamlined bodies to help them move easily in water There are some sea animals like squids and octopus which do not have this streamlined shape They stay deeper in the ocean near the seabed and catch any prey that moves towards them However when they move in water they make their body shapes streamlined These animals have gills to help them use oxygen dissolved in water SCIENCECIENCE CIENCE gills They breathe in air through nostrils or blowholesblowholes blowholes that are located on the upper parts of their heads This allows them to breathe in air when they swim near the surface of water They can stay inside the water for a long time without breathing They come out to the surface from time to time to breathe in air Did you ever see this interesting activity of dolphins in television programme or films on ocean life Ponds and lakes Have you seen plants growing in ponds lakes rivers and even some drains Go on a field trip to a nearby pond if possible and try to observe the kinds of plants that are seen there Observe the leaves stems and roots of these plants Some of these plants have their roots fixed in the soil below the water In terrestrial plants roots normally play a very important role in the absorption of nutrients and water from the soil However in aquatic plants roots are much reduced in size and their main function is to hold the plant in place The stems of these plants are long hollow and light The stems grow up to the surface of water while the leaves and flowers float on the surface of water Some aquatic plants are submerged in water All parts of such plants are under water Some of these plants have narrow and thin ribbon-like leaves These can bend in the flowing water In some submerged plants leaves are often highly divided through which the water can easily flow without damaging them Frogs usually live in ponds Frogs can stay both inside the water as well as move on land They have strong back legs that help them in leaping and catching their prey They have webbed feet which help them swim in water We have discussed only a few common animals and plants compared to the wide variety that live in different habitats You may have also noticed the very wide variety in plants around you when you prepared a herbarium as part of the suggested activities in Chapter Imagine the kind of variety that you could see in a herbarium of leaves of plants from all regions of the Earth We went on a journey through different habitats and discussed many plants and Some aquatic plants float on water Some have their roots fixed in the soil at the bottom Some aquatic plants are submerged in water animals In Activity we listed objects plants and animals found in different surroundings Suppose we stop a while and think which examples in our list are living Let us think of examples from a forest Trees creepers small and big animals birds snakes insects rocks soil water air dry leaves dead animals mushrooms and moss may be only some of the objects that are present in the forest Which of these are living Think of objects that you can see around you at this moment and group them as living and non-living In some cases it is easy for us to know For example we know that objects like chair or table are not alive Paheli was reading this rhyme from Complete Nonsense written by Edward Lear Paheli and Boojho found the poem very funny because they knew that a chair or a table is not alive and it cannot talk or walk Chair table stone or a coin are not alive Similarly we do know that we are alive and so are all the people of the world We also see animals around us that are so full of life dogs cats monkeys squirrels insects and many others How do we know that something is living Often it is not so easy to decide We are told that plants are living but they do not move like a dog or a pigeon On the other hand a car or a bus can move still we consider them as non living Plants and animals appear to grow in size with time But then at times clouds in the sky also seem to grow in size Does it mean that clouds are living No So how does one distinguish between living and non living things Do living things have some common characteristics that make them very different from the non-living You are a wonderful example of a living being What characteristics do you have which make you different from a non living thing List a few of these characteristics in your notebook Look at your list and mark those characteristics that you have listed which may also be found in animals or plants Some of these characteristics are perhaps common to all living things Said the Table to the Chair You can hardly be aware How I suffer from the heat And from chilblains on my feet If we took a little walk We might have a little talk Pray let us take the air Said the Table to the Chair Said the Chair to the table Now you know we are not able How foolishly you talk When you know we walk Said the Table with a sigh It can do no harm to try I’ve as many legs as you Why can’t we walk on two cannot noticed pups grow into adults A chick hatched from an egg grows into a hen or a cock Plants also grow Look around you and see a few plants of a particular type Some are very small and young some are bigger They may all be in different stages of growth Look at the plants after a few days and weeks You may find that some of them have grown in size Growth seems to be common to all living things Do you think non-living things show growth Do all organisms respire Can we live without breathing When we inhale the air moves from outside to the inside of our body When we breathe out the air moves from inside our body to outside Breathing is part of a process called respiration In respiration some of the oxygen of the air we breathe in is used by the body We breathe out carbon dioxide produced in this process The process of breathing in animals like cows buffaloes dogs or cats is similar to humans Observe any one of these animals while they are taking rest and notice the movement of their abdomen This slow movement indicates that they are breathing Do all organisms need food In Chapters and we learnt that all living things need food and how essential it is to animals and to us We have also learnt that plants make their own food by the process of photosynthesis Animals depend on plants or other animals for their food Food gives organisms the energy needed for them to grow Organisms also need energy for other life processes that go on inside them Do all organisms show growth growth growth Does the kurta you had four years back still fit you You cannot wear it any more isn’t it You must have grown taller during these years You may not realise it but you are growing all the time and in few more years you will become an adult Young ones of animals also grow into adults You would surely have A baby grows into an adult A chicken grows into an adult Respiration is necessary for all living organisms It is through respiration that the body finally obtains energy from the food it takes Some animals may have different mechanisms for the exchange of gases which is a part of the respiration process For example earthworms breathe through their skin Fish we have learnt have gills for using oxygen dissolved in water The gills absorb oxygen from the air dissolved in water Do plants also respire Exchange of gases in plants mainly takes place through leaves The leaves take in air through tiny pores in them and use the oxygen They give out carbon dioxide to the air We learnt that in sunlight plants use carbon dioxide to produce food and give out oxygen The amount of oxygen released in the process of food preparation by plants is much more than the oxygen they use in respiration Respiration in plants takes place day and night Do all organisms respond to stimuli How do you respond if you suddenly step on a sharp object like a thorn while walking barefoot How do you feel when you see or think about your favourite food You suddenly move from a dark place into bright sunlight What happens Your eyes shut themselves automatically for a moment till they adjust to the changed bright surroundings Your favourite food bright light and a thorn in the above situations are some examples of changes in your surroundings All of us respond immediately to such changes Changes in our surroundings that makes us respond to them are called stimulistimuli stimuli Do other animals also respond to stimuli Observe the behaviour of animals when food is served to them Do you find them suddenly becoming active on seeing the food When you move towards a bird what does it do Wild animals run away when bright light is flashed towards them Similarly cockroaches begin to move to their hiding places if the light in the kitchen is switched on at night Can you give some more examples of responses of animals to stimuli Do plants also respond to stimuli Flowers of some plants bloom only at night In some plants flowers close after sunset In some plants like Mimosa commonly known as touch-me-not leaves close or fold when someone touches them These are some examples of responses of plants towards changes in their surroundings Activity Place a potted plant in a room a little away from a window through which sunlight enters some time during the day Continue watering the plant for a few days Does the plant grow upright like plants out in the open Note the direction in which it bends if it is not growing upright Do you think this may be in response to some stimulus All living things respond to changes around them Living organisms and excretion All organisms need food Not all the food that is eaten is completely used only a part of it is utilised by the body What happens to the rest This has to be removed from the body as wastes Our body produces some wastes in other life processes also The process of getting rid of wastes by organisms is known as excretion Do plants also excrete They do but not as seen in animals The mechanisms in plants are a little different Some plants find it possible to store the waste products within their parts in a way that they do not harm the plant as a whole Some plants remove waste products as secretions Excretion is another characteristic common to all organisms Animals reproduce their own kind The mode of reproduction may be different in different animals Some animals produce their young ones through eggs Some animals give birth to the young ones Plants also reproduce Like animals plants also differ in their mode of reproduction Many plants reproduce through seeds Plants produce seeds light Do all organisms reproduce their own kind Living things produce more of their own kind through reproduction It takes place in many different ways for different organisms Do all organisms move In Chapter we discussed the various ways in which animals move They move from one place to another and also show other body movements What about plants Do they also move Plants are generally anchored in soil so they do not move from one place to another However various substances like water minerals and the food synthesised by them move from one part of the plant to other Have you noticed any other kind of movement in plants Opening or closing of flowers Do you recall how some plants show movement in response to certain stimuli We also have some non-living things moving of course A bus car a small piece of paper clouds and so on Is there something different in these movements from the movements of living beings There is such a variety of living organisms but all of them show some common characteristics as we have discussed Yet another common characteristic is that living beings die Because organisms die particular types of organisms can survive over thousands of years only if they reproduce their own kind One single organism may die without ever reproducing but the type of organism can exist only if there is reproduction Plants also reproduce through cuttings Activity Take a cutting from a rose or a menhdi plant Fix it in the soil and water it regularly It may not be easy to grow plants from cuttings Do not be disappointed if your cutting does not grow Talk to a gardener if possible on the care to be given to cuttings to make them grow into plants We see that all living things seem to have some common characteristics They all need food respire respond to stimuli reproduce show movement grow and die Do we find some non-living things that also show some of these characteristics Cars bicycle clocks and the water in the river move The moon moves in the sky A cloud grows in size right in front of our eyes Can such things be called living We ask ourselves do these objects also show all the other characteristics of living things In general something that is living may have all the characteristics that we have discussed while non-living things may not show all these characteristics at the same time Is this always true Do we always find that living things definitely show all the characteristics of the living that we have discussed Do we always find that non living things may show only some of these characteristics and never all of them To understand this a little better let us look at a specific example Consider any seed say moong Is it living It can stay in a shop for months and not show any growth or some of the other characteristics of life However we bring the same seed and plant it in soil water it and it turns into a whole plant Did the seed need food did it excrete grow or reproduce when it was in the shop for many months We see that there can be cases when we cannot easily say that a thing has all the characteristics that we have discussed for it to be called living What then is life Push your hand deep inside a sack of wheat Do you find it is warm inside There is some heat being produced inside the sack of wheat The seeds respire and in that process give out some heat We see that respiration is a process that takes place in seeds even when some of the other life processes may not be very active It may not be very easy to answer our question what then is life However looking at all the diversity of living beings around us we can conclude that life is beautiful The surroundings where plants and animals live is called their habitat Several kinds of plants and animals may share the same habitat The presence of specific features and habits which enable a plant or an animal to live in a particular habitat is called adaptation There are many types of habitats however these may be broadly grouped as terrestrial on the land and aquatic in water There is a wide variety of organisms present in different habitats Plants animals and microorganisms together constitute biotic components Rocks soil air water light and temperature are some of the abiotic components of our surroundings Living things have certain common characteristics they need food they respire and excrete respond to their environment reproduce grow and show movement SUGGESTED PROJECTS AND ACTIVITIES Many magazines and newspapers talk about possibility of life outside the Earth Read these articles and have a discussion in the class about what could be defined as life outside Earth Visit a local zoo and find out what special arrangements are made for the animals that have been brought there from different habitats Find out where are the habitats of the polar bear and the penguin For each animal explain two ways in which it is well adapted to its habitat Find out which animals live in the foot-hills of the Himalayas Find out if the types and varieties of animals and plants changes as one goes higher into the mountain regions of the Himalayas Make a habitat album Try to obtain pictures of animals and plants that you have listed in Activity and paste these under different habitat sections in the album Draw the leaf shapes and structures for trees found in these different regions and include these in the album In addition draw the patterns of branching found in trees of these different regions and include these also in the album Motion and Measurement of Distances There was a general discussion among the children in Paheli and Boojho's class about the places they had visited during the summer vacations Someone had gone to their native village by a train then a bus and finally a bullock cart One student had travelled by an aeroplane Another spent many days of his holidays going on fishing trips in his uncle's boat The teacher then asked them to read newspaper articles that mentioned about small wheeled vehicles that moved on the soil of Mars and conducted experiments These vehicles were taken by spacecraft all the way to Mars Meanwhile Paheli had been reading stories about ancient India and wanted to know how people travelled from one place to another in earlier times Long ago people did not have any means of transport They used to move only on foot and carry goods on their back Later on they began to use animals for transportation For transport through water routes boats were used from ancient times To begin with boats were simple logs of wood in which a hollow cavity could be made Later people learnt to put together different pieces of wood and give shapes to the boats These shapes imitated the shapes of the animals living in water Invention of the wheel made a great change in modes of transport The design of the wheel was improved over thousands of years Animals were used to pull carts that moved on wheels Until the beginning of the th century people still depended on animals boats and ships to transport them from place to place The invention of steam engine led to the development of new means of transport Railroads were made for steam engine driven carriages and wagons Later came automobiles such as motor cars trucks and buses Motorised boats and ships were used as means of transport on water The early years of saw the development of aeroplanes These were later improved to carry passengers and goods Electric trains monorail supersonic aeroplanes and spacecraft are some of the contributions of the th century Sometimes there are objects whose length or width we need to know In Paheli and Boojho's classroom there are large desks which are to be shared by two students Paheli and Boojho share one desk but frequently end up objecting that the other is using a larger share of the desk On the teacher's suggestion they decided to measure the length of the desk make a mark exactly in the middle of it and draw a line to separate the two halves of the desk Both Paheli and Boojho are very fond of playing gilli danda with their friends Boojho brought a set of gilli and danda with him Here is how they tried to measure the length of the desk using the danda and the gilli The desk seems to be having a length equal to two danda lengths and two lengths of the gilli Drawing a line in the middle of the desk leaves each of them happy with a half of the desk equal to a danda and a gilli in length After a few days the marked line gets wiped out Boojho now has a new set of gilli and danda as he lost his old one Here is how the length of the desk seems to measure using the gilli and danda Hello Now when measured with the new set of gilli and danda the desk length seems to be about two danda lengths one gilli length with a small length still left out This is less than one gilli length Now what What would you suggest Paheli and Boojho do to measure the length of the whole desk Can they use a cricket wicket and bails to measure the length or do you think that this might create the similar problem One thing they could do is to take a small length of string and mark two points on it This will be a string length They can measure the width of the desk in string lengths How can they use the string to measure distances less than the length of a string They can fold the string and mark it into 'string lengths' Now perhaps Paheli and Boojho can measure the exact length of the desk using the string You would say that they should use the scale in their geometry box and solve their problem Yes Of course Boojho has been reading about the way people used to measure distances before such standard scales were made and he has been trying to follow different methods of measuring distances There are so many occasions when we come across a need to measure lengths and distances The tailor needs to measure the length of the cloth to know if it is enough to stitch a kurta A carpenter needs to measure the height and width of a cupboard to know how much wood he would need to make its door The farmer needs to know the length and breadth or the area of his land to know how much seed he can sow and how much water would be needed for his crops Suppose you are asked how tall you are You want to tell the length of a straight line from the top of your head to the heel of your feet All these questions have one thing in common They all concern distance between two places The two places may be close enough like the two ends of a table or they may be far apart like Jammu and Kanyakumari unit of length measure the length and breadth of the classroom It is possible that while measuring these you may find some part remains to be measured as it is smaller than your foot Use a string to measure the length of a part of your foot as you did before Activity Work in a group and each of you use your handspan as a unit to measure the width of a table or a desk in the classroom with some known quantity This known fixed quantity is called a unit The result of a measurement is expressed in two parts One part is a number The other part is the unit of the measurement For example if in Activity the length of the room is found to be lengths of your foot then is the number and foot length is the unit selected for the measurement Now study all the measurements recorded in Table and Are all the measurements for the room using everybody's foot equal Are everybody's measurement by handspan of the width of the table equal Perhaps the results could be different as the length of your handspan and that of your friends may not be the same Similarly the length of the foot may be slightly different for all the students Therefore when you tell your measurement using your handspan or length of foot as a unit to others they will not be able to understand how big the actual length is unless they know the length of your handspan or foot We see therefore that some standard units of measurement are needed that do not change from person to person Measuring the width of a table with a handspan Here too you may find that you need string lengths equal to your handspan and then fractions of this string length to make the measurement Record all observations in Table We see that measurement means the comparison of an unknown quantity In ancient times the length of a foot the width of a finger and the distance of a step were commonly used as different units of measurements The people of the Indus valley civilisation must have used very good measurements of length because we see evidence in excavations of perfectly geometrical constructions A cubit as the length from the elbow to the finger tips was used in ancient Egypt and was also accepted as a unit of length in other parts of the world People also used the foot as a unit of length in different parts of the world The length of the foot used varied slightly from region to region People measured a yard of cloth by the distance between the end of the outstretched arm and their chin The Romans measured with their pace or steps In ancient India small length measurements used were an angul finger or a mutthi fist Even today we can see flower sellers using their forearm as a unit of length for garlands in many towns of India Many such body parts continue to be in use as unit of length when convenient However everyone's body parts could be of slightly different sizes This must have caused confusion in measurement In the French created a standard unit of measurement called the metric system For the sake of uniformity scientists all over the world have accepted a set of standard units of measurement The system of units now used is known as the International System of Units SI units The SI unit of length is a metre A metre scale is shown in Also shown is the cm scale in your geometry box Each metre m is divided into equal divisions called centimetre cm Each centimetre has ten equal divisions called millimetre mm Thus m cm cm mm For measuring large distances metre is not a convenient unit We define a larger unit of length It is called kilometre km km m Now we can repeat all our measurement activities using a standard scale and measure in SI units Before we do that we do need to know the correct way of measuring lengths and distances In our daily life we use various types of measuring devices We use a metre scale for measuring length A tailor uses a tape whereas a cloth merchant uses a metre rod For measuring the length of an object you must choose a suitable device You cannot measure the girth of a tree or the size of your chest using a metre scale for instance Measuring tape is more suitable for this For small measurements such as the length of your pencil you can use a cm scale from your geometry box In taking measurement of a length we need to take care of the following Place the scale in contact with the object along its length as shown in In some scales the ends may be broken You may not be able to see the zero mark clearly a In such cases you should avoid taking measurements from the zero mark of the scale You can use any other full mark of the scale say cm b Then you must subtract the reading of this mark from the reading at the other end For example in b the reading at one end is cm and at the other end it is cm Therefore the length of the object is cm cm Correct position of the eye is also im portant for taking measurement Your eye must be exactly in front of the point where the measurement is to be taken as shown in Position B is the correct position of the eye Note that from position B the reading is cm From po sitions A and C the readings may be different b Activity Measure the height of your classmate using hand span and then by using a metre scale For this ask your classmate to stand with his back against a wall Make a mark on the wall exactly above his head Now measure the distance from the floor to this mark on the wall with your handspan and then with a metre scale Let all other students mea sure this length in a similar way Record all observations in Table at the results in column where the measurements are done using a standard scale The results may be close to each other now but are they exactly equal If not why do you think there is a difference After all everybody is using the same scale and not different hand spans This could be due to small errors in taking observations In higher classes we will learn about the importance of knowing and handling such errors in measurement We cannot measure the length of a curved line directly by using a metre scale We can use a thread to measure the length of a curved line Activity Use a thread to measure the length of the curved line AB Put a knot on the thread near one of its ends Place this knot on the point A Now place a small portion of the thread along the line keeping it taut using your fingers and thumb Hold the thread at this end point with one hand Using the other hand stretch a little more portion of the thread along the curved line Go Study carefully results obtained by different students The results in column may be different from each other as the length of the handspan may be different for different students Look on repeating this process till the other end B of the curved line is reached Make a mark on the thread where it touches the end B Now stretch the thread along a metre scale Measure the length between the knot in the beginning and the final mark on the thread This gives the length of the curved line AB We see that we need a lot of care to ensure that we are measuring distances and lengths correctly And we need some standard units and devices with which we measure these distances and can convey our results to others Activity Think of some objects you have seen recently List them in Table These may include a school bag a mosquito a table people sitting on chairs or people moving about The list may also have a butterfly a dog a cow your hands a small baby a fish in water a house a factory a piece of stone a horse a ball a bat a moving train a sewing machine a wall clock or the hands of a clock Make your list as large as you can You might have noticed that the bird is not at the same place after some time while the table is at the same place On this basis you may have decided whether an object is at rest or in motion Let us look at the motion of an ant closely Activity Select a place where you find ants Spread a large sheet of white paper on the ground and keep a little sugar on it Ants are likely to be attracted to the sugar and you will find many ants crawling on the sheet of paper soon For any one ant try and make a small mark with a pencil near its position when it has just crawled on to the sheet of paper Keep marking its position after a few seconds as it moves along on the sheet of paper After some time shake the paper free of the sugar and the ants Connect the different points you have marked with arrows to show the direction in which the ant was Some examples of rectilinear motion moving Each point you have marked shows where the ant moved to in intervals of a few seconds You may have observed the motion of a vehicle on a straight road march-past of soldiers in a parade or the falling of a stone The motion of a point marked on the blade of an electric fan or the hands of a clock are examples of circular motion The electric fan or the clock by themselves are not moving from one place to another But the blades of the In all these examples we see that the objects move along a straight line This type of motion is called rectilinear motion Activity Take a stone tie a thread to it and whirl it with your hand Observe the motion of the stone We see that the stone moves along a circular path In this motion the distance of the stone from your hand remains the same This type of motion is called circular motion object or a part of it repeats its motion after a fixed interval of time Did you observe a sewing machine as a part of Activity You must have observed that it remains at the same location while its wheel moves with a circular motion It also has a needle that moves up and down continuously as long as the wheel rotates isn't it This needle is undergoing a periodic motion Have you observed closely the motion of a ball along the ground Here Boojho is not sure why we say that the distance of the stone from your hand is the same when we whirl it around Can you help him understand this Remember that the stone is held with a string fan rotate and so do the hands of a clock If we mark a point anywhere on the blades of a fan or on the hands of a clock the distance of this point from the centre of the fan or the clock will remain the same as they rotate In some cases an object repeats its motion after some time This type of motion is called periodic motion Take the stone tied with a string that you used in Activity Now hold the string in your hand and let the stone hang from it This is a pendulum Pull the stone to one side with the other hand and let it go Now the pendulum is in motion It is an example of periodic motion A branch of a tree moving to and fro motion of a child on a swing strings of a guitar or the membrane of drums tabla being played are all examples of periodic motion where an Different modes of transport are used to go from one place to another In ancient times people used length of a foot the width of a finger the distance of a step as units of measurement This caused confusion and a need to develop a uniform system of measurement arose Now we use International System of Units SI units This is accepted all over the world Metre is the unit of length in SI unit the ball is rolling on the ground rotating as well as moving forward along the ground Thus the ball undergoes a rectilinear motion as well as rotational motion Can you think of other examples where objects undergo combinations of different types of motion We did many measurement activities and discussed some kinds of motion We saw that motion is a change in the position of an object with time The change in this position can be determined through distance measurements This allows us to know how fast or slow a motion is The movement of a snail on the ground a butterfly flitting from flower to flower a river flowing an aeroplane flying moon going around the Earth and blood flowing inside our bodies show that there is motion everywhere around us Light Shadows and Reflections We see so many objects ar ound us On the way to school we see things like buses cars cycles trees animals and sometimes flowers Without light things cannot be seen Light helps us see objects The torch bulb is an object that gives out light of its own The Sun is another familiar object that gives its own light During the day its light allows us to see objects Objects like the sun that give out or emit light of their own are called luminous objects What about objects like a chair a painting or a shoe We see these when light from a luminous object like the Sun a torch or an electric light falls on these and then travels towards our eye Recall our grouping objects as opaque transparent or translucent in Chapter If we cannot see through an object at all it is an opaque opaque opaque object If you are able to see clearly through an object it is allowing light to pass through it and is transparent There are some objects through which we can see but not very clearly Such objects are known as translucent Activity Look around yourself and collect as many objects as you can an eraser plastic scale pen pencil notebook single sheet of paper tracing paper or a piece of cloth Try to look at something far away through each of these objects Pencil Rubber ball Sheet of writing paper opaque depending on whether it allows light to pass through it completely partially or not at all WHAT EXACTLY ARE SHADOWS Activity Now one by one hold each of the opaque objects in the sunlight slightly above the ground What do you see on the ground You know that the dark patch formed by each on the ground is due to its shadow Sometimes you can identify the object by looking at its shadow Spread a sheet of paper on the ground Hold a familiar opaque object at some height so that its shadow is formed on the sheet of paper on the ground Ask one of your friends to draw the outline of the shadow while you are holding the object Draw outlines of the shadows of other objects in a similar way Now ask some other friends to identify the objects from these outlines of shadows Activity This is an activity that you will have to do in the dark In the evening go out in an open ground with a few friends Take a torch and a large sheet of cardboard with you Hold the torch close to the ground and shine it upwards so that its light falls on your friend's face You now have a source of light that is falling on an opaque object If there were no trees building or any other object behind your friend would you see the shadow of your friend's head This does not mean that there is no shadow After all the light from the torch is not able to pass through his body to the other side Thus the shadow can be seen only on a screen The ground walls of a room a building or other such surfaces act as a screen for the shadows you observe in everyday life Shadows give us some information about shapes of objects Sometimes shadows can also mislead us about the shape of the object In are a few shadows that we can create with our hands and make-believe that they are shadows of different animals Have fun Activity Place a chair in the school ground on a sunny day What do you observe from the shadow of the chair Does the shadow give an accurate picture of the shape of the chair If the chair is turned around a little how does the shape of the shadow change Take a thin notebook and look at its shadow Then take a rectangular box and look at its shadow Take flowers or other objects of different colours and look at their shadows A red rose and a yellow rose for instance Do the shadows look different in colour when the colours of the objects are different Take a long box and look at its shadow on the ground When you move the box around you may see that the size of the shadow changes Not really If we just wish to make a simple pin hole camera Activity Take two boxes of cardboard such that one can slide into another with no gap in between them Cut open one side of each box On the opposite face of the larger box make a small hole in the middle In the smaller box cut out from the middle a square with a side of about to cm Cover this open square in the box with tracing paper translucent screen Slide the smaller box inside the larger one with the hole in such a way that the side with the tracing paper is inside Your pinhole camera is ready for use Holding the pinhole camera look through the open face of the smaller box You should use a piece of black cloth to cover your head and the pinhole camera Now try to look at some distant objects like a tree or a building through the pinhole camera Make sure that the objects you wish to look at through your pinhole camera are in bright sun shine Move the smaller box forward or backward till you get a picture on the tracing paper pasted at the other end Look through your pinhole camera at the vehicles and people moving on the road in bright sunlight Surprise surprise Let us now image the Sun with our pinhole camera We need a slightly different set up for this We just need a large sheet of cardboard with a small pinhole in the middle Hold the sheet up in the Sun and let its shadow fall on a clear area Look at these pinhole images of the Sun when an eclipse is visible from your location Adjust your pinhole and screen to get a clear image before the eclipse is to occur Look at the image as the eclipse begins You will notice a part of the image of the Sun gradually becoming darker as the eclipse starts Never ever look directly at the Sun That could be extremely harmful for the eyes There is an interesting pinhole camera in nature Sometimes when we pass under a tree covered with large number of leaves we notice small patches of sunlight under it These circular images are in fact pinhole images of the Sun The gaps between the leaves act as the pinholes These gaps are all kinds of irregular shapes but we can see circular images of the Sun Try to locate images of the Paheli has another thought Activity Let us use a piece of a pipe or a long rubber tube Light a candle and fix it on a table at one end of the room Now standing at the other end of the room look at the candle through the pipe Sun when an eclipse occurs next That could be so much fun Boojho has this thought We saw upside down images of people on the road with our pinhole camera We all use mirrors at home You look into the mirror and see your own face inside the mirror We also see reflections of other objects that are in front of the mirror Sometimes we see reflections of trees buildings and other objects in the water of a pond or a lake Activity This activity should be done at night or in a dark room Ask one of your friends to hold a mirror in his her hand at one corner of the room Stand at another corner with a torch in your hand Cover the glass of torch with your fingers and switch it on Adjust your fingers with a small gap between them so that you can get a beam of light Direct the beam of the torch light onto the mirror that your friend is holding Now adjust the direction of the torch so that the patch of light falls on another friend standing in the room This activity suggests that a mirror changes the direction of light that falls on it Here is an activity that shows light travelling along straight lines and getting reflected from a mirror Activity Fix a comb on one side of a large thermo Col sheet and fix a mirror on the other side as shown in Spread a dark coloured sheet of paper between the mirror and the comb Keep this in sunlight or send a beam of light from a torch through the comb Opaque objects do not allow light to pass through them Transparent objects allow light to pass through them and we can see through these objects clearly Translucent objects allow light to pass through them partially Shadows are formed when an opaque object comes in the path of light Pinhole camera can be made with simple materials and can be used to image the Sun and brightly lit objects Light travels in straight line Electricity and Circuits We use electricity for many purposes to make our tasks easier For example we use electricity to operate pumps that lift water from wells or from ground level to the roof top tank Electricity makes it possible to light our homes roads offices markets and factories even after sunset This helps us to continue working at night A power station provides us with electricity However the supply of electricity may fail or it may not be available at some places In such situations a torch is sometimes used for providing light A torch has a bulb that lights up when it is switched on Electricity to the bulb in a torch is provided by the electric cell Electric cells are also used in alarm clocks wristwatches transistor radios cameras and many other devices You might have noticed that it has a small metal cap on one side and a metal disc on the other side The metal cap is the positive terminal of the electric cell The metal disc is the negative terminal All electric cells have two terminals; a positive terminal and a negative terminal An electric cell produces electricity from the chemicals stored inside it When the chemicals in the electric cell are used up the electric cell stops You might have seen the danger sign shown here displayed on poles electric substations and many other places It is to warn people that electricity can be dangerous if not handled properly Carelessness in handling electricity and electric devices can cause severe injuries and sometimes even death Hence you should never attempt to experiment with the electric wires and sockets Also remember that the electricity generated by portable generators is equally dangerous Use only electric cells for all activities related to electricity The electric cell then has to be replaced with a new one A torch bulb has an outer case of glass that is fixed on a metallic Activity Take a torch and look inside its bulb You can also take out the bulb with the help of your teacher What do you notice Do you find a thin wire fixed in the middle of the glass bulb b Now switch the torch on and observe which part of the bulb is glowing The thin wire that gives off light is called the filament of the bulb The filament is fixed to two thicker wires which also provide support to it as shown in One of these thick wires is connected to the metal case at the base of the bulb The other thick wire is connected to the metal tip at the centre of the base The base of the bulb and the metal tip of the base are the two terminals of the bulb These two terminals are fixed in such a way that they do not touch each other The electric bulbs used at home also have a similar design Thus both the electric cell and the bulb have two terminals each Activity Take four lengths of electric wire with differently coloured plastic coverings Remove a little of the plastic covering from each length of wire at the ends This would expose the metal wires at the ends of each length Fix the exposed parts of two wires to the cell and the other two of the bulb as shown Caution Never join the two terminals of the electric cell without connecting them through a switch and a device like a bulb If you do so the chemicals in the electric cell get used up very fast and the cell stops working Keep the tip of your pencil on the wire near one terminal of the electric cell for the arrangment Move the pencil along the wire all the way to the bulb Now from the other terminal of the bulb move along the other wire connected to the cell You can stick the wires to the bulb with the tape used by electricians Use rubber bands or tape to fix the wires to the cell Now connect the wires fixed to the bulb with those attached to the cell in six different ways as have been shown in In Activity you connected one terminal of the electric cell to the other terminal through wires passing to and from the electric bulb Note that in the arrangements shown Such an arrangement is an example of an electric circuit The electric circuit provides a complete path for electricity to pass current to flow between the two terminals of the electric cell The bulb glows only when current flows through the circuit In an electric circuit the direction of current is taken to be from the positive to the negative terminal of the electric cell as shown in When the An electric bulb may fuse due to many reasons One reason for a bulb to fuse is a break in its filament A break in the filament of an electric bulb means a break in the path of the current between the terminals of the electric cell Therefore a fused bulb does not light up as no current passes through its filament Can you now explain why the bulb did not glow when you tried to do so with the arrangements Activity Take a torch bulb and a piece of wire Remove the plastic covering at the two ends of the wire as you did before Fix the other end of the wire to the negative terminal of an electric cell with a rubber band Now bring the tip of the base of the bulb that is its other terminal in contact with the positive terminal of the terminals of the bulb are connected with that of the electric cell by wires the current passes through the filament of the bulb This makes the bulb glow Sometimes an electric bulb does not glow even if it is connected to the cell This may happen if the bulb has fused a drawing pin into the ring at one end of the safety pin and fix it on the thermo Col sheet as shown Make sure that the safety pin can be rotated freely Now fix the other drawing pin on the thermo Col sheet in a way that the free end of the safety pin can touch it The safety pin fixed in this way would be your switch in this activity Paheli has another arrangement of the cell and the bulb Now make a circuit by connecting an electric cell and a bulb with this switch as shown Rotate the safety pin so that its free end touches the other drawing pin The safety pin covered the gap between the drawing pins when you made it touch two of them In this position the switch is said to be on Since the material of the safety pin allows the current to pass cell We had an arrangement for switching on or off our home made torch by moving the base of the bulb away from the tip of the cell This was a simple switch but not very easy to use We can make another simple and easier switch to use in our circuit Activity You can make a switch using two drawing pins a safety pin or a paper clip two wires and a small sheet of thermo Col or a wooden board Insert through it the circuit was complete Hence the bulb glows On the other hand the bulb did not glow when the safety pin was not in touch with the other drawing pin The circuit was not complete as there was a gap between the two drawing pins In this position the switch is said to be off as in A switch is a simple device that either breaks the circuit or completes it The switches used in lighting of electric bulbs and other devices in homes work on the same principle although their designs are more complex In all our activities we have used metal wires to make a circuit Suppose we use a cotton thread instead of a metal wire to make a circuit Activity Disconnect the switch from the electric circuit you used for Activity This would leave you with two free ends of wires as shown Bring the free ends of the two wires close to let them touch each other You can now use this arrangement to test whether any given material allows current to pass through it or not the inside of the torch as in When we close the switch the circuit is completed and the bulb glows Can you draw a red line on the figure indicating the complete circuit Reflector Insulators do not allow electric current to pass through them With the help of Recall the objects that we grouped as those having lustre in Chapter Are they the conductors It now seems easy to understand why copper aluminum and other metals are used for making wires Let us recall Activity in which we made an electric circuit with a switch When the switch was in the open position were the two drawing pins not connected with each other through the thermo Col sheet But thermo Col you may have found is an insulator What about the air between the gap Since the bulb does not glow when there is only air in the gap between the drawing pins in your switch it means that air is also an insulator Conductors and insulators are equally important for us Switches electrical plugs and sockets are made of conductors On the other hand rubber and plastics are used for covering electrical wires plug tops switches and other parts of electrical appliances which people might touch Collect samples of different types of materials such as coins cork rubber glass keys pins plastic scale wooden block aluminium foil candle sewing needle thermo Col paper and pencil lead One by one bring the free ends of the wires of your tester in contact with two ends of the samples you have collected The bulb does not glow when the free ends of the wires are in contact with some of the materials you have tested This means that these materials do not allow the electric current to pass through them On the other hand some materials allow electric current to pass through them which is indicated by the glowing bulb Materials which allow electric current to pass through them are conductors of electricity Caution Your body is a conductor of electricity Therefore be careful when you handle an electrical appliance Electric cell is a source of electricity An electric cell has two terminals; one is called positive + ve while the other is negative ve An electric bulb has a filament that is connected to its terminals An electric bulb glows when electric current passes through it In a closed electric circuit the electric current passes from one terminal of the electric cell to the other terminal Switch is a simple device that is used to either break the electric circuit or to complete it Materials that allow electric current to pass through them are called conductors Materials that do not allow electric current to pass through them are called insulators Fun with Magnets Paheli and Boojho went to a place where a lot of waste material was piled into huge heaps Something exciting was happening A crane was moving towards the heap of junk The long hand of the crane lowered a block over a heap It then began to move Guess what Many pieces of iron junk were sticking to the block as it moved away sticking to the holder In some pencil boxes the lid fits tightly when we close it even without a locking arrangement Such stickers pin holders and pencil boxes have magnets fitted inside If you have any one of these items try to locate the magnets hidden in these magnets inside them They had just read a very interesting book on magnets and knew immediately that there must be a magnet attached to the end of the crane that was picking up iron from the junk yard You might have seen magnets and have even enjoyed playing with them Have you seen stickers that remain attached to iron surfaces like almirahs or the doors of refrigerators In some pin holders the pins seem to be It is said that there was a shepherd named Magnes who lived in ancient Greece He used to take his herd of sheep and goats to the nearby mountains for grazing He would take a stick with him to control his herd The stick had a small piece of iron attached at one end One day he was surprised to find that he had to pull hard to free his stick from a rock on the mountainside It seemed as if the stick was being attracted by the rock The rock was a natural magnet and it attracted the iron tip of the shepherd's stick It is said that this is how natural magnets were discovered Such rocks were given the name magnetite perhaps after the name of that shepherd Magnetite contains iron Some people believe that magnetite was first discovered at a place called Magnesia The substances having the property of attracting iron are now known as magnets This is how the story goes In any case people now have discovered that certain rocks have the property of attracting pieces of iron They also found that small pieces of these rocks have some special properties They named these naturally occurring materials magnets Later on the process of making magnets from pieces of iron was discovered These are known as artificial magnets Nowadays artificial magnets are prepared in different shapes For example bar magnet horse shoe magnet cylindrical or a ball-ended magnet shows a few such magnets Activity Take a plastic or a paper cup Fix it on a stand with the help of a clamp as shown in Place a magnet inside the cup and cover it with a paper so that the magnet is not visible Attach a thread to a clip made of iron Fix the other end of the thread at the base of the stand Mind you the trick involved here is to keep the length of the thread sufficiently short Bring the clip near the base of the cup The clip is raised in air without support like a kite Activity Let us walk in the footsteps of Magnes Only this time we will change the positions of the magnet and the iron There will be a magnet at the end of our shepherd's stick We can attach a small magnet to a hockey stick walking stick or a cricket wicket with a tape or some glue Let us now go out on a Magnes walk through the school playground What does our Magnes stick pick up from the school ground What about objects in the classroom Collect various objects of day-to-day use from your surroundings Test these with the Magnes stick You can also take a magnet touch these objects with it and observe which objects stick to the magnet Prepare a table in your notebook as shown in Table and record your observations Look at the last column of Table and note the objects that are attracted by a magnet Now make a list of materials from which these objects are made Is there any material common in all the objects that were attracted by the magnet We understand that magnet attracts certain materials whereas some do not get attracted towards magnet The materials which get attracted towards a magnet are magnetic for example iron nickel or cobalt The materials which are not attracted towards a magnet are non-magnetic Boojho has this question for you A tailor was stitching buttons on his shirt The needle has slipped from his hand on to the floor If you fill this table and send it to Paheli and Boojho they can compare the amount of iron filings found in soil from different parts of the country They can share this information with you We observed that iron filings if they are present stick to a magnet rubbed in the soil Did you observe anything special about the way they stick to the magnet Activity Spread some iron filings on a sheet of paper Remove the iron filings sticking to the magnet and repeat the Activity Rub a magnet in the sand or soil Pull out the magnet Are there some particles of sand or soil sticking to the magnet Now gently shake the magnet to remove the particles of sand or soil Are some particles still sticking to it These might be small pieces of iron iron filings picked up from the soil Through such an activity we can find out whether the soil or sand from a given place contains particles that have iron Try this activity near your home school or the places you visit on your holidays You can do this activity using pins or iron nails in place of iron filings and also with magnets of different shapes Draw a diagram to show the way iron filings stick to the magnet Poles of a magnet are said to be near these ends Try and bring a few magnets of different shapes to the classroom Check for the location of the poles on these magnets using iron filings Magnets were known to people from ancient times Many properties of magnets were also known to them You might have read many interesting stories about the uses of magnets One such story is about an emperor in China named Hoang Ti It is said that he had a chariot with a statue of a lady that could rotate in any direction It had an extended arm as if it was showing the way The statue had an interesting property It would rest in such a position that its extended arm always pointed towards South By looking at the extended arm of the statue the Emperor was able to locate directions when he went to new places on his chariot Let us make such a direction finder for ourselves Activity Take a bar magnet Put a mark on one of its ends for identification Now tie a thread at the middle of the magnet so that you may suspend it from a wooden stand Make sure that the magnet can rotate freely Let it come to rest Mark two points on the ground to show the position of the ends of the magnet when it comes to rest Draw a Paheli has this puzzle for you You are given two identical bars which look as if they might be made of iron One of them is a magnet while the other is a simple iron bar line joining the two points This line shows the direction in which the magnet was pointing in its position of rest Now rotate the magnet by gently pushing one end in any direction and let it come to rest Again mark the position of the two ends in its position of rest Does the magnet now point in a different direction Rotate the magnet in other directions and note the final direction in which it comes to rest Do you find that the magnet always comes to rest in the same direction Now can you guess the mystery behind the statue in the Emperor's chariot Repeat this activity with an iron bar and a plastic or a wooden scale instead of a magnet Do not use light objects for this activity and avoid doing it where there are currents of air Do the other materials also always come to rest in the same direction We find that a freely suspended bar magnet always comes to rest in a particular direction which is the North South direction Use the direction of the rising sun in the morning to find out the rough direction towards east where you are doing this experiment If you stand facing east to your left will be North Using the Sun for finding directions may not be very exact but it will help to make out the direction North from the South on your line Using this you can figure out which end of the magnet is pointing to the North and which points to the South The end of the magnet that points towards North is called its North seeking end or the North pole of the magnet The other end that points towards the South is called South seeking end or the South pole of the magnet All magnets have two poles whatever their shape may be Usually north N and south S poles are marked on the magnets This property of the magnet is very useful for us For centuries travellers have been making use of this property of magnets to find directions It is said that in olden days travellers used to find directions by suspending natural magnets with a thread which they always carried with them Later on a device was developed based on this property of magnets It is known as the compass A compass is usually a small box with a glass cover on it A magnetised needle is pivoted inside the box which can rotate freely with directions marked on it The compass is kept at the place where we wish to know the directions Its needle indicates the north-south direction when it comes to rest The compass is then rotated until the north and south marked on the dial are at the two ends of the needle To identify the north-pole of the magnetic needle it is usually painted in a different colour There are several methods of making magnets Let us learn the simplest one Take a rectangular piece of iron Place it on the table Now take a bar magnet and place one of its poles near one edge of the bar of iron Without lifting the bar magnet move it along the length of the iron bar till you reach the other end Now lift the magnet and bring the pole the same pole you started with to the same point of the iron bar from which you began Move the magnet again along the iron bar in the same direction as you did before Repeat this process about times Bring a pin or some iron filings near the iron bar to check whether it has become a magnet If not continue the process for some more time Remember that the pole of the magnet and the direction of its movement should not change You can also use an iron nail a needle or a blade and convert them into a magnet You now know how to make a magnet Activity Magnetise an iron needle using a bar magnet Now insert the magnetised needle through a small piece of cork or foam Let the cork float in water in a bowl or a tub Make sure that the needle does not touch the water Your compass is now ready to work Make a note of the direction in which the needle points when the cork is floating Rotate the cork with the needle fixed in it in different directions Note the direction in which the needle points when the cork begins to float again without rotating Let us play another interesting game with magnets Take two small toy cars and label them A and B Place a bar magnet on top of each car along its length and fix them with rubber bands In car A keep the south pole of the magnet towards its front Place the magnet in opposite direction in car B Now place the two cars close to one another What do you observe Do the cars remain at their places Do the cars run away from each other Do they move towards each other and collide Record your observations in a table as shown in Table Now place the toy cars close to each other such that the rear side of car A faces the front side of car B Do they move as before Note the direction in which the cars move now Next place the car A behind car B and note the direction in which they move in each case Repeat the activity by placing cars with their rear sides facing each other This property of the magnets can also be observed by suspending a magnet and bringing one by one the poles of another magnet near it Magnets lose their property on heating hammering and droping A Few Cautions Magnets loose their properties if they are heated hammered or dropped from some height Also magnets become weak if they are not stored properly Magnetite is a natural magnet Magnet attracts materials like iron nickel cobalt These are called magnetic materials Materials that are not attracted towards magnet are called non-magnetic Each magnet has two magnetic poles North and South A freely suspended magnet always aligns in N-S direction Opposite poles of two magnets attract each other whereas similar poles repel one another magnets should be kept in pairs with their unlike poles on the same side They must be separated by a piece of wood while two pieces of soft iron should be placed across their ends For horse-shoe magnet one should keep a piece of iron across the poles Keep magnets away from cassettes mobiles television music system compact disks CDs and the computer Water Suppose for some reason your family gets only one bucket of water everyday for a week Imagine what would happen W ould you be able to cook clean utensils wash clothes or bathe What are the other activities you would not be able to do What would happen if we do not have easy access to water for a long period of time Apart from drinking there are so many activities for which we use water Do you have an idea about the quantity of water we use in a single day each activity by you and other family members Y ou may use a mug a glass a bucket or any other container to measure the amount of water used Activity List all the activities for which you use water in a day Some activities are listed in Table Make a similar table in your notebook Throughout the day measure the amount of water used for You now have a rough idea as to how much water your family uses in a day Can you estimate the amount of water used by you for personal cleanliness in a day Using this information calculate the amount of water needed by your family in a year Now divide this amount by the number of members of your family This will give an idea of the amount of water needed by one member of your family in a year Find the number of people that live in your village or town You may have listed some activities for which you use water We use wheat rice pulses vegetables and many other food items everyday We know that some of the fibres that we use for making fabric come from plants Water is used in industries for producing almost all the things that we use So we need water not only for our daily activities but also for producing many things water from a river spring pond well or a hand pump Some others might say We get water from taps Water that we get from taps is also drawn from a lake or a river or a well It is then supplied through a network of pipes Water in taps comes from rivers lakes borewell or wells Boojho wonders whether people living in different regions of our country get the same amount of water Are there regions where people do not get adequate amount of water How do they manage You may now get an idea of the amount of water needed by your village or town in a year Paheli wants to tell you that about two glasses of water are required to produce each page of a book Each of us may be getting water into our homes in different ways But finally all of us get water from the same sources such as ponds lakes rivers and wells We have discussed some of the sources of water Where does the water come from to fill these ponds lakes rivers and wells Boojho wants you to imagine a day in your life when water supply through taps is not available So you have to fetch it yourself from a far away place Would you use the same amount of water as on any other day The water in the oceans and seas has many salts dissolved in it the water is saline So it is not fit for drinking and other domestic agricultural and industrial needs You might have heard the famous lines of the poem Rime of the Ancient Mariner written by S T Coleridge in Water water every where Nor any drop to drink Here the poet has described the plight of sailors on a ship lost in the ocean Yet oceans play an important role in supplying the water that we use Do you find this surprising After all the water that we use is not salty Many of us live in places far away from the oceans Do you remember Activity in Chapter in which water with salt dissolved in it was heated What did we find The water evaporated and the salt was left behind This activity gives us an idea that on heating water changes into its vapour We also realise from this activity that water vapour does not carry away the salt with it Water vapours so formed become a part of the air and cannot usually be seen We also found that heating is essential to convert water into its vapour However we have seen that water changes into its vapour also Clothes drying on a clothes-line That is where the water cycle comes in The water seems to disappear Similarly water disappears from wet clothes as they dry up Water from wet roads rooftops and a few other places also disappears after the rains from the fields roads rooftops and other land areas We also discussed in Chapter that to obtain salt water from the sea is left in shallow pits to let the water evaporate From where does this water get the heat it needs to evaporate Let us find out Activity Take two similar plates Place one of the plates in sunlight and keep the other under shade Now pour equal amount of water in each of the plates You can use a cap of a bottle to measure water Make sure that water does not spill over Observe the two plates after every minutes Does the water seem to disappear From which plate does it disappear first What is the source of heat for this evaporation During the daytime sunlight falls on the water in oceans rivers lakes and ponds The fields and other land areas also receive sunlight As a result water from all these places continuously changes into vapour However the salts dissolved in the water are left behind In Activity did you find that water also disappeared from the plate kept in the shade though it could have taken more time Does the heat from the sunlight reach here Yes during the daytime all the air surrounding us gets heated This warm air provides heat for evaporation of water in the shade Thus evaporation takes place from all open surfaces of water As a result water vapour gets continuously added to air However evaporation of water is a slow process That is why we rarely notice its loss from a bucket full of water In sunlight evaporation takes place faster On heating water on a burner its evaporation takes place even faster Is there any other process through which water vapour gets transferred into air Loss of W ater by Plants You have learnt in Chapter that plants need water to grow Plants use a part of this water to prepare their food and Boojho has been reading about transpiration He asked himself how much water is lost through transpiration by wheat plants that give us one kilogram of wheat He found out that this is nearly litres that is roughly large sized buckets full of water Can you now imagine the amount of water lost by plants of all the forests crops and grasslands together retain some of it in their different parts Remaining part of this water is released by the plants into air as water vapour through the process of transpiration Do you remember observing transpiration of water by plants in Activity in Chapter Water vapour enters the air through the processes of evaporation and transpiration Is it lost for ever No we get it back again as we will see How are clouds formed Activity Take a glass half filled with water Wipe the glass from the outside with a clean piece of cloth Add some ice into the water Wait for one or two minutes Observe the changes that take place on the outer surface of the glass From where do water drops appear on the outer side of the glass The cold surface of the glass containing iced water cools the air around it and the water vapour of the air condenses on the surface of the glass We noticed this process of condensation in Activity in Chapter Drops of water appear on outer surface of the glass containing water with ice The process of condensation plays an important role in bringing water back to the surface of earth How does it happen As we go higher from the surface of the earth it gets cooler When the air moves up it gets cooler and cooler At sufficient heights the air becomes so cool that the water vapour present in it condenses to form tiny drops of water called droplets It is these tiny droplets that remain floating in air and appear to us as clouds It so happens that many droplets of water come together to form larger sized Paheli has noticed dew on leaves of grass on winter mornings Did you notice something similar on leaves or metal surfaces like iron grills and gates on a cold morning Is this also due to condensation Do you see this happening on hot summer mornings Clouds Ice Water droplets drops of water Some drops of water become so heavy that they begin to fall These falling water-drops are what we call rain In special conditions it may also fall as hail or snow Thus water in the form of vapour goes into air by evaporation and transpiration forms clouds and then comes back to the ground as rain hail or snow What happens to the water that rain and snow bring to different regions of earth Almost all land surfaces are above the level of oceans Most of the water that falls on the land as rain and snow sooner or later goes back to the oceans This happens in many ways Snow in the mountains melts into water This water flows down the mountains in the form of streams and rivers Some of the water that falls on land as rain also flows in the form of rivers and streams Most of the rivers cover long distances on land and ultimately fall into a sea or an ocean However water of some rivers flows into lakes The rainwater also fills up the lakes and ponds A part of the rainwater gets absorbed by the ground and seems to disappear in the soil Some of this water is brought back to the air by the process of evaporation and transpiration The rest seeps into the ground Most of this water becomes available to us as ground waterwater water Open wells are fed by ground water Ground water is the source for many lakes as well It is also this ground water which is drawn by a handpump or a tubewell The more handpumps or tubewells that are used in an area the deeper we need to dig to find this ground water The loss in the level of ground water due to over use is worrisome Paheli wants to share a concern with you In those areas where the land has little or no vegetation the rainwater flows away quickly Flowing rainwater also takes the top layer of the soil away with it There are few areas where most of the land is covered with concrete This reduces the seepage of rainwater into the ground which ultimately affects the availability of ground water Boojho has noticed fog near the ground in winter mornings He wonders if this is also condensation of water vapour near the ground What do you think Water cycle We now know that water brought back to the surface of the earth by rain hail or snow goes back to oceans Thus water from the ocean and surface of the earth goes into air as vapour; returns as rain hail or snow and finally goes back to the oceans The circulation of water in this manner is known as the water cycle This circulation of water between ocean and land is a continuous process This maintains the supply of water on land The time duration and the amount of rainfall varies from place to place In some parts of the world it rains throughout the year while there are places where it rains only for a few days In our country most of the rainfall occurs during the monsoon season Rains bring relief especially after hot summer days The sowing of many crops depends on the arrival of monsoon However excess of rainfall may lead to many problems Heavy rains may lead to rise in the level of water in rivers lakes and ponds The water may then spread over large areas causing floods The crop fields forests villages and cities may get submerged by water In our country floods cause extensive damage to crops domestic animals property and human life During floods the animals living in the water also get carried away with the waters They often get trapped on land areas and die when floodwater recedes Rains also affect the animals living in the soil Can you imagine what would happen if it does not rain in a region for a year or more The soil continues to lose water by evaporation and transpiration Since it is not being brought back by rain the soil becomes dry The level of water in ponds and wells of the region goes down and some of them may even dry up The ground water may also become scarce This may lead to drought In drought conditions it is difficult to get food and fodder You might have heard about droughts occurring in some parts of our country or the world Are you aware of the difficulties faced by the people living in these areas What happens to the animals and the vegetation in these conditions Try and find out about this by talking to your parents and neighbours and by reading about it from newspapers and magazines Only a small fraction of water available on the Earth is fit for use of plants animals and humans Most of the water is in the oceans and it cannot be used directly When the level of the ground water decreases drastically this can not be used any more The total amount of water on Earth remains the same but the water available for use is very limited and is decreasing with over usage The demand for water is increasing day-by-day The number of people using water is increasing with rising population In many cities long queues for collection of water are a common site Also more and more water is being used for producing food and by the industries These factors are leading Rooftop rainwater harvesting to shortage of water in many parts of the world Hence it is very important that water is used carefully We should take care not to waste water One way of increasing the availability of water is to collect rainwater and store it for later use Collecting rainwater in this way is called rainwater harvesting The basic idea behind rainwater harvesting is Catch water where it falls What happens to the rainwater that falls in places that are mostly covered with concrete roads and buildings It flows into the drains isn't it From there water goes to rivers or lakes which could be far away A lot of effort will then be required to get this water back into our homes as the water did not seep into the ground Here two techniques of rainwater harvesting are discussed Rooftop rainwater harvesting In this system the rainwater is collected from the rooftop to a storage tank through pipes This water may contain soil from the roof and need filtering before it is used Instead of collecting rainwater in the tank the pipes can go directly into a pit in the ground This then seeps into the soil to recharge or refill the ground water Another option is to allow water to go into the ground directly from the roadside drains that collect rainwater Water is essential for life Water vapour gets added to air by evaporation and transpiration The water vapour in the air condenses to form tiny droplets of water which appear as clouds Many tiny water droplets come together and fall down as rain snow or hail Rain hail and snow replenish water in rivers lakes ponds wells and soil The circulation of water between ocean and land is known as the water cycle Excessive rains may cause floods while lack of it for long periods may cause droughts The amount of usable water on earth is limited so it needs to be used carefully Air Around us We have lear nt in Chapter that all living things require air You might not have seen air but surely you must have felt its presence in so many ways You notice it when the leaves of the trees rustle or the clothes hanging on a clothes-line sway Pages of an open book begin fluttering when the fan is switched on The moving air makes it possible for you to fly your kite Winnowing is more effective in moving air You may have noticed that during storms the wind blows at a very high speed It may even uproot trees and blow off the rooftops Have you ever played with a firki Move it a little back and forth Observe Activity Let us make a firki of our own following the instructions shown in Hold the stick of the firki and place it in different directions in an open area Close your fist what do you have in it Nothing Try the following activity to find out Activity Take an empty open bottle Is it really empty or does it have something inside Turn it upside down Now dip the open mouth of the bottle into the bucket filled with water as shown in Observe the bottle Does water enter the bottle Now tilt the bottle slightly Does the water now enter the bottle Do you see bubbles coming out of the bottle or hear any bubbly sound Can you now guess what was in the bottle Yes You are right It is air that was present in the bottle The bottle was not empty at all In fact it was filled completely with air even when you turned it upside down That is why you notice that water does not enter the bottle when it is pushed in an inverted position as there was no space for air to escape When the bottle was tilted the air was able to come out in the form of bubbles and water filled up the empty space that the air has occupied This activity shows that air occupies space It fills all the space in the bottle It is present everywhere around us Air has no colour and one can see through it It is transparent Our earth is surrounded by a thin layer of air This layer extends up to many kilometres above the surface of the earth and is called atmosphere As we move higher in the atmosphere the air gets rarer Now can you think mountaineers carry oxygen cylinders with them while climbing high mountains Until the eighteenth century people thought that air was just one substance Experiments have proved that it is really not so Air is a mixture of many gases What kind of a mixture is it Let us find out about some of the major components of this mixture one by one We have learnt earlier that air contains water vapour We also saw that when air comes in contact with a cool surface it condenses and drops of water appear on the cooled surfaces The presence of water vapour in air is important for the water cycle in nature Activity In the presence of your teacher fix two small candles of the same length on a table Light both the candles Cover one of the candles with an inverted glass tumbler Observe both the candles carefully Do both the candles continue to burn or go off You must have observed that the candle covered with glass tumbler got extinguished after some time whereas the other candle continued burning What can be the reason for this Think about it It seems that the candle got extinguished because the component inside of the glass tumbler which supports burning is limited Most of the component is used up by the burning candles However the other candle is getting continued supply of air This component of air which supports burning is known as oxygen Nitrogen In Activity did you observe that air is still present in the glass bottle even after the candle blew out This indicates the presence of some component in the air which does not support burning The major part of air which does not support burning candle is nitrogennitrogen nitrogen Carbon dioxide In a closed room if there is some material that is burning you may have felt suffocation This is due to excess of carbon dioxide that may be accumulating in the room as the burning continues Carbon dioxide makes up a small component of the air around us Plants and animals consume oxygen for respiration and produce carbon dioxide Plant and animal matter also consumes oxygen on burning and produces mainly carbon dioxide and a few other gases It is advisable not to burn dry leaves and discarded remains of the crop which pollute our surroundings Dust and smoke The burning of fuel also produces smoke Smoke contains a few gases and fine dust particles and is often harmful That is why you see long chimneys in factories This takes the harmful smoke and gases away from our noses but brings it closer to the birds flying up in the sky Dust particles are always present in air Activity Find a sunny room in your school home Close all the doors and windows with curtains pulled down to make the room dark Now open the door or a window facing the sun just a little in such a way that it allows sunlight to enter the room only through a slit Look carefully at the incoming beam of sunlight Do you see some tiny shining particles moving in the beam of sunlight What are these particles During winters you might have observed similar beam of sunlight filter through the trees in which dust particles appear to dance merrily around This shows that air also contains dust particles The presence of dust particles in air varies from time to time and from place to place We inhale air when we breathe through our nostrils Fine hair and mucus are present inside the nose to Paheli wants to know why the transparent glass of windows if not wiped off regularly appears hazy Policemen regulating traffic at a crowded crossing often wear a mask Boojho wants to know why during an incident of fire one is advised to wrap a woollen blanket over a burning object Boojho is asking you why do you think the policeman in is wearing a mask prevent dust particles from getting into the respiratory system Do you recall being scolded by your parents when you breathe through your mouth If you do that harmful dust particles may enter your body We may conclude then that air contains some gases water vapour and dust particles The gases in air are mainly nitrogen oxygen small amount of carbon dioxide and many other gases However there may be some of the container Do you see tiny bubbles on the inside These bubbles come from the air dissolved in water When you heat the water to begin with the air dissolved in it escapes As you continue heating the water itself turns into vapour and finally begins to boil We learnt in Chapters and that the animals living in water use the dissolved oxygen in water The organisms that live in soil also need oxygen to respire isn’t it How do they get the air they need for respiration Activity Take a lump of dry soil in a beaker or a glass Add water to it and note what happens Do you see bubbles coming out from soil These bubbles indicate the presence of air in the soil When the water is poured on the lump of soil it displaces the air which is seen in the form of bubbles The organisms that live inside the soil and the plant roots respire in this air A lot Water contains air variations in the composition of air from place to place We see that air contains mostly nitrogen and oxygen In fact these two gases together make up of the air The remaining is constituted by carbon dioxide and a few other gases and water vapour Activity Take some water in a glass or metal container Heat it slowly on a tripod stand Well before the water begins to boil look carefully at the inner surface Here is a question from Paheli Will the tiny air bubbles seen before the water actually boils also appear if we do this activity by reheating boiled water kept in an air tight bottle If you do not know the answer you may try doing it and see for yourself Nitrogen oxygen carbon dioxide water vapour and other gases of burrows and holes are formed in deep soil by the animals living in the soil These burrows also make spaces available for air to move in and out of the soil However when it rains heavily water fills up all the spaces occupied by the air in the soil In this situation animals living in the soil have to come out for respiration Could this be the reason why earthworms come out of the soil only during heavy rains Have you ever wondered why all the oxygen of atmosphere does not get used up though a large number of organisms are consuming it Who is refilling the oxygen in the atmosphere In Chapter we read about photosynthesis In this process plants make their own food and oxygen is produced along with it Plants also consume oxygen for respiration but they produce more of it than they consume That is why we say plants produce oxygen It is obvious that animals cannot live without plants The balance of oxygen The wind makes the windmill rotate The windmill is used to draw water from tubewells and to run flour mills Windmills are also used to generate electricity Air helps in the movements of sailing yachts gliders parachutes and aeroplanes Birds bats and insects can fly due to the presence of air Air also helps in the dispersal of seeds and pollen of flowers of several plants Air plays an important role in water cycle and carbon dioxide in the atmosphere is maintained through respiration in plants and animals and by the photosynthesis in plants This shows the interdependence of plants and animals We can now appreciate how important air is for life on earth Air is found everywhere We cannot see air but we can feel it Air in motion is called wind Air occupies space Air is present in water and soil Air is a mixture of nitrogen oxygen carbon dioxide water vapour and a few other gases Some dust particles may also be present in it Oxygen supports burning and is necessary for living organisms The envelope of air that surrounds the earth is known as atmosphere Atmosphere is essential for life on earth Aquatic animals use dissolved air in water for respiration Plants and animals depend on each other for exchange of oxygen and carbon dioxide from air Garbage in Garbage out we throw out so much rubbish or garbage everyday from our homes schools shops and offices The grains pulses biscuits milk or oil purchased in shops are packed in plastic bags or tins All these wrapping material go out as garbage We sometimes buy things that are rarely used and often thrown into the garbage We generate so much garbage in our day-to-day activities We often throw groundnut shells on public places in buses or trains after eating the nuts We throw away the ticket when we get off a bus A child might go on sharpening pencils just for fun If we make mistakes or spill ink on our notebook we tear off the sheet and throw it away And we also throw away many domestic wastes such as broken toys old clothes shoes and slippers What if the garbage is not removed from our homes and surroundings How do you think this will harm us When safai karamcharis take the garbage from the bins where does the garbage go and what happens to it Is it possible for all of this garbage to be changed into something that will not harm us Can we contribute towards this in any way We will look for answers to these questions in this chapter Children from Paheli and Boojho’s school did a project called Dealing with Garbage We will learn about some of the things they learnt through this project Safai karamcharis collect the garbage in trucks and take it to a low lying open area called a landfilllandfill landfill There the part of the garbage that can be reused is separated out from the one that cannot be used as such Thus The Prime Minister of India launched the Swachh Bharat Mission SBM The aim of this mission is to create an open defecation-free India by October Activity Collect the garbage from your house before it is thrown into the dustbin Separate it into two groups so that they have Group Group Group Garbage from the kitchen like fruit and vegetable peels egg shells waste food tea leaves Include newspapers dry leaves and paper bags in this group Group Group Group Pieces of cloth polythene bags broken glass aluminium wrappers nails old shoes and broken toys Now divide the contents of each group into two separate heaps Label them Putting garbage heaps in pits as A B C and D Put one heap from Group and one heap from Group into two separate plastic bags Tie the mouth of these two bags tightly Put all the four heaps in separate pits and cover them with soil You can also use four pots to bury these garbage heaps Remove the soil after four days and observe the changes in the garbage A black colour and no foul smell indicates that rotting of garbage is complete Put the heaps again in the pits and cover with the soil Observe again after every two days and note your observations as suggested Did the garbage i rot completely and not smell ii rot only partially rot almost completely but still smells bad not change at all Garbage in which heap was seen to rot and which did not Enter options i ii iii or in the columns of Table based on your Paheli did wonder as to what could be useful garbage Why was it thrown away in the first place Is there some garbage that is not actually garbage the garbage has both useful and non useful components The non-useful component is separated out It is then spread over the landfill and then covered with a layer of soil Once the landfill is completely full it is usually converted into a park or a play ground For the next years or so no building is constructed on it To deal with some of the useful components of garbage compost making areas are developed near the landfill What is compost Let us learn about it from the following activity observations If you make any other observations do not forget to write all these down in your notebook Do not remove and burn the garbage that did not rot If the garbage was found to rot completely and did not smell mix it in the soil where you sow your favourite plants This would provide nutrients to the plants You must have observed from this activity that some things in the garbage rot They form manure which is used for the plants The rotting and conversion of some materials into manure is called composting In some cities and towns municipalities provide separate dustbins for collecting two kinds of garbage Usually one is coloured blue and the other green The blue bin is for materials that can be used again such as plastics metals and glass Did you notice that these are the materials that do not rot in the garbage heaps The green bins are for collecting kitchen and other plant or animal wastes You may have noticed that this type of wastes rot completely when buried in the soil Do you see why it is necessary for us to separate waste into two groups as we did in Activity before we throw it Have you noticed garbage heaps of dried leaves on the roadside Most of the time these are burnt Farmers too often burn the husk dried leaves and part of crop plants in their fields after harvesting Burning of these produces smoke and gases that are harmful to our health We should try to stop such practices These wastes could be converted into useful compost Boojho noted in his notebook Do not burn leaves You will not be able to tolerate the fumes Here are some of the observations and thoughts noted by Paheli and Boojho from their project Dealing with Garbage Not theft really She must have meant illegal She wanted that the government should make a law against the burning of leaves and other plant wastes anywhere in India We can be friends of plants by supplying them with compost We will also be very good friends to ourselves by making compost Talking of friends do you know that earthworms are called farmer’s friend Let us find out how a type of earthworm called redworm is used for composting This method of preparing compost with the help of redworms is called vermicomposting We can try to make manure by vermicomposting at school Activity Let us dig a pit about cm deep or keep a wooden box at a place which is neither too hot nor too cold What about a place which does not get direct sunlight Let us now make a comfortable home for our redworms in the pit or the box Spread a net or chicken mesh at the bottom of the pit or the box You can also spread or cm thick layer of sand as an alternative Now spread some vegetable wastes including peels of fruits over this layer of sand One can also use green leaves pieces of dried stalks of plants husk or pieces of newspaper or carboard to spread over the layer of sand However shiny or plastic coated paper should not be used for this purpose Dried animal dung could also be used as a spread over sand or wire mesh Sprinkle some water to make this layer wet Take care not to use excess of water Do not press the layer of waste Keep this layer loose so that it has sufficient air and moisture Now your pit is ready to welcome the redworms Buy some redworms and put them in your pit Cover them loosely with a gunny bag or an old sheet of cloth or a layer of grass Your redworms need food You can give them vegetable and fruit wastes coffee and tea remains and weeds from the fields or garden It might be a good idea to bury this food about cm inside the pit Do not use wastes that may contain salt pickles oil vinegar meat and milk preparations as food for your redworms If you put these things in the pit disease-causing small organisms start growing in the pit Once in a few days gently mix and move the top layers of your pit Redworms do not have teeth They have a structure called gizzard which helps them in grinding their food Powdered egg shells or sea shells could be mixed with the wastes This would help redworms in grinding their food A redworm can eat food equal to its own weight in a day Redworms do not survive in very hot or very cold surroundings They also need moisture around them If you take good care of your worms in a month’s time their number will double Observe the contents of the pit carefully after weeks Do you now see loose soil-like material in the pit Your vermicompost is ready Put some wastes as food in one corner of the pit Most of the worms will shift towards this part of the pit vacating the other part Remove the compost from the vacated part and dry it in the sun for a few hours Your vermicompost is ready for use The part left in the pit has most of the worms in it You can use these for preparing more compost or share them with another user Use this excellent vermicompost in your pots gardens or fields Is this not like getting the best out of waste Those of you who have agricultural fields can try vermicomposting in large pits You can save a lot of money that is spent on buying expensive chemical fertilizers and manure from the market How much of garbage do you think is thrown out by each house everyday You can make an estimate by using a bucket as a measure Use a litre bucket to collect the garbage from your home for a few days In how many days does the bucket become full You know the number of members in your family If you find out the population of your city or town can you now estimate the number of buckets of garbage that may be generated in a day in your city or town We are generating mountains of garbage everyday isn t it Let us read a story about a village where there is less garbage and more wisdom Nanu studies in Class VI He is very fond of making paper planes His mother is very annoyed when he tears off sheets from new notebooks to make aeroplanes but Nanu does not care Once Nanu went to his aunt’s village along with his mother He was amazed at the variety of things his cousin Shyam had made Files from old charts greeting cards decorated with flowers made from pencil shavings mats from old clothes baskets from used old polythene bags were some of the items Nanu liked Shyam had even made a diary from invitation cards One morning Nanu went looking for his grandmother Nani He saw that she was applying a thick paste on a basket Nanu asked Nani What are you doing What is this paste This is papier-mâchè a paste made of clay and paper in which I have also mixed some rice husk replied Nani But why are you putting it on the basket asked Nanu To make it stronger said Nani and added would you like to learn this from me Nanu was not very keen and ran outside to play He was only interested in tearing up papers to make planes In fact he also started tearing up papers from Shyam’s files Shyam collected all the pieces of paper Nanu had used wondering what to do about him He just did not listen to anyone It was Nanu’s birthday in a few days Shyam planned to invite Nanu’s friends Nanu took out money from his mud pot and went to the market He bought some paper hats for his friends He asked the shopkeeper for a polythene bag to keep the hats who gave him a paper bag instead of polythene Nanu also bought many other items like biscuits and toffees He found it difficult to carry all of these things as no shopkeeper was ready to give a polythene bag Shyam had told him to carry a cloth bag with him and he was sorry he did not listen to him Somehow he managed to reach home with all his purchases Nanu’s friends enjoyed the feast on his birthday and played many games All his friends wore the shiny paper hats Nanu had bought Shyam had made beautiful papier mâchè masks for Nanu’s friends He had a special gift for Nanu as well A photoframe and a greeting card made from the paste of all the pieces of paper Nanu had thrown away It was a new experience for Nanu All his friends went home with their masks Nanu was too excited to finish his meal and look at his gifts Nanu returned home after his holidays were over How different his town was from Shyam’s village There were no rag pickers in the village as it was neat and clean But now he stopped making faces when he saw the rag picking children near his house You might have seen some children sorting the garbage near your house or at other places Observe the children at work and find out how they separate useful material from the garbage They are actually helping us Talk to one such child and find out What do they do with the rubbish they collect Where do they take it Does he she go to school What about his her friends If they do not go to school find out the possible reasons Can you help this child to read and write Have you ever helped at home to sell old newspapers glass and metal things plastic bags and your old notebooks to a garbage dealer Talk to him and find out what he does with all the garbage Would you like to make paper from old and discarded paper like Shyam Let us learn to do this You will require pieces of old newspapers magazines used envelopes notebooks or any other paper Do not use shiny plastic coated paper You will also need a frame fitted with a wire mesh or a net You can also use a large sized sieve in place of a frame Tear the paper into small pieces Put them in a tub or a bucket and pour water in it Let the pieces of paper remain submerged in water for a day Make a thick paste of paper by pounding it Now spread the wet paste on the wire mesh fixed to the frame Pat it gently to make the thickness of layer of the paste as uniform as possible Wait till water drains off If required spread an old cloth or a sheet of newspaper on the paste to let it soak up the extra water Now carefully remove the layer of paste from the frame spread it on a sheet of newspaper in the sun Keep the corners of the newspaper sheet pressed by putting some weights so that these do not curl up You can add food colour pieces of dry leaves or flower petals or pieces of coloured paper in the paste before spreading it It would help you to get a recycled paper with beautiful patterns on it Some kind of plastics can be recycled but not all of them Did you notice that polythene bags and some plastics did not rot in Activity You might now easily understand why polythene bags create a big problem in garbage disposal It may be a little difficult to imagine our life without plastics Shall we list a few things we use that are made of plastics Toys shoes bags pens combs tooth brushes buckets bottles and water pipes the list is very long Can you name a few parts of a bus car radio television refrigerator and a scooter that are made of plastics The use of plastics in itself might not create so much of a problem Problems arise when we use plastics excessively and are ignorant about ways of disposing their waste This is what is happening all around us We might even be acting irresponsibly knowing well about its harmful effects We often use plastic bags to store cooked food items Sometimes these bags may not be suitable for keeping eatables Consuming food packed in such plastic bags could be harmful to our health Many a time shopkeepers use plastic bags that have been used earlier for some other purpose Sometimes bags collected by rag pickers are also used after washing them Use of such recycled plastic bags to keep food items could be harmful for our health For storing eatables we must insist on use of plastic bags that are approved for such a use All kind of plastics give out harmful gases upon heating or burning These gases may cause many health problems including cancer in humans The government has also laid down guidelines for recycling of plastics Paheli would like to suggest that containers used for storing poisonous substances should be recycled separately and that such recycled plastics are not used to make plastic bags You must have noticed that people often fill garbage in plastic bags and then throw it away When stray animals look for food in these bags they end up swallowing these Sometimes they die due to this The plastic bags thrown away carelessly on roads and other places get into drains and the sewer system As a result drains get choked and the water spills on the roads During heavy rains it might even create a flood like situation There is a lot of harm that too much use of plastics can do We make a minimum use of plastic bags We re-use the bags whenever it is possible to do so without any adverse affects We insist shopkeepers use paper bags We carry a cloth or a jute bag when we go out for shopping We do not use plastic bags to store eatables We do not throw plastic bags here and there after use We never burn plastic bags and other plastic items We do not put garbage in plastic bags and throw it away We use vermicomposting at home and deal with our kitchen waste usefully We recycle paper We use both sides of the paper to write We use a slate for rough work We use blank sheets of paper left in our notebooks for rough work We make our family friends and others to follow proper practices for disposing different kinds of wastes Think about some more ways to minimise overuse of plastics and discuss The most important point to know and think about is that more garbage we generate more difficult it will be to get rid of it Let us refuse plastic Landfill is an area where the garbage collected from a city or town is dumped The area is later converted into a park Converting plant and animal waste including that from kitchen into manure is called composting The method of making compost from kitchen garbage using redworms is called vermicomposting Paper can be recycled to get useful products Plastics cannot be converted into less harmful substances by the process of composting We need to generate less waste and find ways of dealing with the increasing amount of garbage in our surroundings TIMOTHY THE TIGER CUB was discovered by Grandfather on a hunting expedition in the Terai Jungle near Dehra At first the tiger cub who was named Timothy by Grandmother was brought up entirely on milk given to him in a feeding bottle by our cook Mahmoud But the milk proved too rich for him and he was put on a diet of raw mutton and cod liver oil to be followed later by a more tempting diet of pigeons and rabbits Timothy was provided with two companions Toto the monkey who was bold enough to pull the young tiger by the tail and then climb up the curtains if Timothy lost his temper and a small mongrel puppy found on the road by Grandfather At first Timothy appeared to be quite afraid of the puppy and darted back with a spring if it came too near He would make absurd dashes at it with his large forepaws and then retreat to a ridiculously safe distance Finally he allowed the puppy to crawl on his back and rest there One of Timothy’s favourite amusements was to stalk anyone who would play with him and so when I came to live with Grandfather I became one of the tiger’s favourites With a crafty look in his glittering eyes and his body crouching he would creep closer and closer to me suddenly making a dash for my feet rolling over on his back and kicking with delight and pretending to bite my ankles He was by this time the size of a full-grown retriever and when I took him out for walks people on the road would give us a wide berth When he pulled hard on his chain I had difficulty in keeping up with him His favourite place in the house was the drawing room and he would make himself comfortable on the long sofa reclining there with great dignity and snarling at anybody who tried to get him off Timothy had clean habits and would scrub his face with his paws exactly like a cat He slept at night in the cook’s quarters and was always delighted at being let out by him in the morning One of these days declared Grandmother in her prophetic manner we are going to find Timothy sitting on Mahmoud’s bed and no sign of the cook except his clothes and shoes Of course it never came to that but when Timothy was about six months old a change came over him he grew steadily less friendly When out for a walk with me he would try to steal away to stalk a cat or someone’s pet Pekinese Sometimes at night we would hear frenzied cackling from the poultry house and in the morning there would be feathers lying all over the veranda Timothy had to be chained up more often And finally when he began to stalk Mahmoud about the house with what looked like villainous intent Grandfather decided it was time to transfer him to a zoo The nearest zoo was at Lucknow two hundred miles away Reserving a first-class compartment for himself and Timothy no one would share a compartment with them Grandfather took him to Lucknow where the zoo authorities were only too glad to receive as a gift a well-fed and fairly civilized tiger About six months later when my grandparents were visiting relatives in Lucknow Grandfather took the opportunity of calling at the zoo to see how Timothy was getting on I was not there to accompany him but I heard all about it when he returned to Dehra Arriving at the zoo Grandfather made straight for the particular cage in which Timothy had been interned The tiger was there crouched in a corner full-grown and with a magnificent striped coat The tiger approached the bars and allowed Grandfather to put both hands around his head Grandfather stroked the tiger’s forehead and tickled his ear and whenever he growled smacked him across the mouth which was his old way of keeping him quiet He licked Grandfather’s hands and only sprang away when a leopard in the next cage snarled at him Grandfather shooed the leopard away and the tiger returned to lick his hands but every now and then the leopard would rush at the bars and the tiger would slink back to his corner A number of people had gathered to watch the reunion when a keeper pushed his way through the crowd and asked Grandfather what he was doing I’m talking to Timothy said Grandfather Weren’t you here when I gave him to the zoo six months ago I haven’t been here very long said the surprised keeper Please continue your conversation But I have never been able to touch him myself he is always very bad tempered Why don’t you put him somewhere else suggested Grandfather That leopard keeps frightening him I’ll go and see the Superintendent about it Grandfather went in search of the Superintendent of the zoo but found that he had gone home early and so after wandering about the zoo for a little while he returned to Timothy’s cage to say goodbye It was beginning to get dark He had been stroking and slapping Timothy for about five minutes when he found another keeper observing him with some alarm Grandfather recognized him as the keeper who had been there when Timothy had first come to the zoo You remember me said Grandfather Now why don’t you transfer Timothy to another cage away from this stupid leopard Butsir stammered the keeper it is not your tiger I know I know said Grandfather testily I realized he is no longer mine But you might at least take a suggestion or two from me I remember your tiger very well said the keeper He died two months ago Died exclaimed Grandfather Yes sir of pneumonia This tiger was trapped in the hills only last month and he is very dangerous Grandfather could think of nothing to say The tiger was still licking his arm with increasing relish Grandfather took what seemed to him an age to withdraw his hand from the cage With his face near the tiger’s he mumbled Goodnight Timothy and giving the keeper a scornful look walked briskly out of the zoo B I realize now that I am alone On myself I must learn to rely I have to begin to stand on my own If I fail I must continue to try I can ask others for their opinions But ultimately it’s I who’ll decide I’ll be the ruler of my dominion Determining which road I’ll take with pride Though some may disagree with my choices Thinking they know a better path to take Though people in abuse raise their voices It’s up to me my destiny to make By being true to myself I begin To learn how to stand alone how to win Read and Enjoy I wonder why the grass is green And why the wind is never seen Who taught the birds to build a nest And told the trees to take a rest O when the moon is not quite round Where can the missing bit be found Who lights the stars when they blow out And makes the lightning flash about Who paints the rainbow in the sky And hangs the fluffy clouds so high Why is it now do you suppose That Dad won’t tell me if he knows The other day I read in a newspaper about a brave act of a small girl This girl Amina saw a child slip and fall into a sump Without a moment’s hesitation she jumped into the sump The sump was six feet deep and full Amina is three feet and she just jumped Holding her breath and wildly kicking her feet she somehow managed to throw the child out and then she climbed up Both the mothers came running Ramachandra’s mother hugged Amina and dried her hair with the end of her sari Amina’s mother tended the gasping child Lakshmi hugged Amina again and again and shed tears on her head Both women are labourers in that building site This is bravery Now the story you are going to read tells you about another kind of bravery It tells you about a young boy’s passionate will to save his country from enemy attack The boy performs a deed of patriotism B Reading Read the following story at home and be ready to follow your teacher’s model reading in class Read the story again at home to strengthen your reading ability The plane was veering and shuddering in the sky It was losing height rapidly and hurtling towards earth It would be a matter of minutes before it crashed A figure fell out of the fiery object that was plummeting down to earth A white structure mushroomed and opened like a flower in the sky and the man floated gently down with the wind to the ground A small boy ten or twelve years old had been watching the plane for sometime The boy emerged from the clump of trees He had seen the plane shot down by enemy fire and the pilot parachute down from the flaming plane He came out from the darkness of the trees and reached the wounded pilot Come with me Sir The enemy will be here any minute There is no time to lose There is an army camp nearby You will be safe there The pilot staggered tried to take two or three steps but collapsed to the ground I can’t walk My legs are probably fractured Can you do something for me The child could see it was with great effort that the man could talk Yes Sir I will do anything you want You are small Better don’t take a chance he muttered under his breath Not a chance Sir a certainty What do you want me to do The man’s hands were bleeding He fumbled inside his pocket and took out a packet of papers Take this to the Commanding Officer of the army unit he said Tell him this must reach the Air Force Station Ambala by night Tell him to take care of it and make sure it reaches Ambala on time Now run for your life You must avoid the enemy Will you be able to do it Yes Sir I will do it But you The enemy will catch you Don’t worry about me I can escape I will try and distract them You run and handover the packet Yes Sir said the boy with a smart salute The man could not help smiling although he was grimacing with the pain of his injuries He began to crawl away from the boy in the opposite direction The small figure streaked across the open space back to the trees from which it had emerged The enemy however had seen him A few of them gave a chase and shot at him The cartridges fell everywhere around him The child ran fast and was lost to sight The enemy gave up and turned their attention to the crawling figure of the pilot A few minutes later the little boy stood at the sentry post of the army unit Take me to the Commander Saheb There is something I have to deliver to him Little boy you cannot go to the Commander Saheb No one is allowed to go to his room unless it is very important What I have is very important It is from the pilot whose plane was shot down You mean the plane that just crashed A rescue party has gone to look for him Yes I had gone there to bring him back to safety The enemy was after him He was injured and couldn’t walk He gave me a packet I must guide the C O to the officer and show him where the enemy lines are The sentry spoke into the field telephone A sepoy came to the sentry post and took the boy to the Commander Saheb Who are you And why did you want to see me the Commanding Officer asked My name is Maqbool Butt My father was awarded a medal for bravery He died fighting for the nation My mother and I live here now I was watching the plane when I heard an anti aircraft gun fire and saw the plane become unsteady I saw him fall to the ground I knew I must save him The enemy was just a little distance away I ran to bring him back by a shortcut When I reached him I found that he could not walk He was bleeding profusely He told me not to worry about him but to try and get this packet to you and tell you that it must reach Ambala tonight It is very important Son weren’t you afraid of the enemy My father told me never to be afraid of the enemy They can’t do any thing if our number is not written on the bullet Good You are indeed the brave son of a brave soldier Has the enemy been able to catch the pilot I don’t know Sir I couldn’t wait to see I had to carry out my orders first I know where he fell I also know where the enemy lines are I can guide you to it by a short cut so that you can intercept them and cut off their retreat We must go at once Sir The enemy came on foot If you take jeeps you will be able to surround them and catch them Instructions noted Sir action will be taken smiled the Commanding Officer Five minutes later the group of enemy soldiers found themselves surrounded by jeeps There was no escape One of them started to run but realized that it was of no use Throwing down his gun he raised his hands above his head The enemy was rounded up and the pilot rescued He was bleeding for he had been dragged along when he failed to rise and walk even when prodded with bayonets He was muttering something incoherently Boy packet He could say no more The pilot was taken to the Military Hospital at once Maqbool thank you my brave son Now you must be taken home Your mother will be worried about you I am Maqbool Butt son of India This is my land and these are my brothers It is here that I was born and nurtured My father’s blood is mixed with the soil of this land and my mother’s tears water the earth on which our crops grow My loyalty rests here with my brothers blood relations of the soil for we have broken bread on the same land The boy who had been standing crumpled up all of a sudden and fell down The enemy fire had hit his leg and blood was dropping from the wound The Commanding Officer gathered the fallen figure in his arms and carried the child to the ambulance The boy stirred and grimaced with pain Major Dogra moved swiftly to him and gently eased his leg into a more comfortable position The Commanding Officer frowned in worry His eyes brimmed with tears Maqbool smiled through his dirt-streaked face A soldier never weeps Sir Another voice from somewhere faraway lost in the distant years seemed to say A soldier never runs from the enemy father you told me so He must face the bullets even when they tear his chest to shreds Yes my son a soldier must not weep but a father’s heart weeps and bleeds with the blood of his son I received the P V C for my son in the war He must have been very brave You too are very brave Sir don’t worry It will be all right I am a soldier’s son and I too will become a soldier when I grow up You my child are a soldier already aren’t you We are proud of you and hope that some day you will lead our army with the same daring and courage that you have shown today Read and enjoy One morning a cat came out with her two kittens for a stroll along the footpath For some reason the mother cat fell behind and the kittens started running playing and chasing each other The mother followed shouting Children stop Don’t run Keep to the footpath Don’t stray into the street Suddenly a big black dog waylaid the kittens and began to bark loudly Frightened the kittens ran back to their mother The angry mother strode up to the barking dog stood before him barked loudly and silenced him Then she turned to her kittens and said Children this is why this is the reason why I always tell you I keep telling you that it is good to learn a second language This story is popular among English teachers but the author is not known If you have a kind word to say Say it now If you have something to give Give it now If you can make someone glad Or another less sad Do it now do it now do it now If there’s good news to give Give it now If there is friendship to show Hope you can raise Or someone you can praise Do it now do it now do it now If you have trust to bestow Give it now If there’s courage to give Pain you can ease Or someone you can please Do it now do it now do it now Refrain Now before it is too late Now’s the time for the good deed Do not wait until tomorrow For it may be just a little too late Dear Poonam It is strange to write because I am so used to you being closeby We say a lot without words you know But now you are away and I can’t help but think of how you’re growing up so quickly So this is only the first of more and more times apart until like a bird you will be ready to fly away It will be my greatest joy to see you strong and confident even as it brings me sorrow to be apart Being apart may be a good thing in this way it makes me put into words those things I feel and think but don’t say For instance it pleases me that you are so strong-minded and persistent you are not easily discouraged even when you don’t succeed at first Remember the time when you couldn’t do your multiplication tables The teacher was going faster than you could manage and you felt bad that you were unable to keep up But you made your own study cards and asked me and Daddy to help you And when you succeeded finally in learning those tables you were independent enough to think through your problems but responsible enough to ask for help to learn I know you are in new surroundings with new people at your hostel and the way things are done at home are not the same there You have to be careful to look after yourself since no one is going to ask you how you are or care about your comforts You have to speak up for what you need because the hostel warden can’t give you the attention you receive at home At the same time you need to watch out for others help them to help themselves Don’t think you are the only one with needs Everyone will feel as you do because it is a new situation for them all If you feel homesick you may find helping someone else through their homesickness will help you feel better yourself I want you to make the best of this experience and I know you can I also know that a new situation brings confusion because you are learning new ways to act Don’t be afraid to try new activities or introduce yourself to new people Look after your own happiness without waiting for someone to look out for you But don’t forget to look out for others’ welfare too You always have done this before but now that you are on your own I want to remind you that you are capable of such a responsibility Don’t let new surroundings confuse you too much Take your time to adjust but don’t forget to be aware of others’ feelings even as you discover your own A Meadows have surprises You can find them if you look Walk softly through the velvet grass And listen by the brook You may see a butterfly Rest upon a buttercup And unfold its drinking straws To sip the nectar up You may scare a rabbit Who is sitting very still Though at first you may not see him When he hops you will A dandelion whose fuzzy head Was golden days ago Has turned to airy parachutes That flutter when you blow Explore the meadow houses The burrows in the ground A nest beneath tall grasses The ant’s amazing mound Oh Meadows have surprises And many things to tell You may discover these yourself If you look and listen well Read and Enjoy The wind and the grasses were having such fun I saw them all tossing their heads in the sun The wind he was teasing and tickling them so The grasses were shrieking with laughter I know So jostling and rustling they swayed to one side And all the whole field of them laughed till they cried It was not a very impressive or high class dog It was one of those commonplace dogs one sees everywhere colour of white and dust tail mutilated at a young age by God knows whom Born in the street and bred on the earnings and garbage of the marketplace he had spotty eyes and undistinguished carriage and needless pugnacity Before he was two years old he had earned the scars of a hundred fights on his body When he needed rest on hot afternoons he lay curled up under the culvert at the eastern gate of the market In the evenings he set out on his daily rounds loafed in the surrounding streets and lanes engaged himself in skirmishes picked up edibles on the roadside and was back at the market gate by nightfall This life went on for three years And then occurred a change in his life A beggar blind of both eyes appeared at the market place An old woman led him up there early in the morning seated him at the gate and came up again at midday with some food gathered his coins and took him home at night The dog was sleeping nearby He was stirred by the smell of food He got up came out of his shelter and stood before the blind man wagging his tail and gazing expectantly at the bowl as he was eating his sparse meal The blind man swept his arms about and asked Who is there at which the dog went up and licked his hand The blind man stroked its coat gently from tail to ear and said What a beauty you are Come with me He threw a handful of food which the dog ate gratefully It was perhaps an auspicious moment for starting a friendship They met every day there and the dog cut off much of its rambling to sit up beside the blind man and watch him receive alms morning to evening In course of time observing him the dog understood that the passersby must give a coin and whoever went away without dropping a coin was chased by the dog he tugged the edge of their clothes and pulled them back to the old man at the gate and let go only after something was dropped in his bowl Among those who frequented this place was a village urchin who had the mischief of a devil in him He liked to tease the blind man by calling him names and by trying to pick up the coins in his bowl The blind man helplessly shouted and cried and whirled his staff On Thursdays this boy appeared at the gate carrying on his head a basket loaded with cucumber or plantain Every thursday afternoon it was a crisis in the blind man’s life A seller of bright coloured but doubtful perfumes with his wares mounted on a wheeled platform a man who spread out cheap story books on a gunnysack another man who carried coloured ribbons on an elaborate frame these were the people who usually gathered under the same arch On a Thursday when the young man appeared at the Eastern gate one of them remarked Blind fellow Here comes your scourge Oh God is this Thursday he wailed He swept his arms about and called Dog dog come here where are you He made the peculiar noise which brought the dog to his side He stroked his head and muttered Don’t let that little rascal At this very moment the boy came up with a leer on his face Blind man Still pretending you have no eyes If you are really blind you should not know this either He stopped his hand moving towards the bowl The dog sprang on him and snapped his jaws on his wrist The boy extricated his hand and ran for his life The dog bounded up behind him and chased him out of the market See the mongrel’s affection for this old fellow marvelled the perfume vendor One evening at the usual time the old woman failed to turn up and the blind man waited at the gate worrying as the evening grew into night As he sat fretting there a neighbour came up and said Sami don’t wait for the old woman She will not come again She died this afternoon The blind man lost the only home he had and the only person who cared for him in this world The ribbon vendor suggested Here take this white tape He held a length of the white cord which he had been selling I will give this to you free of cost Tie it to the dog and let him lead you about if he is really so fond of you Life for the dog took a new turn now He came to take the place of the old woman He lost his freedom completely His world came to be circumscribed by the limits of the white cord which the ribbon vendor had spared He had to forget wholesale all his old life all his old haunts He simply had to stay on forever at the end of that string When he saw other dogs friends or foes instinctively he sprang up tugging the string and this invariably earned him a kick from his master Rascal want to tumble me down have sense In a few days the dog learnt to discipline his instinct and impulse He ceased to take notice of other dogs even if they came up and growled at his side He lost his own orbit of movement and contact with his fellow creatures To the extent of this loss his master gained He moved about as he had never moved in his life All day he was on his legs led by the dog With the staff in one hand and the dog lead in the other he moved out of his home a corner in a choultry veranda a few yards off the market He had moved in there after the old woman’s death He started out early in the day He found that he could treble his income by moving about instead of staying in one place He moved down the choultry street and wherever he heard people’s voices he stopped and held out his hands for alms Shops schools hospitals hotels he left nothing out He gave a tug when he wanted the dog to stop and shouted like a bullock-driver when he wanted him to move on The dog protected his feet from going into pits or stumping against steps or stones and took him up inch by inch on safe ground and steps For this sight people gave coins and helped him Children gathered round him and gave him things to eat A dog is essentially an active creature who punctuates his hectic rounds with well-defined periods of rest But now this dog henceforth to be known as Tiger had lost all rest He had rest only when the old man sat down somewhere At nights the old man slept with the cord turned around his finger I can’t take chances with you he said A great desire to earn more money than ever before seized his master so that he felt any resting a waste of opportunity and the dog had to be continuously on his feet Sometimes his legs refused to move But if he slowed down even slightly his master goaded him on fiercely with his staff The dog whined and groaned under his thrust Don’t whine you rascal don’t I give you your food You want to loaf do you swore the blind man The dog lumbered up and down and round and round the market place on slow steps tied down to the blind tyrant Long after traffic at the market ceased you could hear the night stabbed by the far off wail of the tired dog It lost its original appearance As months rolled on bones stuck up at his haunches and ribs were relieved through his fading coat The ribbon-seller the novel vendor and the perfumer observed it one evening when business was slack and held a conference among themselves It rends my heart to see that poor dog slaving Can’t we do something the ribbon seller remarked That rascal has started lending money for interest I hear from the fruit seller he is earning more than he needs He has become a very devil for money At this point the perfumer’s eyes caught the scissors dangling from the ribbon-rack Give it here he said and moved on with the scissors in hand The blind man was passing in front of the eastern gate The dog was straining the lead There was a piece of bone lying on the way and the dog was straining to pick it up The lead became taut and hurt the blind man’s hand and he tugged the string and kicked till the dog howled It howled but could not pass the bone lightly it tried to make another dash for it The blind man was heaping curses on it The perfumer stepped up applied the scissors and snipped the cord The dog bounced off and picked up the bone The blind man stopped dead where he stood with the other half of the string dangling in his hand Tiger Tiger Where are you he cried The perfumer moved away quietly muttering You heartless devil You will never get at him again He has his freedom The dog went off at top speed He nosed about the ditches happily hurled himself on other dogs ran round and round the fountain in the market square barking his eyes sparkling with joy He returned to his favourite haunts and hung about the butcher’s shop the tea stall and the bakery The ribbon vendor and his two friends stood at the market gate and enjoyed the sight immensely as the blind man struggled to find his way about He stood rooted to the spot waving his stick he felt as if he were hanging in mid air He was wailing Oh where is my dog I will murder it when I get at it again He groped about tried to cross the road came near being run over by a dozen vehicles at different points tumbled and struggled and gasped He would deserve it if he was run over this heartless blackguard they said observing him However the old man struggled through and with the help of someone found his way back to his corner in the choultry veranda and sank down on his gunnysack bed half faint with the strain of his journey He was not seen for ten days and twenty days nor was the dog seen anywhere They commented among themselves The dog must be loafing over the whole earth free and happy the beggar is perhaps gone forever Hardly was this sentence uttered when they heard the familiar tap tap of the blind man’s staff They saw him again coming up the pavement led by the dog Look Look they cried He has again got at it and tied it up The ribbon seller could not contain himself He ran up and said Where have you been all these days Know what happened cried the blind man This dog ran away I should have died in a day or two confined to my corner no food not an anna to earn imprisoned in my corner I should have perished if it had continued for another day But this thing returned When When Last night At midnight as I slept in bed he came and licked my face I felt like murdering him I gave him a blow which he will never forget again said the blind man I forgave him after all a dog He loafed as long as he could pick up some rubbish to eat on the road but real hunger has driven him back to me but he will not leave me again See I have got this and he shook the lead it was a steel chain this time Once again there was the dead despairing look in the dog’s eyes Go on you fool cried the blind man shouting like an ox driver He tugged the chain poked with the stick and the dog moved away in slow steps They stood listening to the tap tap going away Death alone can help that dog cried the ribbon seller looking after it with a sigh What can we do with a creature who returns to his doom with such a free heart In this poem Toru Dutt describes the beauty of the garden around her bungalow A sea of foliage girds our garden round But not a sea of dull unvaried green Sharp contrasts of all colours here are seen The light-green graceful tamarinds abound Amid the mango clumps of green profound And palms arise like pillars gray between And o’er the quiet pools the seemuls lean Red red and startling like a trumpet’s sound But nothing can be lovelier than the ranges Of bamboos to the eastward when the moon Looks through their gaps and the white lotus changes Into a cup of silver One might swoon Drunken with beauty then or gaze and gaze On a primeval Eden in amaze I soon realized that it was not going to be difficult to get involved in India From day one I was surrounded by friends the friends my predecessors introduced me to the staff of All India Radio the members of the press club and my new neighbours Many are still good friends It’s through them that I have become involved in their country Now when I am asked why I’m staying on I reply Because of my friends That of course is only part of the truth I’m drawn to India by its beauty Particularly its natural beauty Recently I was beside a campfire in the Great Himalayan National Park watching the snow covered mountains glitter in the sunset A week later I was in Kerala in the extreme south sitting in my bathing trunks looking out over the Arabian Sea as the sun slid like a great red dome below the horizon There are the smells of India too which evoke such nostalgia There is the dry scent of early summer in Delhi as the blue jacarandas the scarlet gulmohars and other trees come into flower the sweet smell of the queen-of-the-night and the freshness of the first of pine trees in the foothills of the Himalayas after a long hot and dusty drive across the plains There are the folk songs and the classical music with ragas that start with such austerity and end in ecstasy There are the great epics and the love poetry There’s the art of the Pradhan tribe in Central India which occupies the whole of one wall of my flat There’s the colour of the festivals the solemn dignity of the courtyards of the great Mosques filled with line after line of worshippers bowing their heads in prayer and the colourful informality of the pujari performing the evening rites in a Hindu temple There’s the sound of priests singing the Sikh scriptures carrying across the water of the sacred tank in which the Golden temple stands There are the great monuments of India I have never known anyone to be disappointed by the Taj Mahal or the forts of Rajasthan There are the fresh cooked parathas for breakfast in the open-air dhabas or restaurants along the Grand Trunk Road and there’s the delicacy of a vegetarian thali or tray in Gujarat All these kept me in India But they are not whole It would need a poet to describe what India means to me and I am no poet I can only say that I’m not alone among foreigners in believing there is nowhere like India and no people like Indians I am perhaps more unusual for a foreigner in that I have been accepted as a part of India Behold her single in the field Yon solitary Highland Lass Reaping and singing by herself Stop here or gently pass Alone she cuts and binds the grain And sings a melancholy strain O listen for the vale profound Is overflowing with the sound No nightingale did ever chaunt More welcome notes to weary bands Of travelers in some shady haunt Among Arabian sands A voice so thrilling never was heard In spring-time from the cuckoo-bird Breaking the silence of the seas Among the farthest Hebrides Will no one tell me what she sings Perhaps the plaintive numbers flow For old unhappy far-off things And battles long ago Or is it some more humble lay Familiar matter of today Some natural sorrow loss or pain That has been and may be again Whatever the theme the Maiden sang As if her song could have no ending I saw her singing at her work And over the sickle bending I listened motionless and still And as I mounted up the hill The music in my heart I bore Long after it was heard no more Once upon a time when the wise men of India dwelt in forest hermitages and made their homes of mud and straw there lived in one such hermitage a young boy called Uttanka Many years passed by and he grew up Soon he had learnt all that his master could teach him One day he went to his master and said Dear master you have taught me all these years and yet I have never once repaid you Tell me of some gift I may bring you that will please your heart His teacher said Child there is nothing that I desire Go to your mother and ask her So Uttanka went to his guru’s wife and bowing low before her asked her if there was anything she desired Yes she replied I have long cherished a wish to wear the ear-rings worn by the queen Go to her and get them for me In four days a feast will be held I want to wear them on that day Get the ear rings for me and I shall know of your true devotion Uttanka hearing this was filled with dismay Nevertheless he set out through the forest to the city where he knew the king dwelt He had not gone far when he saw a huge bull coming towards him As it drew nearer Uttanka saw seated upon the bull a man so large that he drew back in fear But the man called out Uttanka Drink this and he held out a cup full of some kind of liquid Uttanka turned his head away but the man said Drink Uttanka it will help you on your way At last he came to the palace of the king He boldly went inside and did not stop to look about him till he saw the king himself seated upon the royal throne Sir said Uttanka bowing low I have come from a hermitage in the forest many miles from here The mistress desires to wear the ear rings of the queen on the feast day and if I do not take them to her I will lose favour in my teacher’s eyes The king smiled kindly upon the boy You must ask the queen he said Go to her chamber and ask her Uttanka went to the queen’s chamber but he could not find her He went back to the king and said Sir I cannot find her The king looked at Uttanka as he stood there with the dust of travel upon his clothes and his hands and feet dirty and stained Is that how you would go to the queen he said Uttanka felt ashamed Washed and clean he again went in search of the queen This time he found her The queen held out her hand and Uttanka saw the ear rings sparkling in her palm You are a good child Uttanka she said I give you the ear rings willingly but beware These ear rings have long been coveted by the Serpent King Do not lose them Uttanka thanked her and started for home Dusk was falling and he was tired Leaning against the trunk of a tree he rested placing the ear rings on the ground beside him Suddenly he saw a hand snatch the ear rings and disappear He sprang to his feet and turned round in time to see a man dressed in rags running through the forest Uttanka ran after him as fast as he could when suddenly the man changed into a snake which wriggled into a hole in the ground Uttanka was greatly distressed for try as he did he could think of no way to get through so small a hole He sat down to lament his fate when an old man appeared before him Do not worry my son he said I have come to help you Even as he spoke there was thunder and lightning and a great thunderbolt fell The whole earth shook with the force of it Suddenly all was quiet again but next to where Uttanka stood was a big hole in the ground Uttanka entered the hole and found himself in the kingdom of the Serpent King He walked slowly along and came to two women weaving a piece of cloth He asked them the way to the palace of the Serpent King They did not heed him and went on with their weaving He saw that their cloth was made of black and white threads Next he came to a wheel with twelve spokes Six boys turned the wheel round and round What are you doing he asked the boys They did not answer him and went on with their work So he went on till he saw a man with a beautiful horse Uttanka went up to him He was so struck with the horse that he bowed respectfully to the man and said O Lord I bow to you Grant me a favour The man turned and said What can I do for you Uttanka replied Let the Serpent King be brought under my power Blow into this horse the man replied Uttanka went up to the horse and blew and blew and from every hair of the horse’s body darted a flame that shot through every space in the kingdom of the Serpent King It burnt the houses till all the serpents rushed out begging Uttanka to save their lives Let the Serpent King return the ear rings said Uttanka All the serpents then clamoured for the king to return the ear rings He did The man gave Uttanka the horse and in a few moments he was back at the hermitage just in time to give the ear rings to his Guru’s wife for the feast She blessed him for his great courage When Uttanka related his adventures his master smiled and said The dirty liquid you drank my boy was ambrosia It will give you eternal youth The two maidens weaving the black and white threads are night and day The man was the God of Rain and the horse was the God of Fire You have been well looked after my child and deserve my blessings Go into the world now for great fortune awaits you Thus Uttanka having fulfilled his duties went into the world to seek his living He was not as other men for he knew that God protected him He had nothing to fear A Two roads diverged in a yellow wood And sorry I could not travel both And be one traveler long I stood And looked down one as far as I could To where it bent in the undergrowth Then took the other as just as fair And having perhaps the better claim Because it was grassy and wanted wear Though as for that the passing there Had worn them really about the same And both that morning equally lay In leaves no step had trodden black Oh I kept the first for another day Yet knowing how way leads on to way I doubted if I should ever come back I shall be telling this with a sigh Somewhere ages and ages hence Two roads diverged in a wood and I I took the one less traveled by And that has made all the difference In the late thirties and early forties of the last century we fought for our freedom Two great leaders inspired us to fight Mohandas Karamchand Gandhi and Subhas Chandra Bose Each led us in his own way Bose asked Indians to give him their blood and he would give them freedom Gandhi promised freedom without violence Hindus Muslims and Sikhs adored Subhas and joined the Indian National Army in thousands They called him Netaji Women knew how Netaji held them in high regard They too joined the Jhansi Lakshmibai Regiment under the leadership of the fiery and beautiful Lakshmi Swaminathan It was an All Women Army The now very popular Jai Hind and Dilli Chalo were their war cry When the British put on trial three I N A officers Shah Nawaz a Muslim Sahagal a Hindu and Dhillon a Sikh India exploded in wrath Nehru said on December The INA trial has created a mass upheaval Sir Claude Auchinleck the British commander-in-chief said that Indians adored the INA and its officers as national heroes This is the general opinion held in India not only by the public but by quite a considerable part of the Indian Army as well In an article published on February Gandhi said The hypnotism of the Indian National Army has cast a spell on us The lesson that Netaji and his Army bring to us is one of self-sacrifice unity irrespective of class and community and discipline Four months before that on August Subhas had died in an accident in which his plane had caught fire In the history of India’s freedom struggle the place of Subhas Chandra Bose is unique He was the leader who thought of fighting the brute force of the British by armed force He had a wonderful organizing capacity He could raise a modern army of about men and women He inspired them with intense patriotic fervour and a burning desire to free their enslaved motherland Subhas Chandra Bose belonged to an educated and prosperous family He was educated in England Cambridge and had travelled widely all over Europe He looked at India from an international perspective As he had a deeply spiritual nature his quest for truth and the right ‘guru’ had taken him to each and every corner of the country At last he made up his mind to follow the teaching of Swami Vivekananda and Aurobindo Ghosh in the spiritual sphere and Deshbandhu Chittaranjan Das in politics Subhas Chandra had a special regard for his Muslim countrymen Some of his ancestors like Mahipati Bose and Gopalnath Bose had held the offices of minister and naval commanders under the Muslim rulers of Bengal The quarters in which we lived says Bose in his autobiography was prominently a Muslim one and our neighbours were mostly Muslims I cannot remember ever to have looked upon Muslims as different from ourselves in any way except that they go to pray in a mosque Subhas was born at Cuttack Odisha on January His father Janakinath Bose was a famous lawyer Bose was a brilliant student He had very broadminded views on freedom and other social issues and his hungry soul was not satisfied with textbooks alone Describing his childhood he said In my infancy I was brought into touch with English people English education and English culture After that I went back to our culture both classical and modern Bose had a rebellious and independent spirit and that was apparent from his earliest days In the Presidency College Calcutta he organised a students’ strike to demonstrate against an English Professor who had insultingly pushed away an Indian student For this Bose was expelled from the college After a year he was allowed to join the Scottish Church College in Calcutta where he secured a first class in the B A examination Subhas left for England on September in order to study and appear at the Indian Civil Service ICS examination After a year he came out successfully and stood fourth in the order of merit But his conscience would not allow him to serve the alien rulers even as a high executive So he resigned from the ICS and returned to India Now Bose wanted to chalk out the future course of his life He had long discussions with Mahatma Gandhi and C R Das He took Das as his mentor and settled down as principal of National College at Calcutta But Bose gave up his job when Gandhiji started the Non-Cooperation Movement He was arrested by the British for joining the Movement After his release Bose formed the Swaraj Party and was appointed the editor of the party’s journal Forward Bose became the Executive Officer of the Calcutta Corporation in and gained valuable experience of planning and practical administration Soon the activities of the Swaraj Party were found unbearable by the British on account of which Bose was in and out of jail repeatedly and fell ill many times Bose was a great thinker as well as a man of vision and action Subhas made such an impact on the Congress that he was elected twice as the President of the Indian National Congress in and for the two sessions held at Haripura Gujarat and Tripura In his presidential address he talked not only of freedom but also of reconstruction the need for planning by setting up a planning commission and of the gradual socialization of the entire agriculture and industrial system He urged strongly that it was the right time to give an ultimatum to the British Government for complete Swaraj Britain was engaged in the World War and so Gandhiji and Nehru were of the opinion that the Congress should not take advantage of Britain’s difficulties But Bose had strong views and advocated total freedom He travelled throughout the country to organize public opinion against the war effort So he was arrested on July at Madras On November Bose went on hunger strike to protest against the ill-treatment of prisoners As his condition suddenly worsened he was released but was kept under police surveillance Bose escaped from the British and reached Kabul and from there he went to Berlin via Moscow The whole country was thrilled when his voice was heard over the Berlin Radio When Japan entered the world war Subhas left for Japan He went to Singapore and took over the leadership of the Indian Independence Movement Subhas went to South-East Asia and organised the Indian National Army I N A to fight against the British The Indian soldiers and civilians at once declared their allegiance to him and began to call him Netaji He gave them the inspiring call of Jai Hind and Dilli Chalo While launching the war Netaji went on air on July and sought Gandhiji’s blessings in the following words Father of our Nation in this Holy War of India’s liberation we ask for your blessings and good wishes The I N A fought so well that it soon liberated about square kilometers of Indian territory from the well entrenched British army But it was soon beset by various difficulties such as lack of communication and food rigours of the monsoon and breakdown in supplies On the other hand the Japanese forces were withdrawn as the war went badly for them But the I N A refused to retreat with the result that thousands of soldiers were captured by the British forces They were disarmed and court-martialled Jawaharlal Nehru himself organised and conducted their defence Ultimately the government released them Netaji boarded a Japanese aircraft for Tokyo on August The plane landed in Formosa at noon and according to the Japanese sources it caught fire while taking off Netaji was badly burnt but managed to come out of the plane He was rushed to a hospital where he died the same night It is amazing how much Subhas Chandra Bose was able to achieve and accomplish in his life of years He was a brilliant student and could have easily attained a high position of power as an I C S officer But he preferred a life of trials and tribulations as a fighter for his country’s freedom His proud and independent spirit mocked at ill health and ill-fortune He was a doer as well as a thinker and a fighter who never submitted to defeat In life he was a natural leader of men who inspired immense devotion and loyalty In death he became a legend People refuse to believe that Netaji is dead Perhaps they are right for martyrs never die A Leave this chanting and singing and telling of beads Whom dost thou worship in this lonely dark corner of a temple with doors all shut Open thine eyes and see thy God is not before thee He is there where the tiller is tilling the hard ground and where the path-maker is breaking stones He is with them in sun and in shower and his garment is covered with dust Put off thy holy mantle and even like him come down on the dusty soil Deliverance Where is this deliverance to be found Our master himself has joyfully taken upon him the bonds of creation he is bound with us all forever Come out of thy meditation and leave aside thy flowers and incense What harm is there if thy clothes become tattered and stained Meet him and stand by him in toil and in sweat of thy brow Have you ever gone on a school trip You have Good On June the students of Nava Bharatha School went on a trip to Chandragiri It was early morning They climbed the hill The town and the fields below looked like they were sleeping in the morning sun They roamed around and enjoyed the beauty of Nature from different points They had a good lunch and came back It was all so peaceful But on the same day in far off Uttarakhand there was a natural calamity The fury of Nature was terrible and disastrous There was an unprecedented cloudburst causing flash floods and landslides Hundreds of people lost their lives Now in this story you will read about another type of natural calamity A scientist searches for his dear ones lost in the calamity In the end he only collects his slides He does this to drown his grief in his work On December the director was in Port Blair He was on his way to New Delhi Since he was travelling for official reasons he had left his family in Malacca He spent the night in Haddo Circuit House which stands close to the water On the morning of he was woken by the shaking of his bed He found the floor heaving and started running out of the building Then his mobile phone rang He saw that his wife was calling from Malacca Car Nicobar He cut off the call and decided to phone back later When the ground was still he hit the call button But there was no answer and he wondered if the network was down Then he observed a strange phenomenon The water in the harbour had begun to rise very rapidly and the anchored ships seemed to be swirling He ran to the higher ground with others Then it occurred to the director that Nicobar islands are low lying islands and some like Car Nicobar islands stand no more than a few meters above the sea level at their highest point This made him anxious The director knew that a government office in Car Nicobar had satellite phone He dialled the number again and again When he got through he received the news that Malacca had been badly hit and there were some survivors but as for his family there was no news The director kept calling and in the afternoon he learnt that his thirteen-year-old son had been found clinging to the rafters of a church He spoke to his son directly later that night and learnt that the family had been in the bedroom when the earthquake started A terrifying sound from the direction of the sea had driven them into the drawing room but the boy had kept running When the wave hit the house dissolved into splinters and the boy was carried away as if on a wind Flailing his arms he managed to take hold of something that seemed to be fixed to the earth Through wave after wave he managed to keep his grip When the water receded he saw that he was holding on to the only upright structure And your mother and sister the director had asked Baba they just disappeared And now for the first time the boy began to cry The director’s heart broke because he knew his son was crying because he thought he would be scolded and blamed for what had happened With the intervention of the local administration and the officers on the airbase he was able to get on a flight the very next day He spent the day searching through the rubble and found many possessions but no trace of his daughter or wife He came back to Port Blair with his son the same evening When he went to Car Nicobar for the second time I too went with him The road wound through a dense tropical jungle It was clear that the island’s interior was sparsely inhabited with the population being concentrated along the seafront I saw to my surprise that many thick strands of coconut palms were still standing even on the edge of the water As for the forest the canopy seemed almost undisturbed All trace of habitation on the other hand had been obliterated It was evident that the Tsunami had been peculiarly selective in the manner of its destruction It had caused maximum possible damage to life and property and had left nature largely unharmed We came to the district library It was unharmed like the surrounding offices There was a medical camp The director spotted a doctor and enquired him about his family The doctor said No news has reached me I’ve not heard anything We continued on our way The director hurried to a spot where there was a mound of household objects and showed me his aristocrat suitcase a steel trunk a cabinet records of his office and slides He took his slides We continued and after seeing the glimpse of the sea front the director came to the point where his house had once stood He said This was my house Only the foundation was concrete The rest was wood My wife used to teach English in a school here but she wanted to leave I applied many times but the transfer never came There was so much she could have achieved I was never able to give her the opportunity When I reached out to touch his arm he shook my hand brusquely away He did not want sympathy from others He showed his daughter Vinceta’s paint box but did not pick it up When I asked him why he did not pick it up he said What good will it do What will it give back As a husband a father a human being it was impossible for me not to wonder what would I have done What would I have felt What would I have chosen to keep off the past The truth is that nobody can know It is an expression of the innermost sovereignty of the self because nothing now remains to cloud its vision In the manner of his choosing there was not a particle of hesitation or the faintest glimmer of doubt Perhaps he must have found some comfort in the knowledge of an impersonal effort Sometimes words seem futile and at these moments it seems nothing is of value other than to act and intervene in the course of events Even thinking reflecting and writing about it seem trivial and wasteful And after the day had passed I understood that in the manner of choosing the director had mounted the most singular the most powerful defence of it that I would ever witness A Note about the author Amitav Ghosh is a famous journalist sociologist and novelist He was born on July at Calcutta to Lieutenant Colonel Shailendra Chandra Ghosh Retired Officer of the Pre-Independence Indian Army He studied in Doon School Dehradoon and St Stephen’s College Delhi He earned the degree of Doctor of Philosophy from St Edmund’s Hall Oxford He has been a Visiting Professor at Harvard University since He teaches Comparative Literature A And as the smart ship grew In stature grace and hue In shadowy silent distance grew the iceberg too Alien they seemed to be No mortal eye could see The intimate welding of their later history Or sign that they were bent By paths coincident On being anon twin halves of one august event Till the Spinner of the Years Said Now And each one hears And consummation comes and jars two hemispheres Suvarnasiddhi and Chakradhara Vishnusharma Suvarnasiddhi told this story to his friend Chakradhara A big strange bird Berunda lived on the banks of a lake called Sangama He had two heads and single body One day as he was wandering on the banks of the lake he found a fruit which was delicious as ambrosia One of his heads mumbled Oh What a fruit I am sure the heavens have sent it for me I am so lucky Hearing this the second head said Oh brother let me also taste the fruit you are praising so much The first head laughed and said Both of us have the same stomach it makes no difference whether I eat or you eat it I shall give it to our beloved She will be very happy Berunda thus gave the fruit to his wife Tatillatha The second head was disappointed at what the first head did He was waiting for a chance to take revenge One day the second head found a poisonous fruit and told the first head You treacherous fellow For what you have done to me I will eat this poisonous fruit and avenge your insult The first head said You fool if you eat that both of us will die Ignoring the first head’s warning the second head ate the poisonous fruit and both of them died After listening to the story Chakradhara said Friend what you say is true You can go home but don’t go alone Suvarnasiddhi asked Chakradhara Why should I not go alone Why should you not I will tell you a story Do you know how a boy survived because he heeded his mother’s advice and took a crab as his travelling companion said Chakradhara How was that asked Suvarnasiddhi perplexed Thus Chakradhara narrated the story Brahmadatta lived in a city called Varanavarta with his old mother One day when he was planning to travel to another village his mother told him not to travel alone but take someone along with him The boy said that the way to the village was safe and he was leaving on an urgent business He asked her not to be afraid for him Knowing that he was determined to go the mother went to the well in the backyard and took out a crab and asked her son to keep the crab with him during the travel The boy then put the crab into a camphor box took the box in a vessel and set out on his journey That being summer the day was very hot and the boy halted and took rest under a big tree From the hollow of the tree a snake emerged and attracted by the fragrance of camphor swallowed the box containing the crab The crab came out of the box and killed the snake The boy woke up to find the dead snake and the open camphor box When he saw the crab alive beside the open camphor box he at once realized what had happened He remembered his mother’s words and thought that he did well by heeding her advice that saved him from death Chakradhara concluded his story telling Suvarnasiddhi how important it is always to have a companion He then agreed to Suvarnasiddhi taking leave of him The Dream Once there was an old woman She was an intelligent woman She used her intelligence only to do good to others all her life One night after a hard day she fell asleep and had a strange dream She dreamt that she died in her bed The dream continued Now from where she was standing she could see at a distance two ornamental gates with arches They looked alike The arches bore welcome signs Two men guarded the gates one at each gate They looked alike She could see pathways beyond the gates They too looked alike She wanted to examine them closely As she walked towards the gates a body-less voice was heard It said One of them is a liar and fell silent Oh why am I warned like this the woman exclaimed Why should one of them lie to me What do I want from these guards It was then that she realized that she was thinking of heaven and was curious to know what it was like I think one of those pathways leads to heaven and the other to hell I will talk to those guards she thought Then she stopped The warning came back to her She stood there and thought for a while She wondered how she could ferret out the truth from them The chances of being told the truth seems fifty-fifty she thought But she was an intelligent woman She thought she should frame her question well and she did frame her question well She asked the first man she met Sir please tell me what would that other guard say if I asked him which is heaven’s gate The guard smiled and pointing to his gate he said Madam he would show you my gate The woman now knew for sure that his gate was not the gate to heaven She walked to the other gate The guard there greeted her and let her in She enjoyed her long walk to heaven and reached heaven At this point the woman’s dream ended She woke up and sat in her bed What a dream She chuckled Was that man I talked to the liar or the truthful person I don’t know but I made sure what he was telling me was not the truth The truthful man would only report to me the liar’s exact words and the liar would twist the truthful man’s words Now a strange thought came to her mind My dream had a puzzle in it Should I share my dream with my class students She chuckled again She lay down and went back to sleep She died that night peacefully in her sleep He came into the room to shut the windows while we were still in bed and I saw he looked ill He was shivering his face was white and he walked slowly as though it ached to move What’s the matter Schatz I’ve got a headache You better go back to bed No I’m all right You go to bed I’ll see you when I’m dressed But when I came downstairs he was dressed sitting by the fire looking very sick and miserable boy of nine years When I put my hand on his forehead I knew he had a fever You go up to bed I said You’re sick I am all right he said When the doctor came he took the boy’s temperature What is it I asked him One hundred and two Downstairs the doctor left three different medicines in different coloured capsules with instructions for giving them One was to bring down the fever another a purgative the third to overcome an acid condition The germs of influenza can only exist in an acid condition he explained He seemed to know all about influenza and said there was nothing to worry about if the fever did not go above one hundred and four degrees This was a light epidemic of flu and there was no danger if you avoided pneumonia Back in the room I wrote the boy’s temperature down and made a note of the time to give the various capsules Do you want me to read to you All right if you want to said the boy His face was very white and there were dark areas under his eyes He lay still in the bed and seemed very detached from what was going on I read aloud from Howard Pyle’s Book of Pirates but I could see he was not following what I was reading How do you feel Schatz I asked him Just the same so far he said I sat at the foot of the bed and read to myself while I waited for it to be time to give another capsule It would have been natural for him to go to sleep but when I looked up he was looking at the foot of the bed looking very strangely Why don’t you try to go to sleep I’ll wake you up for the medicine I’d rather stay awake After a while he said to me You don’t have to stay in here with me Papa if it bothers you It doesn’t bother me No I mean you don’t have to stay if it’s going to bother you I thought perhaps he was a little light-headed and after giving him the prescribed capsules at eleven o’clock I went out for a while It was a bright cold day the ground covered with a sleet that had frozen so that it seemed as if all the bare trees the bushes the cut brush and all the grass and the bare ground had been varnished with ice I took the young Irish setter for a little walk up the road and along a frozen creek but it was difficult to stand or walk on the glassy surface and the red dog slipped and slithered and I fell twice hard once dropping my gun and having it slide away over the ice We flushed a covey of quail under a high clay bank with overhanging brush and I killed two as they went out of sight over the top of the bank Some of the covey lit in tees but most of them scattered into brush piles and it was necessary to jump on the ice-coated mounds of brush several times before they would flush Coming out while you were poised unsteadily on the icy springy brush they made difficult shooting and I killed two missed five and started back pleased to have found a covey close to the house and happy there were so many left to find on another day At the house they said the boy had refused to let anyone come into the room You can’t come he said You mustn’t get what I have I went up to him and found him in exactly the position I had left him white-faced but with the tops of his cheeks flushed by the fever staring still as he had stared at the foot of the bed I took his temperature What is it Something like a hundred I said It was one hundred and two and four-tenths It was a hundred and two he said Who said so The doctor Your temperature is all right I said It’s nothing to worry about I don’t worry he said but I can’t keep from thinking Don’t think I said Just take it easy I am taking it easy he said and looked straight ahead He was evidently holding tight on to himself about something Take this with water Do you think it will do any good Of course it will I sat down and opened the pirate book and commenced to read but I could see he was not following so I stopped About what time do you think I’m going to die he asked What About how long will it be before I die You aren’t going to die What’s the matter with you Oh yes I am I heard him say a hundred and two People don’t die with a fever of one hundred and two That’s a silly way to talk I know they do At school in France the boys told me you don’t live forty-four degrees I’ve got a hundred and two He had been waiting to die all day ever since nine O’clock in the morning You poor Schatz I said poor old Schatz It’s like miles and kilometres You aren’t going to die That’s a different thermometer On that thermometer thirty-seven is normal On this kind it’s ninety-eight Are you sure Absolutely I said It’s like miles and kilometers You know like how many kilometres we make when we do seventy miles in the car Oh he said But his gaze at the foot of the bed relaxed slowly The hold over himself relaxed too finally and the next day it was very slack and he cried very easily at little things that were of no importance UNIT I HEALTHY LIFE Pedro Pablo Sacristan Before you read OUTLINE Listening Text A Morning Walk Step The teacher reads the outline relating to ‘A Morning Walk’ come back at sunrise people doing exercise morning dew freshness in the air beside a river calm and cool wake up early and walk MORNING WALK keep healthy this way farmers working birds chirping Step Look at the pictures and the outline With the teacher’s help prepare a passage and write it You can start the para graph like this I get up early in the morning My friend Richard meets me We go out for a walk Healthy Life Pedro Pablo Sacristan Many years ago everyone was strong and healthy They ate varieties of food and loved fruits and vegetables They took daily exercises and enjoyed walking running playing and leaping about The earth was the healthiest place you could imagine and it was clear that both adults and children were full of joy and were in good moods All this made one of the witches furious She suggested that all the witches should come together to prepare a potion One who drinks it would lose the desire to live So that night all the witches gathered in the forest They all needed to put all their energy to make the potion which would have a powerful spell on people During the collection of energy one of the witches made a mistake in uttering the words As a result there was a big explosion It was so big that it completely destroyed the forest As a result it turned all the witches into tiny creatures like germs They were trapped in liquid in a small bottle which was lying in a swamp One day a little boy found this bottle Thinking it contained a nice new drink he swallowed it fully The germ-like witches took advantage of this situation Though they could not physically harm anyone they learned to change the boy’s likes and dislikes In a few days a funny feeling started in the boy’s mouth He no longer wanted to eat vegetables fruits and good food All he wanted to do was to ask for pizza burger and wait for them at home He wasted his time waiting for food from hotels or restaurants and watching television eating ice cream and chips No longer did he enjoy fruits and vegetables He did not feel like walking running and playing with his friends Eventually he stopped going out of the house and was sitting or lying about He started feeling ill Before long he had no desire to do anything The evil potion had worked And the worst thing of all was that the witches had learnt to jump from one person to another like virus They managed to turn the effect of the potion into one of the worst diseases the disease of wasting life It was a long while before with the help of his microscope Doctor Fitton-Healthy discovered that the little witches were causing this disease There were no vaccines or cough mixtures to get rid of them The doctor found out that the witches could not tolerate joy and good health It turned out that the best cure was to make a strong effort to live a healthy joyful and happy life When a person became healthy the witches had to leave that body as soon as they could riding off on a sneeze From then on the best remedy was neither pills nor injections but just a little bit of effort to eat some fruits and vegetables and to do some exercise Whoever came to see Doctor Fitton-Healthy and took his advice ended up totally well being cured of the wasting life disease L Listen well S speak well L Listen and S Speak Work in pairs and collect information about what your friends do and do not do Find out a few details about your friends Do you dance Priya asked Sharath No I don’t Sharath answered Then Sharath asked Can you dance Yes I can answered priya Does Altaf dance asked Sharath Priya answered No he doesn't but he sings well Do you last week at the back of long ago in front of at the bottom of this year at the top of next month by the side of this hour every hour on the banks of late night next year to do it W More Food Some food items can be eaten raw Some others have to be cooked before they can be eaten Put the different food items below in the correct balloons One is done for you eggs milk beans cucumber tomatoes mutton chicken mangoes potatoes dal carrots ladiesfinger rice bananas fish cereals oranges onions wheat ragi can be eaten raw tomato have to be cooked raw as well as cooked Language in use Singular is one and Plural is more than one Such nouns are called countable nouns But the other kind of noun which has no plural form is called an uncountable noun G Nouns can typically be divided into two categories COUNTABLE and UNCOUNTABLE nouns Nouns that are countable one house two houses or one deer two deer are called countable nouns The plural forms of these nouns are usually made by adding an to the singular forms Example Singular Plural Singular Plural horse horses wolf wolves train trains class classes boy boys cry cries egg eggs knife knives However some countable nouns have irregular plural forms person people sheep sheep man men fish fish tooth teeth Uncountable nouns are things which cannot be counted by themselves because they are always treated as a group volume mass or quantity Some common mass nouns are liquids water oil gasoline materials coal steel wood food bread fruit butter ideas love knowledge advice In order to count mass nouns you must use amount words Some examples are a pound of bread three baskets of fruit four slices of bread two litres of oil a glass of water a grain of sand two pairs of eyeglasses Poem THE GYMNASTIC CLOCK C Davies The little clock is friends with me It talks as plain as plain can be And says each morning as it rises Now don’t forget your exercises Both hands above your head you know Then lower them very slowly so Oh don’t get tired and stop that way I exercise like this all day Right in its face then I say Pooh I wouldn’t boast of it like you But I can swing my arms round too And so the clock then looks at me And I look back and I and he Each single morning when we rise Just exercise and exercise Know about the poet As the picture of the poet is not available her signature copy is given Mary Carolyn Davies was born and educated in California In she published The Drums in Our Street a book of war poems and in brought out a collection of her poems under the title Youth Riding Miss Davies has also written several one-act plays one of which The Slave with Two Faces has had successful presentation AVOID PLASTICS It is time to say no to plastic Plastic is not a strange product to anyone It’s everywhere in the present world and it has become a part of our life Alexander Parkes created the first man-made plastic He demonstrated it in an International Exhibition in London He named it as Parkesine The common and wide use of plastic is mainly because it is inexpensive it is long-lasting and it is easy to make This substance can be moulded into any form by heating and it can be retained in that particular form when cooled It can be made into thin and light material which is now widely used to make hard and disposable carry bags or packing materials These qualities cause threat to the environment As it is cheap and easily available people dispose plastic everywhere Plastic stays on the earth’s surface for many centuries as it is long-lasting and is impossible to decompose It ultimately causes enormous environmental hazards Due to migration plastic pollution is highly concentrated in big cities When these are thrown after use they remain in the soil in the same form as they are non-biodegradable Plastic causes serious damage to the environment at every stage of its production or even in its disposal To reduce the risks involved in plastic the usage should be minimized which can result in production The chemical that is used in the production of plastics is toxic and can cause serious damage to all living beings Even recycling of plastic causes problems The worst thing is that recycling degrades the quality of plastic and demands the production of more plastic to make an original product A single plastic sheet can take about thousand years to rot It also has bad impact on the food chain Plastic is one of the causes for global warming Rivers have become the main dumping ground for plastics which pollute water marine life and also the air that we breathe Many are being profited by plastic Those who get profit from plastics are trying to dispute the harm that it causes You can’t completely stop the use of plastic but can definitely minimize its production For a healthy future the use of plastic should be minimized at any cost People are foolish to use plastic extensively Some people think that the argument against the use of plastic is meaningless Only when people come to know about its threats it will be a remarkable achievement This awareness has to be created AWARENESS Sylvia Stults Broken bottles and charred pieces of glass Wadded up newspapers tossed on the grass Pouring of concrete and tearing out trees This is the environment that surrounds me Poisons and insecticides sprayed on our food Oceans filling with thick oil crude All sea life destined to a slow awful doom These are the things we are to consume Mills pumping out iron expelling yellow fumes Airlines emitting caustic gases from fuels Weapons of destruction tested at desolate sites And this is the air that’s to sustain life There has to be something that someone can do Like raise the awareness to those around you That if we don’t heed the problem at hand It’s your life that’s at stake the destruction of man Read and enjoy I WAS DREAMING It was beautiful It was green and clean The smell of fresh air The sound of the river flowing I love everything happening there I pinched myself to see if it was real That was when I realized I was dreaming Couldn’t it be real Now all wasted The color is just awful The smell of pollution is killing me The sound of traffic is giving me a headache I wanted my perfect dream to come through But again I was dreaming Surega Rajan EKALAVYA Before you read The Teacher Murillo was a Spanish artist He found some of his stu dents’ sketches that were great They were done during the night and he was unable to find out who had painted them One morning he found his pupils standing in a group before a beautiful painting of the Blessed Virgin They seemed to be lost in surprise and wonder He asked them who had painted it Each one said Not me After admiring it he said He who has done this will one day be the master of us all Finally Murillo found out that his young slave Sebastian had painted the picture Murillo asked him who his master was Sebastian replied that Murillo was his master Murillo in a shock told him that he had not taught him Sebastian said that when Murillo taught others he had overheard him and prac tised on his own Murillo was greatly impressed He released Sebastian and his father from slavery EKALAVYA Scene I Dronacharya’s ashram Drona is standing under a tree surrounded by the Pandava and the Kaurava princes Drona I am very glad my dear boys You have learnt all the tricks of archery that I taught Practise them well Arjuna But we know only to aim at an object seen at a distance You have not yet taught us the art of shooting at an unseen object Drona Yes Shabdavedhi it is the most skilful trick in archery aiming at an object merely by the sound You shall learn it by and by But who comes here A boy enters and bows to Drona The boy Great Acharya Ekalavya the son of Hiranya dhanus prostrates before you Drona Long live boy Hiranya Dhanus Is he not the hunter chief of the southern forest Ekalavya Yes Acharya But he is no more Drona Oh what a pity He was a bold hunter Indeed you look equally bold What brings you here my boy Ekalavya Wolves have increased in my forest and the fawns have no safety I cannot bear to see the poor animals troubled by the greedy wolves I must learn archery in order to protect the fawns in the surroundings So I have come to you great Acharya please take me as one of your pupils Drona Your thought is indeed noble Arjuna Noble indeed But Acharya he is not a prince How can you have him as your pupil Drona That is true But I am sure he will prove a worthy pupil Ekalavya Acharya teach me archery just enough to save my dear fawns Take pity on the poor animals Drona The archery teacher for both the Pandava and the Kaurava princes prostrate lie flat on the ground before a person to show respect Drona My vow binds me my boy I cannot take as my pupil anyone other than a Kshatriya or a Brahmin But my blessings go with you May you prosper Ekalavya Great Acharya keep your vow Your blessings shall be my guide and shall help me to reach my goal You are my guru though I may be far away from you I will learn archery with your blessings Ekalavya prostrates and goes out Scene Forest Scene Two years later Drona’s idol decorated with flowers on a platform under a tree Ekalavya bowing before the idol and some deer grazing peacefully at a distance Ekalavya addressing the idol Great Acharya How kind you are You have taught me archery well within these two years What good luck is mine to have you as my guru I have achieved my goal My dear fawns are now free from trouble Looking at the deer in the distance How peacefully they are grazing Ekalavya Hears the barking sound of dogs at a distance Ha This is not the howl of wolves The sound is coming nearer The deer lift up their heads in fear and run to him Have no fear my dear animals No dog or wolf shall disturb your peace as long as I live He shoots arrows in the direction of the barking The sound stops Oh Quite a big party of hunters How wicked they are to set their dogs against the innocent animals of the forest Oh what do I see My guru with his pupils Enter Drona with Arjuna and other princes and a dog with arrows in its mouth The poor dog whines helplessly Ekalavya prostrates before Drona Ekalavya Acharya Ekalavya the son of Hiranyadhanus pays his respects to you Drona Arise my boy God bless you What a skill you have gained in archery in this short period Your teacher must indeed be a great one Arjuna Really This boy has mastered the art of shooting arrows by detecting the source of sound Ekalavya It is all the result of your blessings great acharya I learnt all the tricks of archery under your kind guidance How kind of you to visit this poor abode of your humble pupil Arjuna Acharya You promised to make me the greatest archer in the world But here is a boy who excels me and he says you are his guru Drona Arjuna you know I have been with you always It is the devotion of this boy that has made him a good bowman Arjuna Whatever it may be Acharya you have not kept your word Drona Ekalavya if you claim that I am your teacher you will have to give me a Gurudakshina Arjuna Acharya so was it really you You have not kept your promise Drona Dear Ekalavya if you say that I am your teacher I deserve Gurudakshina Can you give your right thumb as Gurudakshina Ekalavya Do not accuse the great Acharya Oh prince I cannot bear it His promise to you shall be kept Goes to the idol bows before it takes his knife from his belt cuts off his right thumb puts it at the feet of the idol takes it again and comes back to Dronacharya My noble master here is my gurudakshina I request you to accept it and bless me This forest is now free from wolves and other cruel beasts and my dear fawns are safe I have no more need of my bow Turning to Arjuna Prince you are now the greatest archer as you will not have a competitor in me The Acharya’s promise to you is fulfilled Drona What a noble Soul God bless you my dear boy WHY GOD MADE TEACHERS Kevin William Huff When God created teachers He gave us special friends To help us understand His world And truly comprehend The beauty and the wonder Of everything we see And become a better person With each discovery When God created teachers He gave us special guides To show us ways in which to grow So we can all decide How to live and how to do What's right instead of wrong To lead us so that we can lead And learn how to be strong Why God created teachers In His wisdom and His grace Was to help us learn to make our world A better wiser place To Laugh Often and Much To win the respect of the intelligent people and the affection of children To earn the appreciation of honest critics and endure the betrayal of false friends To appreciate beauty To find the best in others To leave the world a bit better whether by a healthy child a garden patch or a redeemed social condition To know even one life has breathed easier because you have lived This is to have succeeded Ralph Waldo Emerson LEG TRAP Manorama Jafa Dhira was a shoeshine boy He lost his father when he was very young and lived with his mother and sister He was a hard working boy After school he would sit near a cinema hall and polish shoes for a living One day it was very hot Dhira sat under a tree counting his day’s earnings and humming a popular tune when he overheard a passerby say A thief has just robbed and escaped from the jewellery shop Dhira stopped counting He quickly put his money back in his pocket and asked the passer by When Where Just now He stole a gold necklace and managed to run away They say he has a beard So saying the passer-by went on his way Dhira was about to go towards the jewellery shop to find out more details when a customer came to him Boy polish my shoes nicely There’s no hurry he said looking at his wristwatch The customer was wearing a pink shirt and a red tie He looked like a rich man Dhira sat down immediately to polish his shoes though his mind was still on the theft The man first put his left foot on the stand With his yellow cloth Dhira dusted the shoe quickly Then he opened a tin took out some polish and smeared it on the shoe with his brush and started shining the shoe Through the corner of his eye Dhira saw two policemen approaching He was eager to ask them about the theft but the customer seemed to have lost his temper You silly boy You’re not doing your job well he cried glancing quickly at the policemen Polish my shoes till they shine There are still five more minutes for the show to be over Dhira was disturbed He must be an influential man He may even complain about me to the policemen he thought So he concentrated his attention on polishing the shoe As soon as he was done with the left shoe Dhira said The other shoe sir The man put his other foot on the stand Hurry up fellow there are only two more minutes for the show to begin Funny Dhira said to himself A moment ago he was in no hurry but now he is in a great hurry Dhira dusted the shoe quickly and applied some polish to it As he was about to shine it with the cloth he found something sticking out of it at the back What can it be Dhira wondered He bent his head to take a closer look My goodness That’ll do boy It’s time the man said taking his foot off the stand Dhira continued to shine the shoe with the cloth while the man fumbled in his wallet for change The boy quickly tied the ends of the laces of the two shoes and got up without taking the coin the man held out and rushed to the policemen He could hear the man yelling Hey I’ll get you But what’s happening The man fell flat on his face when he tried to walk While he was struggling to get up Dhira was back with the two policemen They caught hold of him Yes he was the jewel thief The gold necklace was found in his shoe and his beard in his pocket He was taken to the police station Of course Dhira was praised for his presence of mind He was also rewarded by the police and by the jeweller His school too honoured him with a medal for his bravery Froth And Bubble Adam Lindsay Gordon Question not but live and labour Till your goal be won Helping every feeble neighbour Seeking help from none Life is mostly froth and bubble Two things stand like stone Kindness in another’s trouble Courage in your own Read and enjoy A Bravery Pledge Some think bravery is living without fear But that is not true Bravery is living despite the fear And doing what needs to be done Even though you’re scared to death Some can stand on the sidelines of life And be content with what could have been but never was That is not me I will not look back at the end of my life Thinking of what could have been I vow to live my dreams no matter what I will stand up and be counted Even when I’m one of the few or standing all by myself I will proudly state before God and all who see This is who I am and what I want to be I will stand proudly in the batter’s box On the baseball field of my dreams And I will not cower at the thought of being hit Or feel ashamed if I should strike out If I do not achieve all that I desire It will not be for lack of courage or effort I will go down swinging as if my life depended on it But if all I want is meant to be Then I will hit a home run That will not only echo in my heart and mind But in all of those who were destined to witness my success And maybe in that moment Courage will be found in another Searching for the strength to be brave Lynn C Johnston Lynn C Johnston is an award-winning poet and author of Angel’s Dance A Collection of Inspirational Poetry Unit THE WONDER BOWL Before you read Look at the picture and listen to the story Pleased with Yudhishtira’s prayers Lord Surya gave him the ‘Akshaya Pathra’ It would give unlimited food till Draupadi finished her meal The Pandavas used this during their exile It so happened that Durvasa and his disciples arrived at Yudhishtira’s dwelling Durvasa asked Yudhishtira to arrange food for him and his disciples There was no food left to serve them since Draupadi had already finished hers The Pandavas became anxious The sage and his disciples who were bathing in the river would return for food soon Draupadi prayed to Lord Krishna for help Krishna appeared and asked Draupadi to bring the Akshaya Pathra On looking closely at the bowl Krishna found a single grain of rice and he ate it He was satisfied with the meal His satisfaction in turn made Durvasa and all his disciples feel so fully fed that they never came to Yudhishtira’s house Read the text THE WONDER BOWL The old couple Philemon and Baucis lived in a hut on a mound They worked hard in their farm and were only able to get as much food as they needed Yet they were so kind that they would never let any stranger who came to their doors go without food They welcomed the guest with joy and shared their own meal with him One evening they finished their supper and sat at the door Suddenly they heard the barking of dogs and shouting of boys in the village Soon the noise grew louder Philemon saw two strangers at whom the village boys hooted and the dogs barked Philemon said to his wife Look at these boys they ill-treat the poor strangers I shall go and bring them You go and see if there is any food to give them Philemon went down to meet the ragged newcomers He drove back the dogs and said Welcome strangers He took them into his poor cottage and made them sit at the table They looked very tired Baucis placed a small bowl of milk on the table and said This is all that I have for you sirs How I wish you had come a little earlier We would have shared our supper with you Don’t worry good lady said one of the guests All will be well Your kindness makes this drink a feast to us We are pleased with your hospitality Baucis poured the milk from the bowl into two cups and placed them before the guests They drank the milk and later one of them asked for some more Baucis in confusion said Sorry my dear guests There is hardly a drop left in this bowl Why cried the guest taking the bowl There is milk in this bowl as much as we want So saying he filled not only his cup but also his friend’s Baucis was astonished as the guests filled their cups again from the bowl She could hardly believe her eyes They are not ordinary men whispered Baucis to her husband Yes he replied they must be angels from heaven come to bless us Good mother said the guests We thank you for your kindness May your bowl be full of milk always Then they went to bed Philemon and Baucis could hardly sleep because of the wonder that the strangers had worked with the bowl The guests arose early next morning and got ready to go Philemon and Baucis walked out with them for a short distance Good Philemon and Baucis said one of the guests We are God’s messengers We are much pleased with your kindness Ask for anything you like You shall have it The old couple looked at each other After a moment Philemon said Good angels we wish to die together Be it so replied the angels there is your home Live in it as long as you desire and come to heaven together Old Philemon and Baucis were astonished to see their poor cottage turned to a grand mansion When they turned round to thank the angels they saw nobody there They humbly prayed to God and lived in their mansion doing good to everyone Seeing the neighbour’s finely finished mansion the man ran out of his palatial house to bring two visitors He met two ragged beggars and gingerly walked towards them But before he reached them he saw a neatly dressed couple and forcefully brought them home They angrily told him that they were on their way to attend a funeral Poem ABOU BEN ADHEM Before you read Edward Tells the Truth Read the paragraph about Edward then decide what he is likely to do in each of the situations below Write your answers on the lines provided Edward always tells the truth He believes that honesty is more important than almost anything else Some kids call Edward a legit because they know they can’t get away with doing bad things when Edward is around Edward feels that telling the truth is more important than the friendship of kids who do bad things Still sometimes he wishes he didn’t feel so strongly about honesty because life on the playground might be easier ABOU BEN ADHEM Leigh Hunt Abou Ben Adhem may his tribe increase Awoke one night from a deep dream of peace And saw within the moonlight in his room Making it rich and like a lily in bloom An angel writing in a book of gold Exceeding peace had made Ben Adhem bold And to the presence in the room he said What writest thou The vision raised its head And with a look made of all sweet accord Answered The names of those who love the Lord And is mine one said Abou Nay not so Replied the angel Abou spoke more low But cheerly still and said I pray thee then Write me as one that loves his fellow men The angel wrote and vanished The next night It came again with a great wakening light And showed the names whom love of God had blest And lo Ben Adhem’s name led all the rest Read and Enjoy Chain Of Pearls Mother I shall weave a chain of pearls for thy your neck with my tears of sorrow The stars have wrought their anklets of light to deck thy feet but mine will hang upon thy breast Wealth and fame come from thee you and it is for thee to give or to withhold them But this my sorrow is absolutely mine own and when I bring it to thee as my offering thou reward est me with thy grace Rabindranath Tagore Read the text Bachendri Pal was the first Indian woman to climb the summit of Mt Everest The middle one of five children she was born in at Nakuri a small village in the Garhwal Himalayas in the present Uttarakhand Bachendri was from a modest background Her father was a border tradesman who would take wheat flour and rice from India to Tibet on mules horses and goats He eventually married and settled near Uttarkashi where the couple raised their family Always a rebellious child Bachendri loved wandering in the snow-clad Garhwal Himalayas She dreamt of flying in aeroplanes and meeting famous people and this always amused her family She was an active child and did well in her studies at school She excelled in sports too She was independent and fearless She climbed together with a group of year old classmates feet height during a picnic As she could not come down before nightfall she had to spend the night there without food or shelter along with the others The experience remained in Bachendri’s memory It increased her love for adventure and the mountains At like most Garhwal girls she was expected to leave school and help in the house But her determination to study impressed her parents who allowed her to finish high school As a student she earned money by sewing in her spare time The principal of her school persuaded her family to send her to college where she defeated both boys and girls in rifle shooting and other competitions Her graduation thrilled her parents who had wanted her to be the first girl in the village with a degree She eventually did an in Sanskrit and then In spite of these achievements the job offers that came in were only temporary and junior-level positions Inspired by her love for the mountains Bachendri decided to apply to the Nehru Institute of Mountaineering Uttarkashi for the Basic Mountaineering Course She was judged the best student in the course and much to her surprise was marked down as Everest Materi al She completed her Advanced Mountaineering Course too with flying colours Bachendri climbed the Gangotri and Rudugaria in an advanced camp during her time at NIM Her mentor Brigadier Gyan Singh the Director of the National Adventure Foundation NAF came to Uttarkashi in February to run an adventure course for teachers at the NIM He selected seven local educated women including Bachendri for scholarship Bhagirathi Seven Sisters Adventure Club was set up by him after he came to know through Bachendripal that the poor could use their mountaineering skill to make a living This was a unique organization of girls and women to help other girls to find adventure This scheme would take care of the monetary worries of trained girls and women Bachendri whose family was under economic pressure became an instructor here and reduced their financial burden Bachendri was selected for the Indian Everest Expedition in This was the first mixed expedition and its prime aim was to provide Indian women the opportunity to face the challenge of climbing Mt Everest Till then four women in the world had scaled the peak The team comprised seven women and eleven men and this was Bachendri’s first real expedition They faced many setbacks including an avalanche and injuries A sudden landslide injured the members of her team However Bachendri Pal continued her climb to reach the peak on May rd Bachendri conquered the summit of Sagarmatha the Nepali name for the highest peak in the world at p It was a difficult climb of over Her dream had come true At this moment of joy Bachendri Pal writes My thoughts went to my father and mother who taught us the value of struggle and the value of efforts Bachendri’s mountaineering excellence has been honoured by the Government of India with the country’s highest sports award the Arjuna Award the highly coveted Padmashri as well as the National Adventure Award Among the other major awards Bachendri was awarded the Yash Bharathi award by the Government of Uttar Pradesh Gold Medal by the Indian Mountaineering Foundation as well as an award from the Department of Education Uttar Pradesh State and the Lifetime Achievement Award by Kolkata Sports Journalists Association Bachendri Pal has put together all her experiences of mountaineering in her autobiography Everest My Journey to the Top She is presently employed as Deputy Divisional Manager Adventure Programmes Tata Steel Adventure Foundation Her life shows how hard work and the will to succeed can raise one to greater heights MOUNTAIN CLIMBING Laura Howell Horner Through the mist up the winding road to the mountain high I did climb Eager I walk over stones and dust higher and higher lost in my mind Legs aching from the assent chest rising and falling 'tis not easy I find Breathless reaching for the sky searching the blue clouds cover eyes blind Stumbling now stones loose muscles grow numb tackling the incline Apex reached breathless fascination the world beneath me conquered now mine The Mountain Sat Upon the Plain The mountain sat upon the plain In his tremendous chair His observation omnifold His inquest everywhere The seasons played around his knees Like children round a sire Grandfather of the days is he Of dawn the ancestor Emily Dickinson NEST WITH GRAND PARENTS NEST WITH GRANDPARENTS Lalitha Sridhar Amma why are you removing all my things from the cupboard Anjali asked in a voice which sounded like she was ready for a fight You already know Anjali Dada and Dadi need some place for keeping their things her mother replied firmly without any apology But Ma where will my things go This has been my room since I was a baby Why should I give up everything just because Dada and Dadi are coming to live with us cried Anjali Come on Anju You are not giving up everything You are only going to sleep on the couch in the hall instead of in this room And your things can be accommodated else where replied her mother trying to be sensitive but feeling angry at her daughter’s objections This is how it had been ever since Anjali had been told that her grandparents would be living with them now onwards They had recently sold off all their land in the little village Dada was nearing seventy now and was too old to run the farm all by himself He had promised he would not leave his land till he died but he was finding it more and more difficult to live there alone All his children had migrated to cities Two of Anjali’s chachajis were abroad Only Papa lived in Pune while Rita Bua was in Delhi Dada had been persuaded by Anjali’s father Papa to come and live with them Papa wanted all of them to be together as a joint family Of course Anjali enjoyed meeting her grandparents during her holidays but that did not mean she was going to be happy giving up her room for them Anjali was an only child Never in her life had she liked sharing anything and she wasn’t ready to change now And so it was that when her grandparents came Anjali was in her fussy irritating bratty mood She made a show of how she had lost her room When she wasn’t making rude comments she would not talk much and pretend to be glued to her favourite programme on TV She was not very polite and complained though not directly for she was too afraid of her father’s wrath It was true that having grandparents living with them needed adjusting to a new routine They the grand parents woke up much before anyone else did and that made things awkward Dadi was forever doing some puja or other and if there was objection to onions in the food one day it was eggs the next day They would not go with them to eat out at restaurants They would not watch movies in theatres They would not enjoy shopping just for fun They thought strap dresses were too foreign and short skirts totally avoidable Pop music was noise and ice-creams were not good for health The one thing they did share was an addiction to television but the programmes they watched put Anjali to sleep Anjali felt as if she had suddenly been imprisoned The house suddenly looked too small As the days passed Anjali’s anger came down It was impossible to remain angry with someone who was so kind Dadi stopped commenting on her clothes and even bought her a pretty T-shirt when they went sightseeing TV became a divided schedule of the most wanted programmes on each individual list Dada helped Anjali with her projects and he was a big help with the Math syllabus He also got Anjali into the habit of reading the newspaper He read the headlines to her when he waited for her bus to arrive at the bus-stop every morning Anjali’s mother worked in an office and she left along with her father every morning Breakfast was always cornflakes and it was usually sandwiches for Anju’s tiffin And when her mother got back in the evening she was so exhausted that cooking food was never great fun But now Dadi had taken over the kitchen she actually said she was getting bored of doing nothing Dadi was a fantastic cook Suddenly they were served divine parathas and subzi mithai and pakoras salads and pickles Anjali’s mother could now slow down a little and rest her feet She even had more time for her daughter She was also satisfied that her child was in the most caring hands possible till one day when the grandparents announced We are thinking of going to Rita’s place for a while Before anyone could say anything Anjali burst out Oh Can I have my room back then Dada Dadi when are you going The silence that followed was terrible and only Dadi had some kind and general words to fill it with Later apart from her room Anjali got the worst firing she had ever received from her parents Anyhow she had what she had wanted and in two days time they were a nuclear family again But it was a lonely achievement There was no one to come home to but the silly TV There was no one to talk to Her mother was again harassed and overworked with no time for anything or anybody But most of all the noise and bustle of one big happy family had faded into silence The house suddenly looked too big When the phone rang the following night just like they had expected it would it was Anjali who ran and picked it up to say Dada Dadi when are you coming back DEAR GRANDMA AND GRANDPA When we are with you we always have fun You make us feel we’re your special ones We can tell by the kindness in your smiles You recall how things look through the eyes of a child If we really need a hug or two We know that we can depend on you Giving hugs is what grandparents do best And you do it better than all the rest Here is a secret and it is true Grandma and Grandpa our hearts belong to you Author Unknown Read and enjoy Love Poem for Grandparents Grandma’s hugs are made of love Everything my grandma does is something special made with love She takes time to add the extra touch that says I love you very much She fixes hurts with a kiss and smile and tells good stories grandma-style It’s warm and cozy on her lap for secret telling or a nap And when I say my prayers at night I ask God to bless and hold her tight 'cause when it comes to giving hugs my grandma’s arms are filled with love Author Unknown WEALTH AND VALUES Before you read Ladder Game The class is divided into two groups Two ladders are drawn on the black board The students are asked to stand in two lines according to the groups allotted The key words are written on the board The group members start filling up the words that match the key words in the ladders The group which completes the ladder with more number of words will be the winner The group should discuss and answer Values are qualities which you would like to develop in yourself as you grow Wealth and Values A Play Here is the story of a rich businessman Mr Balaji and his sons Gagan and Rahul Gagan always helped his father and was a very responsible boy But Rahul was very irresponsible always enjoying his time with his friends Scene Mr Balaji’s Palatial house Rahul Father give me my portion of the property Mr Balaji Oh dear What makes you ask for a share in the property Gagan Why Rahul Why do you want your share Aren’t we happy together Rahul No Gagan I need my share I want to visit places all over the world I do not want to explain things to everybody I want to be independent and happy I am asking for my share and not your advice palatial like a palace Rahul collects the money and goes away He wastes his money spending lavishly and leads a luxurious and wasteful life He visits places all over the world with his friends Eventually he turns into a poor man He begins to feel the need for money again His friends do not want to be with him Rahul goes in search of them but no one helps him He wanders about desperately and lives in utter poverty Gradually Rahul realizes that even the servants enjoy better facilities in his father’s house He decides to go back home He is advised by his father’s friends to go back to his father Rahul goes back to his father His father sees him coming He embraces him joyfully and takes him home Scene Mr Balaji’s palatial house Rahul stands ashamed for what he has done Rahul Father I have made a mistake I do not deserve to be called your son Make me one of your servants Father Oh My beloved son I’m so happy to see you back home Forget what has happened and begin life afresh Mr Balaji calls his servants Mr Balaji Bring Rahul the best clothes you can buy Decorate his finger with a ring and get good shoes for his feet Make a delicious meal and let’s celebrate his return Servants leave the room Rahul Falls at his Father’s feet Father I’m sorry please forgive my foolish behaviour I have realized that money alone cannot bring satisfaction and happiness Mr Balaji breaks down Stop My son All I can do is thank God for sending you back At this moment Gagan comes home He notices music and dancing Gagan What’s happening You are all happy and enjoying yourselves Servant Your brother Rahul has come back and your father is celebrating his return Gagan gets angry and does not go in Mr Balaji comes out Mr Balaji Gagan come in Rahul has come home Come let’s join the feast Gagan angrily Dad all these years I’ve served and obeyed you But you did not hold a feast for me with my friends And now Mr Balaji Son You were always with me and all that I have is yours But your brother was lost and has come back to us I have never missed you any time Shouldn’t we forgive your brother as he has realized his mistakes To err is human to forgive is divine they say and that is how I feel Gagan thinks for a while he sees joy and happiness on his father’s face which was not there earlier in Rahul’s absence He controls his anger Yes father I see joy on your face I understand the importance of forgiveness In forgiveness there is happiness and peace I understand what you say Brother welcome back home THE QUARREL I quarrelled with my brother I don’t know what about One thing led to another And somehow we fell out The start of it was slight The end of it was strong He said he was right I knew he was wrong We hated one another The afternoon turned black Then suddenly my brother Thumped me on the back And said Oh come on We can’t go on all night I was in the wrong So he was in the right Eleanor Farjeon There was a butcher who at the end of the day went into the freezer to put away some meat and got locked in It was after working hours so he surely knew there was no one left to save him Hours went on so he decided to make peace with God knowing the angel of death was on his doorsteps Just then the door opened wide Shocked amazed puzzled grateful There standing in front of him was the security guard The man looked up to the heavens to thank God and then curiously he asked the security guard How did you know I was here Very simple he replied for ten years you are the only person who says hello and goodbye to me with such a kind warm smile Today I heard the hello but never heard the goodbye so I knew you had to be here Everyday it may be your smile a thank you a kind word or two that makes a difference in someone’s life and if by chance it comes back to you well that would be nice Pandora's Box In the days when the world was young everything was beautiful bright and gay The sun shone brightly and the most beautiful flowers and fruits grew everywhere There lived at that time a lovely boy called Epimetheus He had everything he could wish for except a companion One day he saw Mercury who was the messenger wearing a winged cap He had wings upon his heels and was coming towards him With him was a beautiful girl whom Mercury called Pandora Epimetheus was delighted and welcomed her with great joy For some time Epimetheus and Pandora wandered hand in hand weaving garlands of flowers and plucking the rich fruits which grew everywhere One evening when they were playing they saw Mercury again His step was slow and weary his garments were dusty and he seemed to stagger under the weight of a huge box which he carried on his shoulder Pandora whispered to Epimetheus to ask Mercury to tell them what was in the box But Mercury would not tell them anything He only asked if he might leave the box until he should call for it again Mercury had hardly gone before Pandora began to be curious as to what was in the box Epimetheus tried to coax her to leave it alone and come out to play She would do nothing of the kind and he had to play alone When Epimetheus had gone out Pandora went up close to the box to examine it It was made of dark wood On the top was a head so cleverly carved that it seemed to smile and encourage her Around the box was tied a glittering gold cord Pandora looked at the cord and thought to herself that she could do no harm by loosening the knot so long as she did not open the box She set to work It was a hard task All the time Epimetheus was calling her to come out and join in his play She was just on the point of giving up when suddenly the knot came undone and the cord dropped on the floor Pandora thought she could hear whispers from the box She put her ear to the lid and heard sad voices which said Pandora dear Pandora have pity upon us Free us from this dark prison Open open we beseech you Pandora's heart beat so fast and loud that she could hear nothing Oh She did want to have one little peep Just then she heard Epimetheus coming She knew that he would wish her to leave the box alone So she opened the lid just a very little bit As she did so all kinds of ugly stinging creatures flew out and filled the room They stung Epimetheus and Pandora and then out of the window they flew and spread sorrow and pain everywhere Epimetheus and Pandora had never felt sorrow and pain But after these things had stung them they sobbed and cried For the first time Epimetheus spoke crossly to Pandora blaming her for all that was going on Suddenly they heard a sweet voice from the box which said Open open and I will heal your wounds Please let me out Epimetheus asked Pandora to open the box For he said there may be some good fairy who will help us There cannot be anything worse than those which have come out already It was well that she opened the box for a dainty fairy called Hope spread her snowy wings and came out She flutterd here and there and touched gently all the wounds of both the children and then flew quickly through the open window out into the world to do the same thing for others A Birthday Present Nehru to his Daughter Central Prison Naini October For Indira Priyadarshini on her thirteenth birthday On your birthday you have been in the habit of receiving presents and good wishes Good wishes you will have in full measure but what presents can I send you from Naini prison My presents cannot be material or solid They can only be of the mind and spirit such as a good fairy might have bestowed on you things that even the high walls of prison cannot stop You know sweetheart how I dislike sermonizing and doling out good advice I am quite sure that there is no danger of my ever bursting with too much wisdom and so there is no need for me to wear copper plate or armour If I am so limited in wisdom how can I pose as a wise man and distribute good advice to others And so I have always thought that the best way to find out what is right and what is not to be done is not by giving a sermon but by talking and discussing and out of discussion sometimes a little bit of truth comes out I have liked my talks with you and we have discussed many things but the world is wide and beyond our world lie many other wonderful and mysterious worlds so none of us need ever be bored or imagine like the very foolish or conceited that we have learned everything worth learning and become very wise for the very wise if any such there are must sometimes feel rather sad that there is nothing more to learn They must miss the joy of discovery and learning new things the great adventures that all of us who care to may have Good-bye little one may you grow up into a brave soldier in India's service With all my love and good wishes Taken from Imprint May Page Note Here in this letter we see the outpouring of a great man's fatherly heart He is awfully lonesome in the prison A long prison life like this would have made an average man plunge into a sea of despair and misery But Nehru's inner resources and above all his devotion to his daughter could maintain him in strength of body and mind and he found the greatest comfort in writing an unbroken chain of letters to her His letters were purposeful While breaking the monotony of a prison life they helped educate his daughter just a girl then and make her a fine student of history Later a large collection of such letters appeared in the form of Nehru's Glimpses of World History one of the best written and most popular books in the world today Listening text A Morning Walk I get up early in the morning With my friend Mohan I go for a walk We walk by the side of a river It is very pleasant then The air is cool and fresh The birds chirp in the trees The farmers go to the field with their oxen The milkmen carry milk to the city Some men do exercises on the banks of the river Soon the sun rises in the east It is a charming sight After getting back I take bath and get ready to go to the school I feel fresh and happy throughout the day Morning walk is really very good for health Listening text The Spider game The little spider Crawled down the wall By using its web So it wouldn’t fall Crawled to the bottom And back up again Then thought to himself What a fine game So he called his friends To join the game And they played all day Till night-time came And when they had finished They went off to bed And left all the wall Covered over in web J walsh Journey to the Top Listening text She was married to a landless labourer Chinappa and they made their living tilling land and cutting stones They did not have any children They decided to adopt trees and plant saplings She spent all her time planting saplings in open spaces on government lands on the outskirts of the city and on either side of the roads The nearly four kilometer stretch between Hulikal and Kudur is a testimony to her efforts She has planted and raised more than trees She was given the Indira Priyadarshini Vriksh Mitra award She continues her work even today and truly loves nature She was born into a Tamil family in At the age of three she started dancing on her own and seeing the dedication her father took her to the famous dance school in Mumbai Kala Sadan By the age of seventeen she had presented stage programmes On May she was travelling with her parents in a bus and met with an accident Her right leg was injured critically and had to be amputated Dr Sethi a specialist in artificial limbs got a foot manufactured for her She resumed dancing practice She has received Nritya Mayuri and Nava Jyoti awards She has proved to the world that despite a disability one can reach the peak of success She has been India’s first and highest ranking woman officer who joined the IPS in and retired in During her years of creative and reformative policing and prison management she has received many awards A film entitled Yes Madam Sir has been produced by an Australian film maker on her Currently she has been in the vanguard of a nationwide movement India against Corruption a movement led by Shri Anna Hazare She was born in in Mumbai She began playing tennis at the age of six She became the first and the only Indian woman to reach the fourth round of a Grand Slam tournament at the US Open She is now the highest ranked female Indian tennis player She is also the recipient of Arjuna Award in tennis for the year Answers Saalumarada Thimmakka Sudha Chandran Kiran Bedi Sania Mirza Harish is studying in standard in a Government school Both his legs are attacked by polio but he is as happy as any other child of his age He says that his friend Satish takes him to school every day on his bicycle his other friends help him climb the stairs to the classroom which is on the first floor They play with him and have never made him feel that he has problem with his legs THEY ALL CAME FIRST This was a different kind of race There were eight children taking part in the race Each child had one problem or the other Some of them had problems with their legs or feet Two of the children had poor eye sight while two of them couldn’t hear properly One of them couldn’t see at all They were differently abled children Reena the girl who couldn’t see properly tripped and fell down Ouch she cried The cry was loud enough for the other participants to hear They turned back went up to Reena and gently picked her up Then they all held hands and started running towards the winning post All of them reached the winning post together They all came first The crowd that was watching stood up and cheered them Everyone felt happy and it was a great lesson for the grown ups too They all realized how important it is to help the needy come up in life DON’T GIVE UP Anonymous If you keep on going And never stop You can keep on going You can make it to the top Life is full of mountains Some are big and some are small But if you don’t give up You can overcome them all So keep on going Try not to stop When you keep on going You can make it to the top Ragav’s father is a traffic constable He wears a white and khaki uniform His main duty is to control and regulate traffic He generally stands on a raised platform and regulates the traffic by making certain signs with his hands If any driver goes against the rules he blows his whistle and stops him He fines her him accordingly He also fines people who do not wear helmets while riding two wheelers and people who do not wear seat belts while driving ROAD SAFETY One day the grandparents of Anitha and Anish come to the city from a village to stay with their son and grandchildren This is their first visit to a big city They are amazed by the crowd big shops and displays As they move from the railway station to their home they watch the traffic police and signals and are very surprised to see all these things They ask their grandchildren several questions Grandfather So many vehicles How do people walk on the roads here Anish Anish Grandpa people do not walk on roads They walk on pavements or footpaths Grandmother It should be difficult to cross the roads then Anitha Grandma if we follow the traffic rules it shouldn’t be difficult at all Grandfather What Traffic rules Anish Yes Grandpa look at how the people are crossing the road First we should wait till the road is clear then look to the right and to the left and to the right again When the road is clear we should cross Anitha See those white-lines They are called zebra crossings While crossing the road it is safe to cross only there Anish Grandma look at those poles with coloured lights Those are signal lights one is red which says STOP Yellow says GET READY and green says go Anitha If we follow them we can avoid accidents Grandma and Grandpa Oh children we have quite a lot to learn from you Are there occasions when elders learn from you Anitha Don’t worry We will teach you Anish If you stay here for a few days you’ll learn all by yourself Would you like to have your grandparents stay with you TRAINS James Sterling Tippet Over the mountains Over the plains Over the rivers Here come the trains Carrying passengers Carrying mail Bringing their precious loads In without fail Thousands of freight cars All rushing on Through day and darkness Through dusk and dawn Over the mountains Over the plains Over the rivers Here come the trains TOM’S SORE TOE A re-telling of a story by Mark Twain Tom Sawyer was unhappy It was clock on Monday He wished he could stay at home Suddenly he discovered something One of his teeth was loose He was about to start groaning when he remembered something If he complained about a bad tooth his aunt would pull it out That would hurt No that would not work Then he found a sore toe A good excuse He lay in bed groaning loudly Sid Tom’s brother woke up What’s the matter Tom He asked Oh Sid don’t touch me groaned Tom What’s the matter Tom I must call Aunty Don’t call anybody It will all be over soon But I must Don’t groan like that Tom It’s terrible I forgive all the bad things you’ve done to me Sid said Tom still groaning Oh Tom Tom please don’t die Sid ran downstairs and shouted Oh Aunt Polly Tom’s dying Dying Yes Come quickly Don’t be silly I don’t believe it But she ran upstairs with Sid and Mary close behind her Tom what’s the matter with you she said Oh Aunty it’s my sore toe It’s dead Oh Tom What a fright you gave me Now stop this noise and get out of bed Aunt Polly it seemed dead and it hurt so much that I even forgot about my sore tooth replied Tom Your tooth what’s the matter with your tooth It’s loose and it hurts Open your mouth and let me see said his aunt Yes there is a loose one there but you’re not going to die because of that Mary get me a silk thread and a piece of coal from the kitchen fire Oh please Aunty don’t pull it out It doesn’t hurt any more Please don’t Aunty It’s not that I want to stay at home from school Oh so that’s why you were making so much noise You thought you’d be able to skip school You’re a bad boy Tom By this time Mary had returned The old lady tied one end of the thread to Tom’s tooth and the other end to the bed-post She took the piece of hot coal and suddenly pushed it almost into the boy’s face Tom quickly pulled his head back and now the tooth was out hanging on the thread by the bed-post Jill and Jilly ate some jelly and Jill loved jelly than Jilly loved jelly Merry Mary merrily married merry man Popcorn popped with a loud pop and Poppy heard the pop Betty bought some butter but the butter was bitter to make the bitter-butter better-butter she bought some more butter She sells sea-shells on the seashore The shells that she sells are sea-shells I’m sure So if she sells sea-shells on the seashore I’m sure that the shells are seashore shells WORK WHILE YOU WORK Stodart Work while you work Play while you play One thing each time That is the way All that you do Do with your might Things done by halves Are never done right Stand in a circle One of you should say the following phrases one by one If the phrase indicates time you should clap your hands twice if the phrase does not indicate time you should remain silent Those who make a mistake are out of the game THE JOY OF FILLING FORMS Savitha Sagar’s mother is on her way to school to admit Sagar to fifth standard On their way they buy a packet of chocolates in a shop Sagar Mother Why have you bought so many chocolates today Mother Today is your first day at school Let us give chocolates to all the children Sagar To Kajal Mother Mother Of course The postman stops near them Postman Here is a money order for you madam Mother Oh How nice Mother signs the money order form Sagar looks at it Sagar Why does he give you money Mother This money is from your father He sends it for your education and family maintenance They reach the school and are at the entrance of the Headmaster’s room Mother May we come in Sir Headmaster Please come in and be seated Mother Thank you Sir Could you admit my child to the fifth standard Headmaster With pleasure Please fill this form The headmaster gives an admission form Mother Could you help me fill this form Sir Headmaster Don’t worry your daughter Kajal can do it for you Kajal Good morning Sir May I come in Headmaster Come in Kajal good morning This is your brother’s admission form Fill it carefully Kajal Yes Sir Kajal fills the form Sagar looks at it curiously She gives it to the Headmaster Headmaster Very good Kajal Show the class room to your brother Inside the thstandard classroom the headmaster shows the admission form which is filled by Kajal Headmaster Look here children Kajal has done an excellent job She has filled in our school admission form very neatly All of you should know how to fill forms Have you seen any other forms like this All Yes Sir Headmaster What are they Kishore A railway reservation form that my uncle filled in for the train ticket Sir Heena Yes there are reservation forms for bus ticket also Sir Pushpa Our teacher filled in a form to put money in a bank Sir Headmaster That is a pay-in-slip Gayathri Could we add bus-pass form also to this list Sir Headmaster Yes Gayathri let us learn to fill some of these forms now The headmaster gives some railway reservation forms bank challans bus ticket reservation forms money order forms and admission forms to everyone and asks them to fill He also guides them Sharath is a clever boy He studies well and scores good marks Rani is his sister She is a tall girl She sings devotional songs She has a melodious voice In the above sentences the words clever good tall devotional and melodious are used as describing words They describe nouns They are called adjectives Pick out the adjectives from the following paragraph and use them in your sentences Mr Razak is a rich man He lives in a big house He has a small family of four His wife is an efficient home manager His daughter is a good singer She sings beautiful songs His son is very intelligent He learns his hard lessons quickly A NIGHT IN JUNE William Wordsworth The sun has long been set The stars are out by twos and threes The little birds are piping yet Among the bushes and the trees There’s a cuckoo and one or two thrushes And a far-off wind that rushes And a sound of water that gushes And the cuckoo’s sovereign cry Fills all the hollow of the sky All of us like playing games Some games are played inside and some outside The games we play inside are called Indoor Games and the games we play on the ground are called Outdoor Games The names of some games and sports are given below Write them under their respective columns Cricket hockey chess kabaddi snake and ladder KhoKho carrom football and table tennis THE OLYMPIC CHAMPION AND THE DUCKS At the Olympic Games of Bobby Pearce won a gold medal in rowing He also won the hearts of all who saw him win Bobby Pearce was born in Sydney in Australia His father was a great rowing champion When Bobby was five he was rowing around the Sydney harbour in a small boat At the age of six he won his first race competing against fourteen year-olds He won many titles in rowing Bobby Pearce is always remembered as the man who stopped rowing for ducks at the Olympic Games In Olympics while on the final course of rowing he saw a duck and her brood of ducklings swimming across the canal They were swimming into the course of his boat and the boat was going to run into them The poor birds had no idea that they were in the middle of an Olympic race Immediately Bobby slowed his boat down Myers was catching up very fast But Bobby waited patiently until all the ducklings were out of harm’s way Then he picked up speed again and went on to win the race easily Of all the Olympic heroes it was he who won everybody’s hearts His friends in the Australian Olympic team were not surprised with that incident Bobby is that kind of a bloke they said Suddenly Bobby saw a duck and her brood of ducklings swimming across the canal Look at the underlined word It is used to refer to a group of ducklings These are called ‘Collective Nouns’ Now fill in the blanks with the collective nouns given in the box flock class army bunch herd I am Vivek I am years old This is my father Mr Mohit He is years old He is the eldest member of our family Meet my mother Sadhana She is years old Here is my brother Suhas who is years old He is older than me by two years The girl sitting at the table is my sister Sunitha She is years old She is younger to me by years Hi I am Sachin Tendulkar I am from Maharashtra I have played cricket for India for years I began playing international cricket when I was just sixteen So far I have played in Test matches After my retirement I was honoured with the Bharat Ratna Narendranath is the boyhood name of Swamy Vivekananda Vishwanath Dutta was his father and Bhuvaneshwari Devi was his mother He learnt puranas from his mother He was an all-rounder he was good at sports and he could sing well He liked to meditate Sri Ramakrishna was his teacher Swami Vivekananda Narendranth HOMES Anonymous I might have lived inside a shell If I had been a snail Or in a great wide tossing sea If I had been a whale Or in a busy noisy hive If I had been born a bee Or a bunny in a burrow Eating lettuce for my tea I might have had a kennel home If I had been a dog Or a mud hole in river bank Had I been born a frog I might have been a little bird And lived inside a nest But Oh I’m glad I’m just a child I think my home is the best Practice names of animals birds Make the children sit in a circle Select a topic animals birds Ask each child to clap their hands twice and say one word related to the topic Go on till you know that they have used all the words they know related to a topic Change the topic and continue the games For instance if the first topic is animals children say clap clap dog clap clap cat clap clap lion clap clap tiger clap clap snake and if there is a gap change the topic to birds Each child should give only one name The actions can be changed to jump roar snap Everyone enjoys watching cartoons as they provide us with a different form of entertainment Children like watching cartoons like Tom and Jerry Donald Duck Mickey Mouse Ben Dragon Ball Z Pokemon and many more They like to have these cartoon figures on everything they buy like pens pencils pencil boxes lunch boxes dresses Apart from this newspapers usually carry a cartoon that speaks about recent events In India this form of newspaper cartooning was popularized by a great cartoonist called R K Lakshman A GREAT CARTOONIST Let’s learn about him R K Lakshman Rasipuram Krishnaswamy Lakshman was born on rd October in Mysuru His father Krishnaswamy Iyer was headmaster in a school His elder brother R K Narayan is a famous story writer in English R K Lakshman was attracted by the pictures that he observed in the newspapers He would also observe objects around him like leaves lizard-like creatures and a number of crows on rooftops of the opposite building He started drawing those pictures on the walls doors and windows of his house All this he did before he went to school Lakshman was the captain of a local cricket team He was very mischievous and his brother often watched him play and wrote characters for his books based on this Later on Lakshman became very serious about cartoon pictures and started drawing for magazines newspapers and the cover pages for almost all his brother’s books He also created a popular mascot for the Asian Paints group called Gattu in His cartoons have also appeared in the Hindi film Mr and Mrs the Tamil film Kamraj and all pictures of the teleserial Malgudi Days written by his brother and directed by Shankar Nag Lakshman’s Mr Citizen or Common Man cartoons became so popular that people who bought The Times of India paid special interest to his cartoons In this way he became very popular in India This great cartoonist of India passed away on January in Pune Try to draw a cartoon which consists of a your school b your friends and c your school bell Try to write a caption for it Caption A sentence you have to write below the cartoon to explain it The caption given below the picture reads It’s neither coffee nor tea It’s plain muddy water from the tap Try to draw a picture for this POEM Read the following poem Mother plays on the violin Daddy plays on the flute Big brother blows the horn Toot-toot-toot-toot Little sister keeps the beat By clanging on a pot And I try to sing along Whether I know the words or not THE HAPPIEST Mother gives me love and care Father shows me how to fare Friends give me joy and fun Uncles buy me toys that run Granny tells me tales at night Brother spares his bike and kite Sister plays some tricks that please Teachers help me learn with ease I’m the happiest you can see To have them all here with me The poem is full of happiness there are three words in the poem which mean the same as happiness to make someone happy Pick and write them There are many rhyming words in the poem Find them and list them in pairs One example is given eg care- fare Manish studies well He scores good marks Everyone praises Manish for his Rohan sees two small children fighting over a ball He talks to them and solves the prob lem He is very popular for his Meena finds an instrument box left in the classroom She hands it over to the Head Teacher She is given a prize for her cleverness honesty intelligence An Act of Cleverness November Mysuru Dear Rafi How are you I am fine here my studies are going well too Hope you celebrated Deepavali very well We are going on a trip to Belur and Halebidu in the month of December Aren’t your teachers planning on any such trip Let me share an interesting incident Last night my friend Shankar was returning home on his bicycle after studying with me When he reached his father’s jewellery shop he saw that the door was open and two men lifting things from the shop Shankar heard them whisper that the jewellery they had collected would fetch them a lot of money At once Shankar knew that they were thieves He was a little afraid His heart began to beat fast He saw them going back to the shop again Then Shankar immediately ran to the jeep and let the air out of all the four tyres After that he got on his bicycle and rushed at full speed to the nearby police station He told the police inspector about the thieves The police inspector along with a few constables went to the spot in the police jeep Shankar also went with them The policemen caught the thieves and took them to the police station How brave The inspector patted on Shankar’s back and said Well done my boy You are very clever Everyone praised Shankar for his cleverness Our school is organising a function next week to honour Shankar for his cleverness and presence of mind Rafi don’t you think we should not lose heart in times of danger or difficulty We should be as clever and confident as Shankar I am really proud of him Tell your friends about this Is there anything special from your side How is your granny Is your sister attending dance classes now Convey my regards to your parents Please do reply Imagine you are Rekha You had attended the programme where Shankar was honoured You are very happy and want to tell your sister Rashmi about the programme Use the fol lowing format to write a letter Immediately he hid behind a tree There was a jeep on the road Two men were putting a heavy bag into it Our school is holding a function next week My brother is an engineer We say a tree a jeep a bag a function But we say an engineer an egg an owl an elephant We use a before the words which begin with consonant sound and an before the words which begin with vowel sound Most always when the postman comes With letters two or three They’re for my mother or my dad But never one for me I’m going to write some letters though That’s what I’m going to do And then my friends will answer me And I’ll get letters too So many wonderful things live on land and also in water Some things animals seen on land and in water are given below Write L for the things available on land and W for those found in water within the brackets provided for each of the words Sea Song I found a shell a curly one Lying on the sand I picked it up and took it home Cold inside my hand Mummy looked at it and then She held it to my ear And from the shell there came a song Soft and sweet and clear I was surprised I listened hard But it was really true I wish you’d find a nice big shell And hear it singing too Chisel Hammer Hand saw Brush Paints Ladder Stethoscope Thermometer Syringe & needle Sewing machine Measuring tape Thread & needle Black board piece of chalk Ruler The Magical Chisel Play Characters Somu A carpenter Princess Angel The goddess Sundari A very poor girl Scene I Somu’s Hut Somu is sitting in front of his thatched hut He is busy with his carpentry He looks worried because he is unable to make enough money with carpentry It gets dark and he enters his hut Somu Sitting on his bed folding his hands prays Oh God please help me Let my goods fetch me a good price After sometime an angel appears in his dream and talks to him Angel Don’t worry I will give you a magic chisel Somu How will that help me Angel It will help you make furniture with fragrance Somu Oh That’s very kind of you Angel But one condition You should never be greedy If you are greedy the chisel will lose its power Somu Okay I will never be greedy Thank you The Angel disappears With the help of magic chisel Somu makes good furniture which gives out fragrance The demand for his goods increases and he becomes rich soon Scene Somu’s Shop Now Somu has a big shop of his own One day Somu was sitting in his shop and making a beautiful doll Sundari Passes by the carpenter’s shop and stops to talk to him Uncle the doll is very beautiful will you give me But I don’t have money to pay for it Somu Don’t worry I will give it to you on your birthday I promise Sundari Thank you uncle Sundari exits Days pass Somu becomes famous and one day the princess of that local kingdom visits his shop Somu is surprised Somu Oh What a surprise Welcome welcome Come in please be seated Princess It’s all right I learnt that you are a great carpenter I have heard so much about the fragrance that comes out of your furniture Somu Thank you Madam Princess looks at the doll made for Sundari Wow What a beautiful doll Take this bag of gold coins and give me the doll Somu becomes very happy forgets the condition of the angel and the promise made to Sundari and gives the doll in return for gold coins Scene In front of his house Somu is crying aloud Sundari comes there Sundari Uncle why are you crying Somu Alas My chisel has lost its magic power Sundari Really Somu Yes dear the doll doesn’t give any fragrance now Sundari Why What happened Somu All because of my greed I wanted to make money VI Animals and birds in the circle The circle is divided into six parts In each part there are letters which are mixed up You have to rearrange the given letters to make a word Each word ends with t and each of these words is the name of either an animal or a bird Write the words in the given space One example is given My name is Mahesh I want to tell you about my friend James He is short and fat He is fair and good looking He has brown hair and blue eyes I am years old and he is year older than me He likes wearing blue and green shirts He loves to play cricket We play cricket together He reads story books and comics A SMILE Anonymous A smile is quite a funny thing It wrinkles up your face And when it’s gone You will never find Its secret hiding place But far more wonderful it is To see what smiles can do You smile at one He smiles at you And so one smile Makes two Read and Enjoy Smile is the song of innocence Smile is the song of friendship Smile is the song of love Smile is the song of tears Smile is the sign of all and all Make the children form a circle Throw the ball to a child The child should say the name of a vehicle The child should throw the ball to another child who will name another vehicle and so on After the first round throw the ball and say any one of these air water or land If the topic is air the child who catches the ball should name a vehicle that flies in the air e g aeroplane helicopter rocket Keep changing the topic after every or names For the next round throw the ball to a child and say any one of these vehicle with wheels wheels wheels or wheels Continue the game till the children have given most of the names Just Read THE HARE AND THE FROG Once upon a time a big green frog fell into a deep hole It tried to jump out but could not reach the top It stopped trying and began to shout for help A hare was playing in the tall grass nearby He heard the cry and went near the deep hole I can’t get out of this hole croaked the frog I can’t jump very high Wait a minute said the hare I know where the ladder is I’ll go and bring it Then you can use the ladder and get out Thank you croaked the frog I’ll wait The hare ran off to fetch a ladder When he came back with the ladder He saw the frog sitting outside the hole Oh said the hare You’ve done it I thought you couldn’t get out by yourself I thought so too croaked the frog But a snake came into the hole and I just had to get out So I did You do not know what you can do till you have to THE TROUBLE WITH BABY OWL Mrs Owl was worried about Baby Owl and didn’t know what to do When all the other owls were asleep in the day Baby Owl was wide awake and when they were awake at night Baby Owl was fast asleep Oh what am I going to do about Baby Owl Mrs Owl asked her friend one day Her friend frowned It really is a problem Why don’t you go and ask Oswald the wise Owl what to do He’s bound to know‘ Mrs Owl went to see Oswald that very night She told him all about Baby Owl and how worried she was When she’d finished her story a tiny tear trickled down her cheek She was so worried about poor Baby Owl ‘There there Mrs Owl don’t cry Oswald said kindly patting her wing All you have to do is put a blindfold over his eyes during the day so he won’t know if it’s day or night Baby Owl’s little problem will soon clear up you’ll see He’ll be right as rain in no time Mrs Owl did just that and it worked Very soon Baby Owl was behaving like all the other owls and Mrs Owl didn’t have to worry any more The King’s Nightingale A Nightingale is a bird It is not very big but it sings beautifully It lives in the forest and sings at night there was once a king of China who lived near a forest One night he was sitting by the window and reading a book He heard a nightingale singing in the forest It was singing beautifully What kind of bird is that he asked I must have it He commanded his servants to bring him the bird They went into the forest and looked for it They found it in a tree near a stream They asked it to go with them The nightingale did not want to go with them It liked to live in the forest But it wanted to make the king happy It went with them and sang for the king The king was very happy He asked the nightingale to stay with him He commanded his servants to buy a golden cage for the nightingale The nightingale lived in the cage and sang for the king every day But it was not happy One day the king of another country presented a toy nightingale to the king of China It had many jewels all over it and it had a key to make it work It sang like a real nightingale The king was very pleased He used the key again and again and it made it sing The king forgot the real nightingale The real nightingale flew out of the window and went back to the forest It was happy again The king put the toy nightingale on a table by his bed It sang all the time It never seemed tired But one day something inside broke and it stopped singing The king commanded his servants to find someone who could repair it At last they found a clever clock maker who was able to repair it I have repaired it he told the king It will sing for you now but it is very old It must not sing more than once every year The king was very sad The nightingale sang once every year for five years Then the king became ill He lay in his bed with his eyes closed The doctors went away and said The king is dead Suddenly the king heard the real nightingale singing outside the window The king opened his eyes and said My little friend has come back The nightingale sang all night and in the morning the king was well again a A nightingale is a big bird b The king of China lived in a big forest c The servants found the nightingale near a stream d The nightingale did not want to live with the king e The nightingale made the king happy f The toy nightingale had a lot of jewels on it g A Key was used to wind up the toy nightingale h The king kept the toy nightingale in a golden cage i The toy nightingale sang five times a year j The real nightingale made the king well again The Moon in the Well One evening a boy looked into a well The water at the bottom was like a mirror The boy saw the moon in the water The moon has fallen into the well he said I must take it out He ran home to get a hook He untied the bucket from the rope and tied the hook Then he let the hook inside the well to pull the moon up The hook reached the water But it was caught underneath a big stone The boy pulled and pulled but the hook would not come up Suddenly the stone moved The hook came up the well The boy fell on his back He saw the moon in the sky Good he said I have pulled the moon out of the well It is now in the sky again The True friends Long long ago there lived three friends in a jungle They were-a deer a crow and a mouse They used to share their meals together One day a turtle came to them and said I also want to join your company and become your friend I’m all alone You’re most welcome said the crow But what about your personal safety There are many hunters around They visit this jungle regularly Suppose a hunter comes how will you save yourself That is the reason why I want to join your group said the turtle Just then they saw a hunter coming towards them with a net Seeing the hunter the deer ran away the crow flew away and the mouse ran into a hole The turtle tried to crawl away fast but he was caught by the hunter The hunter tied him up in the net The turtle’s three friends became much worried after seeing their friend trapped by the hunter They sat together to think of some plan to free ththeirier friend from the hunter’s trap The crow then flew high up in the sky and spotted the hunter walking along the river bank As per the plan the deer ran ahead of the hunter unnoticed and lay on the hunter’s path as if dead The hunter saw the deer from a distance lying on the ground He was very happy Now I’ll have a good feast and sell its beautiful skin in the market thought the hunter to himself He put down the turtle on to the ground and ran to pick up the deer In the meantime as planned the rat cut the threads of the net and freed the turtle The turtle hurriedly crawled away into the river Unaware of the plot of these friends the hunter went to fetch the deer for its tasty flesh and beautiful skin But what he saw with his mouth open was that when he reached near the deer suddenly sprang up to its feet and ran away into the jungle Before he could understand anything the deer had disappeared Disappointed the hunter turned back to collect the turtle he had left behind on the ground in the net But he was shocked to see the net open and the turtle missing The hunter was disappointed If only I hadn’t been so greedy he thought to himself Malathi Holla Mallathi Holla is an international para athlete from India A raging fever in her childhood had paralyzed her entire body She had to undergo lots of treatments and surgeries The trials and turbulences in her life have never stopped her from becoming what she is today Her never-say-die attitude has been an eye-opener to many present sports stars who often refer to her as the Champion of Champions Interviewer Before going further just share your secret of success Malathi Determination Devotion and Dedication This is the mantra behind my success Interviewer You have participated at national and international level sports especially when people did not even know what was Paralympics Malathi Yes sporting events held for specially challenged people like us in Olympics is called the Paralympics Interviewer Madam you were born a normal child but when were you attacked by polio Malathi I was born a normal child but when I was months old I was attacked by polio Interviewer How was life after that Malathi Life did take a lot of turn I realized that being handicapped should not prevent me from achieving what I dreamt to do Interviewer How was your childhood Malathi To be very frank I spent more days in hospital and rehabilitation centres I have undergone surgeries till now I did manage my basic schooling somehow but when I came to college I had lots of problem specially while I had to climb steps But the Principal and Lecturers helped me a lot to reduce my strain Interviewer Who is your inspiration or role-model Malathi My disability is my greatest inspiration In addition I owe a lot to my father but for him I would not have been what I am today He has encouraged me so much that I consider him to be my inspiration Interviewer What is your daily schedule Malathi Well my day begins at am I swim do various exercises get ready and go to my bank at am I am very punctual with my daily activities I devote my entire time from to for the bank After that I go to practice in Kanteerva Stadium later on I drive to Matru Foundation and spend my time with the physically challenged children Interviewer Madam you too have hours like others but I am extremely surprised at the way you use it This indeed should be a lesson to the others to follow Malathi You see the present and future is in our hands How we utilize it is what matters Interviewer What is your message to the younger generation Malathi Do not give up Challenge life and not let life challenge you Remove the word impossible from your dictionary Move ahead in life with enthusiasm Avoid being lazy Plan your day’s work in such a way that you have time to do everything Strength is life weakness is death You are the creator of your own destiny Swamy Vivekananda Interviewer Thank you so much All the best madam Plastic A Curse Incident Shamu’s father has two oxen He also had a cow Shamu loved the cow very much Once he gave the cow some fruits and threw the plastic bag close by the cow The cow ate the fruits and also the plastic bag and died The above story shows that plastic is very dangerous It is harmful to human beings plants and animals It contains poisonous chemicals It is light in weight It is used for making many different items Shopping bags toys water bottles are made of plastic We should avoid using plastic The government is also creating awareness among people against the use of plastic We should store food items in containers made of glass metal or porcelain LESSON VIJAYANAGARA EMPIRE Introduction The expedition which started during century by Delhi Sultan Allauddin Khilji over South India continued in century also As a result many south Indian kingdoms like Yadavas of Devgiri Hoysalas of Dwarasamudra Kakatiyas of Warangal Pandyas of Madhurai and others were defeated At this juncture Vijayanagar succeeded in creating a strong political power as a solution for South India’s political issues It ruled for three centuries In this lesson the dynasties which ruled Vijayanaga Empire are explained Contributions of these Kings to Political social economical literary art and sculpture are also discussed Battle of Talikota Rakkasatangadi which was the main reason for the decline of Vijayanagar Empire and its affects are also discussed here Competencies To understand the achievements of Vijayanagara kings To know administration social and economic conditions and literature of the Vijayanagara period To know the art and sculpture of the Vijayanagara period To know the religious equality maintained by the Vijayanagara kings To mark the borders and to identify the places of Vijayanagara Empire on the map Vijayanagara Empire was founded in A D on the southern bank of Tungabadra river by the sons of Sangama called Harihar Bukka Raya Kampana Marappa and Muddappa Hampi of Ballari district was their capital and their national emblem was boar Varaha Emblem was boar Varaha During Vijayanagara Empire was ruled by the four dynasties called Sangama Dynasty Saluva Dynasty Tuluva Dynasty and Aravidu Dynasty Sangama Dynasty Harihara and Bukka Harihara was the first king of this dynasty He took control over the regions of Tungabhadra River He extended his empire to Konkan coastal areas of the West to Nellore and Kadapa of East to the Krishna River of the North and Kaveri River of the South Like this he laid a strong foundation for his empire Bukka Raya brother of Harihara took over power after his death because Harihara had no son During his rule his son Kampana widened the empire by defeating the Sultan of Madhurai This was explained in a book called Madhura Vijayam which was written by Kampana’s queen Gangadevi Bukka captured Penukonda by defeating Reddys of Kondaveedu and included it to Vijayanagara Empire Shravanabelagola inscription of explains that he pacified the conflict between Jains and Vyshnavas and maintained religious harmony and equality After Bukka Raya Harihara Bukka Raya Virupaksha Devaraya I Vira Vijayaraya ruled Vijayanagara Empire Devaraya Prauda Devaraya He was the famous king of Sangama Dynasty and his period was significant in Vijayanagara Dynasty After he took over the power he built a new army including Muslim soldiers who had archery and horse taming skills With the help of this army he defeated Reddy leaders of Kondaveedu region He defended famous Mudugal fort Raichur and Bankapur by fighting with Ahmed Shah of Bahmani Sultans His brave commander called Lakkanna Dandesha defeated the kings of Kerala and Srilanka and collected treasure and tribute in cash from them Prauda Devaraya who had religious tolerance built Jain and Vyshnava temples in the capital and he permitted to build Mosques also Telugu poet Srinatha Sanskrit philosopher Dindima and Kannada poet and the Minister Lakkana Dandesh were sheltered in his kingdom Veerashaivism got resurrected in his period Persian ambassador Abdul Razak visited Vijayanagara Kingdom during Prauda Devaraya period and stated I have seen such a rich kingdom like Vijayanagara Kingdom for the first time The capital has seven forts and the Raja’s army has lakhs of soldiers After his death in his son Mallikarjuna and then Virupaksha ruled Vijayanagara These were weak rulers and because of this a strong commander Saluva Narasimha captured the capital With this incident the rule of Sangama Dynasty ended in Saluva Dynasty After taking over the power in Saluva Narasimha ruled for six years and died in His children were minors when he died and because of this Kingdom was in the protection of a commander called Tuluva Narasanayaka from to Tuluva Dynasty In Vira Narasimha son of Tuluva Narasanayaka started the rule of Tuluva Dynasty After his death in his brother Krishna Deva Raya came to power Krishna Deva Raya He was the famous and greatest king among other Vijayanagara kings At the initial years of his rule he had to face many revolts Robert Sewell stated that Krishnadevaraya was an uncommon brave king intelligent soldier and diplomatic expert He defeated his enemies and extended his empire in South India He seized Sivanasamudra fort from Ummattur chief Ganga Raja in Later he won Raichur fort He supported Portuguese to capture Goa from Vijayapura Sultan In he won Udayagiri fort then in he captured Cuttack the capital of Gajapati Prathapa Rudra a Kalinga King by defeating him and married his daughter Jaganmohini In he recaptured Raichur from the king of Adil Shah Ismail Adil Khan Later he captured Kalaburagi Bidar forts He got released the son of king who was imprisoned by Bahmani Prime Minister and restored him to power in Bidar For this he got the title Yavana Rajya Prathishtapanacharya Vijayanagara Kingdom was expanded in all four directions at the time of his death in Domingo Paes who visited his kingdom stated Krishnadevaraya was a soft person with a strong body in his book Rakkasa Tangadi Battle After Krishnadevaraya Achyuta Raya and Sadasiva Raya ruled Vijayanagara Since Sadasiva Raya was a minor and unable to rule Rama Raya of Aravidu dynasty son in law of Krishnadevaraya took the whole responsibility of administration His diplomacy expanded Vijayanagara Kingdom and made it rich The number of enemies also increased Deccan Sultanates were attacking Vijayanagara often To avenge Rama Raya captured Vijayapura and Golkonda and this caused the war All Sultanates united themselves with jealousy and hatred on the growth and richness of Vijayanagara Kingdom They had political differences in between them but to defeat Vijayanagara they united On rd January of the Rakkasa Tangadi war began between the united army of Sultans and the army of Vijayanagara on the banks of Krishna River and Rama Raya died in the war Sultanates looted Vijayanagara Tirumala and Venkata sons of Rama Raya who escaped from war ran away to Penukonda Later Aravidu dynasty started their ruling from to by making Penukonda Chandragiri and later Vellur as their capitals By this war feudal chiefs of Mysuru Keladi Chitradurga Yelahanka and Surapur became independent rulers in Karnataka Cultural Contributions of Vijayanagara Empire Administration Vijayanagara Empire had strong central administration and it adopted decentralized administrative system In the administration there were many ministers to assist the king and leaders of local provinces For the administration purpose kingdom was divided into provinces provinces into regions regions into cities and cities into village groups King’s representatives were managing the provinces and hereditary officers were managing village administration The king was the supreme judiciary Regional officers were dispensing justice in Provinces of land revenue was collected It was major income and trade tax profession tax road tax fair tax export tax and tribute in cash were other incomes During the reign of Vijayanagara infantry cavalry elephant and canon divisions were the prominent divisions in the army Arabian horses were very attractive in Vijayanagara Social Status During Vijayanagara period child marriage Sati system and Devadasi systems were in practice Monogamy was in practice but rich people and kings were following polygamy Women were respected Deepavali and Dasara festivals were celebrated grandly Dasara festival was celebrated under King’s patronage Economic Status Agriculture was the main occupation Rice Maize sugarcane and cotton crops were the major crops Kings of Vijayanagara encouraged agriculture through building tanks and wells They had trade links with other countries and rice cotton clothes iron diamonds sugar musk sandal and spices were exported Horse silk clothes mukhmal clothes were imported Vijayanagara was the international business centre for diamonds Cloth weaving was the important industry Bhatkal Honnavara Manglore were the important ports then Golden coins were in use and pictures of gods and goddesses were etched on these coins Literature During the reign of Vijayanagara literature of Sanskrit Telugu and Kannada developed immensely Vidyaranya wrote books like Shankara Vijaya and Sarvadarshan Sangraha in Sanskrit His brother Sayanacharya also wrote books called Vedarthaprakasha and Ayurveda Sudhanidhi Kings and their family members also created sufficient literature Among them Gangadevi wrote Madhura Vijayam Prauda Devaraya wrote great drama called Sudhanidhi Krishnadevaraya wrote Jambavati Kalyana Madalasa Charitam and Rasamanjari Kumarvyasas Gadugina Bharata Rathnakaravarnis Bharatesha Vaibhava Chamarass Prabhulingaleele were significant literary works in Kannada Lakkanna’s Shivatatwa Chintamani Bhima poet’s Basava Purana were the contributions to the Veerashaiva literature Krishnadevaraya encouraged Telugu literature because of this he got title called Andhra Bhoja He himself was a poet and he wrote Amuktamalyada in Telugu There were eight famous scholars called Ashtadiggajas in his kingdom and they are Allasani Peddanna Tenali Nandhi Thimmanna Srinatha Pingali Suranna Tenali Ramakrishna and others Religious Harmony Kings of Vijayanagara Kingdom were great followers of religious tolerance They built a mosque in their capital Bukka Raya solved the problems between Jains and Vaishnavas and it is known by the Shravanabelagola inscription of Barbosa who visited Vijayanagar during the reign of Krishnadeavraya stated that any Christian Jew Muslim Hindu or person of any religion can live happily in Vijayanagara Kingdom because these kings respect all Art and Sculpture Great historian Percy Brown on observing the temples monuments and sculptural statues stated that art and sculpture of Vijayanagara was the evolutionary form of Dravidian style Hajara Ramaswamy Temple Hampi The temples of that period were built with strong granite rocks Kalyana Mantapa of Virupaksha temple in Hampi Hazara Ramaswamy temple Vittalaswamy temple Krishnaswamy temple Kamala Mahal Shringeri’s Vidyashankar temple are some important temples which were built during their rule Very spacious enclosures high tower very wide marriage halls meeting halls spring pavilions were the feature of temples of Vijayanagara period Vidyashankara Temple Shringeri Kalahasti Srishyla Thirupati Chidambaram Srirangam Kumbhakonam Kanchi and in other places art and sculpture of Vijaynagara can be found Lepakshi temple which was called as Shaiva’s Ajanta has sketches of Shivapurana of Vijayanagara period On the roof of the Virupakasha temple’s Marriage hall scenes of Dashavatara and Girija Kalyana were carved Stone chariot idols of Narasimha and Ganapati illustrate the monolith stone sculpture of the Vijayanagara reign Dakshinadi music which is introduced now as Karnatak Music had reached even common people then Purandaradas and Kanakadas contributed a lot to this field Chronological Period Ruling period of Vijayanagara Kingdom Sangama Dynasty Harihara Bukka Raya Devaraya Prauda Devaraya Saluva Dynasty Tuluva Narasanayaka Tuluva Dynasty Krishnadevaraya The battle of Talikot January BAHMANI ADIL SHAH'S Introduction In the history of Karnataka Vijayanagara Empire was established in Later on rd August of the first Muslim dynasty Bahmani Empire came to exist Allauddin Hasan Gangu Bahman shah was the founder of this empire Battles were taking place continuously between the Bahmani Sultans and Vijayanagara kings Inner conflicts rose in the dynasty and by five Shah dynasties came into existence Among them Adil Shahis of Vijayapura were prominent Main achievements of Sultanates of this dynasty are discussed in this lesson They also gave prominence to literature art and sculpture The achievements of Sultan Firoz Shah and famous prime minister Mohammed Gavan are discussed in this lesson With this Bahmani state’s significant contributions are also discussed Competencies To know contributions of Firoz Shah and Mohammed Gawan To recognize the contributions in the field of literature art and sculpture by Bahmani Sultans To mark the important places of Bahmani Sultans on map To know the important sultans among Vijayapura Adil Shahs To know art literature and sculpture of this period When Vijaynagara Empire was founded in the northern part of it Bahmani Empire also founded in Its founder was Alla-Ud-Din Hasan Gangu Bahman Shah Bahman Shah was working in the army of Delhi Sultan Muhammad Bin Tughluq Bahamani Sultans Bahmani State had the parts of Karnataka Maharashtra and Andhra Pradesh Telangana states under its rule In the beginning Kalaburagi and later Bidar were their capitals Bahmani Empire was in northern part of the Krishna River and Vijayanagara Empire was in southern part of Krishna Tajuddin Firoz Shah was the great Sultan in Bahmani dynasty Tajuddin Firoz Shah He was liberal judicious and a believer of god He made copies of Quran and edited it for his whole life He was a writer encouraged all languages and he was an expert in Geometry and Theology He sheltered many philosophers poets artists and had honoured them He established observatory in Daulathabad Maharashtra He propagated the beauty of his capital Kalaburagi He built a new city called ‘Firozabada’ on the bank of Bhima River He gifted many villages to a Sufi Saint Bandenawaz who arrived to the kingdom during his period He concentrated on the development of ports and as a result foreign tourism was encouraged Mohammed Gawan All credits of making Bahmani dynasty great goes to Mohammed Gawan Basically he was a Persian and worked honestly as a Prime Minister in the reign of Sultanate Mohammed Shah Prominent Bahmani Sultans Alla-Ud-Din Hasan Gangu Bahman Shah Firoz Shah Ahamud Shah and Mohammed Shah Important Factors Mohammed Gawan captured Hubballi Belgavi and Goa from Vijayanagara Empire Administration was according to the Islamic laws He encouraged revenue and postal services He fixed taxes on the basis of land’s fertility and irrigation facility Tax was collected in cash only He removed some taxes which were annoying the people As a philosopher himself Mohammed Gawan founded Madarasa University in Bidar It encouraged Islamic religion and law education Astronomy Mathematics History were being studied here Free education and hostel facilities were there Around manuscripts were in the library of Madarasa Mohammed contributed a lot in making the Bahmani kingdom great Regional leaders were jealous of his fame and conspired to have him murdered On the Gawan’s tomb it is written that innocent Gawan was killed Cultural Contributions Education Bahmani Sultans encouraged Islamic education Chanting of Quran was the part of the education Kalaburagi Bidar Elichapur and Daulathabad and others were the Islamic educational centres during their reign Poor people and orphans were provided free food and shelter and scholarships was given to students in Madarasas Quran philosophy and principles of Sufism were taught in the schools Literature Literary activities were greatly encouraged by Bahmani Sultans and they sheltered many philosophers poets and writers Firoz Shah Mohammed Shah and Mohammed Gawan were writers and minister poets During their reign Persian Arabic and Urdu literatures were developed Great Sufi saint and writer Bandenavaz belonged to their period The language that they and other foreigners used became famous as Dakani Later it developed as Urdu language Sculpture The history of Bahmani dynasty is famous for sculpture and architecture Monuments in Bidar Kalaburagi and other places are in Hindu-Islam style It is familiar as Dakani style The first contribution of Bahmanis is Jamia Mazjid of Kalaburagi and Mohammed Shah built it The meeting hall with small domes is the major attraction here Tombs of Sultans are in Kalaburagi and they are also domed structures The tomb of Bandenawaz is another prominent monument of Kalaburagi Bidar’s Solahkhamba Mosque and beautiful palaces in the fort are famous These buildings are decorated and have carved wooden crafts on them Twelve tombs of Ashtur near Bidar are also famous The prominent monument of the Bahmani kingdom is Madarasa which was built by Mohammed Gawan It is feet wide feet long feet height and storied building The building which is more than five centuries old appears to be declaring its glory Shah Dynasties After Mohammed Gawan Bahmani Kingdom did not continue its rule strongly The Sultans who came to power after Mohammed were incompetent to rule After Mohammed Mohammed came to power But he was a little boy and could not rule the kingdom The last king was Sultan Khalimullah Shah After his death Bahmani kingdom was broken into five states of Shahi Adil Shahs of Vijayapur Bijapur Barid Shahs of Bidar Qutub Shahs of Golkonda Nizam Shahs of Ahmadnagar Imad Shahs of Berar Adil Shahs of Vijayapura Bijapura Yusuf Adil Khan Ismail Adil Khan Ibrahim Adil Shah Ali Adil Shah I Ibrahim Adil Shah Mohammed Adil Shah Ali Adil Shah Sikandar Adil Shah Yusuf Adil Khan was the founder of Adil Shahs dynasty of Vijayapur He was a good administrator and tolerant towards other religions After him Ibrahim Adil Shah came to the power Ibrahim Adil Shah Ibrahim Adil Shah the Second was the great king among other Sultans Kingdom was expanded and became rich in his period He had a title called Jagadguru Badshah He was tolerant of other religions He sheltered many Hindu philosophers poets and musicians in his court He renovated Dutta temples in his fort and encouraged pooja rituals He worked for the cultural harmony of Hindu-Muslim He wrote a book called Kitab-e-Navaras and tried to make music popular among Muslims The book begins with worshipping the Gods like Ganapati Saraswati Bhyrava and others He himself was a great musician Ibrahim Rauza which is famous for its architecture was built by him Ibrahim Rauza Vijayapura Barid Shahs of Bidar When Bahmani State was scattered into many provinces Barid Shahs ruled Deccan’s Bidar and other regions around it Qasim Barid was the founder of this dynasty After him Ibrahim and his brother Qasim who ruled Bidar were incompetent kings And because of their inner conflicts this dynasty declined Then Ibrahim Adil Shah of Vijayapur captured Bidar Like this Barid Shah Kingdom was merged into Ibrahim’s Vijayapur’s state Qutub Shahs of Golkonda Quli Qutub Shah He was the founder of independent Golkonda State He ruled the state with good administration and in he was killed by his own son Ibrahim He had compassion for Hindu religion and there were many Hindu officers in his administration During his ruling he made Golkonda a beautiful city He changed his capital from Golkonda to Hyderabad in After him Abdul Qutub Shah Abdul Hasan and others came to power But they were incompetent kings and later Golkonda surrendered to the Mughals Nizam Shahs of Ahmadnagar In Malik Ahmed who was a chief of Junnar Province founded his own state of Ahmadnagar and established Nizam Shah Dynasty He took Daulatabad under his control and expanded empire After him Burhan Hussain Nizam Shah Murtaza were Sultans just for namesake With death of Chand Bibi Ahmadnagar declined And later in during the period of Shah Jahan Mughal king Ahmadnagar was merged into the Mughal State Imad Shahs of Beerar After the fall of Bahmani Kingdom five Sultan states came to exist Imad Shah Dynasty of Berar is one among them It was situated between Pen Ganga and Vine Ganga Rivers at Vardha Tapati to north of Bidar In Fathullah founded this dynasty Ellichpur was their capital Fathullah had a title called Imad-ul-Mulk After his death in his son Allauddin Imad Shah came to the power He was an incompetent king After him his son Darya Imad Shah came to the power and even during his rule also Berar Dynasty continued its battles with neighbouring states After the death of Darya Imad Shah his little son Burhan Imad Shah took the power During his rule power came to the hands of usurper called Tufail Khan Later Berar Dynasty fell to the hands of Vijayapura Sultans The Contributions of Adil Shahs During the reign of years Adil Shahs of Vijayapur contributed a lot to the fields of education literature music fine arts art and sculpture Education Adil Shahs were great lovers of education and they encouraged it Their education policy was to develop Islamic culture Mukhtub Mosque and Madarasa college were the educational centres Knowledge religion law poetry and others were taught Educational institutions were under King’s patronage Literature The contribution of Adil Shah to the literature is very prominent Literature became rich in their period because Kings were poets themselves Many books were written in Persian Arabic Urdu and Kannada languages Persian Poet Fersita Thariq-i-Ferista and Gulshan-ye-Ibrahim Urdu Poets Abdul’s Ibrahim Nama Mulla Nasrati’s Alinama Kannada Poet Narahari of Torave Torave Ramayana Music Yusuf Ali Adil Shah and Ibrahim Adil Shah were great musicians Ibrahim Adil Shah’s work Kitab-e-Navaras was the great work in music He opened a music school Women of royal and rich families were interested in music Fine Arts Ibrahim was a fine artist His court had many Persian artists Beautiful painting of flowers plants creeper and other nature scenes were painted on their houses walls of Mosques and floors These paintings helped to know aspirations interests and traditions of the people Art and Sculpture In the history of art and sculpture of Karnataka the buildings of Adil Shahs of Vijayapura are the important ones They built forts palaces mosques and tombs Their monuments are in Indo-Islamic style a Fort The fort of Vijayapur is a big one and it has ninety six bastions the dome which were built on fort and six main entrances b Palaces Gagan Mahal In Ibrahim Adil Shah built it It has three storied towers Mehtar Mahal It is also a three storied palace Ibrahim Adil Shah built it It is famous for its fine and delicate decorations And in Asar Mahal rooms have different paintings painted on them c Mosques Jama Masjid Ali Adil Shah built it It is famous for its very wide prayer hall It is a common building without any decorations It has different new style among other art monuments Ibrahim Rauza Ibrahim Adil Shah built it in the memory of his wife Taj Begum in Vijayapura It has the tombs of Ibrahim and his relatives It is the only Rauza in India It is called as Taj Mahal of South India The Mosque and the Tomb are built on an elevated platform with a garden around them and compound wall around it This is called 'Rauza' Gol Gumbuz Mohammed decided to build something that is even bigger and greater than Rauza He built Gol Gumbuz a domed tomb in at Vijayapura It has a big dome with a whispering chamber inside It is a fine example for technology of that time It is the fourth largest dome in the world and the first largest dome in India Other Important Monuments Bara Kaman Bade Kaman Ananda Mahal Upli Buruj Taj Bawdi Chand Bawdi and other monument are important ones Activities Collect the pictures of art and sculpture of Bahmani and Adil Shah Dynasties and make an album Collect pictures of temples churches and mosques which are the symbols of Hindu Christian and Muslim cultures and make an album Chronological Period The reign of Bahamani Kingdom Establishment of Madarasa in Bidar The reign of Adil Shahs Construction of Ibrahim Rauza Construction of Gol Gumaz BHAKTHI CULT AND SUFI HERITAGE Introduction In South and North India Alwars and Daasas and in north India Sanths Saints and Sufis created social awakening through Bhakthi Cult In this lesson the objectives meaning and features of Bhakthi cult are discussed In southern India Aandal Akkamahadevi Kanakadasa Purandaradasa and Shishunala Sharif are introduced Similarly in North India Kabirdas Gurunanak Tulasidas Meerabai Sri Chaithanya and Sufi Saints are introduced The harmony these faiths together have achieved despite their diverse religious faiths and their endowment towards enriching the vernacular languages are discussed here Competencies Understanding the contributions of Bhakthi Cult in forging religious hormony Understanding the preachings of Dasas and Saints Understanding and appreciating the unique philosophy of Sufis Indian society is inclusive of many cultures In this society caste system superstitions and pseudo rituals were deeprooted It was believed that attaining Moksha salvation for the common man was impossible The medieval society was under the impression that the common people were not eligible for such a destiny During this period saints of Bhakti cult and Sufi tradition brought in a social and religious reformation They stressed the importance of global brotherhood and taught that Bhakthi is the best way to attain Moksha This path is called Bhakthi Cult The word Bhakthi is from the Sanskrit word Bhuj Bhuj means the knowledge Gist of Bhakthi cult Bhakthi cult condemned discrimination It preached equality The Saints of Bhakthi cult opposed and condemned superstitious practices They undertook the task of uniting the hearts of people According to Sufi Saints dharma is love and service to mankind God is one not many they preached Bhakthi Heritage in South India Aandal Aandal Aandal is one among the twleve Alwars the Vishnu Devotees of Tamilnadu She was an adopted daughter of Vishnuchitha Vishnuchitha was an alwar they were also called Periyalwar Aandal's original name was Godadevi They were devotees of Krishna Her father was making flower garlands and offered it to Krishna temple of Srivilliputhur Aandal loved Krishna and she claimed that he was her husband She wrote Thirupaamai and dedicated to God In Tamilnadu Tirupaamai Vratha rite a ceremony religious observance is very famous According to Alwars all Vishnu devotees are equal and their birth should not be questioned Caste discrimination is a criminal offence they believed Akkamahadevi Akkamahadevi Akkamahadevi was an enterprising woman in the Vachana movement of twelfth century She has made immense contributions to Vachana literature She was born in Uduthadi of Shivamoga District Her father was Nirmalashetty and mother Sumathi Akka immersed in Shivabhakthi since her childhood She claimed Channamallikarjuna himself to be her husband Her parents forcibly got her married to king Koushika She found it a hindrance to her service to Guru Linga Jangama so she left the palace Later she stayed at Anubhava Mantapa in Kalyana for sometime There she wrote many Vachanas under the pen name Channamallikarjuna She was respected by all Shivasharanas She left Kalyana and went to Srishaila towards the end of her life She left her mortal body in the Kadali forest of Srishaila Purandara Dasa Purandaradasaru He is one of the important persons in Kannada Dasa literature Purandaradasa was born in Purandaragada His original name was Srinivasa Nayaka His father was Varadappa Nayaka and mother Leelavathi Wife Lakshmibai was a religious woman Srinivasa Nayaka was a miser and an atheist Later he distributed all his wealth to the needy people and spent rest of his life in the thought of God He travelled to many places singing Keerthanas and at last he reached Krishnadevaraya’s court Vyasaraya gave him deeksha and called him as Purandara Later he became Purandaradasa We can see humaneness in all his songs He condemned caste system We also see the combination of philosophy moral and musical qualities in his songs He is known as Karnataka Sangeetha Pithamaha Father of Carnatic music He wrote Keerthanas with the pen name of Purandara Vittala He was praised by his own Guru teacher Vysaraya as Purandara Dasa is Ultimate as a Dasa Kanakadasa Kanakadasa Kanakadasa is one of the famous Keerthanakaras of Daasa Literature He was born about at Bada village of Bankapura Taluk in Haveri District Thimmappa was his original name Beerappa and Bachamma were his parents He was a warrior and also a poet He headed a group of over villages It is said that he found a potful of Gold and he came to be known as Kanakanayaka He renounced wordly things and became a disciple of Vyasaraya Later he came to be known as Kanakadasa He has composed many Kirthanas with a pen name Adhikeshava Adikeshava was his personal God He has criticized the superstitious of the society in his songs and has preached the simple path of attaining Moksha in them He has also criticized caste system in his songs Kanakana Kindi The priests of Udupi temple stops Kanaka from entering the temple It is said that Lord Krishna pleased by his devotion turned his face towards west for Kanaka This was named as Kanakana Kindi Kanakadasa wrote Haribhakthisara Nalacharithre Ramadhyana Charithe Shatpadi epics Mohana Tharangini The Sangeetha Kavya Shishunala Sharifa Shishunala Sharifa Shishunala Sharifa is the first Kannada Muslim mystic poet He is known as Kabeera of Karnataka He was born in at Shishunaala His parents were Imam Saheb mother Hajjamma He studied both Hindu and Islamic religion in his childhood Later he passed his Mulki exams and served as teacher for sometime He took Deeksha from Govindabhatta and wrote many Thathvapadas In his poems one can find Rewayath Moharam words Among those songs Kalagapada Dharmika Neethipada Alaavipada Savaal Jawab Pada are famous We can see his grave in Shishunala He tried to spread humanity beyond the barriers of caste and religion Bhakthi Heritage of North India Kabirdas Kabirdas Kabirdas is a famous saint of Bhakthi cult and was a disciple of Ramananda He tried to bring harmony between Hindu and Muslim religions He was an adopted son of weaving Muslim couple Neeru and Neema of Varanasi He condemened caste system luxurious life and discrimination based on religion Allah and Rama are the two names of one God he said He described Hindu Muslims as pots of same clay Kabir told that he is the son of Rama and Allah According to him it is not possible to see God by fasting torturing the body sacred pilgrimages It is only possible by sacred devotion He taught his philosophy through Doha Two lines poems which is simple and easy to understand by common man His followers are called Kabir Panthis Gurunanak Gurunanak Gurunanak is the founder of Sikh religion He was born in at Thalavandi in Punjab now it is in Pakistan Mehtakalu Kaaluchanda and Thruptha were his parents He stressed on good views of Hindu and Muslim religions His songs called as Japaji are in Grantha Sahib sacred book of Sikhs Sikh cult has given importance for Japa and good deeds He stressed on gender equality Nanak had great belief in the existence of the God God is one and eternal he proclaimed He said one can gain Guru through Bhakthi and with Bhakthi one can attain Mukthi He opposed social evils like Idol worshiping casteism Sathi System During one of his travels he visited Karnataka He stayed in Bidar the place called Naanak Jaara Sweet water spring Tulasidas Tulasidas Tulasidas was the first to support bhakthi Maarga in North India He was born in a Brahmin family He has contributed to the Hindi literature He wrote Ramacharithamanasa This is a great book in Hindi in the North it is famous as Tulasiramayana Ramabhaktha Tulasidasa He sowed devotion pure life love affection patience generosity among the people Meerabai Meerabai Meerabai is a renowned saint of India and is called as Radha of Kaliyuga She was born in a Rajput family in Rajasthan She was Raja Rathansingh's daughter She married prince of Mewar She loved philosophy from her childhood so she spent her time in offering Puja meditation and singing Her mother in-law opposed her worshipping lord Krishna Meerabai could not tolerate this and she left to Brindavan the pilgrimage place of Srikrishna Her songs are full of devotion and love Giridhara Gopala is her favourite God She has remained eternal due to her thousands of Bhajans Chaithanya Chaithanya Chaithanya was born in Nabadwip Dham Nadia in Bengal in Jagannatha Mishra and Sridevi were his parents Vishwambara was his original name Eshvarpuri was his Guru Chaithanya left his family life and took Sanyasa at the age of He rejected casteism Bhakthi is the only way to attain Mukthi Universal love is the first step towards the God he said He travelled to pilgrimage places of India and spread the message of love Love brotherhood and generosity are the essences of his teachings Today’s Hare Krishna cult has been influenced by him The Bengalies call him Chaithanya Mahaprabhu and also treat him as the incarnation of lord KrishnaInfluences of Bhakthi cult Result Bhakthi saints created harmony between Hindu and Muslims Bhakthi saints wrote in simple common man’s language This enriched the languages of the common man Heritage of Sufi Like Kabir Kanakadas Chaitanya and others brought in new awareness among the Hindus Sufi saints brought awareness among the mulsims They worked for the harmony among Hindu and Muslim The Sufi cult originated in Arabia and entered India later The word Sufi comes from the word Saaf which means clean and clear The Sufi saints were Mystics and used to wear woollen dress Essence of Sufi cult God is one He is powerful We are all his children Encouraged good deeds All are equal Opposed caste system Later on Sufis were influenced by Yoga Vedantha and Buddhist thoughts Dharma means love service to mankind is important are some of the philosophical thoughts of Sufis Nizamuddin Auliya He is one of the main Sufisaints He lived inDelhi and lived a life of poverty Masjid with thatched roof was his centre of activity He refused the village gifted by Sultan of Delhi He preached to the devotees who visited him to practise good qualities and kindness Kwaja Bande Nawaz Bande Nawaz is a famous Chisthi Sufi saint He was the disciple of Nasiruddhin of Delhi Bandenawaz means protector of those who came to his shelter His original name was Gesudaraj means long haired He knew Sanskrit Arabic Parasi Dakani Urdu and many more languages He settled in Kalaburagi He was respected by the king Firoz Shah He wrote in Dakani language His literature is still preserved in Kalaburagi library Every year his Uru is held in Kalaburagi Chisthi Sect In Sufi cult Chisthi sect is important Moyinuddin Chisthi is the founder of this He came and settled in Ajmera Devotion towards God service to Guru good life are the main features of Chisthi followers He had concern for harmony of Hindu and Muslims He wrote in Dakani urdu language Salim Chisthi from Fathepur Sikri was famous among them Salim Chisthi Tomb Agra Lahore Today’s Pakistan Sheik Ismail Ajmer Kwaja Moyinuddin Chisthi Delhi Nijamuddin Aulia Arcot Tippu Masthara Aulia Kalaburagi Kwaja Bande Nawaz Chronology Nijamuddin Aulia to Kabirdasa to Gurunanak to Purandara Dasa to Chaithanya to Meerabai to Kanakadasa to Tulasidas to NAYAKAS PALEGARAS AND NAADA PRABHUS Introduction After the fall of Vijayanagara Empire Karnataka came under three administrative rulings They were Vijayapura Bijapura Keladi and Mysuru After the decline of Vijayapura Mughals and Marathas ruled many regions of Karnataka Even with presence of these rulers Keladi and Mysuru states protected themselves well from them and continued the traditions and practices of Vijayanagara Empire With these Palepattus feudatory Kingdoms grew in Chitradurga Surapura and Yelahanka Bengaluru regionally In this lesson we will learn about Nayakas of Keladi Chitradurga Surapura and Naada Prabhus of Yelahanka and their achievements Competencies To understand the achievements of Senior Venkatappa Nayaka and Shivappa Nayaka To know brave story of Rani Chennammaji To recognize the tolerance of other religions by Keladi Nayakas To understand the bravery and achievements of Madakari Nayaka of Chitradurga To understand the achievements of Venkatappa Nayaka IV of Surapura To appreciate the cultural contributions of Surapura Nayakas To know the achievements of Kempegowda I and Kempegowda the Naada Prabhus of Yelahanka Nayakas of Keladi Nayakas Palegaras Under the control of Vijayanagara Empire there were many small kings They are called Nayakas Chieftains or Palegaras The places which were ruled by these chiefs are called Palepattus Among these chiefs Nayakas of Keladi and Nayakas of Chitradurga are famous Keladi was founded in during the Vijayanagara period and later became independent The leaders of Keladi were ruling the coastal and malendu regions of Karnataka The Keladi province was large and prosperous Keladi consisted of Shivamogga Dakshina Kannada Udupi Kasaragodu Kerala Kodagu Hassan Tumakuruu Chitradurga Dharawada and Uttara Kannada areas Hiriya Venkatappa Nayaka Venkatappa Nayaka is popular among the kings of Keladi In his period the Keladi kingdom attained complete freedom He took out military expedition till River Chandragiri in the coastal region With the help of Queen Abbakkadevi he defeated the Portuguese in Mangaluru He defeated Adil Shahi forces of Vijayapura and established victory pillar in Hanagal He encouraged all religions Shivappa Nayaka Shivappa Nayaka was a famous Keladi king He occupied the coastal forts of the Portuguese and got the title Padugadalodeya He built strong forts in Mangaluru Bekal and Chandragiri Kerala for the security of the kingdom Shivappa Nayaka was a pious man He encouraged the traders of Goa to settle in his state for development of trade The Christians of Goa were experts in agriculture and he encouraged them to migrate to his state and provided land and other contributions He made a strict rule that the Christian priest should be a local person The Sistu of Shivappa Nayaka The revenue system started by Shivappa Nayaka was called as Sistu As per this the fixation of land revenue was based on the fertility of the land About of the production was collected as land revenue This systematic revenue system was called Sistu of Shivappa Nayaka The sistu system led to the development of Malenadu Queen Chennammaji Queen Chennammaji the daughter-in-law of Shivappa Nayaka took power after him She repelled the Mughul army and gave protection to Chatrapathi Rajaram the son of Shivaji Chennama the symbol of valour and sacrifice of Karnataka fought war even with the Mysuru army The Keladi kings founded temples agraharas and veershaiva mutts The Aghoreshwara temple in Ikkeri is famous for sculpture The mutts were the centres of boarding food facilities and education They contributed generously for all the religions Chennammaji gifted land for a Christian church in Mangaluru On account of continuous wars with Mysuru and internal wars the Keladi kingdom became weak Later Hyder Ali occupied the Keladi kingdom Chronology In a The period of Keladi rule b Hiriya Venkatappa Nayaka c Shivappa Nayaka d Queen Chennammaji e Occupation of Keladi by Hyder Ali The Nayakas of Chitradurga The Nayakas of Chitadurga have prominent place in the Karnataka history They ruled as Chieftains from to centuries Thirteen Chieftains ruled this province for about years Matthi Thimmanna Nayaka -CE was the first king of this Palepattu Kasturi Rangappa Nayaka-I Kasturi Chikkanna Nayaka Bichchugatthi Bharamanna Nayaka Hiremadakari Nayaka are the famous kings Raajaveer Madakari Nayaka He is the most powerful and popular among the Nayakas of Chitradurga He ascended the throne at the age of twelve years He helped Hyder Ali several times during wars But Hyder Ali became jealous of the valour of Madakari Nayaka In order to suppress him Hyder Ali besieged the seven ringed fort of Chitradurga But it was an impossible task to occupy such an invincible fort The soldiers of Hyder Ali tried to enter the fort after knowing the secret entrance in the absence of the watchmen At that time the wife of a watchman called Obavva killed the enemies with her wooden pestle Onake That secret passage is present in the fort of Chitradurga and called Obavvana Kindi Hyder Ali who was not prepared to accept defeat besieged the fort once again Madakari Nayaka was defeated in the fierce war The dynastic rule of chieftains of Chitradurga province ended with the rule of Madakari Nayaka Chitradurga is an attractive hill fort consisting of seven encircled forts There are several temples and tanks inside it The Nayakas of Chitradurga built several temples The Bharamasagara and Bheemasamudra tanks are their contributions The Nayakas of Chitradurga are known for their bravery and valour Chronology a Matthi Thimmanna Nayaka b Bichchugatthi Bharamanna Nayaka c Hiremadakari Nayaka d Raajaveer Madakari Nayaka The Nayakas of Surapura Surapura in Yadagiri district is situated in between the rivers Krishna and Bheema From to twelve Nayakas ruled it Gaddipidda Nayaka was the founder of this dynasty His ancestors were in the Vijayanagara army They are one among the scattered groups after the fall of the Vijayanagara Empire Later after getting the official permission from Vijayapura Adilshahis they started to rule from Vaginageri Peethambari Baharipidda Nayaka made Surapura his capital after constructing it Later in accordance with the agreement of the British and the Hyderabad Nizam Surapura came under the control of Hyderabad Raja Nalvadi Venkatappa Nayaka the son of Raja Krishnappa Nayaka came to power The news of the First War of Independence in India reached Surapura Nalvadi Venkatappa Nayaka had a plan to fight against the British by unifying the kings of South India He enlisted Arabs and Rohilas in his army And he also started to train the army On hearing these developments the British officer Thornhill wrote a letter to Captain Campbell on December and directed him to take immediate action against Raja Nalvadi Venkatappa Nayaka The British regiment entered Surapura in and battle ensued The enraged army of Surapura broke the bones of Stuart Newberry also fell Meanwhile Nalvadi Venkatappa Nayaka travelled to Hyderabad to bring the special forces of Arab and Rohil The British forces entered Surapura and destroyed it The Prime Minister of Hyderabad Nizam Salar Jung handed over Nalvadi Venkatappa Nayaka on the pretext of helping him with the intention of getting a favour British kept Nalvadi Venkatappa Nayaka in a prison at Secunderabad Later he was subjected to enquiry and was awarded death sentence On the plea made by a British officer Medose Taylor the Governor General of India dropped the death sentence condemned him for four years deportation While he was taken to a fort in Chengalpet near Madras the British betrayed and shot the resting Venkatappa dead Later they spread the false news that he committed suicide Later the British gifted Surapura to the Nizam of Hyderabad The successors of Surapura province spent their time under the Nizam Finally when the province of Nizam of Hyderabd merged with the Indian Union on September Surapura also merged with India The Surapura Nayakas have contributed to the field of culture Their rule still finds resonance in the minds of people due to their pro people programmes They built tanks temples wells forts and palaces Many Jahagirs Land gifts were given They had provided Inam land to sutain the worship the of their Patron God Venkataramana at Thirupathi and Gopalaswamy They had offered patronage to many artists sculptors and musicians Many literary works of good value were written during their reign They were known for their religious tolerance The Surapura rulers always accorded prominent place to paintings The design and techiniques of Surapura paintings are of high quality The Surapura paintings stand unique from Viyaynagara Vijayapura and Mysuru Paintings These paintings can be seen the museums of London Hyderabad’s Salarjung Museum Chronology The period of rule by Surapura Chieftains Peethambari Baharipidda Nayaka Nalvadi Venkatappa Nayaka The fall of Surapura February Merger of Surapura with Indian September Union Naada Prabhus of Yelahanka Ranabhaire Gowda is the founder of Yelahanka Naadaprabhu dynasty After Ranabhaire Gowda Jayagowda Gidde Gowda Kempananje Gowda and others ruled The most popular ruler of this dynasty is Hiriya Kempe Gowda Therefore the rulers of Yelahanka are known as the rulers from Kempegowda dynasty They were Naadaprabhus during the rule of Vijayanagara empire They ruled Bengaluru Ramanagara Tumakuru and undivided Kolar districts in their period Since Yelahanka was the first capital they are called Yelahanka Naadaprabhus Later Bengaluru and Magadi were their capitals Hiriya Kempe Gowda Hiriya Kempegowda founded Bengaluru city in He built a fort in Bengaluru and started his rule from it He built Basava Temple of Basavanagudi Someshwara Temple of Halasuru and extended the Gavigangadareshwara temple He is credited of building several prominent tanks Some of them are Dharmambudhi tank Halasur tank and Sampangi tank Hiriya Kempegowda was a devotee of Gangadhareshwara of Shivagange and built several choultries and agraharas He also earned the title Prajavatsala in recognition of his pious administration Kempe Gowda-II Kempe Gowda-II was the elder son of Hiriya Kempe Gowda During his period Army General Ranadulla Khan of Vijayapura Adil Shahis occupied Bengaluru in Hence Kempe Gowda-II started to rule Magadi and Kunigal regions and made Magadi his capital Usually the rulers of this family are called as Magadi Kempegowdas Kempegowda-II had marked the borders of Bengaluru and had built four watch towers in the marked places During his reign Bengaluru grew as a major weaving centre He built forts at Magadi Savanadurga Huliyurdurga Huthridurga and others Like his father he also constructed new villages temples and tanks Kempe Gowda-II handed over the political power of Magadi to his son Kempe Gowda-III and the power of Kunigal province to his another son Hiriya Kempe Gowda Kempe Gowda-III constructed the Kempasagara tank in order to tackle drought Hiriya Kempegowda-II was not only brave but was also a multi language academician He earned the title Nava Kavita Gumbhapumbhavani in recognition of his literary achievements His queens built Agraharas tanks and temples in Kunigal and Huliyurdurga Later the regions ruled by the Yelahanka Chieftains merged with the Mysuru province Chronology Hiriya Kempegowda Kempegowda-II Kempe Gowda-III Hiriya Kempegowda-II Know this The watch towers built by Kempegowda-II are present in the following areas of present Bengaluru the North tower -Mekhri circle the South tower-Lalbagh the East tower Halsoor and the West tower-Gavi Gangadhareshwara WODEYARS OF MYSURU Introduction The Wodeyars of Mysuru Hyder Ali and Tippu Sultan are introduced Important Wodeyar rulers like Krishnaraja Wodeyar and others are introduced The important Dewans are introduced Competencies Appreciating pro-people achievements of Chikkadevaraya To know the reasons and results of battles of Haider Ali and Tippu Sultan against British To know the contributions of Hyder Ali and Tippu Sultan To understand the achievements of Nalvadi Krishnaraja Wodeyar Mark the historical places of Mysuru Province on a map Important Wodeyars of Mysuru Yaduraya was the first king of Mysuru Wodeyars Gandabherunda was the emblem of the state Srirangapatna was their first capital Chikkadevaraya Chikkadevaraya Chikkadevaraya is the prominent king of early kings He implemented many pro-people measures He opened Attara Kacheri with eighteen departments He built a dam across the western stream of River Kaveri near Srirangapatna and provided irrigation facility He introduced thrift in his administration and enriched the treasury and was conferred with Navakoti Narayana title Mysuru state was prosperous during the reign of Chikkadevaraya But the later Kings were weak The administration was overseen by Dalawoys who ruled in the name of Kings Athara Kacheri Mysuru Hyder Ali and Tippu Sultan Hyder Ali Hyder Ali Hydar Ali was an eminent commander in Dalawoy Nanjarajaiah’s army He was brave and adventurous He won many battles and accumulated army and wealth This made him gain respect from the king When there was a revolt in the capital city Hyder Ali suppressed it and restored the Kingship of Krishnaraja Wodeyar and removed the Dalawoy and took over the administration Soon after taking over the administration he engaged in extending the borders of the state He defeated the Keladi ruler and confiscated the wealth of them and improved his financial status He also took over the Chitradurga fort with a lot of difficulty Battles with British The British came for business and gradually became powerful in politics The British did not tolerate the expansion of Mysuru kingdom in the south by Hyder Ali This led to an inevitable clash between Hyder Ali and British The four battles waged by Hyder Ali and later by his son Tippu Sultan against British are called Anglo Mysuru wars or Mysuru Wars In the First Anglo-Mysuru war the British suffered considerable loss Hence they had to sign Madras Treaty with Hyder Ali inevitably As per the treaty both the parties rush to each others rescue if attacked by any enemy This elevated the status of Hyder Ali A few years later Marathas attacked Mysuru kingdom Then the Britishers did not come to the aid of Hyder Ali and remained neutral This enraged Hyder Ali and he invaded British This is the Second Anglo-Mysuru war Hyder Ali died while fighting this war The battle was continued by Tippu Sultan Achievements of Hyder Ali Hyder Ali was aware of contemporary politics Though he was an illiterate he knew many languages including Kannada He extended the kingdom Mysuru considerably He was a brave soldier and an efficient administrator Hyder Ali has an important place in the anals of Karnataka history He established the beautiful Lalbagh gardern in Bengaluru Tippu Sultan Tippu Sultan Tippu Sultan was the son of Hyder Ali Tippu participated in his father’s battles actively and emerged as winner and declared himself as the Sultan Tippu led the Second Anglo-Mysuru war when his father Hyder Ali died in the battle due to illness After the death of his father he continued the Anglo Mysuru wars Nobody came to help him He fought against Britishers bravely At last the British signed the Treaty of Mangaluru This treaty was beneficial for both parties Both the parties returned their captured areas and exchanged the prisoners of war This treaty increased the stature of Tippu In a very short duration another two battles took place between Tippu and Britishers The mutual hatredness and disbelief was the main reason for this In the third Anglo-Mysuru war the Britishers lay siege to the capital city of Tippus Srirangapattana Without any alternative Tippu had to sign a Peace treaty with the British As per the peace treaty Tippu had to surrender half his kingdom to the British and had pay lakh as compensation Until the compensation is cleared two sons of Tippu were taken as hostages This treaty made Tippu feel disgraced He decided to throw the British out of India The fourth Anglo-Mysuru started Again Srirangapatanam was under siege Tippu fought valiantly and died in the battle field Tippu Sultan is known as Tiger of Mysuru After the fall of Tippu Sultan Mysuru came under the rule of British They handed over the administration to Krishnaraja Wodeyar But Mysuru became the dependent state of the British Personality and achievements of Tippu Tippu was aware of the latest achievements in science and technology He had a very good library He built Bengaluru palace and summer palace in Srirangapattana Dariya Doulath The walls pillars and the roof of the summer palace are painted with paintings depicting historical incidents Bengaluru palace Dariya Doulath Srirangapattana Tippu put a lot of efforts to enrich his kingdom He popularized Sriculture in the state He modernized his army with the help of French He moulded guns in Srirangapattana Mastering the technique of launching rockets was his uniqueness Tippu sanctioned grants to many Hindu temples and he gave gifts to Shringeri Math He brought many changes in the field sericulture and helped farmers by giving loans which could be repayed in easy installments The tomb of Hyder Ali and the Jumma Masjid were great constructions finished by Tippu The Minarets of the Masjid are known for the beauty He established royal mints at Srirangapattana and Mysuru Jumma Masjid Srirangapattana Krishnaraja Wodeyar Krishnaraja Wodeyar The period of wars ended with the fall of Tippu Sultan The British took over the Mysuru state and divided into four parts among Marathas Nizam and themselves The remaining one part was returned to Mysuru Wodeyars Krishnaraja Wodeyar was brought to power Since Krishnaraja Wodeyar was only five year old boy Poornaiah was appointed as the Diwan of Mysuru As they felt that Krishnaraja Wodeyar did not properly suppress the revolt of Bidanuru of Shivamogga they dethroned the King and brought the administration of Mysuru under a commissioner Administration of Commissioners Mark Cubbon Mark Cubbon implemented many administrative reforms in the state He transferred the capital from Mysuru to Bengaluru Mysuru was divided into many administrative units and kept them under superintendent’s supervision Administration units were divided into Districts and Talukas Judiciary and police departments were organized well Kannada was implemeneted as the official language New roads were built and as a result all the major places of the state could get connected directly to Bengaluru Bridges were built and telegraph lines were laid The construction of railway line between Bengaluru and Jolarpet started This was the first railway in the state He resigned from the commissioner post in The Cubbon Park was built in his memory Louis Bentham Bowring Louis Bentham Bowring Louis Bentham Bowring took charge as the commissioner in He reorganized the administration structure of Mysuru state The land revenue collection process was reorganized Judiciary and Police department were established properly Educational reforms were introduced with the establishment of Public Instrcution Bowring resigned from the Commissioner post in The commissioner laid the strong foundation for the development of Mysuru state Chamaraj WodeyarChamaraj WodeyarIn British handed over the administration of the state again to Chamaraja WodeyarThis is called Punardana C Rangacharlu and K Sheshadri Iyer ruled as Diwans under him In People Representative Assembly started functioning Naalvadi Krishnaraja Wodeyar Naalvadi Krishnaraja Wodeyar Chamaraja Wodeyardied in Calcutta while there on a visit Naalvadi Krishnaraja Wodeyar ascended throne as his successor in and he was only eleven years old then The administration was run by his mother Nanjammanni The direct rule of Naalvadi started from He was well educated and laid a firm foundation for a modern state during his long reign He was visionary and had a soft corner for the welfare of the downtrodden He formed Miller Commission in order to ensure the participation of all sections of the society in the administration Achievements of Naalvadi Krishnaraja Wodeyar He gave acres of land and five lakh rupees grants to J N Tata to start a science institution in Bengaluru In Legislative Assembly was established This enabled people to discuss their problem through their representatives He built K R S Dam and developed agriculture in the State The present Mysuru Palace was completed in The Mysuru Economic Conference was started in He passed the order that backward class should get special representation in Government Service He gave voting power to women first the time Naalvadi ushered in development in education industries Banking and other important sectors by the role of a guide and a motivator He appointed talented Diwans who could translate his vision into reality Among them Sir Vishveshwaraiah and Sir Mirja Ismail are important Mahatma Gandhiji called the Mysuru state of Naalavdi as the Ramarajya and called him Rajashri There is no mature ruler like Naalvadi Krishnaraja Wodeyar in the early part of twentieth century Mysuru Palace was built in the year The fire had destroyed the previous wooden palace Skilled workers had come from different places for its construction The main hall Darbar Hall was painted by famous artist Rajaraviverma Financial difficulties aroused during the constructin of Krishna Raja Sagar dam across river Kaveri The royal family sold its gold ornaments in Bombay and raised money for the constrcution work Mysuru Palace Sir Vishveswaraiah Sir Vishveshwaraiah considered as the sculptor and creator of Modern Mysuru He worked as the Chief Engineer of Mysuru from to Naalvadi Krishnaraja Wodeyar appointed him as the Diwan of Mysuru in During this period Mysuru state progressed as per the vision of Naalvadi Krishnaraja Wodeyar Sir Vishveshwaraiah Industrailise or Perish was the famous declaration of Sir Vishveshwaraiah He started Sandalwood Factory at Mysuru a soap factory Central Industrial Workshop Leather Processing and metal factories were started in Bengaluru In order to provide impetus to trade and commerce Mysuru Chambers of Commerce and Industries was started at Bengaluru Mysuru Bank was started in to provide support to the growth of industries Vishveshwaraiah had believed that education is the key to progress of a country He made primary education compulsory and gave importance to technical education He established an agricultural school at Hebbal The University of Mysuru established in the year has achieved phenomenal success Kannada Sahitya Parishad was established in the year The construction of the KRS dama continued and got completed in the year The railway lines between Mysuru and Arasikere Bowringpete and Kolar was laid Vishveshwaraiah was instrumental in implementing many of the visionary programmes of Naalvadi Krishnaraja Wodeyar Finally he resigned from the post of Diwan in the year The British government awarded with Knight Commander The Government of India awarded Bharatha Ratna in He was the first Kannadiga to receive it State Bank of Mysuru Kannada Sahitya Parishath BengaluruKrishnaraja Sagara Dam Sir Mirza Ismail Diwan Sir Mirza Ismail is also considered as one of the builders of modern Mysuru He also established various industries as per the wish of Naalvadi Krishnaraja Wodeyar Hindustan Aeronautics Limited Glass industry Porcelain factory Fertilizer Industry at Belagola Sugar Factory at Mandya Matchstick factory at Shivamogga and Iron and Steel Factory at Bhadravathi An airport was established at Jakkur Sir Mirza Ismail Radio stations were started Bengaluru and Mysuru He also encouraged rural industries A Khadi production centre was established at Badanavalu near Mysuru Irrigation facility was given to Madya district by constructing Irwin Canal The city of Mysuru was made the city of gardens The Brindavan Gardens was established in front of the Krishnaraja Sagar Dam Brindavana Garden National Institute of Mental Health and Neuro Sciences NIMHANS in Bengaluru Narasimharaja Hospital in Kolar McGann Hospital in Shimogga Vanivilasa Hospital in Mysuru were started during his time Primary education was encouraged and Primary education law was implemented The private schools were offered aid to run the schools Kannada Medium education was offered in high schools Thus Sir Mirza Ismail was instrumental in implementing the visions of Naalvadi Krishnaraja Wodeyar Sir Mirza Ismail was also the classmate of Naalvadi Krishnaraja Wodeyar and was successful in the translating the vision of Naalvadi Krishnaraja Wodeyar’s into reality After the death of Naalvadi Krishnaraja Wodeyar Jayachamaraja Wodeyar came into power He was the last ruler of the Mysuru state After the declaration of Indian Independence a Sathyagraha started in front of the Palace pressing for the inclusion of Mysuru state in the Indian Federation under the leadership of K C Reddy as a result Jayachamarajendra Wodeyar accepted the demand to become part of India A responsible government came into existence under the leadership of K C Reddy on October Jayachamarajendra Wodeyar later became the first Governor of Mysuru State Chronology Chikkadevaraja Wodeyar Hyder Ali Tippu Sultan First Anglo Mysuru War Second Anglo Mysuru War Third Anglo Mysuru War Fourth Anglo Mysuru War Mark Cubbon Bowring Chamaraja WodeyarNaalvadi Krishnaraja Wodeyar Sir Vishveshwaraiah Sir Mirza Ismail THE SULTANS OF DELHI Introduction During the centuries the Turks repeatedly invaded Indian territories These invasions finally culminated in the establishment of the rule of the Sultans of Delhi This Lesson briefly states the policies of the sultans their administration socio-economic conditions of the period and the contributions made by them to architecture and literature Competencies Understanding how the Turkish invasions during the centuries finally led to the establishment of the rule of the Delhi Sultans Understanding the impact of the rule of the sultans on the political social and cultural life of the people Marking the historical places of the Sultanate Period on the map Beginning from the century there were repeated invasions from across the north-western borders of India These invasions aimed at looting the wealth acquiring territories and spreading Islam The Arab invasion The Arabs were the first to invade the Indian territories They invaded Sindh in As a result of their victory the provinces of Sindh and Multan came under their control With this the Islam started taking roots in the newly conquered lands However the Arab aggression soon decelerated The Turkish invasion Mohammad Ghazni Three centuries later Mohammad Ghazni of Turkish origin invaded India Mohammad was the Sultan of Ghazni a small kingdom in Afghanistan He invaded India seventeen times looting and destroying prosperous cities and wealthy temples Among such temples included Sri Krishna temple at Mathura Uttar Pradesh and the rich and sacred temple of Somanath Gujarat Mohammed Ghazni Mohammed Ghori Mohammad Ghori During the last quarter of the century Mohammed Ghori who was ruling a kingdom in Afghanistan invaded India and secured the provinces of Sindh and Punjab When he made further advances into Indian territories Prithviraj Chauhan the king of Delhi and Ajmer routed him in a battle However Mohammad was spared from death penalty The very next year Mohammad came to India and fought with Prithviraj and defeated him Mohammad ordered him to be killed Delhi came under the control of Mohammad Ghori Before returning to Afghanistan he transferred the conquered territories to his general by name Qutubuddin Aibak Aibak started ruling as the sultan of Delhi The Slave Dynasty Qutubuddin was the first sultan of Delhi He had originally been a slave and hence the dynasty founded by him is known as the Slave dynasty The Slave the Khilji the Tuglaq the Syyid and the Lodi are the five dynasties who ruled Delhi He strengthened the Turkish rule in India by defeating his enemies To mark his victory he started constructing Qutb Minar at Mehrauli near Delhi Later it was completed by Sultan Iltumish Qutubuddin Aibak Qutub Minar Delhi The only female ruler during the Sultanate period was Raziya A daring sultana she dispensed justice in the royal court She dressed herself as a man and led army in the battlefield Intolerant of a woman's rule the nobles rebelled and killed her The Khilji Dynasty After the Slave dynasty the Khilji dynasty came to power Allauddin Khilji was the strongest of all the sultans of Delhi His rule was based on military power Policies Allauddin introduced several reforms in administrative military and economic fields He regulated the price of goods commonly consumed He banned consumption of liquor and gambling in Delhi The guilty were severely punished Military campaigns Allauddin aspired to conquer entire India In the first instance he conquered North India byhis military strength To South India he sent Malik Kafur a slave who was close to him with a huge army Malik Kafur invaded the four major kingdoms of South India and looted their capitals The kingdoms conquered by Malik Kafur were the Yadavas of Maharashtra capital Devagiri the Kakatiyas of Andhra Warangal the Hoysalas of Karnataka Dorasamudra and the Pandyas of Tamil Nadu Madurai Malik Kafur continuing his military march proceeded upto Rameshwaram All along the route his army destroyed several places of worship and looted wealth Never before had such a huge quantity of wealth of South India flowed to Delhi Allauddin patronised Amir Khusrau Amir Hasan and other Persian poets He built a new fort in Delhi known as Siri Alai Darwaza in Delhi a grand structure was his contribution to architecture Alai Darwaza Delhi Allauddin's last days were tragic There were several revolts in the palace to overthrow him Finally Malik Kafur out of greed for power killed his master and declared himself a sultan But he too was killed by his enemies Within a short time the Khilji rule ended and the Tughlaqs came to power The Tughlaq Dynasty Mohammad bin Tughlaq was the most notable sultan of the Tughlaq dynasty He was imprudent and ill-tempered who took hasty decisions He could be easily enraged In a word he was a strange character Administrative experiments Transfer of capital To improve the functioning of the administration he undertook several experiments One such experiment was the transfer of capital from Delhi to Devagiri Maharashtra He was of the view that the capital should be centrally located Devagiri miles from Delhi was renamed Daulatabad He passed strict orders that all the residents of Delhi should move to the new place The residents of Delhi who were forced to leave their homes faced untold misery in the course of their journey to a far place in the south A large number of them died on their way Anyway after shifting the capital he realized that he had committed a grave mistake So he ordered reshifting of the capital and the people to Delhi However only a few survived to return to Delhi Issue of token coins Another reform of Mohammad was that he issued copper coins in place of silver coins with the same face value But he failed to pass order that only the government had the authority to mint copper coins Consequently people themselves began to mint copper tokens This resulted in the devaluation of coins Finally he abolished the use of copper coins He exchanged the silver coins for copper coins The treasury was empty He was deceived by the people This experiment proved a great failure and weakened the financial condition of the state The government could not meet the demand for silver coins in exchange for token coins Discontented by Mohammad's rule people revolted While he was putting down a revolt in Sindh province he died of fever After the Tughlaq rule the Sayyed and the Lodi dynasties ruled from Delhi for a short period The last Lodi ruler Ibrahim was defeated in the battle of Panipat by Babur who laid the foundation of the Mughal rule Contributions of Delhi Sultans Administration Although the Hindus formed the majority under the sultanate the administration functioned on Islamic lines The army formed the backbone of the state The sultans were absolute Balban a notable sultan declared that he was God's representative and hence accountable to God alone The sultans however had to face frequent revolts of the local rulers and were always fearful of losing power Economy The burden of land tax heavily fell on the peasants Mohammad bin Tughlaq further increased the land revenue and got it collected mercilessly Consequently peasants revolted everywhere Weaving was a major occupation of the people The cities provided employment to a large number of workers on account of brisk building activities taking place there The Sultans were mainly importing horses Architecture and literature The main structures built by the sultans were the famous Qutub Minar tall Alai Darwaza an impressive entrance Quwwat-ul-Islam mosque and the fort of Siri All these are in Delhi During the sultanate period the Urdu language evolved Amir Khusrau and Amir Hasan were great Persian poets of the period Amir Khusrau was a great musician and evolved musical instruments such as tabla sitar and others The poet Jayasi wrote Padmavat in Urdu which was a sufi poem Ramananda Kabirdas Raidas and Meerabai belonged to this period Chronology Arab invasion of Sindh Mohammad Ghazni's invasions Tarian Battles between Muhammad Ghori and Prthiviraj Chouhan Delhi Sultans Qutubuddin Aibak Raziya Sulthana Allauddin Khilji Mohammad bin Tughlaq Battle of Panipat and beginning of the Mughal rule THE MUGHAL EMPIRE Introduction Babur invaded India in and after overthrowing the Delhi Sultanate established the Mughal rule In this Lesson the reign of Akbar and Aurangzeb are described Their administration and contributions to culture are also explained At the end the causes for the decline of the empire are mentioned Competencies Appreciating Akbar’s liberal policies and achievements Understanding how Aurangzeb’s narrow-minded policies led to riots in the country and ultimately to the decline of the dynasty Appreciating how the Mughal emperors enriched the fields of literature and art Marking on the map historical places relating to the Mughal era There were three empires in the history of India One is Maurya Empire second is Gupta Empire and the third one is Mughal Empire The founder of the Mughal dynasty was Babur He was ruling a small region in Afghanistan called Kabul and was waiting for an opportunity to attack India which was rich and prosperous Babur belonged to the Mongol race The word 'Mughal' comes from 'Mongol' Rose was introduced to India by Babar Taking advantage of the growing weakness of the Delhi sultans Babur invaded Delhi and ended their reign But he could not stop at that because the Rajputs and the Afghans resisted him strongly The brave warrior that he was Babur with his powerful weapons forced the opposing armies to retreat Soon Babur conquered Delhi Agra and the surrounding areas and established his kingdom But he died soon His son Humayun ascended the throne Humayun Though Humayun managed to overpower his enemies in the beginning he had to face defeat at the hands of the Afghan chieftain Sher Shah Suri Having lost his kingdom he fled to Persia and stayed there for fifteen years When the Afghan rule in India weakened Humayun invaded India and conquered Delhi However he died within a short period thereafter Akbar Akbar Humayun’s son Akbar had always aspired to build a vast empire in India With this intention he tried to persuade the mighty Rajput kings to support him Some among them joined hands with him But Rana Pratap Simha of Mewad opposed Akbar tooth and nail He was a proud and brave warrior Later a fierce battle between the Rana and Akbar took place at Haldighat Rajasthan Though Rana Pratap Simha was defeated in the battle he did not bow down to Akbar Thereafter Akbar engaged himself actively in military compaigns for many years As a result he conquered Gujarat Bengal Kashmir Kabul and other areas and built a vast empire Akbar’s achievements Administration Akbar was an able administrator and a broad-minded ruler He possessed many of the qualities needed for a great king He was not a despotic ruler He realized that in order to preserve his vast empire it was necessary to win the trust of his Hindu subjects who formed the majority He appointed Hindus to high posts in his court He withdrew the personal tax called jiziya which was imposed by the earlier Muslim kings on Hindus and also the tax levied at pilgrimage centres Akbar’s land revenue policy was well received by the people It was framed by his revenue minister Raja Todarmal Religious policy Akbar was tolerant of other religions He constructed a prayer hall Ibadat Khana in his new capital Fatehpur Sikri where he discussed religious matters with leaders of various Islamic sects He invited Hindu Jaina Buddhist Parsi and Christian leaders to discuss their views on religious issues As a result of such discussions he evolved a new sect called the Din-e-Ilahi It incorporated some of the best principles of different religions However it could attract only a handful of followers Patronage to arts Akbar patronised literature and art Faizi Abul Fazl and Birbal were the distinguished poets in his court The immortal singer Tansen adorned his court Akbar’s contributions to architecture and painting are also remarkable Jahangir and Shah Jahan who succeeded Akbar to the throne continued his policies to a great extent Shah Jahan achieved fame by getting the famous Taj Mahal built at Agra the mammoth Red Fort at Delhi and other stately palaces Aurangzeb Shah Jahan’s son Aurangzeb is the last well-known Mughal emperor He ruled for a long period of fifty years During this period the empire expanded in all directions but at the end it declined rapidly Religious policy Aurangzeb was an orthodox Muslim He stayed away from drinking wine gambling entertainment and music He lived a simple life Aurangzeb Aurangzeb gave up the liberal policy of Akbar He reimposed the jiziya This led to many political rebilions The Sikh rebellion The Sikhs were provoked by Aurangzeb’s religious policiy The Sikh Guru Tegh Bahadur was publicly executed in Delhi His son Guru Govindasimha organised the Sikh community into a militant sect The members were designated as Singh lion They had to possess the five k’s at all times These were Kesh long hair Kanga comb Kirpan sword Kachcha a pair of knicker bockers and Kara steel bracelet This custom is prevalent among Sikhs even today Rebellions The Sikhs and the Rajputs strongly opposed Aurangzeb in north India Shivaji rose in revolt in the Deccan The revolts continued for a long time and as a result Aurangzeb lost enormous wealth a large part of his army and worst of all his prestige Many provinces of his empire became free The Deccan wars sapped Aurangzeb’s economic power as well as military strength Being exhausted he died in the Deccan With his death the Mughal Empire was greatly weakened The Cultural Contributions The Mughal Administration The Emperor possessed all civil and military powers His judgement was final in all matters The empire was divided into provinces subas districts sarkars and taluks paraganas The kotwal looked after law and order in the cities Revenue system Akbar’s minister Raja Todarmal framed the land revenue system Under the system the land revenue was fixed on the basis of the fertility of the soil Literature The Mughals patronized Persian literature in a special way There were famous historians like Abul Fazl Nizamuddin and Badauni in Akbar’s court Akbar-nama is an important literary work of Abul Fazl Darashukoh the Mughal prince was an extraordinary scholar He translated the Bhagavadgita Though Hindi literature did not receive royal patronage it flourished on account of the efforts of the Bhakti saints Ramacharitamanas the well-known work of Tulsidas is of this period Architecture Humayun’s tomb in Delhi was constructed during the early period of Akbar’s reign He built a new capital near Agra and named it Fatehpur Sikri The magnificent palaces mosques and pavilions of this place attract tourists from all over the world The entrance to the Jami Masjid Bulund Darwaza here is the tallest in India It is tall Humayun’s tomb Delhi The Mughal architecture attained its glory during the reign of Shah Jahan Moti Mahal the palace that he built in Agra fort is extremely beautiful The Taj Mahal at Agra shows Mughal architecture at its best This wonderful monument was built in memory of his queen Mumtaz Mahal century There are tombs of Shah Jahan and Mumtaz in this mausoleum It was Shah Jahan who got the famous Red Fort built at Delhi Fort Agra Red fort Delhi Painting A new school of painting emerged during the period of the Mughals There were more than a hundred artists in Akbar’s court The art of painting reached its peak under the patronage of Jahangir Aurangzeb who was orthodox in outlook did not encourage painting Tansen Music Music received special patronage during Akbar's reign The large number of musicians in his court were divided into seven groups Each day a particular group gave a music recital Tansen was the most remarkable musician of Akbar’s court Jahangir and Shah Jahan also extended patronage to music But Aurangzeb banned music However music lingered in the hearts of people The Decline of the Mughal Empire The empire began to decline towards the end of Aurangzeb’s reign The reasons for the decline are The chieftains became corrupt Intense fighting took place among the claimants to the throne The provincial governors took advantage of the situation and declared their independence Aurangzeb’s desire to convert India into an Islamic state met with opposition everywhere The prolonged warfare with the Sikhs the Rajputs and the Marathas fully exhausted the resources of the empire In the meanwhile Nadir Shah a Persian invader raided Delhi He looted the wealth amassed by the Mughals over a period of two centuries He carried away the world-famous Kohinoor diamond and the Peacock throne of Shah Jahan The treasury of the Mughals became empty Chronology Babur Akbar Aurangzeb New words jiziya the tax that the Muslim kings levied on every Hindu MARATHAS Introduction In this lesson the childhood of Shivaji his ideals the way he resisted Mughal and Vijayapur army establishment of Maratha kingdom and his administrative measures are explained Competencies To understand the life adventures and achievements of Shivaji To recognize on the map the historic places associated with Shivaji Marathas were the ones who revolted against the Mughals in the Deccan region when Mughals were at their height of power in North India Shivaji was the founder of Maratha dynasty Shivaji Shivaji Shivaji was born in Shivaneri Durga near Pune His father was Shahaji Bhonsle He held a high post in the office of the Sultan of Vijayapur Shivaji was brought up under the care of his mother Jijabai His tutor Dadaji Kondadeva and Tanaji Malasure taught him the lessons of warfare In the beginning Shivaji assembled the Maratha leaders and Mavalas the trible people of Western Ghats and built a strong brigade Footsteps of Shivaji At the age of Shivaji captured Torana Durga which was under the control of Adilshah of Vijayapura After this he won Rayagadha Simhagada and Pratapagada one by one Enraged by this the Sultan of Vijayapura sent his general Afzal Khan to supress Shivaji Afzal Khan wanted to kill Shivaji decietfully so he invited Shivaji under the pretext of reconciliation Expecting this Shivaji killed Afzal Khan with ‘Vyaghra Nakha’ Tiger’s claw a weapon that he had hid with him On learning these advancements of Shivaji Aurangazeb sent his general of Deccan province Shahista Khan to curb him down But clever Shivaji was able to defeat Shahista Khan Shahista Khan had stayed at the Palace of Pune to attack Shivaji He could not get hold of Shivaji even waiting for two long years One night Shivaji in disguise along with his soldiers entered the living qarters of Shahista Khan and attacked him Khan some how escaped the attack but lost his thumb In panic Shahista Khan fled away from Pune This maddened Aurarangazeb so he sent a huge army under the leadership of Raja Jayasimha Jayashimha defeated Shivaji and captured few Maratha forts At the end Jayasimha invited Shivaji to Delhi to come to have treaty with Aurangazeb Aurangazeb arrested Shivaji on his arrival to Delhi and kept him in the prison of Agra But Shivaji played a trick and escaped from jail and reached his capital After that he won all the forts that he had lost to the Mughals He attacked Surat and ransacked heavy wealth from there Fort of Shivaji Rayagada Coronation of Shivaji In Rayagada Shivaji was conferred with the title Chatrapati and was crowned king of Marathas in a lavish ceremony Soon after coronation Shivaji won Jinji Velluru and large area of Mysuru province and received a heavy tribute But Shivaji could not live long to witness the grandeur of the Marathas Administration of Shivaji There were eight ministers called Ashta Pradhanas to assist him in administrative matters The prime minister was called as Peshva After the death of Shivaji a political crisis arose but it was succesfuly solved by the Peshwas and smoothened the administration From here onwards the administration of Martha Provinces was done by the Peshvas Balaji Vishwanath Bajirao I and Balaji Bajirao are the important peshvas who ruled Maratha kingdom New words Guerilla warfare a surprise attack of hit and run tactic by a group of soldiers Chatrapati Emperor ADVENT OF THE EUROPEANS TO INDIA Introduction On May Vasco-da-Gama reached Calicut in thus discovering a new sea route to India This enabled the Europeans to come to India This sea route helped the Portuguese Dutch French and British to arrive in India for trade Competencies Understand early activities of the Europeans in India Understand the conflict that emerged between Europeans and Indians Get acquainted with the European companies that came to India Understand the reasons that enabled the British to settledown in India To locate European trade settlements on the map of India The Portuguese On May Vasco da Gama reached Calicut in Kerala thereby discovering a new sea route to India Through this sea route the Portuguese were the first among Europeans to reach India They gained trade monopoly with eastern countries Building colonial empire propagation of Christianity were there main aims Causes for Portuguese Rise Zamorin the King of Calicut granted trade permission to voyager Vasco da Gama In Albuquerque was appointed as Governor Viceroy of India In he captured Goa from Sultan of Vijayapura Vijayapur Until Portuguese left India Goa remained as the capital of the Portuguese Successive Governors after Albuquerque established colonies at Diu Daman Salsetle Bassein Chawl Bombay mumbai Santhome and Hugli in Bengal and other places Causes for the decline of the Portuguese Possession of strong navy by the Dutch and the English posed as a formidable challenge to the Portuguese Portuguese Government officials became highly corrupt loosing their loyalty Later reduced their government a pathetic condition Religious fanaticism was the reason for their decline They attempted to convert the locals forcefully With the decline of Vijayanagar Empire their trade declined Francisco-de- Almeida was the first Portuguese Viceroy Governor in India They were the first among the Europeans to enter India and the Portuguese happened to be the last among the Europeans to leave India Goa Diu and Daman alone remained as Portuguese possession Even though British rule ended in yet Portuguese did not leave our land For liberation of Goa the native Indians resorted to non-violent protest But the protesters were subjected to inhuman treatment Ultimately in the Indian Navy chased away the Portuguese and liberated Goa The Dutch After the Portuguese Dutch from the Netherlands arrived in India In Dutch East India Company was established This company obtained monopoly to trade with countries in the East It also came equipped with the manadate to wage battles or enter peace treaties with the local rulers Pulicat became the capital of the Dutch Dutch Trading Centres Agra Machalipatnam Surat Karaikal Nagapatnam Cochin and such other places were Dutch trading centres in India Decline of the Dutch Dutch clashed with the English But the English defeated the Dutch Unable to face the English competition the Dutch turned their attention towards the islands of Sourth East Asia Islands of South East Asia Indonesia Malaya Thailand Philippines Cambodia The English In the beginning English followed Peaceful Trade as their policy But they took advantage of the deteriorated political situation of India to establish their political supremacy The Merchants of England who aspired to have trade with the East Countries founded The East India Company in They established trade links with India with the permission of Queen Elizabeth In the beginning East India Company ships were anchored at Surat ports Sir Thamus Roe visited the court of the mughal emperor Jahangir in and obtained permission to trade in Surat Later trade centers were established at Agra Ahamadabad and Broch After this they established trade centres at Culcutta Madras and Bombay Culcutta was their first capital Gradually the profit of the East India Company increased notably They obtained permission Dastakath to trade without any tax in the Bengal Province the present Bengal Bihar and Odisha and in Agra from the Mughal Emperor Farroq Siyara These measures enabled the British to gain more strength The licenses issued to the British traders to conduct tax free trade were known as Dastak In order to improve their strength the British built forts around their residential areas and trade centres They employed soldiers to portect their establishments and also stocked arms and ammunitions In a very short time the English had a strong army French C E French were the last among Europeans to reach India for trade They established French East India Company in In India the French opened their first ware house at Surat in C E Within a short time they established their trade centers in different parts of India French Trade Centres They opened their trade centers at Pondichery Maslipatnam Calicut Maha Karaikal and Chandranagar Pondicherry was the capital of the French Dupleix the governor of the French increased the influence of French in Hyderabad and Carnatic regions East of Tamil Nadu with his clever diplomacy Many battles took place between the French and British and they are called as Carnatic Wars Causes for the French decline French army commanders in India were not given complete support by the Government of France Political confusion and revolutions took place in France This led to their decline in India French Navy was not superior to the English Navy Chronology British East India Company Dutch East India Company French East India Company RISE OF BRITISH POLITICAL SUPREMACY IN INDIA Introduction The capacity of the British and French soldiers and political ambitions along with the internal rivalries among the local rulers led to many battles The British waged many battles in India By employing deceit and cleverness the British could establish their power in Carnatic and Bengal by Competencies To understand the factors responsible for the rise of British Political supremacy in India To learn about the results of Plassey and Buxar battle To know about the causes and results of Carnatic wars To understand the meaning and clauses of Subsidiary alliance To understand the policy of the Doctrine of Lapse Battle of Plassy Siraj-ud-Daula Bengal was the prosperous province of the Mughal Empire Its provincial governer Aliwardhi Khan became independent when the Mughal empire started to decline After him Siraj-ud Daula became the Nawab of Bengal As Nawab Siraj-ud-Daula was still in his youth the British neglected him and strengthened their Fort William without his permission They also misused the trade exemptions given to them Causes for the Battle of Plassy Siraj-ud-Daula felt that the English were disobeying his orders and supporting his enemies Irked by this he captured English warehouses This became the reason for the battle of plassy On hearing the news of Nawab Siraj-ud-Daula's attack the officials of Madras Company sent an army under the commandership of Robert Clive to Calcutta Clive who had the knowledge of Bengal’s situation entered into a secret pact with the Military Commander of Siraj Mir Jaffer by offering the post of Nawab The Commander of the Nawab army Mir Jaffer entered into a secret pact with the British in his desire to become the Nawab He was expected to give lakh rupees to the British when he became the Nawab This shady deal was brokered by a merchant Ameenchand Robert clive Mir Jaffer The British and Siraj-ud-Daula’s armies clashed at Plassey on Jue rd Mir Jaffer supported the British in the war Finally Siraj-ud-Daula was defeated in the war Due to the treachery of Mir Jafar the British won the war With this the British Colonialism was established Results In the history of modern India Plassy battle is one of the decisive battle Defeat of Siraj-ud-Daula enabled the English to play a major role in Bengal politics Because of the British favour Mir Jaffer became the Nawab of Bengal But he became a puppet in the hands of the British British East India company earned huge money and obtained control of Zamindari system in a district called Paragana Plassey battle later became the cause for battle of Buxar English who came as traders obtained the power to administer Victory in Plassey led to the establishment of the British Empire in India Battle of Buxar Mir Jaffer failed to fulfill the endless demands of the British So they dethroned Mir Jaffer and brought in his nephew Mir Qasim to power Causes Mir Qasim was independent in his out look After verifying the misuse of Dastakaths he made all trade in Bengal tax free This made the British to face the competition from the Indian Merchants So they dethroned Mir Qasim and brought back Mir Jaffer to the throne Undettered by this move Mir Qasim gained friendship of the Nawab of Avadh Shuja-ud-Daual and Sha Alam of the Mughal Kingdom With their help he declared war against the British in And this war is the Buxar war In this battle Hectar Muro of the British defeated the combined forces of Mir Qasim The Nawab of Avadh took refuge in Rohilakhand and Sha Alam took the side of the British Mir Qasim had to run away from the battle field The Results Mir Jaffer again became the Nawaba of Bengal Battle of Buxar stabilised the British East India Company This war led to the expansion of British influence from Bengal to Allahabad They obtained Diwani right collection of taxes from Mughal Emperor Shah Alam in Bengal province In after the death of Mir Jaffer Nizam-ud Daula became the Nawab of Bengal Carnatic wars Carnatic was one of the regions of Mughal Empire The Coromandal area the coastal region of the present Tamil Nadu and Andhrapradesh and its hinterland were called as Carnatic by the British The competition between the British and the French to have trade monopoly over the South India led to the Caranatic wars Three major battles took place in Carnatic Hence these wars are called as Carnatic wars First Carnatic war Reasons The competition and jealousy between the British and the French over trade and the political ambitions The war between the British and the French in Europe over the issue of succession in Austria in Europe led to wars in India too Arcot was the capital of Carnatic Province After the victory over South Eastern Cost the English were making attempts to capture Pondicherry from the French In retaliation Dupleix the French Governor captured Madras The English approached Nawab of Arcot Anwaruddin for help Nawab sent his army to recapture Madras But the Nawab's Army met with a defeat Mean while in Europe the war between the English and the French ended and a peace treaty was signed This treaty was applicable to the British and the French in India too French achieved upper land in the First Carnatic war This ended with the treaty of Yekes-la-Chaple Results English captured Madras French strengthened their position in Arcot This enhanced the prestige of Dupleix Prisoners of war on both the sides were released Second Carnatic war Causes In Arcot and Hyderabad the problem of succession arose This was the main cause for the war The competition for the power arose between Chandasahib and Anwaruddin in Arcot and between Nasir Jung and Musafar Jung in Hyderabad Through secret negotiation Dupleix created a confederation of chandasahib and Muzaffar Jung They defeated and killed Anwaruddin His son Mohammad Ali escaped to Tiruchanapalli Chandasahib in Arcot Muzaffer Jung in Hyderabad became Nawabs with the French support After sometime Muzaffer Jung was killed The French brought Salabat Jung in his place Manewhile the English were annoyed on account of this they captured Arcot and killed Chandasahib Mohammed Ali was made as Nawab of Arcot After this war Dupleix was recalled by the Government of France This war ended with Pondicherry treaty of Result The power and influence of the French was reduced in Arcot English procured the right to collect taxes and maintain army units By the end of second Carnatic war English at Arcot and French at Hyderabad safeguarded their might Third Carnatic War Causes In Europe war of seven years started between the British and the French in This resulted in war between the French and the British in India in the form of Third Carnatic War The forces of British under the command of Eyre Coote and the French forces under the command of Comte de Lally faced each other at Wandiwash near Pondichery The French lost the battle and surrenderd to the British Meanwhile the Seven Years War in Europe came to an end and the Paris Treaty was signed With this the Third Carnatic War also came to an end Results The political and military might of the French ended in India The British emerged as the most powerful force among all the Europeans in India Subsidiary Alliance Lord Wellesley English Governor General Lord Wellesley introduced Subsidiary Alliance in C E This is an important legislation that led the expansion of British Empire in India and control over the politics in India Lord Wellesley encouraged the Kings to avail military aid from the British to stay safe from their enemies In some cases the Kings were coerced to take the support Conditions Clauses Rulers who accepted this policy had to maintain English army contingent in their kingdom War expenses should be paid in monetary form to the British The King had to have a British resident in the court and the expenses borne by the ruler himself Results of Subsidiary Alliance Huge burden of military expenses made Indian status economically weak British took control of vast land States which came under this policy lost their Sovereignty The states that came under the treaty of subsidiary Alliance Hyderabad Mysuru Travencore Baroda Jaipur Jodhpur Bharathpur Nagpur Gwalior Oudh Tanjore Surat and others Policy of Doctrine of Lapse Lord Dalhousie British Governor General Lord Dalhousie introduced the polciy of Doctrine of Lapse declared that if any Indian ruler had an adopted son the son would have no right to ascend the throne The Princely state whose ruler died without male heir was annexed by the British This law was against the tradition of adoption that was in practice in India since ancient times Results On account of this treacherous policy Oudh Satara Nagpur and Jhansi directly came under the British By the time Lord Dolhousie returned to England of India was under the rule of the British Chronology C E Battle of Plassey Battle of Buxar Carnatic wars to Subsidiary Alliance Doctrine of Lapse IMPACT OF THE BRITISH RULE Introduction British East India Company during to was just a trading Company British came in with trading interest and gradually developed political interest In the beginning they appealed to various political powers to safeguard their aspirations and increased their trade They gradually replaced appealing with policy of Conquest and hence became politically strong After having conquered India they tried to take it under their possession by forming strategies to achieve their distant dreams They made use of administrative reforms as an instrument Various legislations were passed in the field of politics economic system and social order and termed it as the reforms meant for the betterment of Indians But behind all these their self interest was of paramount importance Initially Indians belived accordingly It is only incidental that their enactment of legislations had any positive impact on the Indians as their aim main was safe guarding their own interests first In this chapter analysis of the reforms related to four fields has been made Revenue English Education Economic impact and Constitutional development Competencies Indetifying the merits and demerits of the implementation of Permanent Zamindari system Mahalwari system and Roytwari system Collecting information about the English Education System that was introduced in India Enlisting economic influecnes To understand Constitutional development Land Revenue Policy The British implemented reformation in land tax system to ensure the flow of regular income to the East India Company’s treasury Apart form this the British needed huge amount of money to fund their war expenses and salary expenses of their staff Particularly the British officers were drawing huge salaries Hence the East India Company started collecting higher land tax from the farmers The Governor General Warren Hastings introduced bidding system to authorize tax collecting works during his period Though the Zamindars were competing to bid for higher rates they used to fail to collect tax accordingly This resulted in variations in the tax remittance In order to ensure steady tax collection the British enacted other tax collection systems Permanent Land Revenue System The Governor General Cornwallis decided to fix the land tax on a permanent basis in Bengal Bihar and Odissa The agreement he entered with the zamindars for tax collection is called Permanent Land Revenue System Under this system the Zamindars worked as government agents With this the company now had access to a permanent income from the agriculture sector It also brought down the expenses on the revenue collection Often stronger Zamindars paid the fixed taxes to the company irrespective of the agricultural production The British created classes like this which could work for them and support them often The Impact on the Peasants The Zamindars exploited the farmers by collecting exess land tax They never gave attention to improve the agricultural output The tenant farmers were forced to pay their share even though crops had failed As a result the agricultural out put collapased Apart from this the company made farmers further poor by forcing them to grow commercial crops that were need for their factories All this resulted in growth of bonded labour Roytwari System The system where the farmers could directly remit the land tax to treasury without any intermediaries is Roytwari System The direct relationship between the government and the farmer is the important feature of Roytwari system This system was brought into effect in the South and West India In its impact it was not much different from the Permanent Zamindari System Under this method the measurement fertility and irrigation facility of the land was taken into consideration and land tax was fixed Half of the out put was fixed as the land tax The volume of tax fixed periodically Even though the farmer lost his crop due to floods or drought the tax payment was manadatory This system was brought into effect by Sir Thomas Munroe in Madras region in Mahalwari System Mahal means village or estate The land tax was fixed for the entire Mahal The local Zamindar was responsible for the tax collection of all the farmers in that Mahal This system was implemented in Uttar Pradesh and parts of Madhyapradesh and Punjab in Total impact of the land revenue system British Converted land into a marketable commodity Instances of land auction and sales increased As land tax was to be paid in cash form the money gained prominence To increase the income Zamindars insisted on cultivating crops like cotton jute peanut tobacco sugar cane and other commercial crops instead of food crops It was profitable for the British as the commercial crops could get exported But this resulted in food shortage Within the Zamindari system new classes of farmers arised English Education Education is an instrument that ensures individual freedom With the help of knowledge that gained through education would lead to better life The universalization of English education profited the Indians All classes of the society could have access to Education Under the Charter Act one lakh rupees was kept aside for the education of Indians But the government had not spent anything from it till The Indian thinkers and the Christain missionaries launched in favour of modern education to Indians At the same time the Company also had different idea It needed English educated Indians to work at the lower cadre of its offices for less salary So it aimed at creating an educated class that was dedicated to it Lord Macaulay and Charles Wood implemented the new education system with this aim Charles Wood Lord Macaulay Dispute over Medium of Instruction Many of the English academecians argued that the Indians should be educated in their mother tongue Some others argued that the modern Science and literature should be given through English medium In the Governor General William Bentinck finally announced the education policy which opted for instruction of Western Science and English Medium of instruction Some of the western academicians had introduced the Indian Cultural Wealth to the Western world Sir William Jones who was in India as the Judge of Supreme Court had founded Asiatic Society of Bengal in He propogated the greatness of Sanskrit language to the world Sir Charles Wilks translated Bagvadhgeetha into English in Max Muller translated Rigveda and other writings Bentinck’s declaration was based on the minute prepared by Macaulay who was the member of the executive body Macaulay was a hardcore pro English thinker He argued that Indian knowledge is of low level He also made fun of the Sanskrit grammar He wanted to take away the Indians from their roots He had declared all the books written in the Sanskrit language is less valuable than what may be found in the most paltry abridgement used at preparatory schools in England These words clearly demonstrate his prejudice The British formulated New Education System in This was based on the report by Charles Wood In a very short period universities were established at Bombay Culcutta and Madras The establishment of primary schools high schools and colleges were done stage by stage Education departments were formed in regions to monitor and supervise education English became the official administrative language by Bombay university of Bombay Madras University Impact of western Education The traditional system slowly declined The new education system enabled Indians from different languages to interact among themselves This gave impetus to the growth of national feelings The European intellectual thoughts affected the Indian thinkings in a long term prespective It also influenced the Indian literature and resulted in various literary movements Many sections of the society received social awakening Economic Impact The industrial revolution that took place in Europe during and century impacted seriously on the trade and commerce of India The East India Company was only a trade company till After this it used the political power to establish monopoly over the Indian production and trade completely As a result the weavers had to purchase raw materials at higher rates The British Commerce Policy was aimed at facilitating the growth of industries of England only They wanted India to be a net importer of factory made goods of England and a net exporter of raw material to England By introducing free trade it forced the Indian cottage industries towards extinction Dadabhai Navroji As the wealth of India flowed towards England India became a poor country According to Dadabhai Navoroji Wealth Drain resulted in poverty The British citizens invested money in India and made profit out of it This was again the main reason for this As a result of drain in the wealth there was shortage of investment in India too This hampered the progress of Indian industries Adam Smith the father of Economics has described the British in India as Plunderers Constitutional Development Warren Hastings Regulating Act The Constitutional Reforms in India started during the British rule The Regulating Act of is an important milestone in the history of Constitution The Governor General Warren Hastings implemented this act in This act became the base of British Administration in India This also gave a constitution to the East India Company Pitt’s India Act The Government of England was not happy with administrative system of India It decided to concentrate on this issue Hence the Prime Minister William Pitt brought in an Act It included the East India Company as a part of the government and a considered it as a unit Many acts followed this act in subsequent years Morley Minto Reforms Lord Minto was the Viceroy of India During this period Lord Morley was also the Secretary of the State Due to authoritative rule of Lord Curzon and violent protests from Indian Revolutionaries the Minto-Morley reforms were introduced According to this act eligible Indians could be made part of the government programmes The number at central legislative assembly increased Similarly the regional assemblies were also expanded The Morley-Minto reforms did not bring in any drastic changes in the constitutional process of India It did not give any responsibility to representatives Montagu Chelmsford Reforms Morley-Minto reforms did not satisfy the Indians The Secretary of State Montagu declared that the British government wants to provide more representations to Indians in administration Lord Minto who was the Viceroy of India during that time brought these acts into effect The total members at The India Council of Secretary of State was increased and the tenure of membership was fixed at five years An Indian High Commissioner was posted in London Act Morley Minto reforms did not satisfy the Indians To pacify the Indians the Government of India Act was implemented According to it a federal of India was formed with federation of states and princely states Diarchy was introduced at Central Government Responsible governments were established at the regions This act is considered as a major milestone in Indian history SOCIAL AND RELIGIOUS REFORMS Introduction The implementation of Western Education System created a wave of awakening among Indians It also unraveled the weaknesses of Indian society and its approaching decay This made Indians realize the drawbacks of their society and also motivated them to seek solutions to it This lesson introduces the efforts of Indian religious leaders of century who attempted to reform Indian society by establishing various associations and socities Competencies Understanding the various aspects that led to new awakening in the Indian society and the efforts by various thinkers in this direction Remembering the contributions of social organizations and reformers in bringing social awareness Understanding the influences of social reformation movement Due to influence of Western Thoughts there was a new awakening in India The Western Culture Dress Behaviour Society Religious thoughts Beliefs and Social Ideals of the English influenced the Indians enormously The Cause and Effect theory Humanism and Rationality of the west influenced the Indians much These developments led to the emergence of Romanticism in India The quest for Equality is Romanticism Movement This is also called as Social and Religious Reform Movement This movement laid emphasis on empowerment of women and dalit sections of the society The British started enforcing colonialism through Englsih education by telling that it is for the betterment of Indians Our country has a rich tradition But all aspects of this vast tradition are not worth following There are many superstitions which need weeding out Raja Rammohan Roy Brahmasamaja- C E Raja Rammohan Roy Rajarammohan Roy was the first man to create social awareness in modern time Rabindranath Tagore has called him the Father of Modernism In order to inject strength to passive India Raja Rammohan Roy started Athmiya Sabha Later in he started Brahma Sabha In the next year it was named as Brahma Samaj Raja Rammohan Roy is a representative of the communion of the western and eastern thoughts The Brahma Samaj opposed child marriage Sati System Caste System Idol Worship Polygamy and many other superstitions vehemently Raja Rammohan Roy and his associates petitioned the British Government to eradicate Sati System Bad conditions of widows As a result Willaim Benticks abolished Sati System in Raja Rammohan Roy had believed that through western education such social evils could be eradicated He was in favour of Widow Remarriage and worshiping One Supreme God He published Samvada Koumudi magazine and continued his reformist movement He attempted to cleanise the Hindu Society through rationality Raj Rammohan Roy was the first to support English Education in India He ran an English School by spending from his pocket He also started a Vedanta College He is one of pioneer of journalism in India He published many periodicals He spent his entire life fighting against the social evils His works were later continued by Devendranatha Tagore and Keshava Chandra Sen Let us know- Mughal Badshah gave the title Raja to Rammohan Roy in Athmarama Panduranga Prarthana Samaja G Ranade Prarthana Samaja was established by Athmaram Panduranga It is a major reformation society to start in Bombay after Brahma Samaj Balwagle N G Chandrawkar and G Ranade were its important leaders They concentrated on issues of widow remarriage intercaste marriage and improving the status of women and development of exploited classes They established homes for orphans and destitutes They also opened schools for widow emancipation Mahatma Jyothiba Pule Sathyashodhaka Samaja Mahatma Jyothiba Pule Non Brahmin Movement was started in Maharastra by Mahatma Jyothiba Pule He established Satyshodak Samaj to create awareness among downtrodden classes of Maharastra He opened schools for orphans destitute and widows He published a book titled Gulamgiri Slavery in order to criticize the Bhraminical supremacy and initiate a dialogue on it He opened a school for girls with his wife Savithribai Pule By opening a rehabilitation home for Child widows he tried to prevent infanticide cases He also encouraged widow remarriage Dr B R Ambedkar had considered him as his philosophical guide Young Bengali Movement The work of Raja Rammahon Roy for the reformation of Indian society motivated many youth of Bengal This initiated the Tarun Bengal Movement An Anglo-Indian youth named Henry Vivian led this movement He gave a call to the youth to have individuality and rationality Then Indian society did not respond much to this call Swamy Dayananda Saraswathi Arya Samaja Swamy Dayananda Saraswathi Swami Dayananda Saraswathi established Arya Samaj His first name was Moolashankara He aimed at establishing an ideal society inspired by the society during Vedic period In this background Dayananda Sarswathi gave call Go back to Vedas He criticized idol worship untouchability and Child Marriage He also encouraged intercaste marriages and widow remarriages He advocated worship of One Supreme God Dayananada Saraswathi published his thoughts in Sathyartha Prakash Arya Samaj apart from working towards educating the Indians also motivated the freedom struggle Lala Hansraj a leader of Arya Samaj established Dayananada AngloVedic School in Lahore Nationalist leaders like Tilak Lala Lajapath Rai and others were deeply influenced by the philosophy and thinkings of Arya Samaj In order to bring back the converted people back into Hindu Dharma Shradananda a disciple of Dayananada started Shuddi Movement Dayananda Sarswathi opposed authority to Brahimins based on their birth He had declared that all including women have the right to learn Veda He advocated the worship of Cow He wanted to motivate Swadeshi awareness in Indians Swamy Vivekananda Arise awake stop not till you reach the goal was the message given to Indian youth by Vivekananda Narendranatha Datha was his first name He was born in Calcutta in January He was the disciple of Ramakrishna Paramahamsa He later took Sanyasa After the death of Ramakrishna Paramahamsa he had the responsibility of guiding his disciples His talk at First World Religious Convention Chicago in brought him fame and recognition He appreciated many of the achievements of the west and equality of women Vivekananda traversed across India on foot and was deeply moved by the plight of Indians As long as people of India are in clutches of poverty and hunger I will take birth again and again in India to eradicate them he declared Ramakrishna Paramahamsa Swamy Vivekananda Pandith Keshavachandra Vidyasagar started a Sanskrit college for non Brahmins in Widow re-marriage was held at Calcutta under the leadership of Vidyasagara He established Ramakrishna Mission to continue the service to humanity He had a lot concern for women and said Welfare of Women is the welfare of our Country He gave a call for the service to the poor He dreamed of Indian upliftment Balagangadhar Tilak has called Swami Vivekananda as the father of Indian Nationalism Many people including Subhas Chandra Bose were influenced by his writings Before going to Chicago Swami Vivekananda had visited Mysuru princely state Chamaraja Wodeyerinvited him to his palace and lent financial support for his visit to Chicago Mysuru Wodeyer opened three separate schools for Dalits on Swami Vivekanandas advise Activity Collect Information about Swami Vivekananda’s talk at World Religion Conference at Chicago Madam H P Blavatsky and Colonel H S OLCOTT Theosophical Society C E H P Blavatsky Dr Annie Besant Theosophical Society was established by H P Blavatsky and Colonel H S Olcott in Newyork in The international centre of the society was started at Adyar near Madras Later Dr Annie Besant became its president H P Blavatsky was a good writer and has expressed her ideas on Humanism Human Brotherhood Philosophy comparative religion and Truth of Nature eloquently Dr Annie Besant was influenced by the Indian culture and translated Bagavadhgeetha to English She published New India newpaper She led the Theosophical Movement strongly in India Objectives of theosophical society To inculcate universal brotherhood by eliminating discrimination To Study Dharma philosophy and science through comparative approach To investigate the hidden aspects of nature and hidden power in human beings Anni Besant started Central Hindu College in Banaras Later it became Banaras Hindu University She established an organization torch bearers to eradicate Child Marriage and Superstitions She later started Home Rule Movement too She was the first women president of Indian National Congress Sir Syed Ahmed Khan Alighar Movement Most of Muslims were suspicious of the Western Education and also believed that it is against the interest of their religion In Nawab Abdul Lateef had started Mohammedan Literary Society He tried to expand English education among muslims through it And also tried bring in harmony among Hindus and Muslims Sir Syed Ahmed Khan provided this attempt a movement Sir Syed Ahmed Khan structure He was born in Delhi in and was a judiciary officer in the East India Company He wanted mulsim youth to have proper employment in the company government by getting good education He always believed that the muslim community is missing an opportunity by missing English education As a social reformer he opposed Purdha System Polygamy and divorce systems In order to translate English literature into Urdu he established Translation Society Later it became Scientific Society In order to promote rationality among Muslims he began publishing a newspaper Aligrah Institute Gezzette It was published in English and Urdu languages He started Muhammedan Anglo Oriental College in It became Aligarh Muslim University in Sri Narayanaguru Sri Narayanaguru His influence is considerable in Karnataka Sri Narayana Guru is an important saint and a social reformer He was born in a Ezhava family in Trivancore in He established Sri Narayana Dharma Paripalana Yogam in Through this institution he tried for the social economical cultural educational development of communities like Ezhava and other downtrodden communities He opposed caste system and animal sacrifice He opened Sanskrit colleges and provided Sanskrit education irrespective of caste He built around thirty temples in Kerala which were open to all including untouchables He established a good library in all the temples He declared One God One Religion Activity Collect more information about Narayanaguru and Periyar who started Self Respect Movement s WOMAN SOCIAL REFORMERS Madam H P Blavatsky Annie Besant Savithribai Pule Tharabai Shinde Pandith Ramabai are the main Indian social women reformers Savithri Bai Pule Savithri Bai pule Savithri Bhai Pule was the most social and education reformer and a poetess She started a school for Girls at Pune along with her husband Jyothiba Pule and also worked as a teacher in that school She tried to stop infanticide by opening a rehabilitation centre for child widows She fought against the gender discrimination and caste system For this she had to face resistance from the society She shouldered the responsibility of social struggle waged by her husband Jyothibha Pule She led Sathya Shodak Samaj after the death of her husband Jyothiba Pule While treating the patients of plague along with her son she died of it Tharabai Shinde Tharabai Shinde Tharabai Shinde is the first women fighter of Maharastra She was the member of Sathyashodak Samaj of Jyothiba Pule and participated actively in the social struggles of the samaj She supported protection child widows and widow remarriages She has opposed the exploitation of women in her book Stri Purusha Tulana Pandith Ramabai Pandith Ramabai Pandith Ramabai was the famous Christain Reformer of India She was born in Gangamoola of Western Ghats as the daughter of Ananthashastri Dongri and Lakshmibai She received education which was against the practice She accepted Christianity while studying in England She dedicated her life for the betterment of women of India and established Mukti Mission in This institution is active till today and provides rehabilitation to widows orphans and alcoholic addicts FREEDOM STRUGGLE Introduction Indians fought many battles for their freedom This is an important milestone in the history of modern India Portuguese Dutch French and British colonialists established their trade centres in India They exploited Indians continuously Indians raised their voice against the aggressive policy injustice economic exploitation of the colonialists They determined to drive away the British from India Thus they set themselves for the fight Different phases of the freedom struggle are explained here Competencies To know about the early protests of Indians against the British To understand the reasons that caused India’s first war of Independence To commemorate the struggle of the important leaders in India’s first war of Independence To understand important reasons that lead to the development of Nationalism during the century To understand ideological stances and policies of moderates radicals and revolutionaries To feel the pride in the principles of Non-Violence and Satyagraha which Gandhiji implemented against the British To appreciate leadership qualities courage truthfulness simplicity humanity and humbleness of Gandhiji Early Protests against the British Indians protested against the British dominance As Mir Jaffer failed to fulfill the demands of the British he was dismissed from the power His nephew Mir Qasim was also cheated by the British Anglo-Mysuru wars took place between The Anglo-Maratha war took place between and The British attacked Sikh Afghan Nepal and Burmese and established supremacy over the sub continent Such struggles happened in Karntaka also In Dondiwagh revolted against the British But Aurther Wellsly arrested Wagh with the help of Marthas and Nizam and killed him In a Zamindar named Veerappa of Koppala revolted against the Nizam and was suppressed by the British Diwakara Deekshit and Balajai Deshpande of Sindagi in Raichur revolted against the British and collected the land taxes on their own and they were arrested and imprisoned by the British From to Rani Chennamma of Kittur of Belagavi district waged war with the British and died a warrior’s death Her committed follower Sangolli Rayanna also did the same thing Revolts happened in Badami Bidanoor town and Kodagu The British could easily contain these revolts and strengthened their power All these revolts were armed revolts Many such incidents were happened before the First War of Independence First War of Indian Independence The year is an important milestone in the history of modern India While the British considered this historical event as a mere Sepoy Mutiny Indian nationalists proclaimed it as the first war of Indian independence It was a great war against the British imperialism Soldiers and citizens remove the British imperialism completely from India Reasons The economic system of India had been weakened by the long-term rule of the British People were in utter distress Farmers were crushed under the burden of heavy taxes Cottage industries got destroyed gradually various occupations which were dependent since generations lost strength and people became resourceless Thus they set themselves to fight against the British The factors that inspired the people to fight can be divided into political economical social religious administrative and military reasons Political reasons Many kings and Nawabs were brought under the terms of Lord Wellesley’s Subsidiary Alliance and Lord Dalhousies Doctrine of Lapse policies and were dethroned Satara Jaipur Sambalpur Udaipur Jhansi Aawad are the states were victimised under the policy of Doctorine of Lapse In addition pension of some kings was withheld The titles of kings were revoked Naturally these things disturbed the feelings of rulers as well as common people of India Administrative reasons A new administrative system was created where the British officers occupied all the major civil and military posts The role of mediators brokers was too much in the administration The rule of the law resulted in the collapse of social hierarchy The people did not like English which became the language of administration in the place of Persian Economic reasons Bahadhur Shah British utilized their political power to loot the economic wealth of India for their profit Business interest of the British destroyed cottage and other local industries of India Land revenue policy was exploitative The status and source of income of Talukadars and Zamindars were snatched away There was a huge outward movement of wealth Commercialization of agriculture made the farmers feeble Terrible draughts of those days took away the lives of millions of people These factors drove India into the pit of poverty Traditional Loom Social and Religious reasons Social and religious factors led to the explosion of revolt British criticised Indians as primitives who have no culture and civilization They used to call Indians as pig and black people Indians were not allowed in hotels and clubs that were under the supervision of the British At the entrance of these institutions there used to be boards declaring Entry of dogs and Indians prohibited The attempts by the British to abolish Sati system and child marriage and support of widow remarriage made the Indians feel that are unnecessarily interfering in their social life The arrival of railways irked the high caste Indians The issue of all traveling in one bogie enraged the upper caste Indians Military reasons The Indian soldiers in the British army were unhappy They were not allowed to wear their traditional and religious symbols and headgears They were paid a meagre salary and had no promotion options But the wages were high for the British officers and were provided good facilities The Indian soldiers were assigned to distant places without any additional pay As per the Lord Canning’s Common Civil Rules Act the Soldiers were expected to work in distant places as per the orders This created created resentment in the Indian soldiers Immediate reasons The time was getting ripe for the people to revolt A single spark was needed to raise huge flames Introduction of a new gun Enfield rifle in the year in the army became an immediate reason for the revolt Before loading the cartridges it was necessary to rip the paper cover with the teeth The rumour was spread all over like a wildfire that the paper covers were coated either with pig’s fat or cow’s fat This hurt the religious sentiments of Hindu and Muslims Soldiers who refused to use it were punished Momentum of the revolt MangalPande The revolt began on May in Meerut Afterwards it spread intensely throughout the provinces of North India Before the explosion of the revolt MangalPande an Indian soldier of Barakpur Bengal refusing to use the gun smeared with fat openly shot dead a British officer Later he was also killed Same time in Meerut Indian soldiers killed Europeans at sight These furious soldiers rushed to Delhi shouting Maro parangiko which meant kill Europeans In Delhi these enraged soldiers crowned old and weak Mughal King Bahadur Shah as the Emperor of India Parangi Parangi is a word of Persian origin It is used in Urdu and Hindi to despise the Europeans Within a short time the revolt spread wildly Important centres of revolution were Delhi Lucknow Bareilly Jhansi and Ara of Bihar Lakshmi Bai The revolts took place under the leadership of colonel Bhukth Khan in Delhi Nana Saheb and Tantya Tope in Kanpur Begam Hazrat Mahal in Lucknow Lakshmi Bai in Jhansi and Kunwar Singh in Bihar The British suppressed these revolts one by one These revolts were not restricted to North India only they even entered into South India In Karnataka Bhimrao of Mundaragi tribal Bedas of Halagali Venkatappa Nayaka IV of Surapura and Babasaheb of Naragund were the prominent ones to raise their voice Though the revolts had spread all over India they were suppressed in a very short duration by the British Activity Collect the information about the queen of Jhansi Lakxmibai’s war against the British Kunwar Sing Nana Saheb Consequences Though the struggle failed it created a long lasting effect As a consequence of these revolts the rule of East India Company ended and the Queen of Britain took over the reign of India In queen Victoria of Britain made a proclamation that there would be no more interference into the religious freedom of Indians The struggles of further lead to the rise of Modern National Movement It proved to be an eternal inspiration for the future wars of independence The Nature of the Great Revolt of British historians have considered the struggle of Indians as a mere Sepoy Mutiny But Indian national historians declared it as a great revolt of the people and called it The First War of Indian Independence Vinayak Damodar Savarkar was the first among those who called it the first war of Indian independence Even Pattabhi Sitaramaiah stated it as the first war of Indian independence It was a combined effort of almost all the communities of the nation The struggle of created a new political consciousness in the history of India As a result anti imperialistic movements took birth and developed in different forms Those who lost their lives in these fights became the house hold names One should remember the sacrifices of these great people The Freedom Movement Policies of exploitation implemented by the British in the second half of century paved way for the budding of nationalism Newly educated class who got English education understood the real motives of British administration Farmers tribals and other classes who were ill treated by the British were waiting for a stern uprising against the British Growth of Nationalism India is a land of diverse cultures It has a long cultural and historical heritage These laid an ideological foundation for the growth of nationalism in the second half of century Nationalism is the germination of the feeling we are one in the minds of the people of a distinct geographical area The lack of proper coordination among the Indians in s first war of independence resulted in a failure This enabled the conscious Indians to get organised Gradually it turned into a national movement Various factors inspired the growth of nationalism They are as follows Introduction of Western Education And Modern Science By reading thought provoking works of Europe Indians who were educated in English understood the national political tendencies The concepts like liberty equality and fraternity which took birth in Europe politically motivated them and instilled a desire of freedom in them The educated people disproved the British calculation Indians who have learnt English will stay in support Uniform Administrative System The British brought India under Uniform Administrative System As a result Indians who were confined to uniform rules felt that they were equal Likewise in one united voice all Indians opposed various acts and laws implemented by the British which were annoying people This led to the growth of nationalistic consciousness among the Indians Economic Exploitation Through their economic policies the British remained responsible for the decline of trade agriculture and industries in India They converted land into a commodity Dadabhai Navaroji exposed the way British were looting the wealth of India through his Drain of Wealth theory Realization of Heritage Foreign scholors like Sir William Jones H T Cole Brook Max Mulller Cunningham through their study enabled Indians to know about the historical cultural heritage of India There by it was confirmed to the Indians that the heritage of India was in no way inferior to that of Greek or Rome Thus the roots of nationalism in the form of knowledge entered into the deeper layers Social-Religious Movements Social reformers of the century such as Rajaram Mohan Roy Ishwarchandra Vidyasagar Swami Dayananda Saraswathi Swami Vivekananda and others advocated the importance of education to the deprived and exploited communities of India While Dayananda Saraswati sowed the idealogy of swarajya and swadeshi Vivekananda awoke the stagnant society This brought a new perspective for the growth of nationalism This made the learned people more creative Inspiration of the First War of Independence This event enabled the Indians to be politically better organised In addition fearless crusaders like Mangal Pandey Laxmibai Hazrat Mahal and others who became martyres of the war set themselves as everlasting inspirations for the next generation of leaders Racial Discrimination British believed that they were supreme and considered Indians the most uncivilized All the higher posts in administration were reserved only for the British This naturally created unanimity among the Indians who were exploited by these rules and policies alike All Indians in one voice opposed the cruel laws and doctrines which were inhumane Thus these factors led to the growth of national consciousness called unity Indian National Congress Indian national congress was the dream child of retired British civil servant Allen Octavian Hume It was established in the year in Mumbai Umesh Chandra Banerji was the first president of the congress There were members in the first convention of the congress Most of them were lawyers journalists and upper class people Infact it was the first political platform that boosted the national movement Objectives of the Indian National Congress To bring together and build a strong bonding between the political activists of different parts of the nation To establish national unity To formulate public opinion by placing the demands of the people before the government To generate nationalism in place of provincialism Age of Moderates The leaders who led Indian national congress in the beginning are called as moderates The period between and is often considered as the age of moderates They had faith in the constitution Being loyal to the British rule they followed the method of praying pleading and agitating Along with this they tried to persuade the British for social political and economic reformations The prominent moderate leaders were Dadabhai Naoroji Surendranath Banerji Gopalkrishna Gokhale Mahadev Govind Ranade and others Because of the struggle of these moderates Indians were able to enter legislative assembly It was due to their efforts the truth that the British were the main reason for the pathetic condition of India came to light At this stage by getting trained in political aptitude Indians created a national perspective for anti British protest Important Moderate Leaders Demands of the Moderates Freedom of speech and publication seperation of the judiciary from executive reduction in military expenses installation of primary secondary and technical education cancellation of ban on weapons act provision of banking irrigation medical and health facilities complete cancellation of tax on salt conducting of I C S examinations simultaneously in England and India creating representations for Indians in central and provincial legislative assembly appointing Indians to higher posts Age of Radicals Lala Lajapath Roy Lal Balgangadhar Tilak Bal Bipin Chandra Pal Pal The moderates were unable to reach the common people The methods of praying and pleading of the moderates were ridiculed by the radicals as the policy of mendicancy Youths could not get attracted towards them A new group emerged in the congress which questioned the wait and see policy of these moderates They were the radicals Lala Lajapath Roy Balgangadhar Tilak and Bipin Chandra Pal were the leaders of this group and were popularly known as Lal-Bal-Pal The period between and is considered as the age of radicals Reason that led to the growth of radicals Ignoring Indians for higher posts in administration Lord Curzans indulgence in communal politics by dividing Bengal in The defeat of Russia in the hands of a small nation Japan in created confidence that Asians could defeat Europeans Indians were inspired by the revolutionary movements which were active in Ireland Russia China Turkey Egypt and others Balagangadhar Tilak was a great patriot His intensity of desire for freedom could be sensed in his proclamation Swaraj is my birth right and I shall have it He brought people close and intact by intoducing Ganesh and Shivaji festivals He published newspapers like Maratha and Kesari and inspired the people politically Bipin Chandra Pal started the daily New India while Aurobindo started Vande Mataram Lala Lajapat Roy was popular as the Lion of Punjab He roared We get Swaraj as a right and not as alms Bipin Chandra Pal organised mass protest in Bengal Another important radical leader was Aurobindo Ghosh He adopted the radical methods like boycotting foreign goods using only swadeshi goods and opening national schools Partition of Bengal An important event that inspired the national struggle of the radicals was the partition of Bengal in The British were anxious as the wave of nationalism in Bengal was getting a strong impetus Hence in order to bring down the rigour of nationalism Lord Curzon attempted to divide Bengal by separating Hindu and Muslim on the basis of religious differences In opposition to this division October was observed as National Mourning Day throughout Bengal Rabindranath Tagore sang the song Amar Sonar Bangla as the national song Bankim Chandras Vande Mataram became the song of the patriots To signify the unity of Bengal Hindus and Muslims exchanged rakhis Unable to withstand the strong protest the British had to cancel the partition in Lord Curzon Bankim Chandra Chatarji Establishment of Muslim League The British always tried to keep the Muslims away from the national movement by using divide and rule policy Right from the day of establishment of Indian National Congress British were encouraging Muslims to establish a separate organisation to protect the interests of their community In a Muslim Committee met the then viceroy of India Lord Minto Inspired by the meeting Sir Aga khan Nawab Salimulla of Dhaka and others established the Indian Muslim League in Dhaka capital of present Bangladesh in Surat Crisis On the ground of controversy over Bengal partition the radicals held agitations on swadeshi and prohibition of foreign goods The moderates wanted to confine the protest only to Bengal Moreover they were not ready for the direct confrontation with the government This led to the outburst of differences between the moderates and the radicals giving way to political confusions in the congress In the congress session held at Surat congress was split into two between moderates and radicals After the split of the congress the government took severe punitive measures against the radicals Several of the radicals were sent to jail few were sent on exile Tilak was given black water punishment and was sent to Mandalay jail Burma To make the radicals politically inactive the British tried to win the favour of the moderates and Muslims by giving greater representation in the legislature To carry out this intention Morley-Minto reformations were implemented in In this act they created a separate election constituency for the Muslims Meanwhile First World War broke out This gave a new force to the national movement In Lokamanya Tilak and Annie Besant organised Home Rule movement Home Rule This movement was inspired by Irish Home Rule movement Its main objective was to bring self-government in India Tilak and Annie Besant started Home Rule movements separately in Tamil Nadu and Maharashtra in the year Rowlett Act In December a committee was formed under the guidance of justice Rowlett Its purpose was to suppress the revolutionary activities in India Ultimately the Rowlett Act was implemented in February According to this act on account of suspicion government could arrest any person without giving any reason Without prior notice the government could search any person or his house The arrested person couldn’t even appoint a lawyer Hence Indians opposed this act very strongly Jallianwala Bagh Massacre No sooner did Gandhiji start Satyagraha against the Rowlett act agitations began in various parts of Punjab On April a meeting was called in Jallianwalah Bagh garden a little distance away from Golden Temple in Amritsar The intention was to demonstrate against the arrest of their leaders Dr Saifuddin Kichloo and Dr Satyapal in the meeting The security officer of Amritsar General Dyer in order to teach a lesson to the protesting people ordered to open fire at the unarmed innocent people after closing the only exit of the park Taken by surprise the crowd fell in panic As per the government report only people had been killed In reality the deaths were higher than what the report told Jallianwala Bagh Massacre Scene Revolutionary Nationalism Some of the radicals set themselves for armed revolution They were called as Revolutionary Nationalists Their aim was to fetch at the earliest complete freedom for India Intense patriotism and a tendency to sacrifice was the base concept of revolutionary nationalism Vasudev Balavant Phadke was the first among the revolutionaries who formed secret organization Damodar and Balakrishna Chapekar brothers were the intimate associates of this secret organization Both of them were arrested and hanged till death The other noteworthy revolutionaries of the nation were Vinayak Damodar Savarkar Khudiram Bose Chandrashekhar Azad and Bhagat Singh Khudiram was the first martyr to be hanged in the history of Indian freedom struggle At that time his age was just years Khudiram Bose Vinayak Damodar Savarkar Chandrashekhar Azad Bhagat Singh Vinayak Damodar Savarkar was another revolutionary In he set up the first secret organization Mitramela The British government sentenced him for life imprisonment and sent him to Andaman jail After independence Indian government erected his statue in Andaman jail where he endured brutal physical tortures Chandrashekhar Azad joined Hindustan Socialist Republican Association and was an associate in some cases like the Kakori conspiracy bombing the legislative assembly hall and firing at British officer Sanderson in Lahore In order to escape the British soldiers Azad fought all alone with a small pistol On finding the last bullet in his pistol he shot himself to keep his vow of not getting arrested by the British till death Many martyres such as Bhagat Singh Rajguru Sukhdev Bhagavati Charan and Gayaprasad sacrified themselves to release India from the clutches of British Bhagat singh joined the Hindustan Socialist Republican Association and became its principal secretary In Bhagat Singh Rajguru and Sukhdev bombed central legislative assembly Delhi These three were caught trialled and hanged in Lahore Central Jail Bhagat Singh was the first Indian to give the call Inquilab Zindabad long live the revolution Important dates Establishment of Indian National Congress Age of Moderates Age of Radicals Partition of Bengal Establishment of Muslim League Surat Crisis Jallianwallah Bagh Massacre Activities Read the biography of Dadabhai Navroji and Balagangadhar Tilak Collect pictures and information of the revolutionaries and prepare an album Read the biographies of the following revolutionaries write an article and display it on the bulletin board of your school Vasudev Balavanth Phadke Khudiram Bose Chandrashekhar Azad Bhagat Singh Madam Kama The Gandhian Age We remember Mahatma Gandhiji with love as Bapu He was the great leader in Indias National struggle He dedicated himself to eradicate untouchability and achieve harmony of Hindu Muslims This period of political struggle under his leadership was called Gandhian Age Mahatma Gandhi Non violence and Sathygraha were the weapons of Gandhiji’s struggle He converted the freedom struggle into a Mass Movement Simplicity Truthfulness and Pious Behaviour were his main success traits Beginning life Gandhiji was born on nd October at Porabandar in Gujarat state His father was Karama Chanda Gandhi mother was Puthalibai The prominent books which influenced Gandhi’s life Bhagavadgita John Ruskin’s Unto this Last Leo Tolstoy’s The Kingdom of God is within you and Satya Harischandra's Drama Gandhiji in South Africa Gandhi had his primary education in Porabandar He went to England for higher education He got law degree in Britain In he returned to India and involved in his lawyer profession in Rajkot and Mumbai Later on as per the invitation of Dada Abdullah Company he went to South Africa as legal adviser While in South Africa Gandhiji was shocked to see Indians as they were living in lower level White government racial policy was condemned by him Through the routes of sathygraha and non-violence he succeeded in changing government’s racial prejudice The theory of sathygraha has been joined by two Sanskrit words Satya means real fact Agraha means compulsion This means stand firmly by the side of truth Activity Collect more information about sathygraha and non-violent movements which were done by Gandhi in South Africa Initial Political Life In after Gandhi returned to India he established Sabaramathi Ashram in As per the guidance of his political guru Gopalkrishna Gokhale he toured through out India and and got to see the sorrowful condition of people He fought for the farmers in champaran and Kheda Champaran The grouse of farmers against the planters of Champaranya has a long history The planters were putting pressure on the farmers to Indigo Gandhiji started Sathyagraha against the planters in Finally the problems of the farmers got solved Babu Rajendraprasad emerged as a leader through this movement Kheda farmers struggle Kheda was the main district of Gujarat State In farmers were economically ruined due to the failure of crops Hence they appealed for the exemption of land tax for that year The government rejected their appeal and insisted on collecting the tax As a result the farmers agitated against this move Gandhiji extended his support to this movement and asked the farmers not pay the land tax Finally the government announced only who could afford to pay the tax can pay Gandhiji accepted this and agreed to take back Sathyagraha Sardar Vallabhabai Patel emerged as a leader out of this movement Gandhi in freedom fighting The year is an important milestone in the history of freedom fighting This year Gandhiji entered the Indian political filed He had realized that pushing out the British by physical strength alone is impossible In he led movements against Rowlet Act and the massacre at Jalin Walabagh He also provided leadership to Kilafath Movement His goal was to establish harmony among Hindu and Muslims What is Khilafath Movement Turkey empire was under the hands of Khalif Khalif was the supreme religious leader to all Muslims of the World Turkey stood aginst Britan in First World War and was defeated Arabia Jordan Iraq which were part of Turkey became independent states In leader Kamal Pasha pushed out Khalifs and came to the power The Muslims of India reacted to this and launched a Movement against the British and in favour of Khalif This is called Khilafath Movement Gandhiji led the movement Muhammad Ali and Shaukath Ali Ali brothers were the main leaders of this movement Non Co-operation Movement Non Cooperation movement was started in under the leadership of Gandhiji He a gave call to people not to co operate with the administration and also press for Swaraj As a part of this movement people boycotted courts educational institutions legislative assemblies and the British products The government programs were also boycotted and titles given by the government were returned The prominent leaders like Chittarajan Das Mothilal Nehru Vallabhabai Patel Subhas Chandra Bose joined this movement The people from all walks of life who were attracted by the non-violence and Sathyagraha joined the movement Students farmers and women participated in this movement This was a novel experience for Indians Ravindranath Tagore returned his Knighthood and Gandhiji returned his Kaiser e Hind award In order to suppress this movement the government adopted violent methods Enraged people indulged in violence and burnt twenty two policemen alive in a police station in Chauri Chaura in Gandhiji considered this seriously From to Gandhiji engaged himself in popularizing Khadi and uplifting Harijans The national movements were continued under the leadership of Swarajya Party C R Dass and Mothilal Nehru Gandhiji’s Journals and important Books My Experiments with Truth Hind Swaraj Satyagraha in South Africa are Gandhiji’s important books Harijan and Young India are the journals he edited Nehru Report The British challenged the Indian leadership to form a constitution that can be acceptable for all the Indians An all party was called and a committee was formed under the leadership of Mothilal Nehru The report expressed acceptance of self rule under the British rule and also expressed its desire for complete independence in the long run Simon Commission British Government sent Simon Commission to India to study s reforms and to give report of its functions in Indian provinces All members of commission were English and there was no representation to Indians in that commission Go back Simon Commission sceneSo Indians by proclaiming Simon Go Back boycotted Simon Commission The public agitation at Lahore took a serious turn Lala Lajapath Roy was injured in police lathicharge and died later in The Complete Independence Poorna Swaraj The youth leaders within the Indian National Congress rejected the Nehru report of self rule under the British and were led by Jawahar Lal Nehru and Subhaschandra Bose They tabled the motion for Complete Independence Poorna Swaraj in Lahore convention of Indian National Congress of It was decided to mark January as the Poorna Swaraj day In order to keep the memory of this decision it was decided to adopt the Constitution of Independent India on January This day is celeberated as The Republic Day till then Civil Disobedience Movement Dandi March Scene Gandhiji started Civil Disobedience Movement with this famous Dandi March on March with chosen followers He walked about kilometers from Sabaramathi Ashram to Gujarat’s Dandi The march aimed at producing salt on his own and break the law Civil Disobedience Movement quickly extended to other parts of the country People participated in Harthal boycotted foreign goods advertised Khadi protested in front of liquor shops Forest Sathyagrahas were held and tax refusal was done Salt Sathygraha of Ankola achieved fame across India In the same period the Frontier Gandhi Khan Abdul Gafar Khan established Kudayith Kidmathigar Servants of the God association Rani Gaidinliu a thirteen year old girl from Nagaland revolted against the British This made the British to provide some political releifs to Indians Round Table Conference After Dandi March British government organized three Round Table Conferences in London Gandhiji participated on behalf of congress in Second Round Table conference But these conferences failed to find solution for the Indian political problems But Britan Viceroy Ramsay Macdonald announced Communal Award after Round Table Conference in According to it a separate constituency was created for the depressed classes This judgment was opposed by Gandhiji as it was aimed at breaking the unity among Indians So he started fast-unto-death at Yervada jail in Pune Finally Ambedkar and Gandhi reached Poona Pact in and the problem was solved In order to increase the representation of Indians in political and administrative areas of the government the Government of India Act of was implemented by the British Quit India Movement Failure of Cripps Commission made Indians angry Gandhiji called a Congress meeting in Mumbai on August The decision to start Quit India Movement was taken here The call Do or Die was given to Indians The next day the government arrested the Gandhiji and other leaders Quit India Movement As the news of arrests spread people started Harthals and protests against the British in schools colleges and factories The post offices railway stations and police stations were raided by the angry mob This movement was supported by farmers students and workers The Quit India movement failed to realize its immediate political goal But it proved the desire among the Indians for independence This was a major movement in the Ghandhi phase of freedom struggle Subhash Chandra Bose and The Indian National Army I N A The role of Subhash Chandra Bose is unique in Indian freedom Movement He was a talented student of Calcutta University He got fourth rank in I C S Exam that took place in London Due to inspiration of Chittanrajan Das Subhas Chandra Bose was attracted to Freedom Movement He was also inspired by the life and works of Swami Vivekananda Subhaschandra Bose had a lot of reverence for Gandhi But he opposed his political policy Finally he resigned from the Congress party in due severe differences with Gandhi He founded Forward Block party By this time the Second World War had started The British put Subhaschandra Bose in house arrest due to his radical views But Bose managed to escape from the house arrest and reached Berlin through Peshawar Kabul and Moscow Bose entered to an agreement with Hitler the enemy of the British and secured his help to push the British out of India During this period Japan had entered the Second World War Around forty thousand Indian Soldiers were taken as prinsoners of war by Japan They were part of the British army These imprisoned soldiers united under the leadership of Mohan Singh and formed Indian National Army or Azad Hind Fauz Subhas Chandra Bose arrived at Singapore and accepted the leadership of INA in Subhas was called as Netaji An Independent Interim Government of India was founded at Singapore This government was given recognition by Italy Germany and Japan By declaring Chalo Dilli the INA attacked India from Burma and moved miles into Indian Territory the present Manipur and hoisted the tricoloured flag But Rangoon the capital of Burma was captured by the British This was a major setback to INA Meanwhile Japan came under Atomic Bomb attack and surrendered in Netaji who had boarded a place on August disappeared mysteriously INA failed to achieve its immediate political target But it has a unique place in the annals of Indian history Netaji had given a call You give me blood Ill give you freedom INA stands an example of the extraordinary capacity of Nethaji Subhas Chandra Bose His adventurous journey to Moscow from Culcutta and then to Germany and from Germany to Japan in those difficult times is extraordinary His aim was to free India with the help of enemies of the British He has left a tradition of valour bravery adventure and a culture of national pride Ambedkar and his reforms Dr B R Ambedkar Dr B R Ambedkar brought the issue of Social Independence to the forefront while India was fighting for the political independence He fought for the eradication of untouchability having experienced it in his early life Ambedkar was born in Mhow of the Central Province present Madhyapradesh on April Father was Ramaji Sakpal and mother was Bheemabai His birth name was Bheemrao and completed his studies locally He completed his education at Elphinstone High School in Bombay He completed his higher education at London School of Economics and earned his P hd from the Coloumbia University He also got LLD and Bar at Law degrees He cultivated an independent personality through his self study As he was born into an untouchable caste Mahar he had experienced the pain of untouchabiltiy He was convinced that only through Constitutional measures the social evil untouchabiltiy can be eradicated Hence he launched various struggles against the untouchability Among them Mahad Movement and Entering the Kalaram temple of Nasik are important He created awareness and self identity among the Dalits He edited Mookanayak and Bahiskruth Bharat periodicals to voice the issues of Dalits He also established Bahiskruth Hithakarani Sabha Ambekdar took part in all the three round table conferences that took place in London as a representative of Dalit classes The British declared Communal Award wherein a separate constituency was allotted for the Dalits in Gandhiji opposed this and sat for a hunger strike in Yeravada jail near Poona Ambedkar and Gandhi arrived at an agreement and entered Poona Pact in that ended the conflict Later Ambedkar became the Chairman of the Drafting Committee of the Indian Constitution He is remembered as the Chief Architect of Indian Constitution He was the first law minister of Independent India He died on December He had accepted Buddhism few months before his death Bharath Ratna was awarded to him posthumously in Ambedkar had called for Education Organisation and Agitation Socialists The Socialist thoughts became popular during s in and out of Congress party By a Socialist Group had clearly emerged in the congress Most of the socialists were younger generation They established Congress Socialist Party Jaya Prakash Narayan became its General Secretary Acharya Narendra Dev Jawaharlal Nehru and Subhaschandra Bose were the other leaders Though Nehru identified himself as Socialist he was with Gandhiji Jawaharlal Nehru Jayaprakash Narayana Acharaya Narendra Dev The Socialists organized the farmers and workers to attain social justice in Indian society Jayaprakash Naryan Ram Manohar Lohia and Aruna Asf Ali and other Socialist leaders took part in Quit India movement and performed major roles in its success and emerged as popular leaders Jayaprakash Narayan J P Jayaprakash Narayan was born in in Bihar He completed his higher education in American Universities for more than seven years While studying in America he became familiar with Socialist philosophy On returning to India he joined Congress as per the guidance of Nehru He formed Congress Socialist Party in He was arrested in and escaped from Hazaribagh jail the following year and went underground He gave his support for Quit India movement from there itself He toured entire Inida in disguise He was arrested in and imprisoned at Lahore Fort He was released from there later He became part of Bhoodhan Movement of Vinobha Bhave He entered politics in and called for Total Revolution As a result of this movement the Janatha Party came to power When Janatha Party divided into two due to its internal friction Jayaprakash Narayan was left disillusioned He died in the year People called him as Loknayak out of love Towards Independence Due to public pressure and the after effects of the Second World War the British tried to arrive at final solution for the Indian problem The British had become weak economically and militarily The Labour Government that came to power in wanted to enter a definitive political agreement with India Maulana Abdul Kalam Azad Vallabhabai Patel and Jawaharlal Nehru took the pivotal decisions regarding the future of India The British Government sent a Cabinet Commission to India to work the modalities of handing over the power of India in But the Muslim League under the leadership of Mohammad Ali Jinah wanted the creation of Pakistan and was adamant in its demand Hence division of India became inevitable On June rd the Last Viceyroy and the Governor General of India Lord Mountbaten declared the division of India and the handing over of power of India Mulana Abdul Kalam Azad Vallabha Bhai Patel Lord Mount Batten On August Pakistan became separate from India India became independent on August Jawaharlal Nehru became the first Prime Minister The British who had arrived in India for trade had ruled India for two hundred years and leaving it economically and politically weak The freedom struggle of the Indians finally forced the British to leave India The day August when the foreign occupation ended is an unforgettable memory in the annals of the Indian history Important years Gandhiji’s Birth October Non-cooperation Movement Chauri Chaura Tragedy Poorna Swaray Declaration Poorna Swaraj Day January Salt Sathygraha April Poona Pact Second World War Quit India Movement Independence to India August PRO-PEOPLE MOVEMENTS OF KARNATAKA Introduction When people in power make an attempt to implement anti-people programmes and projects people have the right to oppose such moves Whenever such situation arose in Karnataka the enlightened people of Karnataka have opposed severely At the same time people from weaker sections backward and exploited people have fought for their socio-economic and cultural development In this lesson the movements organized by the Environmentalists Feminists Farmers Dalits and Pro-Kannada organizations have been explained The implementation of Panchayet Raj system in direction of decentralization of power is also discussed here Competencies Students understand the environmental movement with the help of examples They appreciate the measures taken by the government towards women empowerment They get to know about the struggle of the farmers to protect their self-interests They learn about dalit movements They learn about the movements began to protect the Kannada language and develop interest in them They understand the necessity of the Panchayat Raj system ENVIRONMENT MOVEMENTS The living beings on this Earth need to depend on the light air water and other material for their survival Human beings like other animals need to depend on these for their survival In their journey to become more and more civilized human beings are killing nature to fulfill their unlimited desire In spite of realizing nature as a wonder to be appreciated they are using nature only as raw material As a result the house sparrows which were part of everyday life have become a rare sight now The living and the non-living form the environment Industrial revolution trade and commercial revolutions have severely affected the environment The big industrialists are all desperately trying to establish their control over the natural wealth As a result new problems have cropped up Communities are becoming victims of new health problems In a nutshell millions of people are facing serious problems because of the destruction of natural wealth During the second half of the Century environmental awareness movements started in order to enlighten people about the importance of the environment In the s the environmental movement started as a global campaign and it also reached Karnataka As Gandhiji says Nature has everything to fulfill man’s need not his greed With the beginning of mining in the Western Ghats environmental protection movements became inevitable Sahyadri Mining Protest Forum started opposing the mining operations in Kudremukh and surrounding areas The Central government had started an iron-ore processing unit Due to this the Bhadra river got polluted at its source itself As a result of this struggle the government was forced to take certain environmental protection measures Salumarada Thimmakka -year old Salumarada Thimmakka is the mother of trees Though illiterate she has educated everyone around her about environmental protection The Tunga river protection drive agitation started after the people realized that the river was getting polluted The forests of Sahyadri mountain ranges slowly started vanishing To grow and protect trees and to prevent their destruction movements like Chipko and Appiko started in various regions We cannot forget the role of Sunderlal Bahuguna who dedicated his whole life to the Chipko movement Activity Make a list of the objectives and aims of Appiko movement The forest department started planting imported plants like Nilgiri and Acacia This project is called Social forestry Environmentalists protested against the planting of Nilgiri as it would push the ground water table level down Harihara Polyfibre Industry of Davanagere discharged its effluent to river Tungabhadra and this prompted an agitation from the people The other movements are agitation against Seabird Naval Base in Karawara and Cogentrics Nagarjuna Power Generation plant in the coastal belt Preserve Tanks agitation Upper Bhadra Project opposition agitation Preserve Cubbonpark drive movement opposing Cargil seeds and oppositions to Industrial cities are few to name The movements which made headlines in the recent past at national and international levels were the movements against mining in Karnataka and agitations against mining and looting the natural wealth of Ballari Tumakuru Chitradurga Chikkamagaluru North Canara Davanagere Ramnagara and other districts The Karnataka Lokayukta’s serious consideration of the various public interest litigations and detailed investigations in the public interest are certainly exemplary and worth mentioning As a result of such serious attempts exploitation of nature is coming down but slowly Even today many agitations are going on The agitation against the use of chemical fertilizers and replacing it with organic fertilizers has assumed the proportion of a revolution This is a very satisfactory phase In Karnataka Organic Farming Mission was established leading to the encouragement of organic farming Many farmers are benefitting from organic farming In these areas Karnataka is in the forefront in the entire country WOMEN’S MOVEMENTS The women’s movement in the beginning laid more emphasis on women’s education In Karnataka Srirangamma and Rukmanamma were the first women to get B A Honours degree Indiramma was the first woman Mayor of Bengaluru In spite of this women empowerment was a distant dream Women did not have right to property Women belonging to different religions are subjected to different types of exploitation Activity Make a list of names of women who have achieved in different fields Aruna Asaf Ali Many women participated in the freedom struggle coming out of the traditional family boundaries Kamaladevi Chattopadhyaya Sarojini Naidu Aruna Asaf Ali Dr Muthulaxmi Reddy and others are worth remembering here The celeberation of International Women’s Day started from the year Karnataka government adopted various women’s welfare programmes and projects Gradually women’s organizations became active The Leftist organizations organized women labourers Women Organizations protested against dowry rape and domestic violence All these organizations put pressure on strengthening legal aspects to tackle this issue They are struggling to get the reservation for women in all the elected bodies so that the voice of the women can be heard in the legislative bodies As a result of these struggles the government has initiated a number of measures The Karnataka government has been the first state to declare reservations for women in local bodies Through the policy of reservation in the government appointments women have been able to get justice to some extent Government has appointed a commission for the welfare and development of girls and women This commission is trying to get justice for women against exploitation by taking up their cause FARMERS’ MOVEMENT Since ages farmers have been called as the backbone of the nation But facilities were never given to keep this backbone stronger Even today our farmers have remained in helpless situation Industrialists decide and fix the price of their product But farmers have not been able do this for their produce They are always at the mercy of the rain god too Whenever the governments failed to come to their rescue farmers have treaded the path of agitation Many a farmers have become martyrs in this process Though the farmers are fighting for their rights a life of happiness has remained elusive still Most of the farmers’ agitations were against the land lords The first farmers’ movement that took place after the independence is in the year in Kagodu of Shivamogga district They launched their movement against the measuring instrument named KOLAGA that was used to measure produce grown by tenant farmer GENI RAITHA The agitation continued to address other issues like the harsh mode of loan collection and the exploitation of lease farmers by the landlords Sri Shanthaveri Gopalagowda of Socialist Party was in the forefront of these struggles Dr Ramamanohara Lohia visited Shivamogga and brought more strength to this struggle Activity Read the novel Kolaga by Na D’Souza and write an essay on the status of farmers During s the socialists organized farmers’ movement in Uttara Kannada district In Grab the Land movement took place in Kolar In farmers from Malaprabha river belt raised their voice when their cotton crops failed Some farmers died due to police firing The farmers continued non cooperation struggle More farmers from Navalagund Naragund and Savadathi lost their lives in this struggle These struggles made farmers to form their own organizations Karnataka Rajya Raitha Sanga was formed first in Shivamogga and it took up local farmers issue It resisted the arrival of foreign companies that were aiming at disrupting the farming in the long run Karnataka Prantha Raitha Sanga Kisan Sabha Dalitha Sangarsha Samithi Raitha Kooli Karmikara Sanga and many other associations voiced the issues of farmers Activity Collect information about Bagur Navile movement D Nanjundaswamy Sundaresh Kadidalu Shamanna K S Puttannaiah and others provided the leadership for the farmers’ movement in Karnataka DALIT MOVEMENT A famous psychologist R D Leong said You can understand the experience of the other person But you can never experience the same experience These words apply well to the Dalit and Women D Nanjundaswamy lives Dalits had no place in the Varna System They were beyond the Shudras in the social status Since they were born in the untouchable caste they had to remain away from the main stream Agitations against this discrimination can be seen in the history But during the colonial period the issues of Dalits were discussed at national platforms The discussion between Gandhi and Ambedkar during the decade of s is the main evidence of this Though their aims were same both went in their own paths Following the visit of Swami Vivekananda on his suggestion the ruler of Mysuru state Chamaraja Wodeyartook the Dalit issues seriously and opened separate schools for them In under the leadership of C Raja a prominent Dalit leader of that time in South India Dalits entered the palace of Mysuru for the first time Many non-dalits fought for the rights of Dalits in the early period Now Dalits are representing themselves well Ambedkar is the major source of motivation for them His call Education Association and Agitation became their basic traits They became politically active in order to solve their problems Ambedkar not only became the symbol of self respect among the Dalits he was called as the Dalit Sun All these developments are clearly witnessed in the history of Karnataka state The Non-Brahmin movements that arose during early century never included Dalits completely The questioning of this led to the growth of Dalit Movement during s It became a major force later Shamasundar founded Bheemasena in in Hyderabad Karnataka The turning point to Dalit Movement was the incident of Boosa incident of Basavalingappa In a programme at Mysuru then minister of Karnataka Government Basavalingappa opined that all the literature in Kannada till then is nothing but Boosa cow fodder rice husk Agitations started against this statement Finally Basavalingappa had to tender his resignation This incident galvanized the Dalit identity and nourished its growth In Dalit writers and artists association was started in Bhadravathi The beginning of Dalit movement is Karnataka can be traced from here onwards Later under its aegis Karnataka Dalit Sangarsh Samithi DSS was founded Prof B Krishnappa was its State Coordinator Like this DSS got an institutional structure Slowly the DSS extended its area of operation by including government officials women scavengers students writers and artists Various branches in these names became part of it Dalits who had no land rights traditionally started their agitation for land now Occupying seats of authority along with education was the main goal Gradually fissures appeared in the Dalit Movement Many organizations with different names started emerging Activity Collect information about the works of Devanura Mahadeva and Dr Siddalingaiah Dalit writers like Devanura Mahadeva and Dr Siddalingaiah presented the inner life of Dalits through their literature Many Dalit writers are portraying the challenges of Dalits in the face of Globalization Though Dalits are in a position of directing the various aspects of the society the path to be treaded is still long SAVE KANNADA MOVEMENT OR PROTECT KANNADA MOVEMENT The Karnataka Integration Movement brought confidence and sense of unity among the Kannadigas After s when the speakers of other languages started creating disruptions in Bengaluru A N Krishna Rao Chidanandamurthy N Ramamurthy Vatal Nagaraj and many others including organizations like Karnataka Yuvajana Sabha Kannada Jagruta Parishat and Kannada Shakti Kendra succeeded in securing supremacy for Kannada Kannadiga and Karnataka In addition to these organizations many other associations are active in preserving the Kannada language’s identity and culture GOKAK MOVEMENT In a sense the s was a period of agitations for securing the existence of the Kannada language In a decisive historical struggle began with the demand for the implementation of the Gokak report The whole of the Kannada community came together and participated in this agitation The linguistic minorities in Karnataka were adamant in saying that they would not learn Kannada but get educated in their mother-tongue itself When the erstwhile Chief Minister R Gundurao had visited Udupi the Pontiff of the Mutt demanded that he gave importance to Sanskrit As a result the question of which language should be the medium of instruction in the state was shelved for the time being and a committee was formed to decide the place of different languages in education and Prof V K Gokak was the chairperson of the committee The committee recommended that priority should be given to Kannada and that it should be made compulsory in education This committee allotted marks for the three-language formula It also recommended that in the three-language formula Kannada should be the first language with marks But the Gokak report was not accepted by then government An intense agitation under the leadership of Kannada cine artist Dr Rajkumar took place throughout the state Senior writers like Kuvempu PatilPuttappa and others extended their support to this agitation Vinayak Krishna Gokak Dr RajkumarThe important slogans of the Gokak agitation were Name is Karnataka let the breath be Kannada Let Kannada thrive towards that we strive Implement Gokak report Let Karnataka be filled with the fragrance of Kannada and many others Activity Collect more information about the recommendations of the Gokak report PANCHAYAT RAJ SYSTEM Panchayat Raj system can be defined as the decentralization of administration It aims at giving authority to the local people to participate in administration and take decisions Though ancient India had a tradition of local self-government after independence the system was given constitutional mandate In the Central government formed a committee under the chairmanship of Balwantrai Mehta This committee recommended a three-tier local administration system In the backdrop of this development in order to enable democratic decentralization then state government promulgated an Ordinance of Mysuru Gram Panchayats in Through this it laid down a solid foundation for the birth of democratic bodies at the grass root level in Karnataka According to the new law the three levels of the administrative system are Gram Panchayat Taluk Panchayat Zilla Panchayat Nazeer Sab The Janata government that came to power in Karnataka in brought about revolutionary changes in the Panchayat Raj system The architect of this system was the Minister for Panchayat Raj Sri Nazeer Sab This system created many opportunities for the dalits people of backward classes and women to participate in self-government Activity Collect information about the structure of your Gram Panchayat and its activities KARNATAKA-ECONOMIC AND SOCIAL TRANSFORMATION Introduction An attempt has been made in this lesson to understand the fundamental aspects of social and economic development that took place in Karnataka after independence Some sections of the society have received the lion’s share of resources of progress whereas other sections for various reasons have remained away from it The result of this has been the creation of social imbalance In order to remove this imbalance within the constitutional framework the Government has brought about land reforms appointment of Backward Classes Commission Competencies Students understand the developments in the social and economic fields of Karnataka after independence They learn about the objectives and consequences of the Land Reforms Act They appreciate the contributions of the Backward Classes Commissions LAND REFORMS The various measures implemented to solve the problems with regard to land holdings are called Land Reforms Land is an essential part of man’s life He depends on the land for his existence However land has not been distributed in equal measure to all communities Land reforms were undertaken to remove this inequality in land ownership Earlier there were rights only to a landowner not to a tenant Due to this inequality resulted in concentration of wealth and unequal wealth distribution We see efforts to create an egalitarian society in the s Many questions were raised by the farmers’ and dalits’ movements about land distribution Many movements took place demanding provision of land for the landless The land reforms that were put into practice as a result of these movements are as follows Abolition of the Zamindari system Restricting the hold of the feudal class on land was the objective of this measure This is one of the most important land reforms In a committee was formed under the leadership of the ex-vice president of India B D Jatti This committee made certain recommendations towards bringing about land reforms The committee recommended that every family should be given maximum acres dry land and acres irrigated land These recommendations helped the wealthy These recommendations were implemented in but did not change the existing system in a decisive manner But the Land Reform Law of played a decisive role in changing the existing system One acre is equal to cents or guntas Reforms in the Tenancy system Indian tenants faced many problems These problems were huge amount of rent to be paid insecure land holdings and landless farm workers In order to solve these problems in Chief Minister D Devaraj Urs brought into force a revolutionary law in Karnataka which said The tiller is the owner of the land Many landless people who had been cultivating the land under tenancy became landowners The main features of the Land Reform Amendment Act It cancelled all kinds of tenancy The tiller was given the opportunity to establish his right to the land he cultivated All the lands on rent came into the possession of the government Those who wished to establish their rights to the land and those who wanted compensation had to apply to tribunals The decision of the tribunal was final Its judgment could be questioned only in the High Court Maximum Limit on Landholdings The State government fixed a limit on the land a family could possess The maximum limit of owning land was fixed by the then government A family could have acres of fertile land that had no facility of water If the land had irrigation facility and more than one crop was being grown there the family could have to acres If it was irrigated land with only one crop being grown each family could have maximum acres In the Inam Cancellation Act came into being Activity Collect information about Inam Cancellation Act Creation of Economic holdings The land holdings which enable the cultivator to earn sufficient income for a comfortable life of his family after accounting for all his expenses are called Economic holdings The standard of life of many farmers improved after the consolidation of holdings and implementation of maximum limit on land holdings Development of Co-operative farming Farmers voluntarily form co-operative associations give up their lands for collective supervision and cultivate the lands together When the crop is harvested and sold they set aside money for long-term development of the land and divide the rest of the money among themselves This is called Co-operative Farming System On account of the land reforms it was possible for the landless to obtain right to own land though in a small measure The tillers’ rights were protected The farmers could get at least a small amount of profit through the co-operative farming system However this system could not generate more support from people BACKWARD CLASSES COMMISSIONS The Indian society has inequality Due to the hierarchical caste system many castes have remained backward from times immemorial After the arrival of the British in India a new social mobility began to be seen Under the British system all people irrespective of caste or class could avail English education English-educated people could get new opportunities in the British government When the non-Brahmins received education there was a new awakening in them Though they were the majority they were not suitably represented in government jobs Hence the non Brahmins like Sahukar Chennaiah Basavaiah and others began a non-Brahmin movement in Mysuru province For the first time in India during the reign of Krishnaraja Wodiyar IV a Backward Class Commission was appointed in under the chairmanship of Justice Lesley C Miller The first Reservation rule came into force in L G Havanur Chief Minister D Devaraj Urs appointed the first Backward Classes Commission under the Chairmanship of L G Havanur in The percentage of students of different castes who passed in the S S L C examination in was taken as the criterion for determining the backwardness of those castes As per the recommendations of the Havanur report a Government Order was issued in This was a revolutionary order It enabled to a great extent the backward classes to be economically and politically empowered However the order was contested in the Supreme Court The Karnataka government gave the assurance that all the deficiencies in the report would be rectified Towards that end the T Venkataswamy Commission was appointed in However due to political pressures the Venkataswamy report was not accepted by the government During the period of Chief Minister Ramakrishna Hegde a committee was formed under the leadership of Justice O Chinnappa Reddy The recommendations of this committee were also not implemented due to political pressures All the reservation policies issued with regard to the backward classes till now have been only compromises and have not been based on any recommendations of a scientific study WOMEN FREEDOM FIGHTERS Introduction The patriarchal society limited the role of women to family Rarely we come across women who entered the space of public life and played a decisive role in it The example of Rani Abbakka is one The educated class of India was exposed to the western concepts like equality fraternity and liberty to all in the beginning of the modern period This resulted in some major changes in the social outlook During the freedom struggle led by Gandhi many social classes that remained hidden till then came out galvanized the freedom struggle and showed they too have a share in the freedom struggle The contribution of women from Karnataka is also notable They dedicated their life for the benefit of the nation and its freedom It is our duty to know their role in the historical freedom struggle by studying a few them Among the women who fought against the British Rani Abbakkadevi Kamaladevi Chattopadya Ballari Siddamma Umabai Kundapura Krishnabai Panbekar G R Bageerathamma Siddamma Jois and Yashodaramma Dasappa are important Apart from these there are hundreds of women who have remained anonymous Competencies Learn about the role of women in freedom struggle Learn about women who participated in the Pre-Gandhian freedom struggle Learn about the important women who participated in the freedom struggle Know the role of women in Karnataka’s Progress in Post Independence period Karnataka Women in Freedom struggle Rani Abbakkadevi Ballari Siddamma Kamaladevi Chattopadyaya Yashodharamma Dasappa Umabai Kundapura Rani Abbakkadevi During the pre-Gandhi freedom struggle among Rani Chennamma Keladi Chennamma stands Rani Abbakkadevi She belonged to Chowta dynasty that ruled Ullala Her uncle Thirumalaraya trained her in warfare and brought to power as the queen of Ullala Abbakka was married to Lakshmappa Arusu of Bhanga region of Mangaluru As her marriage did not last for long she returned to Ullala She rejected the demands of Portuguese for taxes They Rani Abbakka Devi declared war on her in Abbakka won this battle Again in the viceroy of Portuguese Antonio Noronha entered Ullal Abbakkadevi escaped from there and attacked on the Portuguese with a band of soldiers General Peixoto died in this attack Many Portuguese soldiers were taken as prisoners In another battle an admiral Portuguese Mascarenhas was killed Rani Abbakka demanded the Portuguese to vacate the Mangaluru fort But the Portuguese continued to attack Ullal as they were attracted by its wealth In Abbakka entered an agreement with Sultan of Vijayapura and Zamorine of Calicut Kutty Pokar Markar the general of Zamorine was killed by Portuguese while returning after winning the Mangaluru fort Finally with the help of Abbakka’s estranged husband Portuguese defeated Abbakka and imprisoned her She died in the prison In memory of Rani Abbakkadevi ‘Veerarani Abbakkana Utsva’ is organized every year at Ullala Veerarani Abbakkadevi award is conferred on woman achievers every year On January the postal department brought out a postal envelope which had her picture on it Ballari Siddamma Ballari Siddamma was born in to traditional family in today’s Haveri District’s Dundasi Village Her father was Kottege Basappa Though he was a businessman by profession he was interested in freedom struggle Her father used to bring news papers and periodicals for Siddamma These made her to develop nationalist thoughts As she was married to another freedom fighter Murugappa it became easy for her to participate in the freedom struggle completely By s freedom struggle was at its peak in Mysuru state It was led by Sardar Veeranna Gowda S Nijalingappa and T Siddalingaiah Ballari Siddamma participated in the Convention of Congress party at Shivapura in She courted arrest by hoisting the flag on April She was imprisoned for a month She was the first woman to participate in hoisting the flag in the state of Mysuru The newspapers of the state highlighted her commitment towards the freedom struggle She continued her participation in the freedom movement after she was released from the prison She participated in the Aranya Sathyagraha of Chitradurga in She was imprisoned in jail from September to September for cutting wild date trees in Mayakonda and Anagodu forests of Davanagere She also took part in Quit India movement When the Mysuru state did not declare its decision to join the Indian union after the declaration of independence Mysuru Chalo or Aramane Sathyagaraha was organized She took active participation in this As a result the Mysuru state joined the Indian union In a new government came into power under the leadership of K C Reddy She became the MLA of Davanagere She established Mathrumandir to protect the health of rural women The state government honoured her with copper plaque Ballari Siddamma took part in the freedom struggle and brought laurels to women in general Kamala Devi Chattopadhyaya Kamaladevi Chattopadhyaya Kamaladevi Chattopadhyaya was born in a rich family on April Her father was Dhareshwara Anantharaya and mother was Girijabai Her father was higher officer in the colonial government She was educated in catholic convent and St Mary’s school She was married at the age of fourteen and became a widow very early When her father was transferred to Madras she continued her education there She went to London School of Economics and returned to India She engaged herself in the social reforms She came to know the poet writer and theatre personality Harindranath Chattopadhyaya She married and became Kamaladevi Chattopadhyaya Kamaladevi Chattopadhyaya is multi talented person from Karnataka who played an important role in national politics Influenced by Gandhi and Sarojini Naidu she participated in the national non cooperation movement She walked the streets of Allahabad by holding the flag and raised slogans against the British government As per the Lahore Congress Convention’s declaration Gandhiji decided to launch Dandi Salt march on March from Sabarmathi with followers On reaching Dandi on May Gandhiji prepared salt on May thus breaking the law of British He gave a call for the nation to participate in this salt agitation Kamaladevi met Gandhiji and sought his permission to participate in the Dandi march Kamaladevi and Avantibai Gokhale were the first women to participate in the salt agitation and break the law of British Gandhiji was arrested when he sold salt telling You buy this salt and the price is six months imprisonment and was imprisoned for six months in Yerawada jail After being released from the prison he went to Bombay and sold swadeshi clothes Kamaladevi undertook the responsibility of the women’s unit of Sevadal at national level and toured the entrie nation organizing Sevadal camps Women volunteers training facilities were opened at Bombay and Borivali The British government arrested Kamaladevi and imprisoned her at Arther Jail for sevadal activities The Sevadal was also banned Kamaladevi met Meerabhen in the jail Later she was shifted to Vellore jail There were many divisions within National Congress party Nehru Ramamanohara Lohia Acharya Narendradeva and others had established Congress Socialist Party within Congress under the influence of Socialist philosophy Kamaladevi took the membership of this inner group She visited Karnataka and delivered public talks on Socialist principles to motivate people She had to undergo a lot of hardships due to these activities She was not only a freedom fighter she was also a social reformer feminist writer and film actor She was awarded Padma Bushan in for her services She also received Vathmull foundation award in Ramon Magsasey award in Shantibharath Desitikothom award Central Academy award and Padma Vibushan in Kamaladevi Chattopadhyaya is the pride of Karnataka She died in the year YashodharammaDasappa Yashodharamma was born in Bengaluru on May Her father was Ramaiah and mother Revamma Her father was a social reformist oriented person After finishing her primary studies at Bengaluru she finished intermediate in Madras at Queen Mary’s college On returning from Madras she was married to Dasappa the third son of Rao Saheb Chennaiah in Both Yashodharamma and Dasappa were social workers On being influenced by Gandhiji they became the members of Indian National Congress The couple stayed at Wadra Seva Grama for few years and returned They participated in the freedom struggle of Mysuru princely state They witnessed the inclusion of Mysuru state into Indian federation Even though her husband H C Dasappa contested elections for Mysuru state assembly and won under the Praja Samyuktha Party Yashodhramma remained in congress She participated in the Shivapura Flag Sathyagraha in In Yashodhramma’s house was the base of underground activities for Quit India Movement She published articles on the movement in Jwale newspaper that was printed secretly Yashodhramma was instrumental in organizing an agitation demanding the establishment of people’s government in Mysuru State in Picketing and protest marches were held in front of Mysuru Palace On seeing the intensity of the agitations the Maharaja of Mysuru handed over the governance to people She became the Member of Legislative Assembly in the independent Mysuru State She also became the Member of Parliament She also served as the Minister of Social Welfare in the cabinet of S Nijalingappa This multi faceted Yashodharmma Dassappa died in due to cancer Umabai Kundapura Umabayi Kundapur Umabai Kundapura was born in in Kundapura of Dakshin Kannada district her father was Golikere Krishnaraya and mother Tungabai She married Sanjeev Rao who was active in the freedom movement at the age of thirteen With the support of her husband she participated in the freedom struggle after She wore Khadi and undertook the work of spreading the message of Indian National Congress Unfortunately she lost her husband in and settled down in Hubbalhi She was influenced by the nationalist ideologies of Gandhiji and Hardekar She wrote a drama in Marathi Swadeshi Vrath to carry the message of Swadeshi and its importance She took over the responsibility of Sarswat Sahityik Samaj Bhagini Mandal and Tilak School of Bombay These institutions sensitized people about the need for Swadeshi cloths like Khadi and nationalist education Apart from taking part in freedom struggle led by Tilak she also participated in the movements led by Gandhiji She assumed the leadership of women unit of Sevadal which was started by N S Hardekar in She played a pivotal role in National convention of Congress at Belagavi of She participated in the Salt agitation She was imprionsed for four months at Yeravada and Hindalaga jails for this After being released from the jail she participated in agitations that took place in Ankola Sirsi Siddapura and other places and underwent imprisonment for these participations Umabai Kundapura became the guardian for many destitute women Thought she could not participate in Quit India movement due to health reasons she provided shelter to many who were participating in the movement As per the suggestion from Gandhi she undertook the responsibility of Kasturba Foundation and continued her social work Umabai Kundapura who had dedicated herself to the cause of the nation died in the year INTEGRATION OF KARNATAKA AND BORDER DISPUTES Introduction Karnataka has a history of two thousand years Kannadigas have lived under various political systems After the fall of Vijayanagara the territories of Kannada speaking parts were ruled by Maratha Peshavas different Palyegaras Sultans Nawabs and British and spread over twenty different administrative units As a result Kannadigas experienced a sense of alienation in their own land The different stages of Integration of Karnataka are explained here And also ongoing border disputes are also discussed Competencies Understand the background and the important stages of the Karnataka Integration movement Understand the border disputes that emerged after and suggest solutions for them HISTORICAL BACKGROUND TO THE INTEGRATION MOVEMENT The extent of Kannada state was from the river Cauvery to river Godavari as explained in Kavirajamarga This land was ruled by many Kannada dynasties After the fall of Vijayanagara Kannada speaking regions had to undergo various shifts in political systems After the death of Tipu Sultan the Kannada speaking regions were distributed among twenty administrative divisions of different languages Kannadigas had to feel alienated under the rule of Marthas and Nizam of Hyderabad By enduring all these hardships Kannadigas fought hard to get united under one state and one administration This struggle is called as Karnataka Integration Movement The early steps for Integration were put forward by the people of Bombay Karnataka region Karnataka Vidyavardhaka Sangha established in under the Chairmanship of R H Deshpande provided the institutional shape to the dream of Integration Activity Collect information about Deputy Chennabasappa who is also called as The Tiger of Kannada He was instrumental in establishing Kannada schools in Bombay Karnataka region Kannada Sahithya Parishad was established in in Bengaluru It aimed at facilitating the progress of Kannada language and literature and also aiding the Integration of Kannada speaking regions Karnataka Ekikarana Sabha was started in Dharwad in These organizations continued the struggle for Integration In the National Convention of Indian National Congress at Belagavi in Huylagola Narayana Rao formally initiated the process of Karnataka Integration process by singing Udayavagali Namma Cheluva Kannada Naadu Let our Kannada land be arisen as welcome song Gandhiji who was the president of the convention extended his support to Integration movement The Integration movement worked in favour of freedom movement Activity Make a list of Kannada writers who worked for the Integration of Karnataka Collect more information on B Shrikantaiah popularly known as B Shri Role of Newspapers and Literature in the Integration Movement Newspapers like Vishwakarnataka Navakarnataka Vagbhushana Jayakarnataka Samyuktha Karnataka and other magazines motivated people for the integration These were getting published from different regions Apart from them various literary works also motivated people Aluru Venkataraya is the senior most person who worked for the integration of Karnataka He had exclaimed on seeing the sorry of plight of Kannadigas as Oh No Where is Karnataka Who would stitch the torn away parts of Karnataka into one Do they have really such pride in them The aim of Aluru Venkataraya was to communicate the glory and richness of Kannada language and land to its members He wrote a book titled Karnataka Gathavaibhava The Past Glory of Karnataka and published by using his own money It was a motivational book The Kannadigas of Hyderbad Karnataka honoured him and gave him a title Kannada Kula Purohitha The High Priest of Kannada Clan Shanthakavi played an important role in motivating the people of Bombay Karnataka He collected money to organize Kannada Literary Convention on the tradition of Dasas who sought alms in the name of God by declaring Here is Kannada Dasa who is seeking alms for Kannada Kindly Donate without delay The poems like Jayahe Karnataka Maathe and Nee mettuva nela ade Karnataka The Land that you touch is Karnataka written by Kuvempu touched the heart of numerous Kannadigas Kayyarakiyannarai fought for the integration of Kasaragodu with Karnataka till his last breath Many other poets writers and journalists motivated Kannadigas to get united Post-Independence Integration Movement The dream of integration that started half a century ago became reality only in post independent India in three stages Stage One Before independence there were two types political establishments in India The British Provinces and Princely States The constituent assembly instead of structuring the states on the lines of language divided India into four units namely A B C and D Based on this division the twenty administrative divisions of Karnataka were redistributed into five categories mentioned above Mysuru Bombay Madras Hyderabad and Kodagu were the five units The first step towards integration was achieved through this Stage Two The universal election for the Indian Parliament was held in After the elections a radical minded organization Akhanda Karnataka Rajya Nirmana Parishat’ was founded It organized Sathyagrahas pressing for the integration of Karnataka and more five thousand people courted arrest Kengal Hanumanthaiah and S Nijalingappa toured throughout the state and spoke in support of the integration movement When the state of Andhra was created seven taluks of Ballari district were merged with Mysuru state This is the stage two of Integration process In an Andhra leader Potty Sriramulu demanded integration of Andhra province and went on a fast for days and died There were wide-spread riots in Andhra After Sriramulu’s death Prime Minister Nehru declared the decision of the Central government to create the state of Andhra Accordingly Andhra State was formed in Final Stage After the creation of Andhra Pradesh the demand for reorganizing regions based on languages grew more The central government formed a commission State Reorganizing Commission to give a report on the issue It was chaired by S Fazal Ali and hence it is called as Fazal Ali Commission H N Kunjru and K Phanikkar were its members The commission presented its report in As a result the reorganization of states took place based on the language and the ease of administration All the political parties accepted the report of the commission But they also opposed the move to merge Kasaragodu with Kerala and some taluks of Ballari with Andhra Pradesh Since the Central Government accepted the report of the State Reorganizing Commission the Vishala Mysuru State came into existence on November The integrated Mysuru State had the following districts Old Mysuru state’s ten districts Mysuru Mandya Bengaluru Kolar Hassan Tumakuru Chikkamagaluru Shivamogga Chitradurga From Bombay region Belagavi Dharwad Vijayapura Bijapur Uttara Kannada From Hyderabad region Gulbarga Kalaburagi Raichur and Bidar From Madras region Dakshina Kannada Kollegal taluk Ballari Joined when Andhra was formed during C State Kodagu Totally districts were there Today there are districts Integration of Karnataka S Nijalingappa became the first Chief Minister of Vishala Mysuru State Later when D Devaraja Urs became the Chief Minister he renamed Mysuru State as Karnataka on November Border Disputes Since the reorganizing of the states based on languages was done at national level perspective many Kannadigas living on the borders had to suffer injustice Though they were majority in numbers they had to become a minority as they were integrated with other language region Kasaragodu of Kerala Alur Adavani Madakashira and Rayadurga taluks of Andhra Pradesh Hosur and Talavadi of Tamil Nadu Chandagadh Sollapur Jatha and Akkalakote of Maharastra though had Kannda speaking majority had to remain out of Karnataka Hence the Pro-Kannada activists and the Government of Karnataka are still fighting for their inclusion into Karnataka The major border disputes are with the states of Maharastra Tamil Nadu Andhra Pradesh and Kerala There is need for working towards a solution for these disputes Activity Collect poems that inspire love for Kannada Dispute between Karnataka Maharashtra and Kerala The Central Government had formed a one member commission of Mahajan a retired Supreme Court Judge in The commission conducted exclusive surveys in disputed areas belonging to all the three states and presented its report In the report it said that Akkalakote and Jatta of Maharastra Kasaragodu of Kerala should go to Karnataka and Nippani Khanapura Halyala should go to Maharastra As Maharastra was expecting more area it is opposing this report since its submission As a result the border dispute has remained unresolved and still remains with the Central Government OUR CONSTITUTION Introduction In this chapter the meaning importance framing and salient features of the constitution are explained Competencies Understanding the meaning and importance of the constitution Understanding the preamble of the constitution Understanding the salient features of the constitution and appreciate them Understanding the profile of persons who were involved in drafting of the constitution Understanding the concept of the Republic Understanding the need for Strengthening ourselves in adopting the principle of secularism in our daily life Developing the attitude to respect the constitution Meaning and Importance of the Constitution Constitution means a set of basic rules followed by a country It enumerates the organs of the government its powers and functions There is a reference to the rights and duties of the citizens The constitution is a reference guide to the government No one should violate the constitution Importance of the constitution The constitution is prominent as it is the fundamental law of the country Everyone has to adhere to it All people including the President the Prime Minister Parliamentarians Judges and officers are bound by it It protects the rights of the citizens as all are equal before the law It functions as a reference guide to the duties to be performed by the government It co-ordinates the functions of the democratic institutions such as Legislature Executive and Judiciary It also organizes better relations between the government and the individual Activity Who is Dr B R Ambedkar Why do we look at him today with great respect Discuss Drafting Committee of the Constitution The Constituent Assembly prepared the constitution Dr Rajendra Prasad was elected as its President when the assembly met for the first time There were members in the Constituent assembly The first session was held on December Drafting Committee In order to hasten the process of preparing the constitution the assembly created various committees It also created a Drafting Committee under the chairmanship of Dr B R Ambedkar The members of the Constituent Assembly verified the draft constitution and proposed amendments The proposed amendments and the draft constitution were discussed in detail in the meeting of Constituent Assembly Hence it took three years for the Constitution to have a final shape Dr B R Ambedkar was the Law Minister of India from August to January The Constitution was adopted on January The Constitution declared India as a republic In order to mark the adoption of Constitution every year January is marked as the Republic Day and it is a national festival On November every year the Constitutional Day is celebrated as it was on November the Constitution was approved by the Constituent Assembly According to the directive of the constitution the first general elections of India were held between The parliament with bi-cameral legislature LokSabha and RajyaSabha came into force in Size of our Constitution The Constitution of India contains articles and schedules Preamble to the Constitution The Constitution of India begins with a Preamble The Preamble is considered as the heart of the Constitution as it represents the dream and ideologies of the people Justice Freedom Equality Self Respect Fraternity and National Integrity are the ideologies that find reference in the Preamble Salient features of the constitution Our constitution has its own unique features Written Constitution The Indian constitution is in the written form This is the lengthiest constitution in the world The structure power and extent of power of three organs of the government such as Legislature Executive and Judiciary are explained There is a single constitution both for central and state governments Therefore the size of the constitution is big Republic The constitution has declared India as a republic In case of republican system there is no rule of the king Instead there is the rule of elected representatives by the people India which has this kind of political system is known as the democratic republic Dr Rajendra Prasad Fundamental Rights and duties The Constitution guarantees six fundamental duties to citizens at present The state can never pass any law that curbs these fundamental rights In case of violation of fundamental rights the Judiciary has the power to rectify it The citizens cannot exercise their rights as per their whims and fancies The Eleven fundamental duties are there in the constitution Secularism The constitution upholds the principle of secularism The governments are expected to make no discrimination on the basis of religion and are expected to treat all religions equally The government considers no religion as its religion Every citizen is at freedom to practice religion of his choice and faith The government has the authority to control the freedom to practice one’s religion in the interest of the public interest Independent Judiciary The Judiciary is independent of executive and legislature and has adequate powers Neither the government nor the parliament can interfere with the functioning of the Judiciary All are equal before the court of law and all have right for justice is the principle of the Judiciary The decision of the Supreme Court is final and all are expected to adhere to it Universal Adult Franchise The system of electing representative through voting of adult members year and above is called Universal Adult Franchise All citizens are eligible for voting without any discrimination Then a good government comes to power The constitution wishes to establish the welfare state A state which sets a goal to provide social and economic security to all its citizens is generally known as the welfare state Election system India is the largest democracy in the world In the past six decades periodic elections have been conducted The system of democracy has been adequately deep-rooted in our country It is still a satisfactory system in spite of certain demerits New Terms a Drafting committee of the constitution The Committee that prepared a draft constitution and placed in the Constituent Assembly for discussion and approval b Democratic The rule of the people FUNDAMENTAL RIGHTS AND DUTIES Introduction The fundamental rights and duties provided to every citizen are introduced in this chapter Competencies Understanding the differences between the natural rights and the fundamental rights Understanding the fundamental rights provided to citizens by our constitution Attaining the capacity to understand and adopt eleven fundamental duties included in our constitution Finding methods to regain the rights in the event of any obstacle to enjoy them A Right means the authority given to a citizen It may be a natural right also like right to live right for protection to life It may be a legally acceptable right also like right to equality right to education For the development of individual and the country some freedom and rights are inevitable Hence our Constitution has given some fundamental rights to its citizens Meaning of Fundamental Rights Fundamental Rights are the basic rights given to an individual by the Constitution for his development They are the Constitutional Rights Fundamental Rights are important for social life No one can violate these rights The Fundamental Rights are protected by the Judiciary Types of Fundamental Rights The constitution of India has prominently provided six fundamental rights to all its citizens Right to Equality Right to Freedom Right against exploitation Right of religion Cultural and Educational right Right to Constitutional Remedies Let us know these six rights Right to Equality All are equal before the law Nobody is above the law and all deserve equal protection are the aspects included in Right to Equality The government cannot discriminate on the basis of religion caste sect gender or place of birth It cannot restrict entry to shop hotel or recreational places to any of its citizen It cannot even restrict anyone from using the public wells tank road and resting places All citizens have the equal opportunity to enter the government service It cannot forbid anyone from entering the holy places and offer prayers Equality Right to Freedom The Right to Freedom given in the constitution provides the following to everyone Right to speech and freedom of expression Right to participate in the peaceful public meeting Right to establish institutions and associations Right to travel throughout the country without any restriction Right to live in any part of India Right to take up any employment business or occupation Right to speech Activity Organize a seminar on the importance of right to speech and collect the opinion Freedom cannot be discharged as one likes though it is the fundamental right The constitution itself states that the government can impose restrictions on the individual freedom on certain occasions For example It restricts everyone from defaming someone by uncontrolled words on the pretext of discharging one’s freedom of speech Right against Exploitation The objective of this right is to prevent exploitation of poor women children and the weaker sections of the society In order to restrict exploitation in the name of religion caste gender and sect the state and the central governments have enforced many laws For example taking dowry is a punishable offence Even the practice of bonded labour is prohibited Employing Children in certain industries such as beedi making mining and cracker manufacturing have been banned The children are expected to get education till the age of years Right to freedom of religion The citizens of India have the right to accept and follow religion of their own choice Everyone has the right to observe their religious practices without disturbing peace discipline hygiene in mind The constitution also prohibits religious conversion by force temptation or by falsehoods Right to freedom of religion Cultural and Educational rights This fundamental right protects the cultural and educational interests of the minorities People have right to protect their own language script or culture The minorities have the right to establish educational institutions and manage them The educational institutions of the minorities should adhere to the rules stipulated by the government Cultural and Educational rights Right to constitutional remedies A citizen has the right to approach the court of justice in the event of violation of the fundamental rights This is known as the right to constitutional remedies Other rights can be protected by way of protecting this right Fundamental rights and duties mean they are directly given to its citizens by the constitution Any individual organization or institution such as Parliament Assembly judicial means official group Police department and any other public institutions are restricted from violating them In the event of violation the aggrieved person can directly approach the High Court or the Supreme Court and seek redressal In the event of violation of fundamental rights and duties a Writ Petition can be filed either in the State High Court or the Supreme Court of India Fundamental Duties The fundamental rights and duties are the two sides of the same coin The responsibility of an individual to his country is known as the duty In case the people discharge their fundamental duties with self motivation the progress of the country becomes easier In the constitution eleven fundamental duties are included They are as follows To respect the constitution National Flag and national anthem To follow the noble ideals that inspired our struggle for freedom To protect the unity of India To defend the motherland To promote the spirit of common brotherhood amongst all the people of India To preserve our rich heritage To protect and improve the natural environment To develop the scientific temper and the spirit of enquiry To safeguard public property and give up the violence To strive towards excellence in all spheres of individual and collective activities The parents or the guardians should provide an opportunity for education to their children from the age of to years Activity Organize a seminar and collect the opinion on the role of present day students in conservation of our environment In case the citizen does not discharge any of his fundamental duties the government cannot question it in the court of law Even then all the citizens are expected to do their duties with self motivation DIRECTIVE PRINCIPLES OF STATE POLICY Introduction The directive principles of the State included in the constitutions helps to achieve the aims set out in the preamble of the Constitution Competencies Understanding the meaning and importance of the directive principles of state policy Understanding the advantages of directive principles of state policy in establishing a welfare nation Meaning of the directive principles of state policy The Constitution has directed the state to follow some principles in order to achieve the ideal welfare state These directive principles are called as Directive Principles of State The governments are expected keep these principles in view while administering the state These are the indicators for the holistic development of India Importance of the directive principles of state policy The directive principles of state policy are the directions given to the central and state governments by the constitution It is necessary to adopt these principles while legislating formulating and implementing policies The directive principles of state policy are important in achieving freedom equality and brotherhood and establish the welfare state The directive principles of state policy included in the constitution are as follows Social justice To achieve the public welfare by providing social economic and political justice to the citizens Social justice to the weaker sections It is intended to provide basic needs to the weaker sections to find remedy against economic exploitation providing education and extending free legal aid to them Women and Child welfare Equal wages to both men and women for the same work Maternity benefit to women prevention of exploitation of children facility for children to grow healthily in addition to providing free and compulsory education Women and Child welfare Free and Compulsory Education Labour welfare Looking after welfare of labour right to work conducive atmosphere to work minimum wages to workers and providing them opportunity to participate in the administration Aid to the helpless The government aid for the aged patients and the unemployed to live Uniform code of law to all To enforce uniform civil law to all the citizens Prohibition of Liquor Drinking spoils the health It leads to financial problems in the family and increased exploitation of women Therefore the constitution has directed all the state governments to enforce the prohibition of liquor Agriculture and association of animal husbandry The state government should make an attempt to organize agriculture and animal husbandry in a modern and scientific manner In order to protect the unique species prevent the slaughter of cattle calf and other animals which give milk and pull heavy luggage Advanced Agriculture Agriculture Development Environment Protection of environment and wildlife protection of environment from pollution of industries and mines And protect the wildlife Protection of historical monuments Protecting the historical places and monuments For example Hampi Belur Halebeedu Pattadakallu and other historical sites Channakeshava Temple Belur International Peace and Security Participation of the country in safeguarding the international peace and security What is social justice Protection to all the people without discrimination based on caste religion gender language colour region and status and treating everyone as equal is known as social justice Provisions such as eradication of bonded labour exploitation of children equal rights to women and respecting them are also included under the Social justice The constitution has given certain advisories and directions to the state government In the event of violation of these principles they cannot be questioned in the court For example the central government and several other state governments could not enforce prohibition of liquor for the last six decades No one can question this in a court of law Activity Check how many of the directive principles of the state have implemented in our state Many exploitations are still going on in different forms Organize a debate meet on this issue and make a report on the opinions expressed there OUR DEFENCE FORCES Introduction In this chapter the divisions of the defence functions training centres latest weapons central office and such other topics are introduced In addition to it the Para military forces assisting forces and civil forces are also explained Competencies Understanding about our defence forces Understanding the Army Navy and Air Force Understanding the capability of the defence forces Feeling proud of our para-military forces for their services Expressing pride over the voluntary services of our defence forces Defence Forces Protecting the country from the foreign aggression is the primary duty These works are given to the defence armed forces Therefore the role of the defence forces is very prominent It is a matter of pride that India has a disciplined powerful and aggressive defence forces We have efficiently faced several challenges after independence which disturbed our national integrity For example the aggressions by China and Pakistan Our defence forces have sufficiently displayed that they are ready for any sacrifice during the Kargil military operation India has about kms of land border and kms of sea border to protect Over of the total annual budget is reserved for the defence forces of India Responsibilities of our defence forces Protecting the border areas Safeguarding the integrity of the country Preventing smuggling and such other anti-national activities The supreme power of the defence forces are vested with the President of India The defence system has three divisions Army Navy and Air Force The defence forces of India take part in the Independence Day and Republic Day celebrations of India and display their military strength There are training centres for the defence forces to learn their fighting skills Important among them are National Defence College Defence Service Training Centre Indian Military Academy Dehradun and National Defence Academy Khadakvasla Pune Indian Army Indian Land Army Emblem The Indian Army is the second largest in the world The army comprises of Infantry Cavalry Tank regiments called Armed Corps Gunners Regiment or Artillery There are soldiers and reserve forces in the army The service chief of the army is called General He is responsible for discharging duties related to the control of the force training operation and administration The head office is based in New Delhi The army has been rendering valuable humanitarian services during natural calamities such as earthquake floods drought landslides whirlwind The land army apart from being technically advanced has also its own spy agency Indian Navy Indian Navy Emblem The naval forces are necessary for protection of the islands and coastal lines The Indian Navy is the sixth largest in the world Its service chief is called Admiral Its headquarters is situated in New Delhi The Indian Navy consists of advanced missile ships and submarines Among them INS Vibhuthi and INS Godavari are prominent Apart from them INS Virat and INS Vikdramaditya are well-equipped with fighter aircrafts The Naval Base of the Indian Navy is situated in Karwar which is known as the Sea-Bird Indian Air Force Air Force Emblem War PlaneThe Indian Air Force is the fifth biggest in the world Its service chief is called Air Chief Marshall Its head office is situated in New Delhi For the administrative convenience the Indian Air Force is divided into five commanding stations The command stations at Bengaluru Hyderabad and Dindigal Tamil Nadu have important training centres As a result of advancement of latest technology it is equipped with fighter aircrafts to face any eventuality Our Air Force is equipped with latest fighter aircrafts like Jaguar The Air Force comprises of Airmen and fighter aircrafts The strength of the air force is a matter of pride to the countrymen Operational Defence Forces The operational defence forces help the main fighting forces during critical situations Border Security Force Border Security Force The important duty of the border security force is to protect the national borders During the Kargil military operations the border security forces fought jointly with the army from the peak of the high mountains Duty until death is the slogan of the BSF Border Roads Organization The Border roads organization opens the closed entries to the army to enable armed operations instantly It also co-ordinates the important works like construction of roads bridges and drainage lines The Coastal Guards This is a Para-military force Its head office is situated in New Delhi Its major responsibility is to protect the coastal borders of the country Coastal Guards It also undertakes humanitarian services during natural calamities such as whirlwind Tsunami and cyclones Its prominent works include preventing intrusions smuggling and such others The Coastal Guards have latest warships and aircraft helicopters There are sailors in the Coastal Guards Central Industrial Security Force This is the biggest industrial security force in the world There are soldiers enrolled here It is providing security to over government and private industrial installations and laboratories in India It also provides protection to the airports harbours railway stations historical sites and nuclear power stations Assistant Defence forces In order to infuse certain values like patriotism and service mindedness among the youth few activities are planned in the schools and colleges National Cadet Corps is a prominent activity among them National Cadet Corps NCC NCC Cadet The National Cadet Corps NCC teaches certain qualities such as community life and leadership Those who get this training are given preference in recruitment to the army They get reservation in admission to higher courses The youths in schools and colleges can join the NCC Its main aim is to infuse the responsibility of national security Its slogan is discipline and unity There were national cadet corps units in districts schools colleges spread across India in Home Guards The Home Guards co-ordinate the functions of the police force Its works are -Assistance in the maintenance of internal security emergency and natural calamities Civil Police Forces The police forces work at central and state levels The jurisdiction of the police services confine to state only The central government has established its own police forces National Security Group National Security Group provides security to very important persons It assists in suppressing terrorism and provides internal security The Bomb diffusion group is complementary to it Indian Red Cross Society Indian Red Cross Society branches are in districts of India The President of India is its Chairman Its main aim is humanity and Voluntary service CONSTITUTIONAL AMENDMENT Introduction The methods of amending the constitution are explained here Competencies Understanding the structure of the Indian constitution Understanding the methods of amending the constitution of India Understanding the method by which the constitution is amended by a simple majority consent Understanding the method by which the constitution is amended by a special majority consent Understanding the method by which the constitution is amended by the special majority consent from half of the states of India Though the stability is an essential feature of the constitutional law in view of adjusting to the changing situation on account of continuous social changes the amendment becomes necessary Structure of the Constitution The structure of the constitution can be decided on the basis of amendments In case the amendment is easy it is called Flexible Constitution and in case the amendment is difficult it is called the Rigid Constitution The constitution of India is a combination of both rigid and flexible factors Methods of Constitutional Amendment Amendment by Simple Majority Amendment by Special majority Amendment by Special majority along with consent by half of the states Amendment of Constitutional Amendment by Simple Majority method Certain parts of the constitution can be amended by a simple majority through general legislative process of the Parliament both LokSabha and RajyaSabha and seek the consent Approval of half of the total members of Parliament for amendment For example- Qualifications necessary for the citizenship of India Amendment by Special Majority method Certain parts of the constitution can be amended by a special majority consent of the members of Parliament Majority means two third members should accept For example Fundamental Rights Directive Principles of State Policy and other factors Seeking consent of half of the States of India and amending by a special majority method Certain parts of the constitution can be amended by special majority along with consent from half of the states of India This method is harder compared with the other two methods By this method the election of the President of India distribution of powers between the Centre and the State and other sections can be amended By these three methods certain necessary amendments can be made to Indian constitution The provision is made in the constitution for including certain changes in accordance with the changing society and situation Till September our constitution has been amended times NORTH AMERICA LAND OF PRAIRIES Introduction Last year you have studied the geographical features and importance of Asia Europe and Africa This year you will learn a lot about North America South America Australia and Antarctica In this lesson you will study about location extent and physical setting Physical divisions climate natural vegetation agriculture important minerals industries population growth distribution and density of the continent of North America Competencies Understand the location extent and physical setting of North America Understand by comparison the diversity of physical divisions Know the richness and lakes of North America Understand the influence of climate on natural vegetation and animals Know about agricultural development of North America Understand how North America developed industries by utilizing Minerals Understand the density and distribution of population of North America North America is a recently discovered continent In the Italian navigator Amerigo Vespucci sailed to the coast of the mainland Then the continent was called by the first word of his name Amerigo America The continent is mostly inhabited by Europeans They made use of Mexico’s gold The French built up profitable fur trade in Canada the British exploited the fisheries and forests of the Atlantic Provinces of Canada and of New England of USA North America Political Division The sound resource base combined with development in science and technology a large domestic market international trade relationship development of good means of transportation have helped North America to become one of the most developed regions of the world So the nations of North America are very rich and called one of the economically prosperous countries Therefore it is necessary to understand the continent as a model for progress for other continents LOCATION PHYSICAL SETTING AND EXTENT Location North America is located entirely to the north of the equator It lies within N to N latitudes and w- w longitudes The tropic of cancer N passes through the continent in the South and the Arctic Circle N in the north Physical setting North America is surrounded by the Atlantic Ocean in the east the Pacific Ocean in the west and the Arctic Ocean in the north It is separated from the continent of Asia by the Bering Strait It has a land link with South America by the Isthmus of Panama A number of smaller water bodies are found here eg the Gulf of Mexico the Hudson Bay the Gulf of Alaska Gulf of California The West Indies and Cuba islands are found in the Caribbean Sea New Found-land is found to the east of Canada A number of islands lie in the Arctic Ocean of which Greenland is the largest The strip of land that lies to the South of North America is called Central America Extent North America is the third largest continent in area in the world after Asia and Africa It is almost times mile sq km bigger than India There are countries in North America Canada United States of America and Mexico are the three large Countries by their size The Caribbean Islands are also area included in the Physical area of North America Do you know Countries Their Fame Canada Trans Canadian Railway USA Grand Canyon HOMES Lakes Bar Ringer Crater Volcanoes West Indies Cricket Islands PHYSICAL DIVISIONS The Continent of North America is divided into four major physical divisions They are The Western cordilleras or the Rocky Mountains The Great Central plains The Appalachian Highlands The Coastal Plains The Western Cordilleras These are the young fold mountain ranges like the Himalayas of India The Western Cordilleras run from Alaska in the north to Panama in South They consist of a series of plateaus eg Colorado Mexican Yucatan Plateau and form a series of parallel fold mountains The Rockies are most important ranges in the Western Cordilleras The height of the range is low towards Alaska Brooks and it increases enormously towards Mexico Mount McKinley is the highest peak and Death Valley below sea level is the lowest part in this region The Cascade and Sierra Nevada are other ranges The Whitney Mountain and White Mountain in California are well known for their rugged slopes and scenic beauty There are some Intermountain plateaus found between these ranges Plateau of Columbia Colorado and Mexican plateau are the important among them River Colorado cuts the Colorado plateau and has given rise to the Grand Canyon The old Faithful Geyser is a World famous geyser in the Yellow Stone National Park of USA Old faithful geyser The Great Central Plains The Central plains are also referred to as the Great plains of the Prairies They lie between the Appalachians in the east and the Cordilleras in the west The plain consists of vast expanse of the total area of NA of flat to gently rolling land These plains are formed by the River Mississippi Missouri and their tributaries This is one of the most fertile plains of the world and is a good farming region The denudation of the area by ice sheets has resulted in the formation of a large number of basins These basins are covered by lakes The 'Dust Bowl' Refers to dust storm caused by unscientific cultivation in s It devasted agricultural lands in America and Canada The Eastern Highlands The Appalachians The Eastern high lands are also known as Appalachians These extend from Newfoundland to Alabama along the eastern margin of the Continent Appalachians The Appalachians are old folded mountains but have been denuded to their present height East of the Appalachian ranges lie the Piedmont plateau and the Atlantic Coastal plain The St Lawrence Valley separates the Labrador plateau from the Appalachian ranges They are rich in coal lead zinc iron ore copper water power and wood This region has a surprisingly large population and its importance in the North America economy is significant The Coastal Plain North America has quite a long and indented coastal line except in the south where the Isthmus of Panama is the coastal plain is narrow in the north east and widens towards the south and west The average height in above sea level This is a low and relatively plain area with sandy soil which is relatively infertile Swamps and marshes are abundant The coast is indented by river mouths and bays on which many sea ports are located Rivers and Great Lakes North America has a few large and short rivers A number of lakes form the unique physical features of this continent around the Canadian Shield Rivers The Mississippi and its tributaries forms the great river system of North America These together drains two third of the area of the continent and finally flows into the Gulf of Mexico The Missouri is the important tributary of Mississippi The other tributaries are Red River Ohio Tenniesee Arkansas nad Plate The Snake Frazer Columbia Yukon Colorado Rio Grande Meckenzie Nelson and St Lawrence are other important rivers of North America Rivers North America Mississippi River The Colaredo Columbia and Frazer are the west flowing rivers They are short and swift And flows into the pacific ocean River Colorado and River Columbia are the west flowing rivers and they are short and swift The River Columbia flows across the Columbian plateau The Colorado river drains into Colorado plateau and forms the Grand Canyon It is a centre for scenic beauty and tourism The grand canyon is called Natural wonder of the world Missouri River Do you know Grand Canyon Arizona USA Depth about mt width to Km Grand Canyon The Canadian Shield is drained by many small rivers and they flow into the Hudson Bay The St Lawrence is an important river of USA and Canada It passes through the Great lakes It remains frozen for months in a year Lakes North America has a large number of fresh water and salt water lakes They are situated on the southern border of Canadian Shield Huron Ontario Michigan Erie and Superior are the important Lakes Superior Lake Together they are called HOMES Lake Superior is the largest of the Great lakes and is the largest fresh water lake in the world Chicago and Detroit are situated on the Michigan and Eire lakes respectively In Canada Lake Winnipeg is very important Great lakes serve as important water ways Climate and Natural Vegetation Climate North America has a wide range of climate due to its vast latitudinal extent and varied relief features It includes extreme weather conditions ranging from freezing condition in Alaska and Greenland the Tundra type to burning heat in the deserts of south-west USA South-Eastern Florida the Caribbean and Central America have tropical conditions The eastern half of North America is more humid Central and Southern regions of the continent are prone to severe storms including hurricanes and tornadoes Natural Vegetation The Natural Vegetation and Animal life largely depend on climate soil and relief features Due to the great diversity in climate and relief North America has a wide variety of vegetation These vegetation belts broadly follow the climatic regions They are The Tundra type of vegetation found within the Arctic circle It is found in Coniferous forest Canada Alaska and Greenland Winters are long and freezing and summers are very short The only vegetation found here are mosses and lichens Some stunted flowering plants are grown in summer season The animals which survive in this hard and harsh conditions are Reindeer and Caribou and Carnivores like Polar Bears and Arctic Foxes South of the Tundra belt lies the cool temperate type of climatic region This is actually a belt of coniferous forest called Taiga The coniferous forests are evergreen and species like pine fir spruce birch are found here The fur bearing animals are found in this region for example the Lynx Sable silver fox Decidious type is found in east and south east of the St Lawrence river and Great Lakes Northern part is cold and Southern part of the region remains warm Winters are cold but summers are warm and rainfall occurs usually in summer The trees found here shed their leaves in autumn Eg Cypress Oak ash and chestnut The wild animals found here include Beaver Black Bear Musk rat and Porcupine The cool temperate climate is found in parts of USA There is a vast grassland between the Rockies and the Great river basin Mississippi-Missouri which is also known as the Prairies This is actually a vast treeless plain This plain land is known for wheat cultivation and animal rearing It is called Wheat Bowl or Bread Basket of world The coniferous and deciduous trees are found in temperate mixed forests Canada and North California have such forests The important trees found in this region are birch beech maple oak Canada is a country of Lakes Formed by Sparse Population and abundant Taiga type of forest largest exporter of wood in the world The Southern part of Mexico and the West-Indies region have the tropical forests Mixed forests are found here with hardwood tree logwood The western coast of California experiences the Mediterranean type of climate The vegetation is typically adjusted to the long summer drought Olives Oak cork are found here This region is also known for citrus fruits orange The desert condition is found in the western part of the continent in South California Mexico and Arizona Different varieties of Cactus and thorny bushes are common here The typical example of cactus is the Joshua Desert nights are called winters of Deserts Desert Vegetation different Cactuses Agriculture Agriculture is an important occupation of North America Central lowlands of the continent especially Canada and USA are very productive agricultural countries Only ten percent of the total area of North America is suitable for agriculture But the production from their farms is very high Because large farms rich soil adequate irrigation mechanised farming other facilities with human efforts make North America one of the largest agricultural regions of the world Regions specialized in the production of specific crops are called Crop belt Corn belt Wheat belt Cotton belt Tobacco belt Wheat is one of the popular cereals grown in North America especially in Canada and USA The Prairie region provides the best soil for wheat cultivation Since the population is low lot of surplus production is obtained which can be exported Maize is popularly known as Corn It is grown extensively in the United States and Mexico Most of the maize is used as feed crop for feeding cattle and pigs They are reared for meat in Mexico Maize is the staple food grain But today maize is grown as a check crop Wheat Maize The other popular crops are barley oat and potato Barley and oat can be grown in cold weather Beer is brewed from barley Oats is used as a feeding crop for the animals Potato is also grown in the continent which serves as a food crop Cotton and Tobacco are grown as cash crops in the continent The Cotton belt lies along the Mississippi Valley USA and Mexico are important producers of long staple cotton Tobacco grows in the south USA Cuba Jamaica and Mexico The USA ranks second after China among major tobacco growing countries of the world Sugarcane is another important crop grown here Cuba is the third largest producer of sugar in the world so popularly called the Sugar bowl of the world Sugar beet is also grown in the USA It is a major source of making sugar after sugarcane Orange Grapes Coffee and Cocoa are the tropical plantation crops grown in the parts of Central America and West Indies Fruits like grapes oranges lime apple pears peaches are grown in California Florida New Jersey and areas around Urban Centers California produces of the wine by using grapes in North America Therefore California is called the Wine Country Shallow continental shelves such as the Grand Banks Georges Banks off the New England and Newfoundland coast are popular fishing grounds Important Minerals and Industries North America is blessed with abundant resources Its natural resources are variety of soils extensive grasslands minerals power resources and forest wealth The continent has rich deposits of different valuable minerals The deposits of gold had once attracted people to this continent Besides this iron ore copper nickel silver and zinc are other major mineral deposits The continent also abounds in coal petroleum and natural gas Gold is the very first mineral mined in North America California and Yukon valleys are important areas of gold mines Lake Superior and its surrounding areas are known for having large deposits of Iron ore The high grade iron ore is found in and around the Canadian Shield Mexico is the world’s major producer of silver The USA is the leading producer of copper in the world It is also mined in Canada Fossil fuels are exploited in considerable quantities throughout the continent North America has large deposits of high grade cooking coal in Appalachian region Pennsylvania alone produces of the world’s total coal production The USA is the world’s largest coal exporter Oil and Natural gas are found in Alaska Texas Louisiana Kansas and in western Canada and parts of Mexico Offshore region of the Pacific Ocean has good deposits of natural gas The USA is the major producer of Petroleum The USA is the leading producer of nuclear power in the world Gold Iron Steel Coal Copper Nickel Silver Zinc Among the countries of North America USA and Canada are highly industrialized Availability of raw materials like iron ore coal copper bauxite helps heavy industries Availability of power transport and modern technology has helped industrialization to a great extent Pitts burgh steel city The Lake Region of Eerie Superior and Michigan have seen a lot of development in iron and steel industry Raw materials and water transport have helped tremendously The favour able industrial policy of USA helped in the growth of industries The city of Pittsburgh is called the Steel city due to rich coal deposits found in the Appalachian region hydroelectric power and easy transport facilities for bulky materials Iron and steel is the basic industry so it helps the growth of other industries like automobile ship building locomotives heavy engineering aircraft Wood pulp paper and news print are produced in the USA and Canada Soft wood is used in making paper pulp cardboard and news print Pulp is used to produce synthetic fibre Canada is one of the top exporters of paper pulp and news prints Lumbering is a highly organized job in North America People engaged in lumbering in Canada are known as lumberjacks Chemical industry produces a variety of articles like synthetic rubber plastics fertilizers and medicines Plastic has now replaced wood to a great extent Plastic is prepared in all parts of the USA Chicago is famous for plastic industry Meat packing is an important industry spread over in a number of centers like Chicago Kansas city and St Louis Electrical and Electronic goods are also produced on a large scale Many of the industrial products and machinery are exported from USA and Canada Mexico and other countries in Central America lag behind in industrial development Most of these countries are small and do not have adequate power resources and raw materials needed for industrial development Chicago Industrial City Population Most of the North Americans are descendants of Europeans of American Indians and Africans Although there are some native or indigenous people most of them speak Spanish English French or American Indian languages North America Population density Population density is the highest in the high lands of Mexico and Central America But much of the northern part of the continent is almost empty especially the frozen far north The densely populated parts of USA are urban centers and industrial regions Nearly of the population is urban in North America The population of the Caribbean islands is less but settlement is dense due to the limited availability of land New terms Prairies Amerigo Caribbean Cordilleras Rockies Appalachians Canadian Fold Mountain Shield Canyon Homes Hurricanes Tornado Twister Tundra Reindeer Caribou Taiga Cropbelt Corn Oats Dust Bowl Cooking Locomotives Lumberjacks SOUTH AMERICA LAND OF ANDES Introduction In this lesson study the location extent and Physical settings rivers and lakes climate Natural Vegetation wild animals agriculture and livestock rearing composition distribution and density of population of South America Competencies Understand location extent and physical settings of South America Know the rivers and lakes of South America Understand diverse climate animals and natural vegetation of South America Understand the speciality of agriculture and animal rearing in South America Know the racial composition distribution and density of population of South America South America is the fourth largest continent in the world It is a part of Latin America When Christopher Columbus reached the continent around he mistook it for India and called brown coloured natives as the Red-Indians Soon the Europeans Spanish and Portuguese flooded the continent South America is the land of superlatives with the Andes and the Amazon Over a quarter of the world’s known copper reserves are found here It is the world’s largest producer of coffee It is popularly called Hollow land and Land of Grasslands The study of South America helps us to know various geographical and economic features of the continent LOCATION EXTENT AND PHYSICAL SETTINGS Location The continent lies mainly in the Southern Hemisphere A small portion is found in the Northern Hemisphere South America The Equator and the Tropic of Capricorn pass through the continent It is inverted triangle in shape broader in the north and tapers towards the south Its latitudinal and longitudinal extant is N to S latitudes and W to W longitudes The continent of South America is located in the western Hemisphere Physical Setting The continent is surrounded by water bodies on all sides except in the north In the north the Panama Canal separates South America from North America The Caribbean sea borders the north the Atlantic Ocean in the east and north-east the Pacific Ocean lies in the west and the South is bordered by the icy waters of Antarctica Extent The land area of South America is about lakh Sq km and it is times bigger than India There are thirteen countries in this continent Brazil is the Largest and French Guyana is the smallest country All the countries of South America have coastal line except Bolivia and Paraguay land locked countries Chile is a linear country Panama Canal is the major Ocean route between North America and South America Ecuador a country named after the Equator Argentina and Brazil are famous for Soccer game Brazil held Olympic meet Venezuela is famous for Angel falls and petroleum Physical features South America has spectacular topographical features It has the mountains with snow covered peaks and the dense equatorial forests The continent has rich fertile plain lands as well as dry wasteful deserts The major physical divisions of the continent are The Andes Mountains The Eastern highlands The Central lowlands The Western Coastal Plains SOUTH AMERICA PHYSICAL The Andes Mountains Andes Mountains This is the longest mountain ranges in the world running to a distance of km long along the Pacific coast Many earthquakes and volcanoes are found in the belt due to its presence in the Pacific ring of Fire Mt Aconcagua Argentina-Chile border is the highest Peak in the mountain range Other peaks are Mt Cotopaxi and Mt Chimborazo in Ecuador The Andes are rich in minerals like copper and Tin The Eastern High Lands Angel Falls This region comprises two distinct high lands a the Guiana high lands in the north and b the Brazilian high lands in the south These are made up of old rocks like the Deccan Plateau of India River Churn a tributary of Orinoco has formed the world’s highest waterfall Angel Falls in the Guyana Shield The Central Low lands The central lowlands lie between the Andes Mountains and Eastern high lands These consist of large river basins They are the Amazon the Orinoco and La Plat river basins The Amazon basin is the most notable and largest among them The Orinoco River forms the plain land in the northern part which is separated by the Guyana highlands from the Amazon basin Gran Chaco the Hunting Land is a vast low land of alluvium area found on the east of Andes and it is famous for grazing in south central parts of S America THE WEST COASTAL PLAINS These are narrow plains found between the Pacific Ocean and the Andes mountain range The west coast is almost devoid of coastal plains except in patches because the Andes Mountains rise steeply from the coast Narrow coastal plains are found in central Chile and Colombia along the west coast The coast line is indented broken Many big cities lie in the coastal plains There are many islands in the southern part viz Falkland Hornos Islands But Galapagos lies in north west of South America Rivers and Lakes The Amazon Female warrior Parana Paraguay Uruguay and the Orinoco are the important river systems of the South America The Amazon km river which rises in the Andes is the longest in South America and the largest river in the world It is navigable to a great extent along its course The Orinoco is another important river system The combined river system of Parana Paraguay and Uruguay is called La Plata Lake Titicaca Bolivia is the highest lake in the world and it is the largest navigable lake of South America Lake Junín Lake Sarococha of Peru Lake Poopo of Bolivia are the other important lakes of South America Titicaca lake South America Rivers Amazon Marajo river Island Anaconda and Piranha Largest river with more than tributaries About of the world land area Hunga underground river Climate South America has a wide variety of climate Latitude altitudes and the proximity of the Pacific and Atlantic Oceans contribute to the variation in the climate of the continent The Equator passes through the northern part of the continent and Tropic of Capricorn pass through the southern part The land mass within the two latitudes falls in the Tropical Zone The broader part in the north is under the influence of Tropical climate Hence the climate here is hot and wet The Amazon basin experiences hot and wet equatorial climate due to the presence of the Equator The region experiences convectional rainfall almost every day Heavy rainfall favours dense forest in this region The Amazon basin has thick forest which is the home of flora and fauna reptiles birds and monkeys are common in this belt Convectional rainfall in the Equatorial region is called Afternoon rainfall Tea time rainfall O’clock rainfall The Andes mountain ranges run almost the full length of the western margin of the continent On-shore winds bring rain to the windward side While the east of the Andes gets low rainfall This is the rain-shadow region and the temperate desert belt Patagonia of South America Ocean currents also influence the climate of the continent Warm Brazilian current move along the eastern coast and it causes rainfall While the cold Peruvian Humboldt current reduces the temperature in the western coast and keeps it dry Therefore the northern Chile and parts of southern Peru have hot desert Atacama type climate Western part of the Andes and Southern most region of Chile receive rainfall throughout the year and it is maximum in winter This region has oceanic climate North and Central Chile coastal region has warm summers and mild winters with rainfall in winter This region has the Mediterranean type of climate Atacama desert-calama Chile is the driest area on the Earth no rainfall for the last yrs Atacama desert NATURAL VEGETATION Evergreen Forest Selvas The Equatorial region of the Amazon basin has dense tropical rainforest It is the world’s largest rainforest locally called Selvas Evergreen trees of hard wood with dense canopy of trees are found here Mahogany and Ebony are the valuable trees in this area The rubber trees found here are used to make latex On either side of the equatorial forests grass lands are found These are known as Llanos in the Orinoco river basin Venezuela and as Campos in the Brazilian high lands The south eastern coast of Brazil has tropical deciduous forest South America land of Grass lands Llanos of Venezuela Campos of Brazil Pampas of Argentina Temperate grassland South of Gran Chaco region Argentina and Uruguay is covered by temperate grasslands to a large extent known as Pampas The plateau of Patagonia has temperate desert having s c r u b vegetation on the western side of the Andes and the central region has mixed type of forests Temperate deciduous forests are found on the lower slopes and coniferous forests are found on the higher slopes Central Chile has the Mediterranean type of climate which has evergreen trees and shrubs Wild life South America has a variety of wild animals birds and reptiles The condor is the biggest bird of prey in the world Rhea is a large bird which cannot fly like the Ostrich in Australia Spider monkey Owl monkey and Squirrel monkey live in the trees of the Amazon forests Anaconda Python is the largest reptile and it lives in the rain forest Puma and Jaguar are large animals of prey which feed on monkeys and smaller animals The Liama and Alpaca are animals similar to camels as they have long necks These are domesticated by the native inhabitants for working Galapagos Islands are well known for their giant tortoise There are spiders and insects like tsetse flies which cause sleeping sickness The Amazon River has varieties of fish such as the sting ray electric fish and Piranha most dangerous fish in the world Rivers also have crocodiles Agriculture and Animal Husbandry Cultivable land in S A is limited Barely of its area is under cultivation The main regions of cultivation are the Pampas in Argentina and Uruguay parts of Brazilian highlands and east coast and central Chile Most important crops of S A are Maize wheat Rice Coffee Cotton Sugarcane Maize is a native crop of S A and it is the chief food crop in the warm tropical region Wheat is grown in the cooler temperate regions in Argentina and Chile Wheat is also exported from Argentina Potato is widely grown in the Andes region Rice is cultivated all along the Brazilian coast Brazil is called Coffee pot of the world coffee is derived from Kaffa Fazenda is the largest coffee estate thousand of coffee plantations in Brazil Rio-de-Janerio is called coffee port of the world Coffee Among non-food crops South America is an important producer of coffee and cocoa Brazil is the world’s largest producer of coffee Columbia and Ecuador are also important producers of coffee Cocoa is also produced on a large scale in the coastal regions of Brazil Colombia and Ecuador are the other producers of cocoa Sugarcane Cotton is grown in drier slopes of Andes and is exported to other countries South America is an important producer of sugarcane in the tropical low lands Brazil is the leading producer of sugarcane and it is second largest producer in the world Other Sugarcane producing countries are Argentina Peru Guyana and Colombia Grasslands of Pampas are ideal for livestock rearing Livestock includes mainly horses pigs sheep and cows Argentina was once the biggest exporter of beef in the world The pampas are fine grazing areas for Beef Cattle Dairy cattle grazing pastures are richer where as poorer pastures on the Patagonian plains and mountains are meant for sheep rearing There are cowboys called gauchos who manage the sheep The best fishing grounds are located in the coast of the Pacific Ocean The Peruvian and Chilean coasts are the most important fishing grounds Though Peru had been the leading fishing nation its importance declined because the bulk of fish caught were mainly small pelagic fishes which were used for making fertilizers Chile’s catch is almost the same as Canada’s but mostly it is used for industrial purposes and not for food Lake Titicaca and river Amazon are important places of fresh water fishing Fishing Population The inhabitants of South America belong to mixed racial groups Amazon Indians and Inca indians are natives of S America who settled before the arrival of Europeans Europeans came in search of gold later settled here Slaves were brought from Africa to work in plantations The inter marriage among these groups formed mixed races South America registers a much higher percentage of urbanization than any other country in the world average The highest Urban population is in Uruguay and the lowest in Guyana South America Population Density The dense forests of Amazon Andean Mountains deserts of Atacama and Patagonia are very sparsely inhabited Gran Chaco and Guyana Highlands are also sparsely inhabited Most of the population is concentrated along the coasts in big cities and ports like Buenos Aires Rio-de-Janerio Valparaiso Sao Paulo Hollow Continent Inhabitance is mainly found in the coastal belt Central part of the continent is thinly inhabited Population in South America is mainly concentrated in Coastal areas But the central continent is less concentrated So it is called Hollow Continent South America registers birth rate similar to the world’s average But the death rate is less than the world’s average Therefore the rate of natural increase of population in South America is higher than the world’s average New terms Latin America Red-Indians Andes Ring of fire Equador Guyana Orinoco Amazon Laplat Gran chaco Galapagos Hornos Parana Paraguay Uruguay Titicaca Warm Ocean current Cold Ocean Current Mediterranean climate Selvas Latex Compos Pampas Piranha Gauchos Mestizos Mulattos Zombos Patagonia Atacama AUSTRALIA-THE FLATTEST CONTINENT Introduction Study of location extent and Physical setting of Australia Its Physical divisions rivers climate natural vegetation agriculture an imal husbandry minerals industries Population growth distribu tion and density Competencies Identify the position of Australia in the world its location and physical setting Describe the physical divisions rivers climate and natural vegetation of Australia Know the relationship between agriculture and animal husbandry of Australia Highlight the minerals and industries Discuss the growth distribution and density of population Location Extent and Physical Setting Australia Location The continent of Australia is situated completely in the Southern and the Eastern Hemisphere It lies between and south latitude and and east longitudes The Tropic of Capricorn passes approximately through the central part of the continent Extent Australia is the smallest continent both in terms of area and population The total area of the continent including the island of Tasmania is lakh sq km It is double the size of India and a little smaller than the USA and the seventh among the continents in order of size The continent is km from North to South and km from West to East Its coastal line is km long Australia Political The term Australia is derived from Austral Latin meaning South The Capital city of Australia is Canberra The term Oceania especially refers to about islands of Central and Southern Pacific Ocean of which Australia is an important part Physical Setting The continent of Australia is located between the Indian ocean and the Pacific ocean It is bound by Timor sea and Arafura Sea in the North West Torres Strait and Coral sea in North East Tasman Sea in the South East and the Great Australian Bight in the South Physical Divisions and Rivers System Physical divisions Out of the total land surface in Australia is less then above sea level comprising of flat low land Therefore it is known as the Flattest Continent Since most of the continent is occupied by the desert it is also known as Desert Continent Structurally Australia was a part of the ancient Gondwana land Australia Physical On the basis of topography Australia can be divided into physical divisions They are as follows The Eastern Highlands The Plateau Lowlands The Western Plateau Australia was discovered by Capt James Cook Europe in century So it is called the New Continent The Eastern Highlands This physical division lies in the eastern part of the continent It extends from Cape York in the north to the bass strait in Tasmania in the south The mountain range the Great Dividing Range lies roughly parallel to east coast of Australia It has steep slopes on the eastern side but it slopes gently to the west They formed a formidable barrier to the early settlers who reached the eastern coast of Australia So they came to be known as The Great Dividing Range In New South Wales the steep slopes are known as Australian Alps and New England Ranges and some of the high peaks are covered with snow in winter season Mt Kosciusko in the division is the highest peak of the continent The Great Barrier Reefextends north to south for about k beyond the east coast of Australia It is a long stretch of coral reef The Central Lowlands It extends from the Gulf of Carpentaria in the north to the Encounter Bay in the south It lies to the west of Eastern high lands It has inland drainage The rivers flows towards lake Eyre which is situated in the central part of the region The worlds largest artesian basin is located here The central low lands can be divided into basins The Murray- Darling Basin The Lake Eyre Basin and The Carpentaria lowlands Artesian wells The Murray Darling Basin is separated from the Lake Eyre basin and it is in the north It is a rich agricultural area of the continent with adequate water supply The Lake Eyre Basin is a vast Saucer shaped area It lies to the north of Murray-Darling basin River Murray River Darling It is the lowest part of Australia and the bed of Lake Eyre is the lowest point Many salt lakes are found here Much of the region is barren desert and very sparsely populated The Carpentarian Low land lies to the north of lake Eyre basin separated from the Barkly plateau It is drained by the rivers Flinders and Mitchell The Western Plateau It extends from the gulf of Carpentaria to onslow it has Perth and Albany in south east This tableland occupies more than two third of the continent It is mainly a desert area on which dunes are mostly mobile Some of the famous deserts located here are the Great Sandy Desert Great Victoria Desert and Gibson Desert The plateau is as old as Deccan plateau of India There are some isolated Inselbergs and hillocks Among them Musgrave and Macdonnell are the heighest ranges in central Australia Rivers System There are a few rivers in Australia As a result of great aridity and high temperature a large part of Australia is a desert Most of the rivers of Australia are short and flow into the lakes and they are more than the rivers which flow into the sea Most of the rivers of Australia rise in the Eastern Highlands Australia Rivers The Murray is the most important river in Australia It rises near Mt Kosciusko in the south eastern part of New South Wales In the beginning it flows west then south west km and finally flows into the Bay of Encounter The Darling Lachlan and Murrumbidge are its main tributaries This river is useful for navigation in certain seasons The east flowing rivers are short and swift They are the Hunter the east Flitzroy and Belyando The rivers Mitchel Gilbert and Flinders in the north eastern part flow towards north west and join the Gulf of Carpentaria The Daly Victoria west Flitzeroy and others flow northward and north westward and joins the Timor sea The Rivers Cooper Creek Diamantina and Mucumba drain into Lake Eyre Rivers Murchison Avon Black Wood drain into the Indian Ocean There are some lakes in Australia They are small in size and most of them are Salt lakes eg Lake Eyre Lake Gairdner Lake Torrence Lake Blache and of these Lake Eyre is the largest The world's largest monolithic rock Ayers Rock lies to the west of lake Eyre Ayers uluru Rock Lake Eyre Climate and Natural Vegetation Climate As mentioned earlier the Tropic of Capricorn passes through the middle of the continent Hence the climate of Australia is tropical and sub-tropical High temperature prevails throughout the year in a large part of the continent A cold ocean current along the western coast has made western Australia a hot desert the northern areas experience monsoon climate and the southern coast experiences Mediterranean type of climate Australia Natural Vegetation Winter season Due to its location in the Southern Hemisphere the seasons of Australia are opposite to those of the Northern Hemisphere When it is summer in the Northern Hemisphere it is winter in Australia Winter extends from June to August During this season the temperature is low and it decreases southward But the pressure is high The winds blow from the land towards sea They do not bring much rain The climate during this season is dry and hot But in Tasmania it is quite different Summer Season The period from December to February is considered as the summer season High temperature and low humidity are the chief characteristics of this season The temperature is higher in West Australia than in East Australia It is moderate in the south eastern parts and Tasmanian island Pressure is low in inland areas So the winds blow from the sea to the land and bring a little rain The south and south eastern parts of the continent receive more rainfall during this season The cyclones in Australia are known as 'Willy Willies' In general rainfall in Australia is like the monsoon type which is unreliable both in time and space The annual rainfall over south eastern northern and south western coastal areas is more than cm It is below cm in the largest interior desert of Australia Natural Vegetation The scarcity of dense forests is the distinguishing feature of Australia Most of the continent is covered with grasslands shrubs and open woodlands It reflects the climate of Australia The different types of vegetation in Australia are as follows Tropical Forests They are found in the northern and north- eastern coastal areas of Australia They occupy a very small area which is patchy and palm ash leech and cedar are the important trees Temperate Forests They are mostly found in the mountainous and hilly areas of Queensland New South Wales Victoria and Tasmania They are also known as hilly forests The important trees are eucalyptus acacia pine and callitris Eucalyptus is mainly used for oil and paper making Grasslands There are two types of grass lands in Australia i Tropical grass lands Savannah and Temperate grass lands Downs The first one is located to the west of the eastern highlands in Queensland central parts of North Australia and northern parts of west Australia This is called Savannah grasslands The latter one is largely found is Murray Darling Basin This is the temperate grassland and is Known as Downs It is used for postoral activity In these grass lands Tussock Mitchel and Astreble grass species are found The tussock grasslands are the best for sheep rearing Savannah Grasslands Downs Grasslands Shrublands These occupy the southern and western parts of Western Australia the southern part of South Australia the western part of New South Wales and a small area in southern Queensland Shrubs are common due to scanty rainfall Acacia is dominant here eucalyptus trees are scattered cactus and thorny plants are more in the arid parts Desert Vegetation This type of vegetation is found in the central and eastern parts of western Australia where the rainfall is very scanty and cactus salt bush grass and many other thorny bushes grow They have special devices to withstand the dry desert climate Ash tree Cedar Palm Eucalyptus Wild life The wild life of Australia is strange and unique The important carnivorous mammals of Australia are the dingo or wild dog numbat quell and Tasmanian devil Marsupials includes Kangaroos Wallabies Koala and Wombat Kangaroo is the national animal They travel by hopping on their long hind legs Monotreme egg laying animals are platypus echidna The most distinctive is the platypus a water dwelling animal It gives birth by laying eggs When the eggs hatch the baby platypus feed on the milk secreted from two patches of skin midway along the mother belly The echidna or spiny ant and termites eater is another monotreme There are variety of birds which include emu cassowaries black-swan fairy penguin kookaburra lyrebird and Currawongs Koala resembling a teddy bear Emu is a large flightless bird Kookaburras are best known for their human sounding laughter Lyre bird resembles the beautiful peacock Snakes and poisonous reptiles are common Kangaroo Wallabies Dingo Koala Emu Lyre bird Australia is a land of rare animals Around of its native birds are not found anywhere else in the world Agriculture and Animal Husbandry Agriculture Agriculture is one of occupations of Australia But the cultivable area is small and accounts for only of the land in Australia It is mainly found in the coastal plains and river basins Only percent of the population is engaged directly in agriculture The white people in particular are engaged in agriculture Due to scanty and untimely rainfall unfertile sandy soil and lack of irrigation facilities the cultivated area is limited However Australia is mostly self sufficient as it meets requirements of agricultural produce in spite of the difficulties faced In Australia extensive farming is in practice The size of the holdings is large and modern methods of cultivation are followed and importance is given to commercial crops as they are needed for export A variety of crops are grown in the continent wheat sugarcane cotton maize tobacco A variety of fruits and vegetables are grown in South Australia Queensland New South Wales and Victoria Wheat Sugar Cane Tobacco Cotton Apple Wheat is an important food crop in Australia It is grown in South Australia queensland New South wales and Victoria The Murray- Darling basin is the most important wheat growing area Australia exports about of its total production of wheat Maize is another food crop in Australia It is used as feed for fattening livestock It is mainly grown in Queensland and New South Wales Rice is grown on a small scale mainly in the Murray- Darling basin and the Coastal Queensland Sugarcane is an important commercial crop in Australia It is cultivated mainly in the region extending from northern New South Wales to north Queensland along the eastern coast Tobacco is another cash crop It is mainly grown in queensland A variety of fruits and vegetables are grown in Tasmania Victoria and New South Wales Apple Grapes Guava Oranges are grown in large scale Animal Husbandry This is an important occupation in Australia Australia is very popular as a country of pastoral activity as sheep and cattle are reared for wool meat skin and dairy products Sheep Rearing Sheep rearing is a dominant economic activity in Australia Sheep are reared in larger numbers in the continent Australia is the leading producer and exporter of wool in the world The vast grasslands water from the artesian wells cool and dry climate modern methods of sheep rearing and wide market facilities have encouraged sheep rearing Nearly of the Australian sheep are merino type which yield fine wool and Sheep are raised on huge farms called 'Stations' Cattle are reared for multiple purposes i e milk meat and other dairy products In the temperate grasslands downs and in Savanna grasslands beef cattle are reared Minerals and Industries Minerals Australia has enough mineral resources Its important minerals are iron ore bauxite lead zinc copper nickle tin and uranium Besides power resources namely coal petroleum and natural gas are also available Many of these minerals are exported Australia is an important producer of iron ore The major iron ore producing centres are Iron knob Iron Monarch Iron Baron Hill Pilbara and Yampi A large portion of iron produced in the continent is exported to Japan The main bauxite producing regions of Australia are Weipa Gove Mitchell plateau and Jarrahdale Australia is rich in bauxite and is the worlds largest producer of bauxite Kalgoorlie and Coolgardie are the famous gold mining centres in Australia Gold is also available in certain parts of New South Wales Victoria and Queensland Lead Zinc occur together silver is a by product These minerals are mainly produced in broken hills New South Wales Renison and Risdon Tasmania Mount Is a Queens land and Arthur River basin Northern Territory Copper is largely produced in New South Wales The Gulf of Carpentaria is a major region for manganese mining Australia has abundant reserves of uranium Its deposits are mainly located in the Northern Territory Western Australia South Australia and Queensland Coal petroleum and natural gas are the main source of power in Australia Australia is rich in coal resources It is mostly mined in New South Wales Queensland and Victoria Australia produces sufficient coal to meet its own requirement It also has some surplus for export Australia is a minor producer of petroleum Moonie Roma Rough Range and Bass Strait are the main oil mining areas Dongare Bass Strait Mercenia and Roma are the major producers of natural gas Industries At present Australia has attained an important position in various manufacturing industries Its mineral wealth agricultural development progress in science and technology availability of capital and wide market are some of the most important factors for the development of industries From the beginning industries of Australia are dependent on foreign investors Japanese are the foremost among the investors The major industries and producing centres are as follows Iron and Steel Industry Textiles Automobile Industry Paper Paperboard and Ship building Pulp industries Electrical machinery Oil Refining Industrial City Sydney Aircraft Sydney Melbourne flour milling fruit and fish canning chemical industry and tanneries are other industries of Australia Population Growth As mentioned earlier Australia is not only small in terms of size but it also has small population Its total population was million in which accounts for only of the world's population In the population was million and it rose to million in It indicates that the growth of population increased till the end of the last century Distribution The distribution of population in Australia is uneven and sparse The vast interior Territory of Australia is almost without inhabitants New South Wales is the most populated state in Australia Victoria state has the second place and followed by South Australia Tasmania is sparsely populated and nearly of the population in the continent lives in six capital cities namely Sydney Melbourne Brisbane Adelaide Perth and Newcastle Density Australia is one of the countries with very low density of population in the world The average density of population is only persons per sq km It varies from one place to another Population density is very high in a few urban and industrial centres capital cities along the east coast of the continent namely Victoria New South Wales Queensland Tasmania Moderate density is found in the south eastern and south western parts In contrast of the continent covered by desert and semi desert it has the lowest density The general pattern of population distribution is a remarkable reflection of geographical influence Australia Population Density In Australia urban population is more than rural population New terms Island continent Gondwana Saucer shape Monolithic rock Coral reef Kangaroo Lyre Dingo Kukuaburra Wallaby Echidna Koala and Inselberg ANTARCTICA THE WHITE CONTINENT Introduction Study of location extent and physical setting of Antarctica Its physical features natural vegetation and animal life expedition Antarctic Treaty and research stations Competencies Know the location extent and physical setting of Antarctica Understand the physical features land and water bodies of the continent Understand the natural vegetation and animal life of Antarctica Describe the expedition treaty and important research stations of Antarctica Location Extent and Physical Setting Location Antarctica is the continent which surrounds the South Pole Most of the continent lies within the Antarctic Circle or south latitude A unique position of the continent is that it is opposite to the Arctic ocean around the North pole Extent Antarctica is the fifth largest continent Its total area is million sq km It is larger than China and India and is more than half the size of the USA Physical Setting The continent of Antarctica is surrounded by a water body It is often called the Southern Ocean or Antarctic Ocean But it is not a separate water body Instead it is formed by the meeting of southern parts of the Pacific Atlantic and Indian Oceans CapeHorn the southern extreme end of South America is the nearest land to this continent It lies at a distance of km Antarctica is bound by the Indian Ocean in the east Pacific Ocean in the west and Atlantic Ocean in the northwest Antarctica Continent Physical Features Ice and snow cover about of the Antarctica Therefore most of the relief features of the continent are covered by ice sheets High mountain peaks and a few plateaus are the only visible land surfaces The ice layer which approximately metres thick makes it look white Therefore Antarctica is called the White Continent It is also known as snow desert and Cold Desert as it generates the coldest climate Ice-berg Under the ice Antarctica has the relief features such as mountains lowlands valleys and gorges Antarctica is the highest continent in terms of average elevation The Trans-Antarctic mountain crosses the entire continent It divides Antarctica into two major physical divisions i East Antarctica and West Antarctica i East Antarctica faces the South Atlantic Ocean and Indian Ocean It covers more than half of the continent and is called the Greater Antarctica Along the coast of the region there are mountains valleys and glaciers The central part of the region is a plateau where the South Pole is located West Antarctica faces the Pacific Ocean Much of its area lies below sea level The Antarctica peninsula of this region is a mountainous S shaped fringe of land that points towards South America Several islands lie near the peninsula It also includes peaks and volcanoes Vinson Massif the highest peak in Antarctica is located in the Ellsworth mountains Mt Erebus Antarcticas most active Volcano is on the Ross island Another one is Prince Charles mountain Two large gulfs cut into Antarctica at opposite ends of the Transantarctic mountains namely Ross Sea and Weddel Sea Vegetation and Animal Wealth As said earlier the continent of Antarctica is covered by thick ice sheets The climate of the continent is extermely cold and hostile It has months of sunshine and months of darkness It is very difficult for life to exist Very limited plant life can survive here It mainly consists of moss lichen and algae living on and between the rocks Only very few animals which can cope with adverse climate live here But there are a variety of animal life in the surrounding water bodies Namely the krill penguins whales seal and variety of sea birds The Krill a small queer shrimp-like fish is found in plenty They usually swim in large groups and survive on planktons These micro organisms are the source of food for large sea animals and fish Penguins are numerous along the coast They are large flightless birds Adelie Emperor Penguin and Chinstrap are the chief species of penguins They are the first to welcome the ships to this ice pack A variety of whales and seals are found along the sea coast and nearby islands There are main species of seals Continuous hunting has endangered the life of seals Penguin Elephant Seal Rookery is the nest built by penguins is hollows of rock for their reproduction Vostok is a place in Antarctica near the south pole which has recorded the lowest temperature C in the world Antarctic Expedition-Antarctic Treaty Antarctic Expedition The expedition regarding Antarctica continent took place in the century and continues to this day Many sea voyagers made adventurous efforts to explore the continent Among them Charles Wilkes Head of US Navy proved the existence of the continent of Antarctica Then James Clark Ross of Great Britain sailed into the Ross sea in the sea is named after him At the end of the summer inventors enter this continent through the ocean After that they prepare the shelter for winter camp Scott and Amund Sen Detailed exploration of the continent commenced in the beginning of century The first person to reach it was Ronald Amund Sen a Norwegian explorer is Scott USA heading another expedition arrived at the pole just a month later But he died on March His diary provided some information for further exploration of the continent Richard E Byrd the Navy officer of United States was the another to reach the south pole in by plane Later several countries of the world began to study the continent of Antarctica Modern research centres Antarctic Treaty This is an agreement between the countries to keep Antarctica as a place just for scientific research So it is later called The Continent of Science The treaty was signed in Washington D C on December by nations and it was enacted on June The treaty applies to the region south of o latitude Member nations Argentina Australia Belgium Chile France Japan New Zealand Norway South Africa Russia UK and USA are the member nations Main objectives Antarctica is to be used for peaceful purpose only and military operations are not allowed It prohibits nuclear test and disposal of radio active waste No ownership of land and water is permitted Mineral and oil exploration environmental pollution and hunting are banned Explorers must not bring any exotic species The continent is reserved for scientific investigation It is also agreed to preserve and conserve the natural resources of the continent Research Centres on the ice continent About of the worlds fresh water is conserved in the form of ice in Antarctica Important Research Stations About nations of the world have established their research stations in Antarctica to conduct research on several aspects of the continent i e structure climate change pollution bio-diversity protection India has also established its own research station in Antarctica In the Indian flag was unfurled for the first time in Antarctica under the leadership of Dr Quasim Maitri Indian Research Centre Bharathi Indian Research Centre Dakshina Gangothri The first permanent settlement was built in and named Dakshina Gangothri In it was buried and was later excavated and is being used again for storage Maitri is the second settlement It was set up in on the Schirmachar Oasis for experiments in Geology Geography and medicines It can accommodate persons India has built a fresh water lake around Maitri known as lake Priyadharshini It is km away from Maitri Bharathi is the third proposed settlement and active research station Its purpose is for the study of oceanography Survey has already been completed New terms Adelie Bharathi Chinstrap cold continent Dakshina Gangothri Erebus Moss Plankton Penguin Krill Maitri Geophysical Shrimp Seal Whale White continent Vinson Massif