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Introduction

This Teaching Guide has been written with the purpose of assisting a teacher in transmitting concepts clearly, correctly and effectively in a limited period of time. Ideas to begin, build and conclude a lesson have been given; yet, these are not the only and best way to teach. A good teacher comes up with new ideas and strategies.

When teaching science, in fact any subject, to young pupils, one must never forget that children at this stage can only make sense of concrete things and not abstract ones. For example, during a lesson on air, if they do not actually **experience** the air in a balloon being released, causing it to deflate, they will never truly understand the concept of air since they cannot hold or see it.

A successful teacher uses a number of strategies in the classroom:

- **Posing questions and inviting pupils' questions:**

In order to keep the students engaged in the class, ask short, relevant questions. Write a summary of different responses on the board and then sum it up. For example:

When you look in the mirror, what do you see?

Expected responses are: I see myself.

I see my body.

I see my face, eyes, nose...

Write the responses on the board and then sum up, e.g. We see our body, face, eyes, nose in the mirror. Before beginning a lesson, tell the class the topic and then ask them to think of any question that comes to their mind regarding it.

- **Conducting interactive demonstration**

The teacher should be well aware of the purpose of the demonstration and should have conducted it **beforehand** to ensure that the results are as desired. Ask a question and have the pupils predict the outcome of the demonstration. They could respond before or after discussing with another child. For example:

Which one do you think will sink in water; an egg or an egg shell?

There could be various responses to this. Practically demonstrate and then conduct a class discussion. Conclude the discussion by summarizing all the ideas shared.



- **Using cooperative learning in the classroom**

Two examples of cooperative learning strategies are described below:

Think-Pair-Share

Begin by first posing a question to the class that requires the pupils to think critically.

a. Think

Give a certain specified amount of time to the class to think alone about the answer to the question. Pupils will write their own answer.

b. Pair

Pupils pair up with a partner to discuss the question, listen to, and expand on one another's ideas.

c. Share

Pupils share their answers to the question with the entire class.

Jigsaw

Research shows that children learn best when they teach others what they have learnt. Jigsaw helps pupils learn and teach one another. It has four steps:

1. Form cooperative groups called **HOME** groups with each group member being given different material to read or learn. For example, the first group member is given page 1 of an assigned text, the second member page 2, etc.
2. **EXPERT** groups are formed by grouping pupils with the same assigned material together. This group must study the material together and plan ways to teach the material to their **HOME** group members and check for understanding.
3. Pupils return to their own **HOME** groups and take turns teaching their **HOME** group members the material they were assigned and are now experts on. The goal is that every member of the group should master all the material presented.
4. Check how well the pupils have worked together by taking a quiz or asking them to make a presentation.

In this entire process, the primary objective is that the pupils are actively involved in the learning process and are not being 'lectured'. **In all cases, do not begin to read the lesson from the textbook before you begin a discussion leading up to it. Reading the text comes after the discussion and brainstorming has taken place.**

Using the photocopy masters

The work sheets are a reinforcement of the lesson and can be used for homework or classwork.



Part 1 | Ourselves



LESSON PLANS

Unit 1

Topic: My body

Teaching objectives:

- To recognize the similarities and the differences between human beings
- To identify parts of the body and describe their functions

Key vocabulary: human beings, tall, short, young, old, dark-skinned, light-skinned, older, bigger, blind, deaf, disabled

LESSON 1: 40 min

Introduction: 5 min

This is the introductory unit and lays the foundation for work relating to the study of humans and animals. Teachers will need to establish whether children have appropriate vocabulary to describe their bodies.

- Invite the children to sit around you in a circle. Display the flashcards one by one showing pictures of a boy, girl, man, woman, baby, etc. Ask questions that evoke a direct response, e.g. *Who is this? It is a girl. Who is this? It is a woman. Who is older and bigger, a girl or a woman? This is a baby. Were you a baby like this once?*
- Point to your eyes. *What are these? These are my eyes.* Point to other parts of your face and name each part. Encourage the children to do the same.

Main teaching: 30 min

- Read pages 2 and 3 and discuss the pictures as you read, asking questions like;

Do we all look exactly the same? No, some of us are taller or shorter than the others. Some of us are girls while others are boys. Some people like our parents and grandparents are older than us. We all look different. Count the number of teeth in your mouth. Do other children in your class have the same number? Does everyone have the same favourite sport, colour or food? No.

- Now focus on the similarities among human beings. *When we look at ourselves in the mirror, we see two eyes, a nose, two ears, a mouth, hands, feet, etc. All of us have the same body parts, according to gender, and all are human beings. We need food, drink, air and sleep just like everyone else in the world.*



- Ask the children to name some body parts while pointing to them. *Just as each part of the body has a name, it also has to do a certain job.* Using the pictures in Exercise 1, discuss the action each picture is showing and what part of the body is being used to perform that function.
- The children could complete Exercises 1 and 2 as classwork.

Wind up: 5 min

Conclude the lesson with the following suggestions:

- Think of the similarities that all human beings share, discuss these with your friend sitting next to you, and name some of them.
- Now discuss some differences and share those with the class, too.

LESSON 2: 40 min

Introduction: 5 min

- Recall the body parts and their functions briefly. Stress the fact that each part has a function to perform. Give the analogy of the function of a pencil and an eraser. The pencil is used to write, while an eraser is used to rub off the pencil marks. Both are important. Similarly, each part of the body is also equally important and it is difficult if any one of these do not work. Give the examples of blind, deaf, or disabled people.
- Point out that we are different from other animals not only because we look different, but also because we are cleverer. We can read and write. We are able to talk to one another, even play music and invent new things! Can animals do that?

Main teaching: 30 min

- Children can then do the remaining exercises and activities.
- Playing the game 'Simon says' will help in the identification of body parts.
- Worksheet No 1.

Wind up: 5 min

Bring together the important points in the lesson by two simple demonstrations:

- Call any two children and ask the rest to note the differences and similarities between them.
- Show the pupils two pictures of any two animals or draw them on the board, e.g. a cat and a dog. Discuss the similarities and the differences between the two. Conclude that all living things may look different and act differently but they all breathe, eat, and grow, and use their bodies to move about.

**EXERCISE** (pages 4–5)

- 1 The body parts are being used in the pictures in the order given below:
knees, ears, legs, eyes, hand, nose.
- 2 Children draw a picture of themselves. Make sure they label it correctly.
- 3 Children draw and label parts of the face in the facial outline given. It would be a good idea if they could learn the spellings of these words beforehand.

ACTIVITY (page 5)

- 1 This game can be played to make the children familiar with the names of parts of the body and to follow instructions.

Explain to the children that they should follow your instructions only if the phrase, 'Simon says' is uttered. Perform an action and ask the children to repeat it.

Simon says, 'Wave your arms.'

Simon says, 'Hands down.'

Simon says, 'Close your eyes.'

If you do not say 'Simon says' before each instruction, the children must not follow your instruction, but remain still. Those who do not do so are out of the game. Give the instructions slowly at first, and then increase the speed.

Unit 2

Topic: Living and growing

Teaching objectives:

- To classify living and non-living things on the basis of common characteristics
- To recognize that all living things grow and as a result change in appearance

Key vocabulary: living and non-living things, food, water, air, move, grow, breathe, feed

LESSON 1: 40 min

Introduction: 5 min

- Recall the children's previous knowledge about living things by asking them to name the three types of living things; humans, plants and animals. Show them the related flashcards and ask pertinent questions:

This is a baby girl. What will she grow up to be?

This is a baby boy. What will he grow up to be?

This is a seed. What will it grow into?

This is a kitten. What will it become when it grows up?

**Main teaching: 30 min**

- Read the text of the lesson and talk about the first picture. *Do you see any humans in the picture? Which animals can you spot? Can you see any other living thing, a plant or a tree? All these are living things.* Put the children in pairs and allow them to discuss which the living things in the picture are. List their responses on the board.
- *All living things need food, air and water to live. Do you need food and water? Living things also grow, move, breathe and produce babies.*
- Explain that we breathe air and demonstrate the action by inhaling and exhaling deeply.
- Discuss non-living things like a toy train. *It can move, but does it breathe, grow or feed?*
No, it does not. So a toy is a non-living thing. Similarly, hair and nails grow but are they living things? Do they breathe or have babies? No, so they are not living things.
- Ask them about familiar animals. *What does a chick grow up to be? A puppy grows up to be a...?*

Wind up: 5 min

- Conclude this lesson by putting the children into pairs and using the Think-Share-Pair strategy, asking them to name any two living things. Compile this list on a chart under the heading 'Living Things' and display it on the soft board.

LESSON 2: 40 min**Introduction: 5 min**

Recap the salient points of the previous lesson:

- All living things grow and change.
- They also move on their own, feed and produce young ones.
- A kitten grows into a cat, a seed grows into a plant and a baby grows up to become an adult.

Main teaching: 30 min

- Draw two columns on the board under these headings; living things, non-living things. Write a list of objects like fan, flower, cycle, bird, baby, frog, etc. Discuss with the class which things they consider to be living and non-living. Accordingly, tick or cross in the correct column. Discuss their choices, 'Why do you think a fan is a non-living thing?'
- Children are now ready to complete Exercises 1 and 2 independently.
- Worksheet 2

Wind up: 5 min

- Review all the characteristics of living things they have learnt: they grow, feed, move on their own, breathe and produce young ones. All living things grow in size and change in appearance. A kitten grows in size and becomes a cat. A human baby grows into an adult, becoming bigger and taller. A baby crawls, then walks and then runs. With the passing of time, it can do many more things. Concepts to be aware of at this stage are that of size, age, time and growth.

**EXERCISE** (pages 7–8)

- 1 a) tick b) cross c) tick
d) cross e) tick f) tick
- 2 Only the insect, plant and turtle are living things, so make sure that the children colour only these. The rest should be left uncoloured.

ACTIVITY (page 9)

- 1 For this activity you will need either a ready-made height chart, or make one yourself, using a ruler and chart paper. Mark off metres and centimetres on it. Children are to record their height both at the beginning, and at the end of the academic year. Discuss the differences in height.
- 2 Call a few children and discuss the differences by comparing their photographs. Ask questions to get proper responses, e.g. *You were small when you were a baby and now you are-----? Bigger.*

Unit 3

Topic: The senses

Teaching objectives:

- To identify the five senses and their functions
- To understand that these senses inform us of our surroundings

Key vocabulary: body, human being, ear, mouth, eye, nose, teeth, chest, arm, knee, foot, finger, leg, toe, hand

LESSON 1: 40 min

Introduction: 10 min

- Do not open the text book yet. Begin this lesson by conducting a simple activity for which the following material is required: a glass of water and spoon, a small bell (optional), some small candies or any other edible item, any fragrant flower or a small cotton swab soaked very lightly in perfume.

Ask the children to close their eyes. Ask them: *Can you see anything? No, because your eyes that help you to see are shut.*

Now, tell the children that they should keep their eyes shut, until you tell them to open them.

Ring the bell or clap your hands. *What can you hear? You hear with your ears.*

With a dropper or a spoon, drop a few droplets of water on each child's hand. *What do you feel? Your sense of touch tells you that your hand is wet.*



Next, remind them to shut their eyes and one by one pass the cotton swab or flower below their noses. *Do you smell something? Is it a nice smell? Our sense of smell lets us know if the smell is nice or not.*

Finally, give them a candy each and allow them to taste it. *What is the taste like? Is it tasty? Do you think it is sweet? You are enjoying the taste of this candy because your sense of taste helps you to enjoy food.*

Main teaching: 25 min

- Remind them of the five senses they experienced by listing them on the board. *What part of the body did you use for seeing, feeling, hearing, tasting and smelling? Hear their responses and write them next to the five senses you have already listed on the board.*
- Now read the lesson with the children, taking care to discuss what people are doing in the pictures on pages 11 and 12.
- As the pictures are discussed, encourage the children to use different adjectives to describe what they experience using their senses, for example:

sight	—	light, bright, colourful, dark, etc.
hearing	—	loud, soft, pleasant, etc.
smell	—	pleasant, unpleasant
taste	—	sour, sweet, bitter, salty
touch	—	rough, smooth, wet, hot, cold, etc.

List them on the board or pin flash cards showing the five senses on the soft board.

Wind up: 5 min

- Recap all they have learnt by asking the class to name all the five senses and their functions.

LESSON 2: 40 min

Introduction: 5 min

- Explain the importance of senses. The sense of sight helps us to see all the beautiful things around us. It helps us to see our family and our friends. The sense of hearing helps us to hear sounds like our parents' voices, the school bell ringing or music playing. The sense of touch helps us to enjoy the cool winter and the warm summer. The sense of taste helps us enjoy the taste of delicious food.

Main teaching: 30 min

- Just as the senses make us aware of everything around us, they also help us to keep safe. Point out how our senses can save us from danger.
 - sight — we can see the things that are dangerous for us, e.g. a fast car, an object falling, a puddle we can slip in, etc.
 - hearing — we are able to hear a train approaching, someone's warning shout, etc.
 - smell — we can smell smoke from a fire, food burning, etc.



taste — when something tastes bad, we will not eat more of it.

touch — if something feels very hot or cold or hurts us, like a thorn, we move away from it. Encourage the children to participate in the discussion and give examples of their own.

- Read to the class the following passage letting them identify the senses used at appropriate places. (Similar passages or familiar stories can be used to further reinforce concepts.)

Title: Five Senses Walk Story

Take a pretend sense walk. Have the entire class stand up. Have them begin walking in place. Start the story.

'It was a beautiful day. The weather was warm, the wind was blowing slightly, and Amir and his mother decided to go for a walk, to the park. They packed a picnic lunch and began to walk to the park. While they walked, they looked (stop and let the children point to their eyes) for all of the animals, birds, and insects. Amir saw the neighbour's dog and stopped to pet him. (Stop and let the children touch their hands) Her fur was so soft and silky. On they went, to the park. Oh no! Amir and his mother held their noses... (Stop and let the children do the same) Guess what they smelled? You are right; they were passing by a garbage dump. They started walking faster to get away from that smell. Soon they were far enough and could let go of their noses. They were a little out of breath, since they had been walking so fast. They walked a little slower and did not talk for a while; they simply listened for the sounds around them. (Stop and let the children point to their ears.) They could hear many things. What do you think were some of the sounds they heard? (Let the children answer.) Finally, they reached the park. It had been a long walk and they were hungry. They sat down under a big tree and enjoyed eating their lunch. (Let the children point to their tongues.) Amir played, while and his mother rested on the green grass. After some time, Amir got tired. He and his mother walked back home.'

Reverse the sequence of the walk beginning with all of the sounds Amir and his mother heard near the park. See how many of the details of the story the children can remember.

- Point out the fact that some people do not have the sense of sight or hearing. We should be caring towards those who have some kind of disability and are less fortunate than us. Children can learn this simple poem on the senses using hand gestures to point to the sense organs.
Eyes to see with,
Ears to hear with,
Nose to smell with,
Tongue to taste with,
Hands to touch with,
I'm a lucky child,
God blessed me with all five senses.
- The pupils can then do the related exercises and activities.

Wind up: 5 min

- Recap the importance of the five senses emphasizing on how we enjoy the things around us more because of our senses. (Talk about how Amir enjoyed his visit to the park.)
- Using the jigsaw strategy, divide the children into groups, asking each group to say how we use each one of our senses.



EXERCISE (pages 13–15)

- 1 (taste – tongue) (touch – skin) (smell – nose) (sight – eyes) (hearing – ears)
- 2 a) sight, smell b) sight, touch
c) sight, hearing d) sight, touch
- 3 The children will give their own answers.
- 4 The children will give their own answers.
- 5 In the following order:
blind, mute, deaf
- 6 a) see b) hear c) feel
d) taste e) smell

ACTIVITY (page 16)

- 1 The children will give their own answers. The teacher can prompt the children with some suggestions:
Class — the bell ringing, children asking questions, a pencil or an eraser falling, the teacher erasing the blackboard, turning the pages of a book.
Home — clock ticking, radio or television, brother or sister playing, mother calling.
Road — cars honking, sound of the rickshaw, policeman's whistle, siren of an ambulance or a police car, street vendors, etc.
- 2 The children can be asked to bring the objects from home. Arrange a 'Sound Table' and put the items on it, or have them sit in a circle. Present each object and discuss what kind of sound it makes.

Unit 4

Topic: Health care

LESSON: 40 min

Teaching objectives:

- To understand the importance of a healthy lifestyle
- To identify factors which contribute towards that lifestyle
- To discriminate between hygienic and unhygienic habits

Key vocabulary: exercise (movements that make you strong, healthy and happy and keep your body fit), energy (the strength to be active without getting tired) healthy (feeling well and eating the right food)



LESSON 1: 40 min

Introduction: 5 min

Begin the lesson by asking the children about all the physical activities they do. List their answers on the board, e.g. jumping, running, skipping, playing, cycling, etc. Ask them about the mental activities they do, e.g. solving sums, writing, drawing, thinking, etc. List these on the board as well.

Main teaching: 30 min

- Point to the list of activities on the board. *We need strength to do all these activities. We have to be strong to jump, work, run and play. Eating the right food, exercising and enough rest makes us strong and gives us energy. What can happen if we do not eat enough food, or do no exercise?* Wait for the children's response and then explain that eating too little makes us thin and weak and eating too much could make us fat and slow. Too little exercise also makes us weak and slow.
- *How else can we be healthy? We must go to bed early so that we sleep well and feel full of energy when we get up in the morning. We should exercise our bodies. Which is healthier? Eating chips in front of the television or playing cricket and having a glass of milk afterwards?*
- Keeping our bodies clean is also important. Each pupil should think of one way to keep clean. List their responses on the board under the heading 'Keeping Clean'. *What can happen if we are dirty?* Wait for the pupils' responses and then tell them that being dirty causes people to fall sick. Ask them if they have ever been sick. What did they feel? Display the flash cards and identify each action being shown.

Wind up: 5 min

- *Eating healthy food, exercising, resting and keeping clean are the ways in which we can stay healthy and strong. Can you give one example each of healthy food and keeping clean?*

LESSON 2: 40 min

Introduction: 5 min

Recall the main points of the lesson by giving one example each of healthy and unhealthy habits.

- a) *Saba eats sweets and chips and drinks cola. She goes to bed late and spends a lot of time watching TV. She forgets to brush her teeth and wash her hands.*
- b) *Faiza eats fruits and chicken, and drinks milk. She goes to bed early, and spends a lot of time playing and cycling. She brushes her teeth daily and washes her hands before every meal.*

Who do you think is healthier and stronger? Saba or Faiza?

Main teaching: 30 min

- Read the lesson and complete the exercises and activities. Ask relevant questions like the following to engage the children in the lesson:
 - a) *What can happen if we eat too much of the wrong kind of food?*



- b) Do you think it is right to eat only one type of food or should one eat a variety of them like meat, bread, milk, fruits and vegetables? Why?
- c) What exercises do you like to do? If you do not exercise, will you feel good or not?
- d) Why do you think cleanliness is important? How do you keep your body clean?
- e) How do you feel in the morning when you go to bed late? Encourage them to use the terms *sleepy* and *tired* to describe their feelings.
- Pupils can complete worksheet 4 in the class.

Wind up: 5 min

Summarize the concepts taught in this lesson by drawing the following table on the board:

Action	Result
e.g. Do not take a bath daily.	We become dirty and smelly

Continue this table by inserting the following in the 'Action' column:

- a) Do not wash hands with soap and water.
- b) Do not cut nails.
- c) Forget to wash and comb hair.
- d) Do not wear clean clothes, socks and underwear.
- e) Forget to brush teeth.

Fill in the 'Result' column with the children's input.

EXERCISE (pages 20–21)

- A 1 Food gives us energy.
2 Answers will vary.
3 Answers will vary.
- B Sentences 2, 3 and 5 to be crossed.
- C The following pictures to be circled: child skipping rope, athletes running on the race track.

ACTIVITY (page 22)

The pupils will draw their favourite food.



Unit 5

Topic: Keeping safe

Teaching objectives:

- To identify places, situations and materials that are dangerous
- To focus on safety measures in familiar environments, e.g. home, road, etc.
- To emphasize the potential hazards associated with electricity, hot and sharp objects, medicines, etc.

Key vocabulary: safety (to be safe from harm), danger (something that can harm or hurt) objects (something you can see and touch), accidents (unexpectedly causing injury or harm), electric sockets (an electric plug is put into it to make a connection)

LESSON 1: 40 mins

Introduction: 5 mins

- Begin the lesson by asking the children questions such as:

Do you hold your mother's/father's or a grown-up's hand when you cross the road? Have your parents ever asked you not to go near hot objects such as teapots or an iron? Do they tell you not to touch electric plugs and sockets?

- Ask them why they think this is so. Prompt them with helping words: safe, dangerous, hurt, burnt, healthy, care, love. The vocabulary words should be put up on the soft board.

Main teaching: 30 min

- Read the text and discuss the pictures. Encourage the children to speak about other materials they consider dangerous. List the 'dangers' on the board.
- Ask the children if they have been hurt or had an accident. How did they get better? Would they like to share it with the class?
- Point out that cleanliness also helps us from getting hurt. Toys or other objects left lying around can also be dangerous as someone can trip and fall over them and get hurt.
- Talk about safe and unsafe places. Ask the children which of these is not a good place to play: park, bridge, road, near an electric pole, school playground. Show flash cards of children playing in the park, or school playground and of busy areas like a road, a market, electricity pylons, railway lines, etc.

Wind up: 5 min

- Put children in pairs and tell them to come up with a list of any three dangers and the three ways of keeping safe from these dangers.



LESSON 2: 40 min

Introduction: 5 min

- Pose questions such as: *Who wears a seat belt when seated in a car? How many sit on the back seat?* Show a picture of a family sitting in a car wearing seat belts. Stress that they should not go out on the road without an adult, should always hold a grown up's hand when crossing the road, and never run or play on the road.
- Point out the precautions or things the children need to be mindful of, when playing or picnicking near ponds, lakes, the sea, etc.

Main teaching: 30 min

- *How can we avoid accidents at home? We should stay away from dangerous objects.* Discuss the possibly dangerous objects present at home and list them on the board.
- *How can we avoid accidents on the road? We must not play or run on the road. We should not jump from a moving bus or van.*
- *How can we avoid accidents near water? When playing or picnicking near lakes, ponds, the sea, etc. We must always remember to stay close to our parents or elders. If someone does not know how to swim, then they must not play or jump in the swimming pool without an adult present to show them how to be careful in the water or to swim. We must remember all this, because if we do not listen to our elders and are not careful, we can hurt ourselves.*
- Stress the fact that accidents can happen anywhere and that they hurt us.
- Children should be able to attempt the related exercise and worksheet 5 on their own.

Wind up: 5 min

- Recap the main points of the lesson. Emphasize the fact that accidents can happen anywhere. When grown-ups tell children not to go near an object which is dangerous, it is because they care about them and do not want them to get hurt.
If time permits, the teacher can also point out the dangers of talking to a stranger, or taking gifts, sweets, etc. from an unknown person.

Note: Children can have disturbing memories of accidents, so this topic should be handled carefully.



Part 2 | Living things

LESSON PLANS

Unit 6

Topic: Animals

Teaching objectives:

- To distinguish between tame and wild animals
- To recognize the needs of all animals
- To classify animals according to habitat

Key vocabulary: tame (an animal that is neither afraid of people, nor dangerous)
wild (an animal that lives in its natural habitat away from people, in the forest or in the jungle).

LESSON 1: 40 min

Introduction: 5 min

- Show the children some flashcards of a variety of animals, both tame and wild. Have them choose any animal they would like as their pet. Would they want to keep an elephant or a lion as a pet? Why not? They cannot keep lions or elephants as pets because these animals are wild. Wild animals need to live in a surrounding where they are free. They find food by hunting for it. They do not need to be taken care of by people because they can look after themselves, unlike pets that need to be fed and looked after. This means that pet animals are tame and can easily live with people who look after them. Animals like cats and dogs are friendly and can be kept as pets.

Main teaching: 30 min

- Read the lesson focusing on the picture on pages 26 and 27. Ask the children questions that will evoke a response.
 - a) *What animals can you see in this picture?*
 - b) *What sort of animals are these? Are they wild or tame? Birds or insects? Can they swim, fly or crawl? Which ones live in water and which ones live on land?* Use the Think-Pair-Share strategy here.



- Write on the board a selection of different types of land and sea animals and those that can fly. Ask the children to identify those that live on land, on sea and those that can fly. Ask them which animals live in trees. Give examples of bird, fish, squirrel and monkey.
- Now complete Exercises 1 and 2 with the children in the class.

Wind up: 5 min

- Conclude the lesson by summarizing all the ideas that were shared:

Animals can be wild or tame.

Some animals live in water and can swim, while some live on land and can fly, run or crawl.

Animals need food, water, air and a place to live.

LESSON 2: 40 min

Introduction: 5 min

- Remind the children that animals are living things and they need food, water, air and a place to live, just like human beings do. Discuss the importance of home and how living in one keeps us safe. It keeps us warm in winter, cool in summer, dry when it rains and provides us with a place to sleep. Lastly, explain that animals have homes as well. Animals' homes are called *habitats*. For example: a lion's habitat is the jungle, while the habitat of a shark is the ocean.

Main teaching 30 min

- Have pupils choose an animal and draw a picture of it in its habitat. They may choose from one of the animals shown in the pictures, or they may choose a different animal entirely.
- Talk about the eating habits of animals they are familiar with, e.g. rabbits eat carrots and lettuce, while cats eat meat and fish and drink milk. Dogs eat meat and bones.
- The pupils can complete the animal mask activity. Make sure that all the material needed to make the animal masks is available before hand.

Activity 4: Animal masks

Material required: paper plates, coloured paper, brown yarn or string, scissors, crayons, and hole puncher.

- Use a pencil to lightly mark the animal's eyes, nose/beak, mouth, etc.
- Coloured paper can be used to make the beak in the case of a bird's mask.
- Using crayons in appropriate colours (e.g. a lion should not be coloured pink or purple!), the children should colour the masks.
- Punch holes on either side of the mask and tie two pieces of strings for tying around the ears.

Wind up: 5 min

- Help the children recall all the concepts that were taught in this unit by asking short and simple questions.



EXERCISE (page 29)

- 1 Lions live in grassy forests and flat grasslands. They hunt their prey and eat meat.
Cats live around or with humans. They eat meat and fish. They drink milk.
Giraffes live in grassy forests and flat grasslands. They eat plants and leaves.
- 2 Rabbits, cats and ants live on land.
Fish live in water.
Birds, butterflies and honeybees can fly.
- 3 Pupils will present individual work. Make sure that they label their picture.

ACTIVITY (pages 30–31)

- 1 Take the class on a field trip to the zoo. Point out the wild animals and the tame ones. Explain that the animals kept in the zoo have been taken away from their natural habitat. They are kept there for people to look at them and learn about them. Children should be encouraged to observe the size, movement and diet of the animals.
- 2 Pupils will colour and label the wild animals shown in the picture. You could also use this to discuss some common characteristics these animals possess, e.g. a tail, four legs, etc. Their differences could be observed, e.g. giraffe has the longest neck, it has brown patches on its body, the monkey and the lion have neither of these. The zebra has black and white stripes, though its neck is not long like the giraffe's.
- 3 Goldfish are omnivorous, which means they eat both animals and plants. Most pet shops sell flaked food made of meat and vegetable matter. Make sure that there are no more than two fish in the bowl at a time and that the water is changed every week.
- 4 Divide children into groups of three or four with each one making their individual animal mask. Display them on the class' soft board. This activity can be a home assignment as well.
- 5 Answers will vary.
- 6 Since the children's writing skills are limited at this stage, it would be useful to provide them with sentence starters which can be put up on the board:

My pet is a _____ . (name of the animal)

It is _____ . (large, small)

It _____ . (verb showing the animal's movement, e.g. runs, swims, hops, crawls, etc.)

I feed it _____ . (name of food)

I keep it in a _____ . (kennel, basket, cage, etc.)



Unit 7

Topic: Plants

Teaching objectives:

- To recognize that plants need sunlight, air and water to live
- To identify parts of a plant
- To observe and record the process of germination

Key vocabulary: stem, leaf, seed, flower, soil, sunlight, air, fruit, root, shoot

LESSON 1: 40 min

Advanced preparation

Use a growing bean plant to introduce the lesson. To establish the connection and to build on to pupils' previous knowledge, in preparation for this lesson, the teacher should plant the bean seeds with the class a week or two before so the plant can be ready for this lesson. Pupils should draw the picture of the seed before it is sown.

Introduction: 5 min

- Link the two lessons by asking, "Do you remember when we planted some bean seeds?" Show them a bean seed at this point. "They are growing into plants. But how did the seeds grow and turn into plants? We put the seed in the soil, watered it and kept it in a well-lit place. That is why the seed turned into a tiny plant." Pupils should draw the picture of newly germinated seed next to the first picture of the seed. This process should continue for some weeks with the pupils observing and noting the growth of the seed that is now emerging as a young plant.

Main teaching: 30 min

- Show the class an assortment of seeds, e.g. papaya, orange, mango, mustard, kalonji, etc. Identify what fruit or vegetable the seeds will produce when they grow into plants, e.g. "This is a mango seed. When it is planted in soil it will grow into a mango tree. This is a mustard seed and it will grow into a plant that will give yellow flowers. Some plants give fruits while some plants give flowers." Children can complete exercises 1 and 2.

Wind up: 5 min

Recall the concepts learnt in the lesson by asking the following:

What did we learn today about what plants need to grow and to live? Discuss with your friend and come up with the name of a fruit tree and a flowering tree.

Look at the picture on page 33. What is the difference between the shoot and the root? What work does the root do?



LESSON 2: 40 min

Introduction: 5 min

- Display a live green plant and ask the class to identify the parts. Explain that small insects like flowers. The honeybee likes flowers as it collects their nectar to make honey.

Main teaching: 30 min

- Read page 34 of the text book and the children can attempt the rest of the exercises, activities and worksheet.

Wind up: 5 min

Children should look again at the germination drawing they had drawn of the bean seed. Ask them relevant questions to summarize the lesson.

What do plants need to live and grow?

How do plants get their food?

Which part of the plant absorbs water from the soil?

EXERCISE (pages 34–35)

- Soil, sunlight, air and water.
- The seed will not grow into a plant.
- (a-4) (b-3) (c-2) ((d-1) (e-5)

ACTIVITY (page 36)

- The dhaniya and methi seeds will take up to ten days to sprout. Keep them away from direct sunlight for the first three days and water on alternate days.
- Material required: variety of leaves, sheets of paper, crayon or colour pencil. Demonstrate by rubbing over a leaf with a pencil. Ask the children to do the same. Display each child's drawing on the class' soft board.
- Pupils' answers will vary.



Part 3 | Materials and matter

LESSON PLANS

Unit 8

Topic: Materials

Teaching objectives:

- To classify materials into natural and man-made materials
- To explain that we use different materials for different purposes according to their properties and that a single material can be used to make many things
- To extend the children's knowledge of materials to the origin of some common materials
- To compare everyday materials and objects by their properties, e.g. hard, strong, smooth, rough, etc.

Key vocabulary: Materials (anything used for making something else), man-made (made by people), natural (not made by people or machines), waterproof (that keeps out water), sort (a group of things or people that are similar)

LESSON 1: 40 min

Introduction: 5 min

Ask the students to bring one item from home, made from any of the following materials: wood, plastic, wool or cloth, metal.

On a table put labels showing wood, plastic, cloth, and metal. Ask the children to put the objects they have brought in the correct group.

Begin the lesson by telling the children that different things are made with different materials. *What are materials? Everything around us is made of materials. Wood, plastic, glass and cloth are all materials. Buildings are made of cement and bricks, our clothes, furniture, etc. are all made of different materials.*

Main teaching: 30 min

- Read the text. Discuss the pictures, during the discussion point out other related objects from around the classroom. Ask questions such as: *What is your desk made of? Why do you think it is made of wood and not paper?*



- Explain that some materials occur naturally; these materials are obtained from plants, animals or from under the ground. Regroup the objects on the table into natural or man-made materials.
- Show objects like: a piece of wood, coal, glass, steel, plant, wool, plastic, etc. Ask the children whether they are man-made or natural materials. Discuss the pictures in the text.
- Point out a few properties, hard or soft, light or heavy.

Make a chart on the board. List the objects and let the children suggest their properties. Put (✓) or (✗) in the suitable column.

Name of Object	Colour	Hard or Soft	Light or Heavy	Made of?

- Children can do the related exercises and activities.

Wind up: 5 min

- Recall the main points of the lesson. Point out the different groups on the materials' table.
- Remind the children that natural materials are obtained from plants, animals and from under the ground.
- Conclude the lesson by using the jigsaw strategy. Form groups, give each group an object to discuss and evaluate. (It will be easier if the entire object is made of one material, e.g. entirely plastic, wood, metal, etc.) Use trigger words— hard, soft, light, heavy, breakable, waterproof, smooth, rough, natural or man-made material, etc. The words can be put up on the soft board or written on the board for this activity.

LESSON 2: 40 min

Introduction: 5 min

- Recall the previous lesson by asking them if they can name some materials that are used to make the objects around them. *What material is this ruler made of?*
- *Is this material natural or man-made?* If they say that the ruler is made of wood, explain to them that since wood is obtained from trees, it is made from a natural material. If the ruler is made of plastic, it is made from man-made material.
- *Are plastic and wood hard or soft materials?*
- Conclude by saying that materials can be; man-made or natural, can be obtained from animals, plants or from under the ground, can be hard or soft and finally, can be waterproof or not waterproof.

Main teaching: 30 min

- After having ensured that children recognize types of material and some of their properties, shift the focus of the lesson to the uses of materials. Using the example of a familiar material like paper, ask them if they know how paper is used to make different things. List their responses on the board. You can add a few of your own to the list. Paper is used for drawing,



painting, writing and printing. It is also used for wrapping and packing, and in the making of tissues, tickets, posters and currency notes.

- You can demonstrate the multiple uses of paper by displaying different kinds of paper in the class; tissue paper, cartridge paper, crepe paper, newspaper, etc.
- Read the unit and guide the children in completing all the exercises and activities.

Wind up: 5 min

- Sum up the key concepts by asking a pair of children to come up. One of them is going to think of an undisclosed object, while the other guesses what the object could be by asking probing questions, e.g. *What material is it made from? What is it used for? Is it soft or hard? Is it waterproof or not? Can it bend or stretch? Can it break easily or not?* Assist the children by prompting them during questioning and answering.

EXERCISE (pages 39–41)

- 1 Manufactured from natural materials:

sweater, leather purse, gold necklace, bottle of cooking oil, pencil

Manufactured from man-made materials:

plastic bucket, steel wrist watch, pair of spectacles, sack of cement

- 2 Objects made from soft material: pillow, flower

Objects made from hard material: brick, a wooden desk

- 3 Waterproof

plastic bag, rubber boots

Not waterproof

towel, woollen scarf, newspaper

- 4 Most toys are made of plastic because plastic does not break easily and is waterproof.

ACTIVITY (page 41)

Refer to the Teacher's notes at the end of the lesson for the 'activities' suggested. The objects should be collected and be ready before the lesson begins, to save time, and to keep the interest of the children alive. If any of the suggested material is not available, the teacher can improvise and use any other alternate material that is obtainable.



Unit 9

Topic: Solids and liquids

Teaching objectives:

- To identify liquids and solids by sight
- To be able to classify random objects into the two types
- To demonstrate changes in the state of matter

Key vocabulary: warm, melt

Advanced preparation

It would be useful if the teacher collects a variety of solid and liquid objects beforehand and displays them on a table. Feel free to use anything that is easily available. However, make sure that there is a variety of both solids and liquids.

LESSON 1: 40 min**Introduction: 5 min**

- Recall what the children already know about materials. *Everything in this world is made of a material. The earth we walk on, the air we breathe, the water we drink, the food we eat and our own bodies are made of different materials.*
- *Some of these materials are solid and some are liquid.* Write the two words on the board.

Main teaching: 30 min

- Solids are to be grouped together and liquids grouped separately. *These are some things which are solid.* Name the objects and allow children to handle them by calling the children in pairs to the display table. *These are some of the things that are liquid.* Name the objects and tilt the containers of liquid gently to show how the liquid is runny and fluid. Allow these to be handled by the children in a similar way.
- Mix all the objects on the table in such a way that liquids and solids are no more in two distinct groups. *I am going to name these things one by one. Keep your hands down if they are liquid and raise them if they are solid.* Make a note of the responses.
- Cut out a dozen or so pictures from old newspapers or magazines of solids and liquids. You will need a chart paper, a marker and glue. Paste the chart paper on the board or pin it on the soft board. Make two columns on it and give them the headings 'Solid' and 'Liquid'. Display the cutout pictures one after the other, each time asking the class for guidance. *Should I put the picture of this cup of tea in solid or liquid?* Continue the exercise until all the pictures have been sorted. Keep the chart on display for future reference.

Wind up: 5 min

- Recap the basic concepts taught in this lesson by asking questions rather than giving explanations:
What two types of material did we learn about today?
Give a few examples of solids. Give a few examples of liquids.



LESSON 2: 40 min

Material

- Plastic bottles, assorted liquids (water, syrup, dish detergent, milk, honey, etc.), assorted solids (wooden blocks and pieces of plastic and metal)

Introduction: 5 min

- Recall the examples of solids and liquids by putting children in pairs and asking them to make a list of solids and another of liquids. Time them. *'The pair who comes up with the most number of solid and liquid objects in two minutes will be a winner in this game.'* Allow them a few minutes to share the list with the rest of the class.

Main teaching: 30 min

- Show the class a variety of liquids (water, juice, milk, honey, etc.). Encourage them to name and describe the appearance of each liquid. Children can note down the description using appropriate words like *wet, moving, shapeless or flowing*.
- Now fill the water bottles with each liquid and pour it from one bottle to another empty bottle. What do the children notice? *Liquids pour and flow. They take on the shape of the container that holds them.*
- Display the solid objects and have the children describe each one. As they examine each solid, help them to name the different properties (hard, soft, etc.) of the solid objects.
- Encourage them to compare the two states of matter and list the ways solids and liquids are alike and different.
- Demonstrate that heating or cooling materials can cause some of them to melt, solidify, or change permanently. Bring some ice cubes to the class. Show these at the beginning of the class as a solid. Explain to the children that you are keeping it in the class where it is warm, rather than in the fridge where it is cold. After a while, show them the melted ice cubes. *What has happened?*

Wind up: 5 min

Can some solids change to liquids? Explain how.

Can some liquids change to solids? Explain how.

EXERCISE (page 43)

- | | | |
|-------------|--------------|-------------|
| a) Tick (✓) | b) Cross (✗) | c) Tick (✓) |
| d) Tick (✓) | e) Cross (✗) | |

ACTIVITY (page 43)

Encourage the children to collect various solid and liquid items and help them label all. Groups of children can sort them on separate tables.



Unit 10

Topic: Floating and sinking

Teaching objectives:

- To introduce the concept that some objects float while others sink.
- To record their predictions
- To conduct an experiment and classify or sort the objects into the appropriate group, i.e. sink or float.

Key vocabulary: sink (go under the surface of water), float (stay on the surface of water)

LESSON: 40 min**Introduction: 10 min**

- Begin the lesson by asking the children if any of them know how to swim. *Do you have toys to play with in the water? Do these toys stay above the water or do they sink in the water?*
- Show the children some objects (rubber duck, plastic cup, tennis ball, keys, apple, etc.) ask them what will happen to these objects when immersed in water. Set a large tub of water in the classroom and have students gather around you. Examine each of the objects closely, asking students to tell you some of the things they observe about it. Place the objects in the water and ask the students to describe what happens. Repeat this procedure with several objects.

Main teaching: 25 min

- Divide the class into manageable groups of four or five. Give each group a tub or bowl of water, along with an assortment of objects to examine.
- For each item, have students:
 1. Draw and label the item.
 2. Guess whether it will sink or float and record their prediction.
 3. Place the object in the water and examine what happens.
 4. Record their finding against the item drawn and labelled.
 5. Repeat the procedure and record the results for different objects.
 6. Place the objects that sank in one pile, and the objects that floated in another pile.

After each group has finished testing their objects, initiate a discussion on the results by asking the following questions:

- *How many of your guesses were correct?*
- *Did your guesses get better, worse, or stay the same?*



- *Look at the pile of objects that sank. What do you notice about them? Are they the same in any way? Look at the pile of objects that floated. Describe them. Do they have anything in common with one another?*

Compare the outcome for each group. Did everybody come to the same conclusion? If any of the results were different, ask students to repeat their experiment.

- Developing the concept further, children should discuss similarities and differences in the characteristics of objects that they think affect whether the object floats or sinks (i.e. objects made of wood will usually float; objects made of metal will usually sink). Children may conclude that heavier objects usually sink in water. However, make sure that children understand that weight is not the only feature.
- Children might also want to investigate questions such as:
Will it make a difference if the water is deeper or shallower?
Does it matter how much water there is?
Have the students put forward different suggestions. Wherever possible, give them an opportunity to test their ideas.
- The children are now able to work with confidence on worksheet 10.

Wind up: 5 min

- Recap the main points of the lesson.
- List on the board the names of the objects that sank and of those that floated.

ACTIVITY (pages 44–45)

The children will conduct the experiment and record their findings.



Part 4 | Sky and space

LESSON PLANS

Unit 11

Topic: The Sun, Moon, Earth and stars

Teaching objectives:

- To show that the Sun is a star and a source of life and light for Earth
- To compare the Earth and the Moon on the basis of their characteristics
- To show that the closer a star is to the Earth, the larger and brighter it seems

Keywords: Sun, Moon, stars, air, water, constellation, light, bright, hot.

LESSON 1: 40 min

Introduction: 5 min

- Practical work on this topic is important, so give the children the task of observing the Moon and stars for homework. Ask them what they saw in the night sky. Were the stars bright or dim, tiny or large? Did they seem to be near or very far away? *The stars are very, very far away from our Earth. Do you know what the stars are made of? They are made of very hot gases. So what do we know so far about the night sky?* Write the following information on the board:

There are many stars in the sky at night.

They are all very far away.

They are very bright and hot.

Main teaching: 30 min

- *Let us now discuss the sky in daytime. What can we see in the sky then? We can see the Sun.* Encourage them to use words to describe the Sun; huge, hot, bright, round, etc. Warn them that it is dangerous to look directly at the Sun.
- Explain that the Sun is also a star. It only looks bigger and brighter than the other stars because it is very much closer. The light from the Sun takes eight minutes to reach the Earth. The light from the next nearest star takes over four years to reach us.



- When you look up at the sky at night, do some stars appear to be brighter than others? Explain to the children that stars are of different sizes; some are small and others are quite large. Our Sun is a medium-sized star. Stars also appear to be of different sizes and have varying levels of brightness, because they are at different distances from the Earth.
- Demonstrate how distance affects a star's apparent brightness. Shut off the lights in the room. Stand in the middle of the room and shine a flashlight on the board or wall. Slowly walk towards the board or wall and ask the children to notice what is happening to the light. Explain that a star closer to the Earth will be brighter than a star which is much farther away.
- Children can now complete the exercises of this lesson.

Wind up: 5 min

- Bring together the main points of the lesson by asking the following:

What have we learnt about the Sun? What is the Moon like? Are all the stars visible in the sky the same size? Are they near to us or faraway?

LESSON 2: 40 min

Material: black chart paper, small sticker or cut out stars.

Introduction: 5 min

- Use a ball or a globe to explain the shape of the Earth which is that of a 'sphere'. Discuss the photo of the Earth taken from space. Can they see land and water?

Main teaching: 30 min

- Explain that life is not possible on the Moon because it has no air, very little water (according to a recent discovery), and no living thing can survive there. In comparison, Earth has air, water and sunlight. That is why there is life on Earth.
- Tell the class that groups of stars appear in the sky forming a picture. They are called constellations. Put up a large black chart paper on a display board and stick on it small stars cut from silver paper. Arrange the stars in the shapes of some of the well-known constellations.



- Now add more facts on stars to the ones listed earlier on the board. You can also list facts on the Sun, Earth and Moon.



Wind up: 5 min

- Sum up all that the children have learnt in this lesson by posing questions to them. However, they will not answer to the teacher, but to their partner. Arrange their seating in pairs. Give them short and relevant questions, e.g. *Which is the star nearest to our Earth? What does the Sun give us? Is the Moon a star? Is there any life on the Moon? Why is there life on Earth?*

EXERCISE (page 48)

- 1 a) The Earth has air, water and sunlight while the Moon has no air and very little water.
b) The Earth has weather; sunny, rainy, windy, cloudy, etc. Moon has no weather.
c) The Earth has air, soil and sunlight. Life can grow and live on Earth but the Moon is lifeless.
- 2 Answers will vary.
- 3 No, living things cannot live on the Moon as it has no air and water. The Sun is too hot to have any life.

ACTIVITY (page 48)

- 1 The torch activity has been explained earlier in the 'Teacher's notes'.
- 2 Caution! For activity 2, take care using a lighted candle in the classroom. It is best to stand the candle in a tray or dish of sand or soil. Children will notice that in a sunny room, the candle light is hard to see while it is easy to see in a darkened room. Explain that during the day, the sunlight is so bright that we cannot see the stars in the sky even though they are there.



Part 5 | The Earth and the atmosphere

LESSON PLANS

Unit 12

Topic: The weather

Teaching objectives:

- To show that changes in the environment occur in a regular pattern known as the weather
- To explore the changes in the weather and relate them to the effects they have on our lives

Keywords: sunny, sunshine, wet, rainy, cloudy, monsoon, shower, thunder, lightning, wind, windy, storm, cool, hot.

LESSON 1: 40 min

Introduction: 5 min

- Begin the lesson by asking the students questions such as: *Was it cloudy last week or sunny or both? Did it get colder or warmer this week or has it been the same as last week? Is it windy? Which season do you think it is?* List their responses. Use trigger words such as: warm day, sunny, windy, summer, etc.

Main teaching: 30 min

- Read the text. Discuss each picture showing the different kinds of weather. Talk about the activities in each picture being directly related to the weather, e.g. everyone is dressed so that they can feel cool in the hot weather. The children are enjoying playing in the water. In summer we like to have cold things to eat and drink, like an ice cream. The ice cream man needs an umbrella to stay in the shade as he moves around. The Sun is very bright and hot, etc.
- Elicit the children's responses regarding their previous knowledge and experiences of the weather. Ask questions such as: *Which is your favourite weather? Why?* Ask questions about the present weather conditions. Point out that we get heat and light from the Sun. On hot days, we try to stay out of the Sun, on a cold day we enjoy the warmth of the Sun.
- Let the children repeat the four seasons several times to help them comprehend the idea of the cycle of seasons and that one follows the other.



- Divide the class into four groups, each group should represent a season.
Encourage the children to say something about the season 'he/she is a part of'. Write key words for each season on the board or paste them on the soft board, e.g. winter: cap, scarf, snow, rain, quilts, play in the sun, winter holidays, drink soup, cold, etc. Spring: flowers, warmer weather, fan, less clothes, visit to the park, etc.
- Reinforce the concept of the recurring four seasons and of the weather changing from day to day—hot, cloudy, cold, sunny, windy, rainy, thunder, lightning, storm, etc.
- Talk about different instruments used to measure the weather, a wind vane and a thermometer should be shown. There is no need to go into a detailed working of the instruments at this stage. A brief mention of their function is sufficient.

Winding up: 5 min

- Recap the salient features of the lesson. The seasons follow one another and the weather changes.
- Using the Think-Pair-Share strategy, ask the children to say something related to the weather they like, e.g. swimming in summer, eating ice cream, playing in the rain, using an umbrella, wearing warm clothes, playing in the park, etc. Assist with prompting words.

LESSON 2: 40 min

Introduction: 5 min

- Begin the lesson by focusing on the children's favourite type of weather, e.g. rainy weather.
How do you feel when it rains?
Are you afraid of storms, if so why do they scare you?
What activities do you like to do in the rain?
Where do you think rain comes from?

Main teaching: 30 minutes

Activity 2

- Explain to the class that they are going to make a rain stick to create the sound of rain. Make sure that the materials required for this activity are ready beforehand.
- One of the ends of the tube must be closed before the children put the seed mixture in it or else the seeds will fall and scatter! After each child puts the mixture in the tube, close its other end with masking tape. You can also help children make their rain stick attractive by putting coloured streamers or glitter as decoration. Encourage them to describe the sounds when they shake it.
- Complete the related exercises.
- Ask the children to watch the TV weather forecast as their home assignment. Ask them the next day as to what the forecast said about wind, temperature and sunshine.

**Wind up: 5 min**

When young children study weather and climate, they should be looking at what the weather is like in a certain place and how this weather affects people's daily lives, what they wear and eat, what their housing is like. They should also know how weather affects the environment, e.g. flooding, landslide, dust storm, cyclone, etc.

- Ask the children about different weather patterns, using standard questions like:

What is it like on a sunny day?

What do people wear to keep cool?

What kind of food do you eat when it is hot and sunny?

What games do you like to play on a sunny day?

Is the sky clear and blue or is it grey and cloudy?

EXERCISE

A The children will give their own answers.

B cloudy, raining, sunny, windy

ACTIVITY (pages 52–53)

1 The children will make the chart according to the prevalent weather.

2 The children will make the rain stick according to the instructions.



Part 6 | Electricity and magnetism

LESSON PLANS

Unit 13

Topic: We use electricity

Teaching objectives:

- To identify the use of electricity around us and its role in our daily lives
- To create an awareness of the importance of conserving electricity

Key vocabulary: conservation, save, waste

LESSON 1: 40 min

Introduction: 5 min

- Ask the children what happens when the electricity goes off. Wait for the children's responses and explain that life becomes difficult when there is no electricity. *It becomes hot and stuffy in the absence of electricity. At night, one has to light candles in the dark and we cannot operate any electrical appliances. Electricity is very important and makes our lives easier.*

Main teaching: 30 min

- *Look around the classroom. What things do you see which work with electricity?* Make a list of these on the board.
- *Talk to your friend sitting next to you. Come up with two or three things that work with electricity at home.* Make a list of those on the board. You can add a few of your own.
- *What things work with electricity outside our homes?* Add these to the list. Read the lesson now and discuss the kitchen's photo. Ask them to observe the picture and give you a list of things that work with the help of electricity.
- *Electricity helps to light our homes and streets, e.g. tube lights, lamps, streetlights, traffic lights, etc. It helps to heat things, e.g. electric heater, toaster and microwave oven. It helps cool things and the air around us, e.g. air-conditioner, freezer and fridge. It can create sound by making doorbells, telephones and burglar alarms ring, and radio/CD player and television work. It makes the washing machine work.*

**Wind up: 5 min**

- Sum up the lesson by bringing together the key concepts:

We learnt today about something that has helped in making our lives easy. What is it?

Electricity gives us light. Draw a table lamp and a bulb on the board.

Electricity heats and cools. Draw a fridge and an iron.

Electricity helps create sound. Draw a television and a radio.

Electricity helps create pictures. Draw a computer.

(The drawings can be rough and need not be artistic or precise.)

- Electricity is so precious. Should we waste it or save it?* Ask them to give you a show of hands if they want to do either of the two. Ask them why they chose one answer or the other.

LESSON 2: 40 min**Introduction: 5 min**

Recap the previous lesson by asking the children why they think electricity is so important to us, how it is useful and how it has made our lives easy.

Main teaching: 30 min

- We have learnt that we use electricity in so many ways. Should we waste it or use it carefully?* Introduce the term 'conservation of electricity'. This means the careful use of electricity.

How do people waste electricity? By leaving the fans and lights on when we are away, we are wasting electricity. Discuss with the children ways in which we can stop this wastage. Use energy saving bulbs. Open curtains and blinds to take advantage of the natural light, instead of using electric bulbs during the daytime. Unplug appliances when we are not using them. Turn off the lights and fan when leaving a room. Plant shady trees around our house to keep it cool. These are some energy saving tips you can discuss with your class.

- Although electricity is very useful, care needs to be taken when using things that work with it. It is dangerous to put fingers in sockets or touch switches with wet hands, etc. So give adequate warning to the children.

Wind up: 5 min

- We have two choices before us. We can waste electricity or save it.* Write the words on the board. *Tell me ways of wasting electricity. Now tell me ways of saving electricity.*

EXERCISE (pages 56–57)

- Answers will vary.
- electric pole, battery cell, energy saving bulb, switch, plug, wire.
- Items to be coloured: microwave, ceiling lamp, fan, television and fridge.

ACTIVITY (page 57)

Children will create a poster, 'Save Electricity'. They can draw or paste pictures of useful electrical items to make it attractive. Display the posters in the class under the heading, 'Save not Waste'.



Part 7 | Machines, force and energy

LESSON PLANS

Unit 14

Topic: Movement

Teaching objectives:

- To explore the forces of *push* and *pull*
- To show that force has strength and can change the speed and direction of the movement of an object

Key vocabulary: forces (a general name for pushes and pulls of all kinds)

Materials: ball, toys cars, trucks, toy train, inflated balloon

LESSON 1: 40 min

Introduction: 5 min

- Do not open the text book at this point. Gather the children around you in a circle and ask them to watch your actions carefully. Roll a ball on the floor and as it begins to gain speed, reach out a hand to make it come to a standstill. Ask the class, '*How did I roll the ball? How did I make it come to a standstill?*' Explain that you used a power called 'force' to make the ball move and to make it stop moving.

Main teaching: 30 min

- Experiment with an inflated balloon by releasing the air inside it. As it is released, it will travel across the room. Tell the class that the force of the air pushes the balloon forward.
- Children should experience the forces of pushing and pulling, so they identify the two and clearly understand the difference between them. Allow them to pull or push the toys that have been collected. As each child pushes an object, use the word *push* to describe the movement. As the child pulls the object, use the word *pull* to describe the movement.
- Ask the children to stay as still as possible for as long as possible. Can they remain motionless for a long period? No, because we and the things around us are moving all the time. Our world is full of moving things. Each time we move our bodies, we are using forces. Lift a book or



pull the top off a pen to demonstrate that even for such small actions you are using forces of movement.

- Now read the lesson and discuss the actions taking place in the picture on page 58. Who is pushing and who is pulling? Divide the class into two groups. Then ask the children to sort the toys into 'Toys that are pulled' and 'Toys that are pushed'. Make sure that every child understands the difference between the actions of pushing and pulling.

Wind up: 5 min

- Recap the lesson by giving short but explicit demonstration of key concepts:

Roll the ball. *I pushed the ball to make it move.*

Reach out to make it come to a standstill. *I used force to make it come to a stop.*

Lift a school bag from the floor. *I used the force of pull to lift up the bag.*

So we learnt about two types of forces today which are; pushing and pulling.

LESSON 2: 40 min

Material: a rubber band, a lump of clay, dough or plasticine, a stone

Introduction: 5 min

- Recall the concepts learnt previously by putting children into pairs. Ask them to discuss with their partner the following questions and share the answers with the class.

How do we use force? Give some examples of forces acting in this room.

Main teaching: 30 min

- Use the following website which shows the video clips of five primary lesson starters, providing some amusing introductions to the subject of forces, pushes, pulls and friction, with questions posed at the end of each section.
<http://www.teachers.tv/videos/lesson-starters-primary-science-forces-pushes-pulls-and-friction>
It is advisable that the teacher sees these video clips prior to the class watching it, so that she/he is aware of its contents.
- Display the three objects mentioned in 'Materials'. Hold the rubber band. Ask the children to predict if the rubber band can be stretched, twisted or pulled. Demonstrate this and do the same with the other objects, each time the children should predict if it is possible for the object to be twisted or its shape to be changed. The stone cannot be twisted or stretched. Encourage the children to handle these objects and to try to twist and stretch them by applying force.
- Children can now complete all the related exercises and activities and worksheets.

Wind up: 5 min

- We are applying force when we pull and push. When we push and pull objects, we can move, stretch, twist or squeeze them. We can also change the speed and direction of the object while it is moving. Demonstrate each action to reinforce the concept.

**EXERCISE** (pages 59–60)

- 1 In a tug-of-war contest the main force used is that of pull.
- 2 (a-push) (b-push) (c-pull) (d-pull)

ACTIVITY (page 60)

- 1 Take the children in groups of four to the door. As each child pushes an object, use the word *push* to describe the movement. As the child pulls the object, use the word *pull* to describe the movement.
- 2 Put children in pairs and tell them why this activity is being conducted. Roll the ball on a smooth floor. Use marker or chalk to measure the distance. Repeat the activity on a rough surface and measure the distance covered. Compare the two distances. The children will observe that a smooth surface is better for movement than a rough surface.

The experiments should be done by the children in pairs or small groups. Give each group a variety of objects and tell them to test which one goes the furthest, which one moves the quickest or slowest. They should discover for themselves that **a**) an object with a smooth surface slides along much better than an object with a rough or uneven surface **b**) smooth surface is better than rough surface for movement **c**) something which is round (a ball) will also travel quite far and quite quickly because it rolls. By putting markers down to measure the distances (there is no need to measure in inches / centimetres: only comparative distance) the children can make a table showing which object went the furthest.

- 3 Let the children experience pulling and pushing toys that you have collected. Do not hurry or think this is a waste of time. It isn't!

Unit 15

Food energy

Teaching objectives

- To explain that all living things need food to survive
- To group food according to type
- To examine a simple food chain

Key vocabulary: energy, food chain**Material:** some coloured chalks

LESSON 1: 40 min

Introduction: 5 min

- Draw two animals on the board, e.g. a parrot with a chili in its beak and a puppy with a bone in its mouth. *What does the puppy eat? It eats bones. It eats food that comes from other animals and*



that is where the puppy gets its energy from. What does the parrot eat? It eats chilies. It eats food that comes from plants and that is where the parrot gets its energy from. Write these facts below the pictures.

- *Do you remember what energy is? It is the power to think, work and move. All living things need energy. Plants get energy from the Sun. Where do the people and animals get their energy from? The puppy got its energy from the bones of another animal. The parrot got its energy from a plant. Human beings get energy from both plants and animals.*
- Draw a simple food chain, e.g. the leaf gets its energy from the Sun. It is eaten by a worm, the worm is eaten by a bird, and the bird is eaten by a cat. *This is a food chain that shows how energy is passed on from one living thing to another. Every food chain begins with the Sun which is the main giver or source of energy.*

Main teaching: 30 min

- *What kind of foods do we need?* Make a list on the board.
- *What kind of foods do your pets or other animals need?* Make a list on the board.
- Now read the lesson, especially focusing on the illustration of different types of food on page 62. Brief mention of the things we need to stay healthy, including water, food, exercise and rest should be made here.
- Explain that some foods give us energy, e.g. cereals, pasta, potatoes, bread, rice, honey, cakes and biscuits. Some foods help children grow, e.g. meat, milk, fish, cheese, lentils, nuts and eggs. Foods that keep us healthy include all sorts of green vegetables, carrots and fruits. In order to stay healthy, we need to eat from all the food groups and drink plenty of water.

Wind up: 5 min

Summarize the lesson by asking the following:

What is energy? Where do all living things get their energy from? Eating all types of foods makes us...? Should we eat all types of food or only one type? Is food necessary for human beings? When you do not eat food for a while, what do you feel? Hungry, tired, unhappy...

LESSON 2: 40 min

Advanced preparation

Children should be asked in advance to bring food wrappers or magazine cut-outs of food pictures which they can glue and label in their books.

Introduction: 10 min

- Have a short game of food hunt as a warm-up exercise. Hide around the classroom various food items like a packet of biscuits, a banana, a packet of cheese or a small pack of milk, a potato, etc. Once they are hidden, announce that it is snack time and today they are going to do something a little different; go on a snack hunt! Explain that different kinds of food are hidden around the room, and then ask them to try and find one. As the children find the hidden food, name the group it belongs to; *milk is a dairy food, biscuits are grains, banana is a fruit and potato is a vegetable, etc. In order to stay healthy, we must eat a variety of food that belongs to all these groups.*



Main teaching: 25 min

- Now assist the children to complete the exercises given on page 63.
- Briefly discuss healthy eating habits.

Wind up: 5 min

Conclude teaching this unit by summarizing the key ideas:

- Human beings get energy from eating food that is obtained from both plants and animals.
- Since animals are living things, some of them eat plants while some eat other animals.
- A simple food chain could start with grass or a plant, which is eaten by a rabbit that in turn may be eaten by the fox. So energy from food is passed on from one living thing to another.

EXERCISE (pages 62–63)

- human beings, animals, plants
- The food we eat comes from plants and animals.
- cross, tick, cross
- Food from plants: fruits, vegetables, lentils, breads
Food from animals: milk, butter, ice cream, yogurt, chicken, eggs, fish, beef
Fruits: banana, apple, orange
Vegetables: potatoes, onions, carrot, peas
Dairy foods: milk, butter, ice cream, yogurt
Solid foods: fruits, vegetables, butter, chicken, fish, beef, bread
Liquid foods: water, fruit juice, milk

ACTIVITY (page 63)

Answers will vary.



Part 8 | Sound / Light and colour

LESSON PLANS

Unit 16

Topic: Sounds

Teaching objectives:

- To identify types of sounds
- To compare loud and soft sounds

Key vocabulary: soft (low, gentle), loud (making a lot of noise), harsh (unpleasant to listen to), pleasant (enjoyable, nice), silence (quiet)

LESSON 1: 40 min

Introduction: 5 min

- Begin the lesson by asking the children to shut their eyes, sit quietly and listen. *What can you hear?* List their responses, e.g. someone moving, the fan, birds, children talking, etc.
- Ask key questions like, *what causes sound? How do we hear sounds?* Note their answers. This will encourage the children to brainstorm and elicit their previous knowledge of the topic.

Main teaching: 30 min

- Point out that people can make sounds with their voices. They can also make sounds by clapping, tapping, blowing, stamping their feet, etc. Animals make sounds as well; cats mew, dogs bark, snakes hiss, horses neigh, etc. The children can make the sounds as each animal's name is called, or you can read a short story with a number of animals in it, whenever an animal's name is read, the children can imitate the sound. (This concept can be used for other sounds as well.)
- Discuss the pictures in the text that show the objects that make loud and soft sounds. Point out each object in the picture and discuss the sound it makes, e.g. rickshaw, plane flying overhead, a drill, birds chirping, cow with bells around its neck, etc.
- Ask the children to sit in a circle, play the recording of various sounds, the children should try to identify the sounds and categorize them as 'loud' or 'soft'. List the sounds under two headings.



They can either be listed on the board, or pasted on a soft board. (Pictures of the objects or animals making the sound should be prepared beforehand.)

- Continue the discussion of introducing pleasant and unpleasant sounds.

What are pleasant sounds? Sounds we like to hear, like music, voices of people we like, our pets, etc.

What are unpleasant sounds? Sounds we do not like, donkeys braying, noise of the traffic, people fighting, etc.

Ask the children to create a poem using the following format.

I like to hear _____

And I like to hear _____

And also to hear _____

But I don't like to hear the sound of _____

You could put up some prompting words on the board or paste them on the soft board, e.g. sound of rain, screeching of brakes, music of the ice-cream van, lion's growl, sound of thunder, balloon bursting, etc.

Wind up: 5 min

Make a list of all the types of sounds learnt in the lesson. *We learnt about musical sounds, animal sounds, people's voices, traffic sounds, sounds made by machines, etc.*

LESSON 2: 40 min

Introduction: 5 min

- As an introduction to vibration, the children can be asked to put their hands on their throats lightly when talking, to feel the movement. There is no need to elaborate further at this stage.
- How do we hear sounds? With our ears. The sound reaches our ears and we can hear it.* Show pictures of ears belonging to different animals, e.g. cat, elephant, rabbit, donkey, etc. Point out that we hear sounds nearer to us better than sounds far away. This could be practically demonstrated by either playing a recording, or clapping or saying something softly first closer to the children, and then have them move away or moving the source of the sound away.

Main teaching: 30 min

- Sounds can warn us of danger, e.g. We can hear a car as it travels towards us, the siren of police cars, fire engines, and ambulances warn us of danger.* You can now guide the children to complete the exercises, activity and the corresponding worksheet.

Wind up: 5 min

- Recap the salient features of the lesson.

We can make sounds with our voices, and by clapping, tapping, etc.

We hear with our ears.

Sounds can be loud or soft.



EXERCISE (pages 66–67)

- 1 loud sounds: motor cycle, drum, rickshaw, bell
soft sounds: clock, cat, bicycle, rain
- 2 elephant-trumps, frog-croaks, grass hopper-clicks, parrot-squawks, lion-roars.

ACTIVITY (page 67)

Although Activity 1 has been given in the text, the teacher can choose either of the two activities, divide the class into two groups, giving each group one of the activities to carry out or have the entire class work on both the activities.

- 1 Make a box guitar. You will need:
 - An empty shoe box
 - Rubber bands
 - Ruler or stick

Method:

Remove the cover from the box. Stretch the rubber bands around the box. Attach the ruler or stick to the back of the box on one end to act as the arm of the guitar. To play, strum or pluck the rubber bands.

- 2 Make a xylophone. You will need:
 - Glasses or jars of different sizes (from large to small)
 - Water
 - A spoon

Method:

Fill the glasses or jars with different amounts of water, the more water there is in the glass, the lower the pitch of sound. Having less water in the glass or jar will raise the pitch. To play, gently strike or tap the glasses with a spoon.

Unit 17

Topic: Light and shadow

Teaching objectives:

- To explain that there are many sources of light, the primary source is that of the Sun
- To identify materials that allow or do not allow light to pass through them
- To conclude that blockage of light results in formation of shadow
- To recognize that light is able to travel only in a straight line

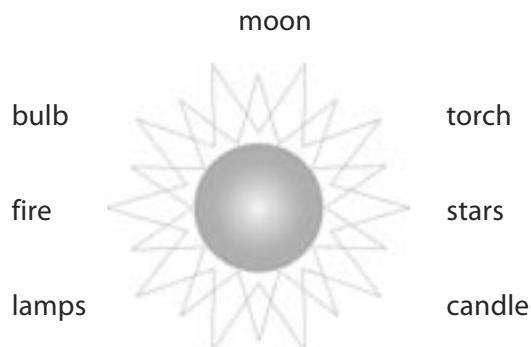
Key vocabulary: light, shadow



LESSON 1: 40 min

Introduction: 5 min

- Brainstorm the sources of light with the children by asking what gives light. Use a yellow chalk or a regular one to draw a large Sun in the middle of the board and place all the other sources around it.



Explain that there are many sources of light but the biggest one is the Sun. We need light to see things. When it is dark we cannot see anything.

Main teaching: 30 min

- Show that light travels in a straight line by conducting a simple activity for which is required a thick chart paper and a torch. Cut out and bend two pieces of 8.5 cm x 11 cm chart paper. Cut a hole in exactly the same place in each one. Shine a flashlight or torch through the holes to show how light travels in a straight line. Refer to the picture in the book for help.
- Now read the lesson and afterwards complete the exercises.

Windup: 5 min

- *What have we found out about light? What objects give light? If there was no light, what would it be like? How does light travel?*

LESSON 2: 40 min

Introduction: 5 min

- Explain to the children that we are going to find out which material allows light to pass through it. *We are going to do some experiments in the class today.*

Material: a small tub or bowl filled with water, a flashlight

- Explain that some things allow light to pass through them. Fill the tub with water and shine the flashlight on it. *Can you see the light in the water? Yes, because water allows light to pass through it.* Go outside, while the children remain inside the classroom. Flash the light through the window. Come back and ask them if they could see the light. *Yes, because light can pass through glass. Light can also pass through air, but it cannot pass through brick walls or wooden doors, or a tiled floor.* You can demonstrate this also.



- Read the lesson and do Activity 2 to teach how and why shadows are formed.

Wind up: 5 min

- Ask relevant question to summarize the lesson:

What are the things that give light?

How does light travel? Can it travel around corners? What happens when light is blocked?
Name three things which allow light to pass through them and three which do not.

EXERCISE (page 71)

- 1 a) Light can travel through glass, air and water.
 b) Light cannot travel through wood, bricks and metal.
- 2 The first drawing should be ticked.
- 3 Sun gives the most light.

ACTIVITY (page 72)

- 1 This science activity shows the difference between transparent (allows all light to pass), translucent (allows some light to pass) and opaque (allows no light to pass) objects. Do not worry about the children memorizing vocabulary in kindergarten. Just use the words as you introduce science activities, and they will later remember and use the words.

Begin with cutting four square window holes in a piece of card paper. The holes do not have to be identical in size. Have the children tape two pieces of different coloured transparent cellophane over two of the holes. Tape a piece of translucent paper like a tissue paper over another hole and a piece of thick construction paper over the last hole. Have them peek through the windows and shine a flashlight to see which of the papers will let the light pass through.

- 2 Details are given in the text book.
- 3 Children will discover by experimenting that their shadows will change in size as the day progresses. From a full length and very long shadow, it will get smaller and smaller as the Earth's position changes.

Unit 1

My body

Look at the part of the body the girl is pointing to. Choose the correct name of the body part from the box below. Write it next to each picture.

eye

nose

mouth

chin

cheek

ear

feet

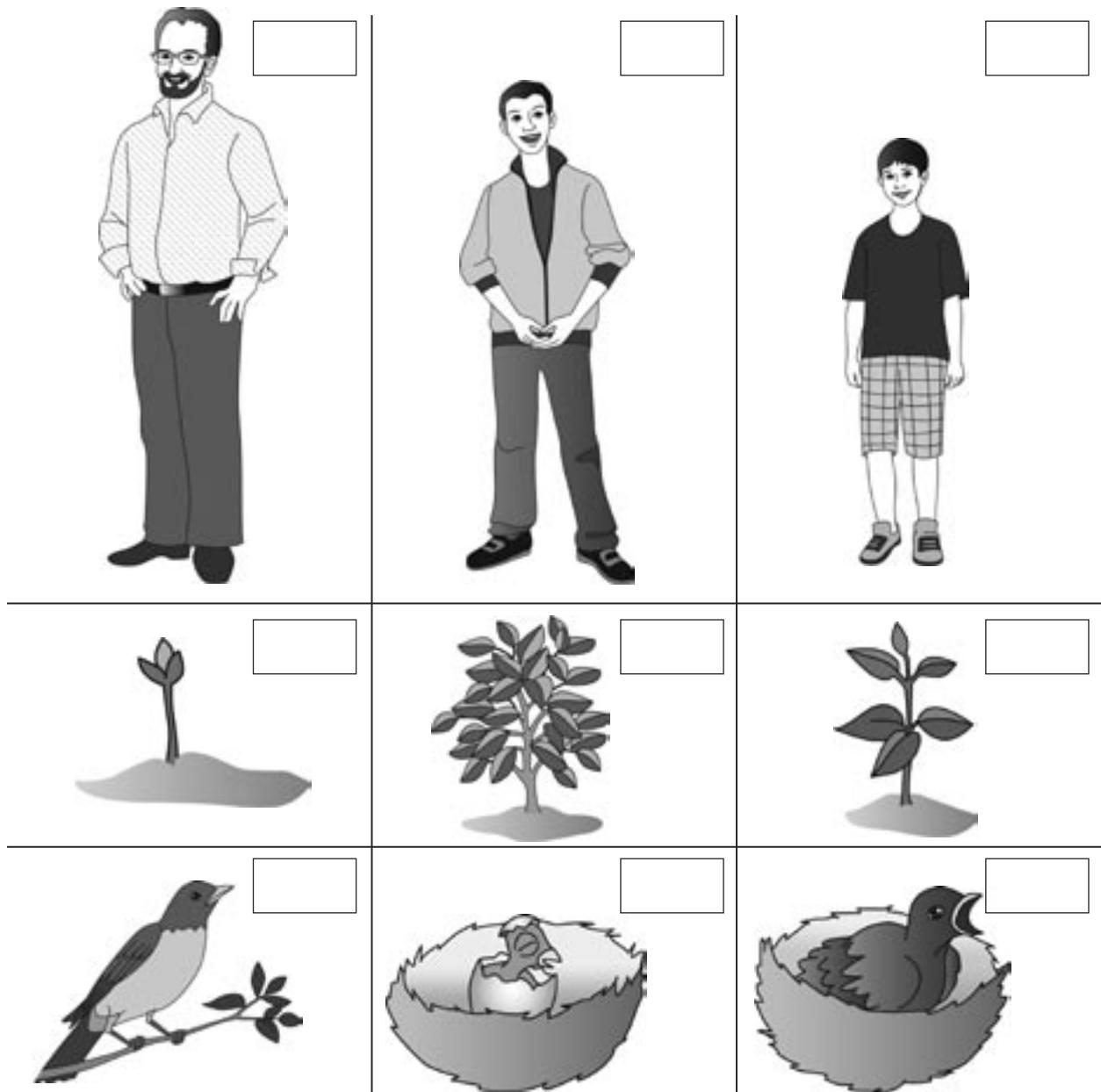


WORKSHEET

Unit 2

Living and growing

All living things are born small. With the passing of time, they grow older and bigger. Number the pictures 1, 2, and 3 in the correct order.



Unit 3

The Senses

We have five senses: sight, hearing, smell, taste, and touch. Look at the picture below and complete the sentences.



- Mother is using her sense of _____ and _____ to knead the flour.
- The girl is using her sense of _____ and _____.
- The boy is using his sense of _____ and _____ to watch television, and his sense of _____ to sip the drink.
- They are all using their sense of _____, while the food is cooking on the stove.

WORKSHEET

Unit 4 Health care

Eating healthy food makes us strong. Make a healthy drink for yourself.

You need:

a glass of milk



a little sugar



some strawberries



Blend them in the blender.



Enjoy your strawberry milk shake.

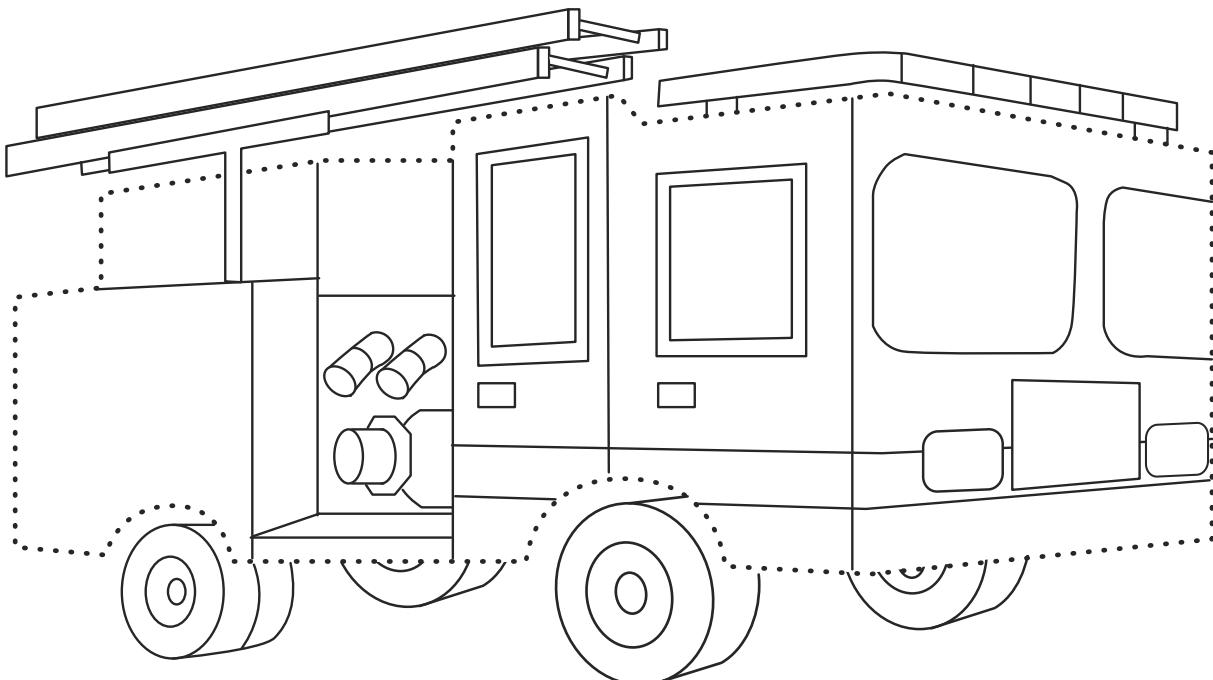
Colour your drink below.



Unit 5

Keeping safe

Fires can be dangerous. A firefighter uses the fire engine truck to put out fires. Complete the picture of the fire engine truck and colour it red.



WORKSHEET

Unit 6 Animals

Tame animals live near people. Wild animals live in the jungle.

Where do these animals belong? Draw a line connecting the animal to its home.



wolf



parrot



cat



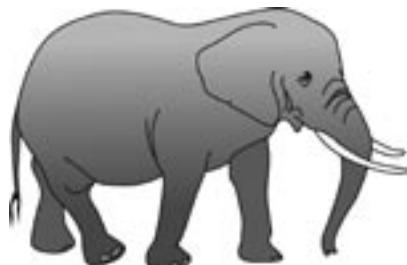
Home



Jungle



dog



elephant



owl

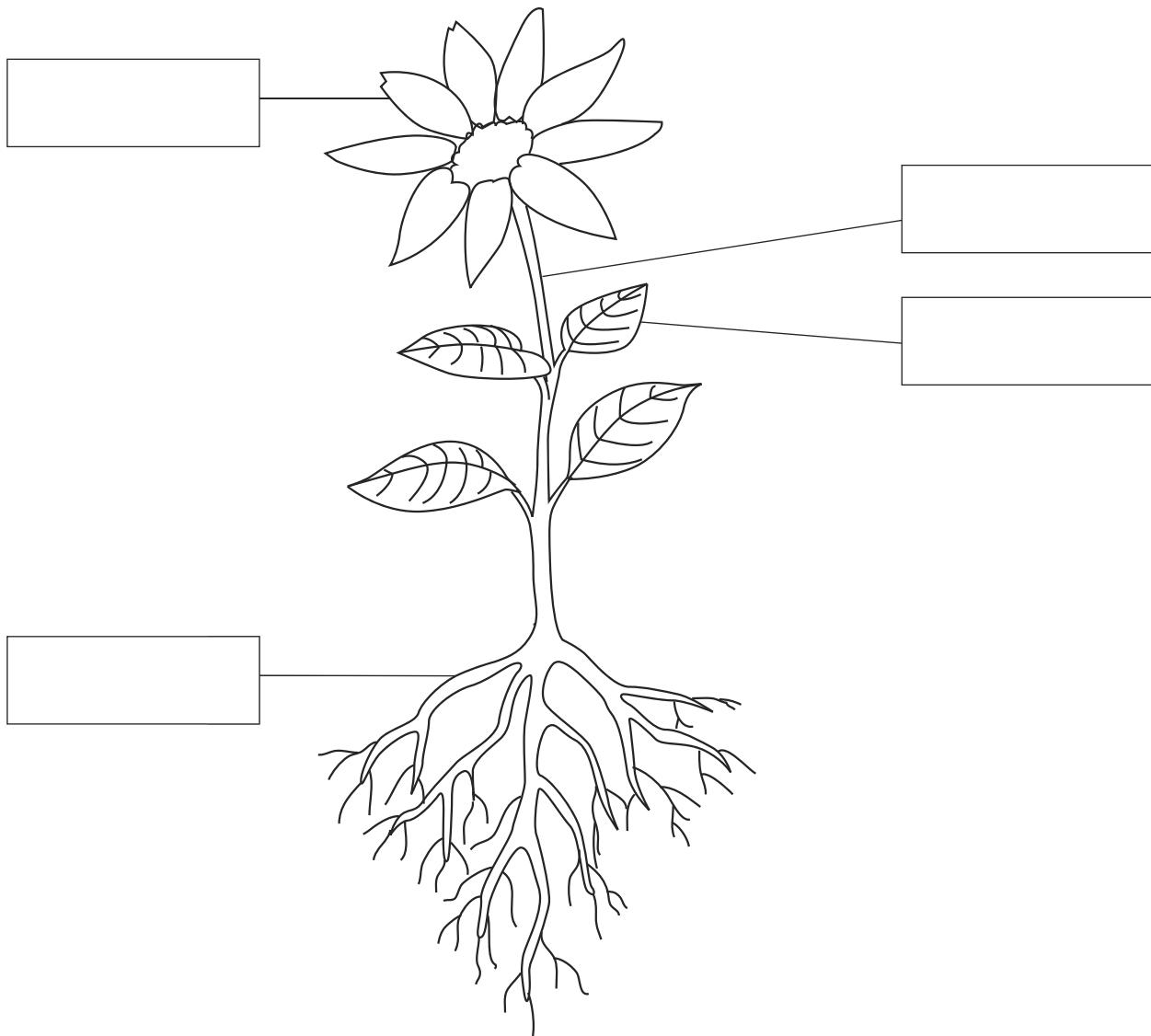
WORKSHEET

Unit 7

Plants

Colour the plant. Label the four main parts of the plant using words in the box below.

roots flower stem leaf

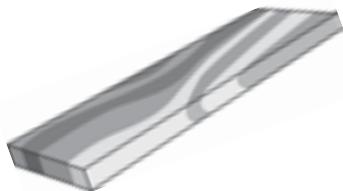


Unit 8

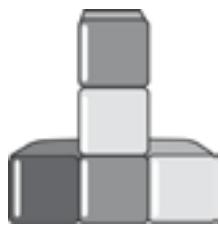
Materials

Everything around us is made up of different materials. Look at the pictures of the objects below. Cross the *odd one out*.

Objects made of natural materials



Objects made of man-made materials



Objects made of waterproof materials.



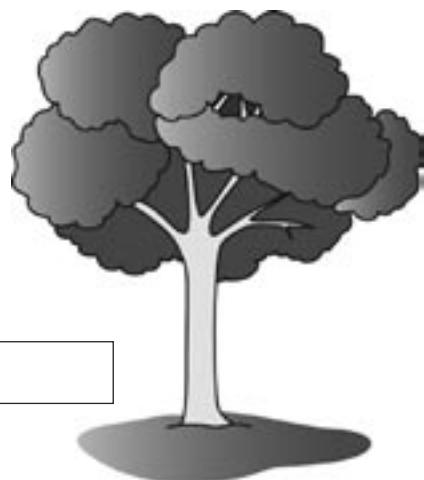
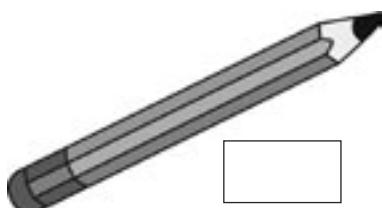
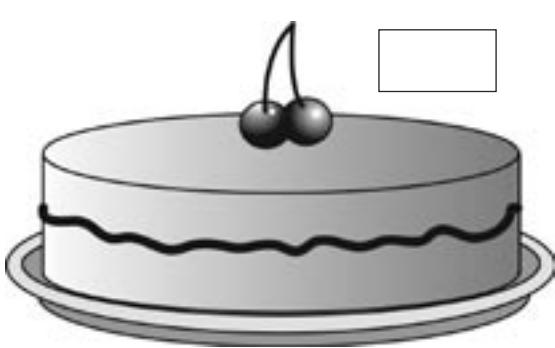
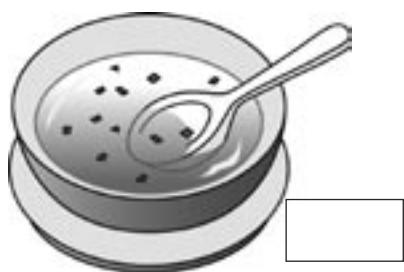
Objects that are soft



Unit 9

Solids and liquids

Some materials are solid. Some materials are liquid. Write 'S' in the box if the material is solid. Write 'L' in the box if the material is liquid.



WORKSHEET

Unit 10

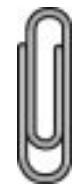
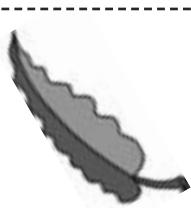
Floating and sinking

Find out which object floats and which sinks. Record your findings below.

Float



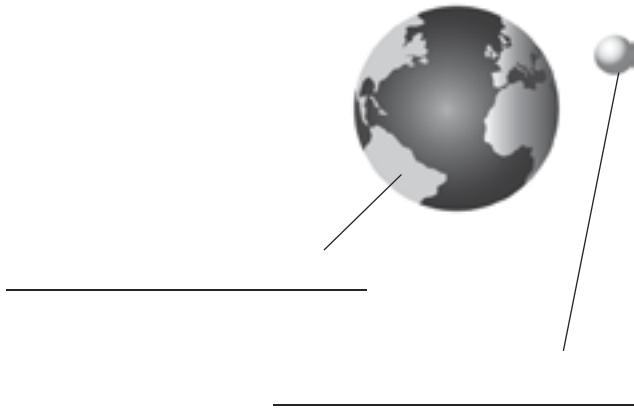
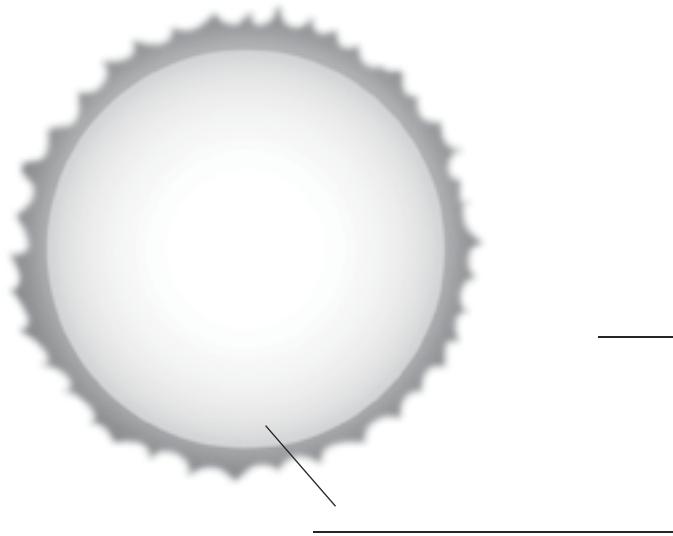
Sink



Unit 11

The Sun, Moon, Earth and stars

Label the drawings.



Write a sentence about each of these using words from the box.

Moon star Earth

- The Sun is a _____.
- The _____ has air, water and sunlight.
- The _____ is cold and dark.

WORKSHEET

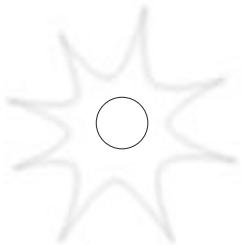
Unit 12

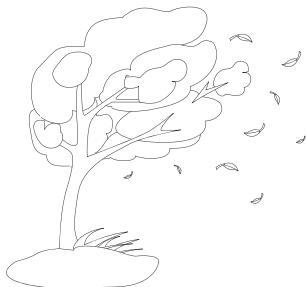
The weather

The weather changes from day to day.

Colour the pictures and write the kind of weather each one is showing. Use the words from the box below.

windy rainy sunny cloudy









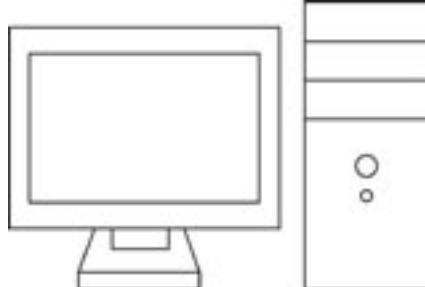
Unit 13

We use electricity

Colour those things that work with electricity.



play station



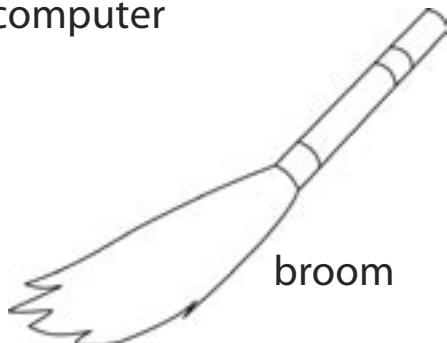
computer



bulb



juicer



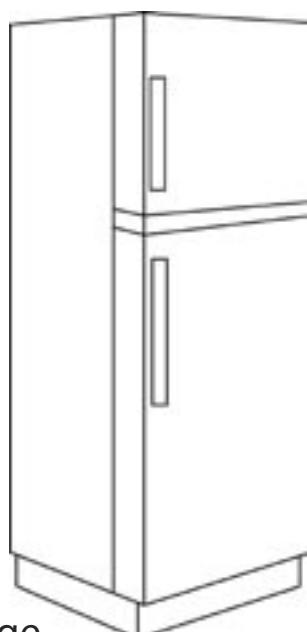
broom



saucepans



scooter



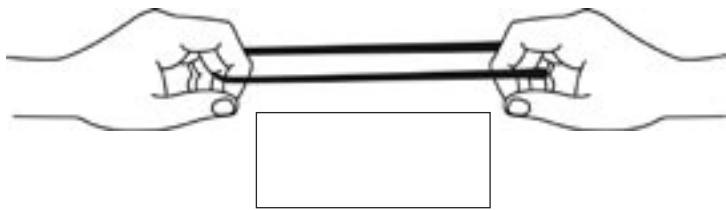
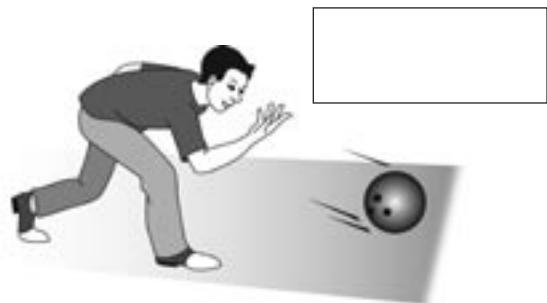
fridge

Unit 14

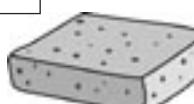
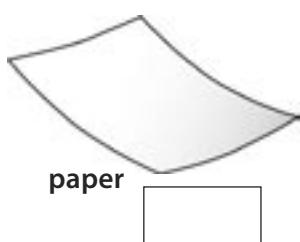
Movement

Pushes and pulls are called **forces**.

1. Look at the pictures. Write 'Push' if the force of push is being used. Write 'Pull' if the force of pull is being used.



2. Force is used to twist objects to change their shape. Which of the objects below can be twisted? Put a tick in front of those which can be twisted.

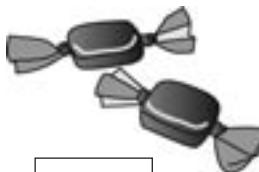


Unit 15

Food energy

Some foods are good for us. Tick (✓) the food which is good for us.

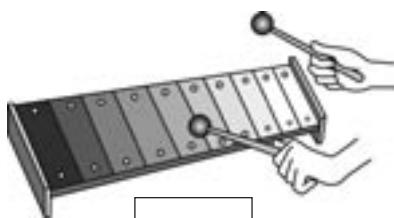
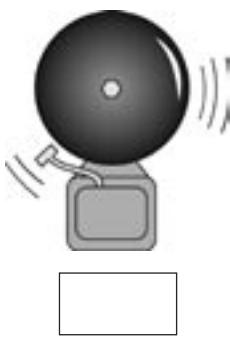
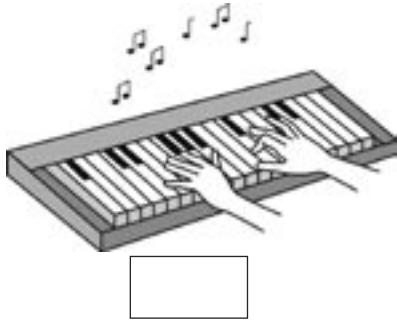
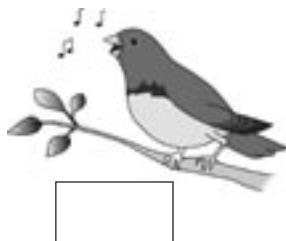
Some foods are bad for us. Cross (✗) the food which is bad for us.



WORKSHEET

Unit 16 Sounds

Some sounds are loud and some are soft. Put 'S' in the box if the sound is soft. Put 'L' in the box if the sound is loud.



WORKSHEET

Unit 17

Light and shadow

When light is blocked, it casts a shadow. Look at each picture carefully and tick the correct shadow.

