

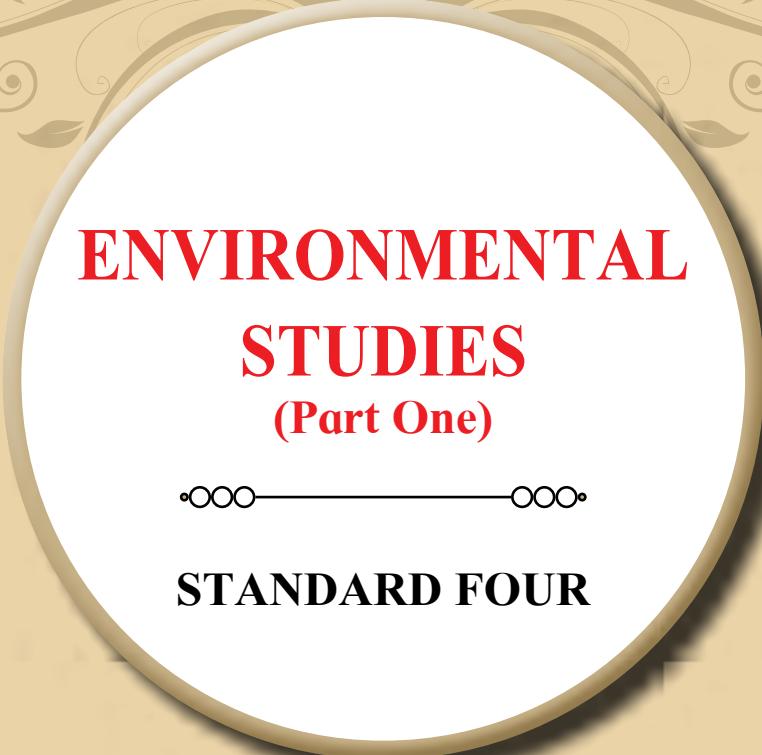
ENVIRONMENTAL STUDIES

(Part One)

STANDARD FOUR



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**ENVIRONMENTAL
STUDIES
(Part One)**

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STANDARD FOUR



**Maharashtra State Bureau of Textbook
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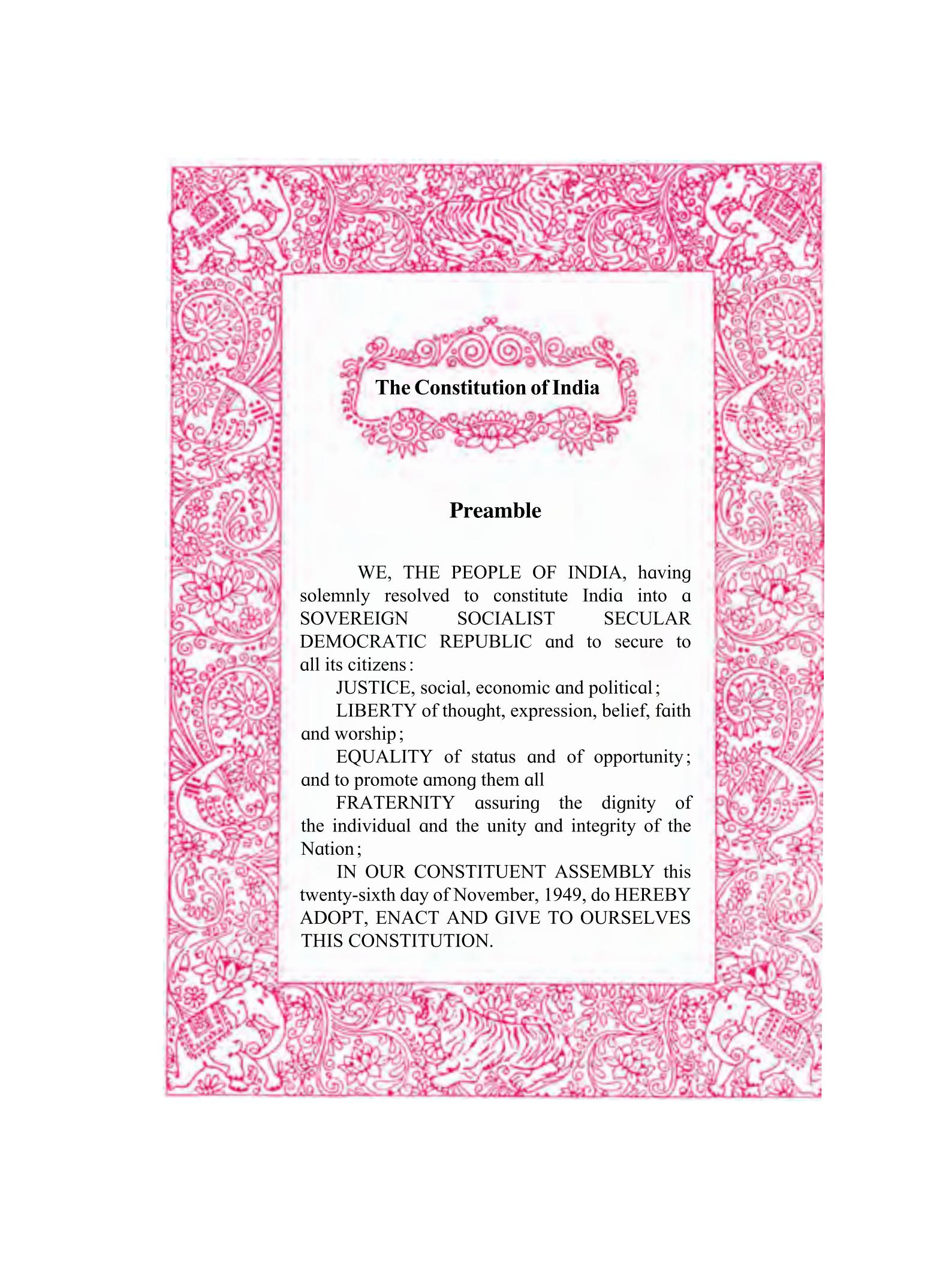
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The Constitution of India

Preamble

WE, THE PEOPLE OF INDIA, having solemnly resolved to constitute India into a SOVEREIGN SOCIALIST SECULAR DEMOCRATIC REPUBLIC and to secure to all its citizens:

JUSTICE, social, economic and political; LIBERTY of thought, expression, belief, faith and worship;

EQUALITY of status and of opportunity; and to promote among them all

FRATERNITY assuring the dignity of the individual and the unity and integrity of the Nation;

IN OUR CONSTITUENT ASSEMBLY this twenty-sixth day of November, 1949, do HEREBY ADOPT, ENACT AND GIVE TO OURSELVES THIS CONSTITUTION.

NATIONAL ANTHEM

Jana-gana-mana-adhināyaka jaya hē
Bhārata-bhāgya-vidhātā,

Panjāba-Sindhu-Gujarāta-Marāthā
Drāvida-Utkala-Banga

Vindhya-Himāchala-Yamunā-Gangā
uchchala-jaladhi-taranga

Tava subha nāmē jāgē, tava subha āsisa māgē,
gāhē tava jaya-gāthā,

Jana-gana-mangala-dāyaka jaya hē
Bhārata-bhāgya-vidhātā,

Jaya hē, Jaya hē, Jaya hē,
Jaya jaya jaya, jaya hē.

PLEDGE

India is my country. All Indians
are my brothers and sisters.

I love my country, and I am proud
of its rich and varied heritage. I shall
always strive to be worthy of it.

I shall give my parents, teachers
and all elders respect, and treat
everyone with courtesy.

To my country and my people,
I pledge my devotion. In their
well-being and prosperity alone lies
my happiness.

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1. © Government of India, Copyright 2014.
2. The responsibility for the correctness of internal details rests with the publisher.
3. The territorial waters of India extend into sea to a distance of twelve nautical miles measured from the appropriate base line.
4. The administrative headquarters of Chandigarh, Haryana and Punjab are at Chandigarh.
5. The interstate boundaries amongst Arunachal Pradesh, Assam and Meghalaya shown on this map are as interpreted from the "North-Eastern Areas (Reorganisation) Act.1971," but have yet to be verified.
6. The external boundaries and coastlines of India agree with the Record/Master Copy certified by Survey of India.
7. The state boundaries between Uttarakhand & Uttar Pradesh, Bihar & Jharkhand and Chhattisgarh & Madhya Pradesh have not been verified by the Governments concerned.
8. The spellings of names in this map, have been taken from various sources.

For Teachers / Parents

Consider the following points while teaching this textbook of Standard Four :

- The boxes ‘Do you know ?’ and ‘Use your brain power !’ have been included to awaken the students’ curiosity. Teachers should not use them for evaluation or for setting question-papers.
- Students are expected to learn through their own experiences the information sought under ‘Can you tell ?’, ‘Try this’, and ‘Use your brain power !’ Teachers /Parents should provide the guidance necessary for that.
- At the end of every lesson, there is a box with the title ‘What we have learnt–’ It sums up the information that the children obtain from the lesson.

Preface

The ‘Primary Education Curriculum - 2012’ was prepared in the State of Maharashtra following the ‘Right of Children to Free and Compulsory Education Act, 2009’ and the ‘National Curriculum Framework 2005’. The Textbook Bureau has launched a new series of textbooks based on this syllabus approved by the State Government from the academic year 2013-2014 in stages. We are happy to place this textbook ‘Environmental Studies Part One’ of Standard Four in this series in your hands.

Our approach while designing this textbook was that the entire teaching-learning process should be child-centred, emphasis should be given on active learning and constructivism and at the end of Primary Education the students should have attained the desired competencies and that the process of education should become enjoyable and interesting. Also, the present textbook has been written following ‘Ten Core Elements’ which have been indicated in the syllabus.

There are many colourful illustrations in this textbook. It is an attempt to make comprehension and construction of knowledge more effective through the language of pictures. Some activities have been included in this textbook under the titles ‘Can you tell ?’, ‘Try this’, ‘Use your brain power !’ They will help the students to understand the concepts introduced in the lessons and will also reinforce them. The textbook will motivate the children to observe their environment. Conscious efforts have been made to impart values which are relevant today in the context of the textbook.

Variety in the exercises will help the children to revise and retain the concepts in the lessons and will motivate them to study on their own. Children will find the exercises interesting. They will also help the teacher with continuous comprehensive evaluation.

This textbook introduces the children to their natural, social and cultural environment. It attempts to develop the students’ skills of problem solving and application and a healthy attitude towards the environment.

The language of presentation used in this book is simple. The topics have been presented in an inter-disciplinary manner without forming compartments of science, geography and civics. It may lead to an approach that looks at several dimensions of an issue or topic simultaneously. We have tried to keep in mind the diverse experiences of all the children in Maharashtra while writing the book.

This book was scrutinized by teachers from all parts of the State, by educationists, experts and members of syllabus committee to make it as flawless and useful as possible. Their comments and suggestions have been duly considered by the Subject Committees while finalising the book.

The members of Science, Geography and Civics Subject Committees, Panel members, quality reviewers and the artists have taken great pains to prepare this book. The Bureau is thankful to all of them. We hope that this book will receive a warm welcome from students, teachers and parents.



(C.R. Borkar)

Director

Maharashtra State Bureau of Textbook
Production and Curriculum Research, Pune.

Pune

Date : May 2, 2014

Akshaya Tritiya



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1. The Life Cycle of Animals



Can you tell ?



- Look at the puppies and their mother in the picture. Do you see some similarities?
- Look at the butterfly and the caterpillar that has come out of the egg. Do you see any similarities?



Can you tell ?



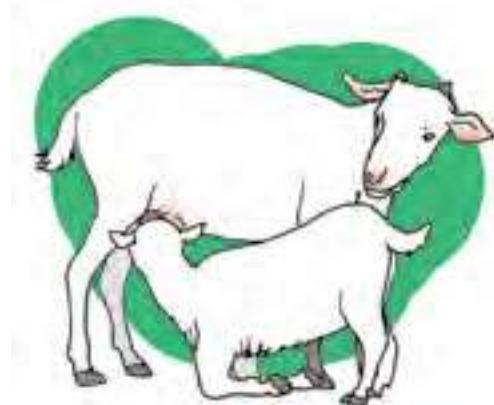
- A hen lays eggs. Chicks come out of those eggs.
- Do kittens come out of eggs ?



The growth of animals

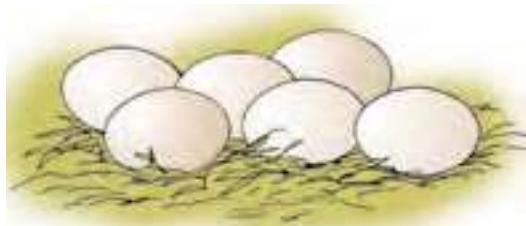
A kid and a fully grown goat are not very different to look at. There is not much difference between a kitten and an adult cat. These babies grow in their mother's tummy and are born from the mother's tummy, too. These animals do not lay eggs.

But some animals like crows, spiders, lizards lay eggs.



A chicken is born from an egg.

Ants, butterflies, fish, frogs, snakes are all animals that lay eggs. But, we do not often see their eggs. The eggs of some very small animals are very tiny. We would hardly notice them. So, we do not come to know that these animals lay eggs. But, we know for sure that a hen lays eggs. Her eggs are big enough to be easily seen.



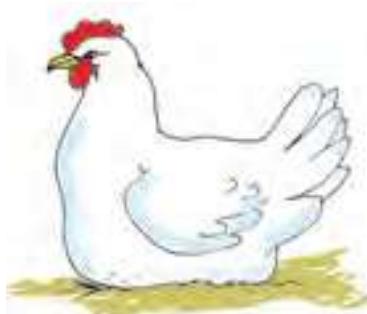
A new term !

hatch : When a hen sits on her eggs to warm them, she is said to be ‘hatching’ her eggs.

A hen lays eggs. Warmth is necessary for the chicks to grow inside the egg. So, after laying them, the hen sits on the eggs to keep them warm. The chicks inside slowly keep growing.



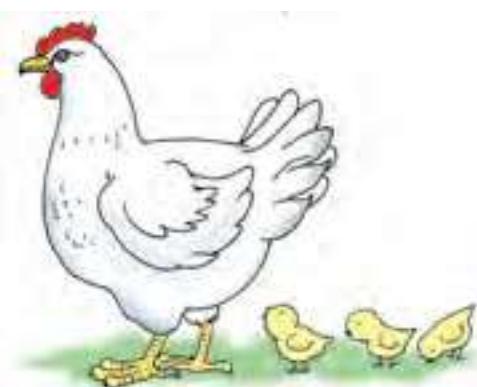
When its growth is complete, the chick breaks the eggshell and comes out.



The hen looks after its chicks till they grow a little bigger.



Do you know ?



When a hen is hatching her eggs, she becomes aggressive for fear of their safety. She attacks anyone who tries to go near the eggs.



Use your brain power !

- What are the similarities between the hen and her chick?

Metamorphosis

There are similarities between a goat and its kid, and between a hen and her chick. However, a caterpillar and a butterfly are very different.

Thus, in some animals, the young one grows into an adult animal that looks very different from the young one. This change of form is called metamorphosis.

Metamorphosis in a butterfly

Butterflies of various shapes and beautiful colours are a part of our environment. They live their life among plants.

As butterflies grow, they pass through four stages. These are egg, larva, pupa and adult. The adult stage is called butterfly.

The Plain Tiger butterfly is a very common one. Let us take its example to see how the growth of a butterfly takes place.



The female Plain Tiger butterfly lays an egg on the milkweed (*rui*) leaf. In six to eight days, the larva emerges from the egg. The larva of a butterfly is called a caterpillar.



When the caterpillar comes out of the egg it is very hungry. It begins to nibble and eat the very leaf on which it emerges from the egg. It eats very fast. So, its growth is very rapid.

A new term !

moult : to shed old skin to make way for new growth.

The caterpillar of the Plain Tiger butterfly grows so rapidly in the first two or three days that it does not fit in its skin anymore. But under the old skin, a new loose skin is formed on the growing caterpillar. Then, the caterpillar sheds the old skin. That is, it moult.

Again it begins to gobble up the leaf and continues to grow rapidly. In two or three days, it moult s a second time. In this way, it moult s four times. It remains in the caterpillar stage for ten to twelve days.



Chrysalis

Just before the last moult the caterpillar weaves a button of a silken thread on a stalk or a leaf and hangs itself from it. When it moult s this time it forms a pupa which is the next stage of its growth. The pupa of a butterfly is also called a chrysalis.



A butterfly emerges from its chrysalis.



Adult Butterfly



Do you know ?

For each type of butterfly, the type of plants on whose leaves its female will lay eggs is fixed.

The time the larvae take to emerge from the eggs is different for different types of butterflies. There is great variety in caterpillars. Different types of caterpillars are of different colours. Their body is long. Many types of caterpillars are hairy.



Various Butterflies



Do you know ?

After we have cleaned the grain we buy, we store it in a box. Even then, when we open the box after some days, we may see some insects in it.

There can be insects in the grain stored in places like warehouses, in the grocer's shop or even in our homes. Now, if a female insect lays eggs in this grain, we cannot see them because of their tiny size. The warmth and air they get in the box in which the grain is stored is enough for them to grow. So their growth continues inside the box. They also have the same stages of growth, namely, egg, larva, pupa and adult. When we open the box, we see the insects in the grain at the different stages of growth in which they are.



What we have learnt –

- A hen sits on her eggs to hatch them. The fully grown chick breaks the eggshell and comes out.
- Egg, caterpillar (larva), chrysalis (pupa) and adult are the four stages of the life cycle of a butterfly.
- The Plain Tiger butterfly lays its eggs on the leaves of the milkweed plant. The larva emerges from the egg. It is called the caterpillar.
- When the growth of the caterpillar is complete, it enters the pupa stage during which it lives inside the chrysalis.
- The adult butterfly emerges from the chrysalis. It has six long legs and four attractive wings.



Always remember –

Butterflies are a part of our environment. It is wrong to catch butterflies just for fun and to keep them tied with a string.



Exercises

(A) Think and tell.

1. It takes 20-22 days for a chick to emerge from a hen's egg. Would the young ones of other birds also take the same number of days to hatch?
2. You must have seen dragonflies hover over grass. Which stage of their life cycle is this – the egg, larva, pupa or adult? 
3. When you take a bunch of a leafy vegetable to sort it, you may find holes of different sizes in the leaves. Some leaves may have been nibbled at the edges. What do you think is the reason for that?
4. When you shell peas, you sometimes see tiny green living things inside the pod. Which of the four stages of the life cycle of an insect are they ?

(B) Answer in brief.

1. Why must the hen sit on her eggs ?
2. Why does a hen become aggressive when she is hatching her eggs ?
3. Which are the four stages of the life cycle of a butterfly ?
4. Which changes take place inside the chrysalis of the Plain Tiger butterfly ?

(C) True or false ?

1. A lamb emerges from an egg.
2. We cannot easily see the eggs of an ant because they are very tiny.
3. When the caterpillar emerges from the egg, it is not very hungry.

(D) Fill in the blanks.

1. The female butterfly lays on the leaves of a plant.
2. The larva of a butterfly is called a

Activities

- Draw and colour the picture of a Plain Tiger butterfly.
- Collect colourful pictures of other butterflies and paste them in your notebook.

2. The Inter-relationships between Living Things

A riddle to solve !

An age old tree with a thick strong trunk
Gives deep, dark shade from the scorching sun.
Like an old man's beard with many strands
It has ropes for swinging from every branch.

Which is this tree in the picture ?



Can you tell ?

Plants in our surroundings are useful to us in different ways. The names of some plants are given below. For what purpose do we use their leaves ?

- Betelvine ● Flame of the forest (Palas) ● Fenugreek (Methi)
- Vasaka (Adulsa) ● Curry leaf plant

The needs of living things are met in their environment.

We have many needs like food, water, air, clothes and shelter. All these needs are met in our surroundings.



In fact, food, water and air are the needs of all living things. They are all fulfilled in the environment. But there are differences in the needs of each kind of living things. For example, the water that a mouse drinks in an entire day would not be enough for an elephant even at one time.

Think about it !

Butterflies feed on the nectar of flowers. Can a frog do the same ? A sheep eats the leaves of shrubs. Can a tiger do the same ? A fish can breathe in water. But can a pigeon do that ? Bulrushes grow in water. Can a lemon tree do so ?



Can you tell ?

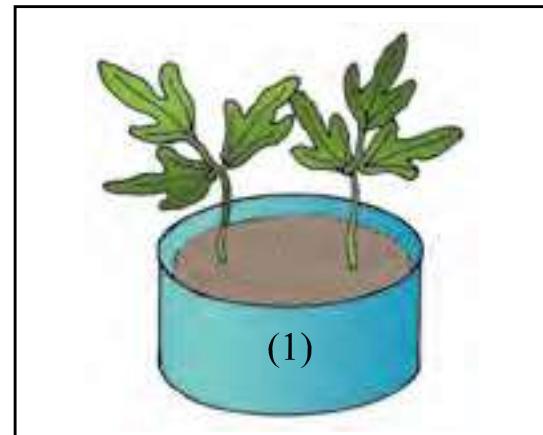
If fish leave the water, will they be able to live on land ?

•••—————•••



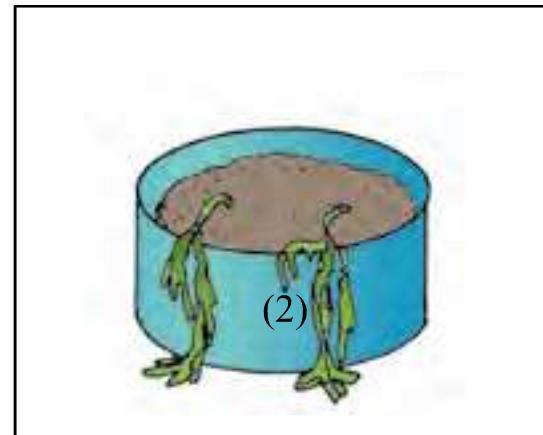
Try this.

- Take two small boxes. Label them box 1 and box 2. Fill them three-quarters with soil. Make the soil moist enough to sow seeds.
- Sow two sprouted moth (matki) seeds in each box.
- Give two spoons of water to the soil of box 1, only once every day. Give four spoons of water to the other box four times a day. Do this for six days.



What will you see ?

- The plants in box 1 are growing well. But the plants in box 2 have begun to rot.



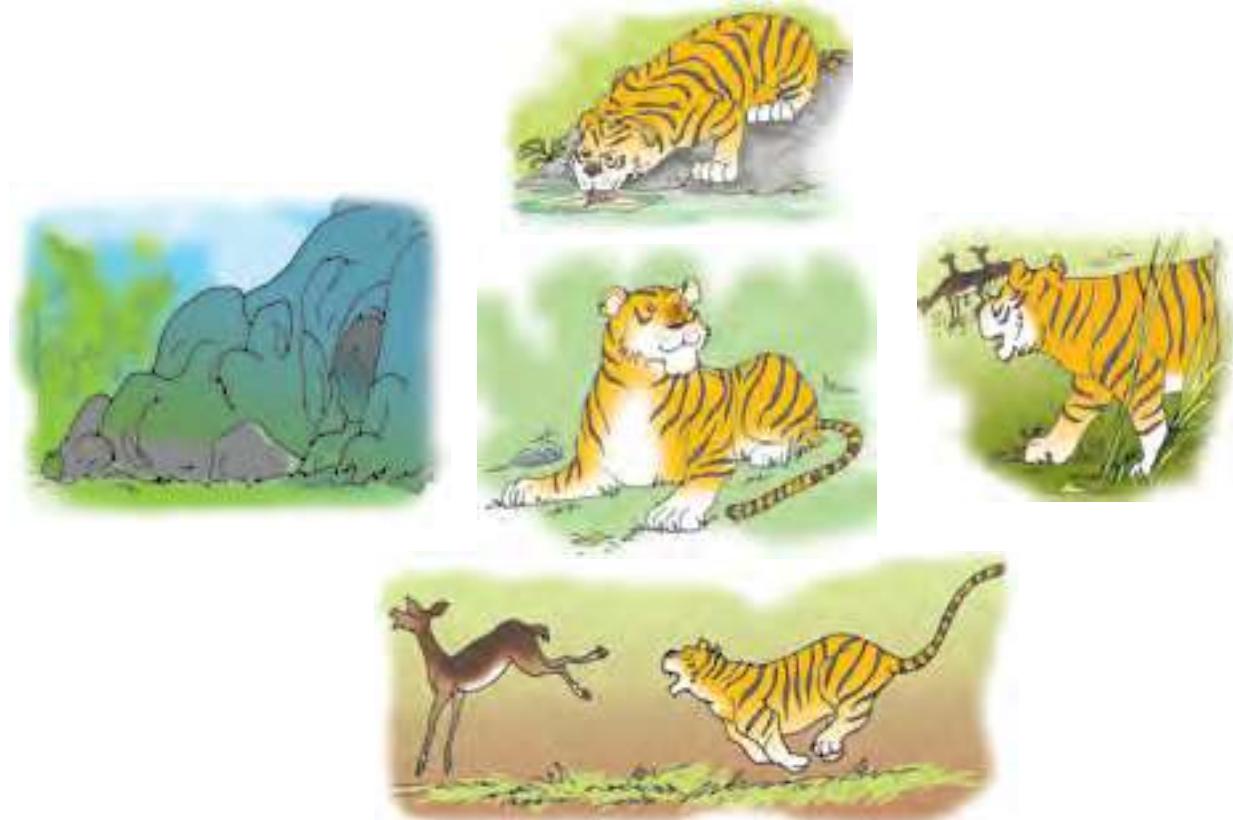
What does this tell us ?

- Plants that are not aquatic plants cannot grow in marshy areas.
 - If they get more water than they need, they rot.
-

Any type of living thing will be found only where all its needs are fulfilled.

Let's take the example of the tiger. A tiger has stripes. A tiger lies in wait for its prey among tall grasses. Its prey cannot see it in the grass because of the stripes. There are animals like the deer, the nilgai and the bison in grasslands. When the tiger is hungry, it can feed on them. For a tiger, there also needs to be a waterhole nearby which never dries up even in the summer. There must also be dense vegetation, tall grasses, or caves in hills or mountains in the area so that the tiger can find shelter.

A tiger inhabits an area where all these things are available.



Where does a tiger live ?



Can you tell ?

- From where do we get silk ?
- How are trees useful for monkeys ?
- How are trees useful for birds ?
- What happens if termites make a tree hollow ?

We keep animals in order to satisfy some of our needs. They become dear to us. We look after them well. We feed them. We take them to a vet if they fall ill. These animals, too, return our affection.

We get milk, meat, eggs and several other things from animals. Some animals are useful for carrying burdens or drawing carts. Domestic animals are also used to help with the heavy farm work in fields. Dogs guard our houses. Sheep give us wool.



Do you know ?

- Even the excreta of domestic animals is of use to human beings.
- The dung of cattle is made into dung-cakes. They are combustible. They are used in some places as fuel. When they burn they give out smoke.
- A combustible gas called gobar gas is also obtained from cattle dung. That, too, is used as a fuel. It burns without smoke.
- Cattle dung is used for plastering mud houses.
- Manures made from cattle dung and sheep pellets are good for plants. Farmers use them for growing crops.



Animals are our friends.

Just as we need animals, we need plants, too. Plants give us foodgrains, vegetables and fruits. We love flowers too. We use them for many different purposes. We get flowers from plants. We also get cottonwool from plants to make cotton clothes.

We grow plants that are useful to us, methodically. We sow seeds. We make sure that they get water. We give manure when necessary. We spray pesticides if they are attacked by insects.

Plants, too, give to us abundantly. They satisfy our needs.

Other living things also get their food from the environment. For example, chameleons eat insects when they are hungry. Some snakes eat mice and frogs. Tigers eat deer. Goats and sheep eat leaves of plants. Cattle eat grass.

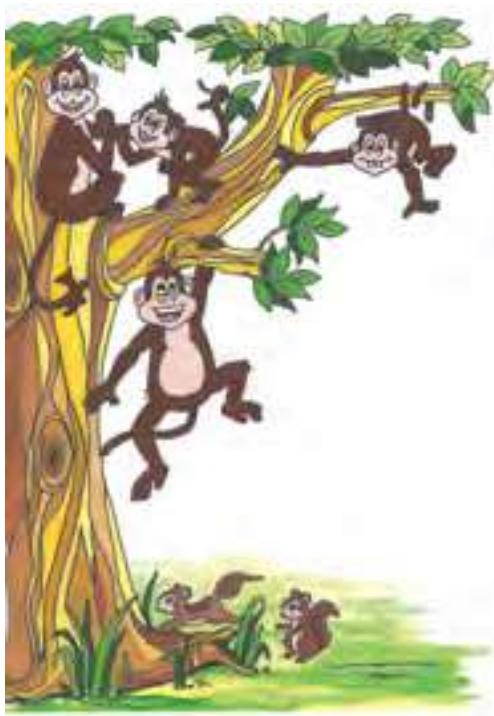
A new term !

arboreal : This word comes from the Latin word ‘arbor’ which means ‘tree’. Arboreal means ‘living in trees’.

Animals like monkeys and squirrels live on trees. It gives them certain advantages. Being at a height, they are better able to defend themselves from their enemies. Besides, they can eat the fruits of the trees to satisfy their hunger. Such animals are said to be arboreal.

Unknowingly, they help the tree with whose support they live. As they move around here and there in the surroundings, they spread the seeds of the fruit they have eaten, through their droppings. Because of this, new trees grow in different places.

Some types of birds, too, find trees useful for building their nests.



Arboreal animals



Do you know ?

- An egret rides on a buffalo's back.

When a buffalo is grazing in a grassy area, you are very likely to see an egret riding on its back. What could be the reason for that?

A certain kind of egret feeds on different kinds of insects. Grass is full of all kinds of insects. But, because they are hidden in the grass, the egret cannot see them and catch them.



As the buffalo treads on the grass, it frightens the insects, which fly out of the grass. The egret on the buffalo's back makes no mistake in swooping down to catch and eat them up.

Seasonal changes in living things

Find out :

- (1) What is the Marathi name for mango blossoms ?
When do mango trees blossom every year ?
- (2) Does the banyan have leaves throughout the year ?
- (3) We see frogs everywhere during the rains. Where do they disappear in summer ?
- (4) Which is the season for jamuns ?



We have three seasons, summer, the rainy season and winter. It is very hot in summer. We wear cotton clothes and drink plenty of water.

In the rainy season, we use umbrellas or different kinds of raincoats and hoods to avoid getting wet in the rain.



In winter, we wear woollens and other warm clothes to protect ourselves from the cold.





Just as the three seasons affect us, they affect all other living things too. We see these changes taking place in the living world every year, year after year.

Winter, in Maharashtra, is also called the season of *paangal*, i.e. the falling of leaves. That is because many trees shed their leaves in winter.



The coats of many furry animals become thicker in winter. This keeps them warm in the cold season. Such growth of hair is especially noticeable in animals like sheep, and some types of goats and rabbits.

The end of winter is also the time for the mango trees to start blossoming. These blossoms are called *mohur* in Marathi.

At the close of the month of February, it becomes warmer and by March, we begin to feel the heat. Its time for summer.



Mohur

In this season, many trees get new leaves. Forests appear to have taken on a copper colour because these leaves are reddish and shiny while they are tender. Their colour changes to green as the leaves grow bigger. The call of the koel is heard in many places.



In summer, the market is full of mangoes and watermelons for us to buy. This is the season for these fruits. Although mango trees grow all over Maharashtra, the Konkan region is particularly famous for its mangoes.

It is also the season for cashew nuts. The red-yellow cashew apples can be seen growing on the cashew trees on the hillsides in the Konkan region.

In June, black clouds make their appearance. The rainy season is a short way away. By this time, we begin to get jackfruits, jamuns (java plums) and *karavandas*.

The seeds of grass and other plants lie scattered all over the ground. They sprout and start growing as soon as it begins to rain. It becomes green everywhere. This greenery is soothing after the hot summer months. Sometimes, we can even see the rainbow with its seven colours in the sky.

As it becomes wet everywhere, frogs appear. We also hear the loud noise of frogs croaking all together.

As the rainy season ends, it is time for winter to make a comeback. It gets colder and colder. This is not good for the frogs. They go deep under the ground for a long period of slumber which lasts for seven or eight months.

We depend on agriculture for food. The different seasons, summer, winter and the monsoons are the time for doing different tasks in the fields.



What we have learnt –

- The needs of all living things are met in the environment. There are differences in the needs of different living things.
- Some arboreal animals like monkeys and squirrels live in trees and feed on them. Their droppings help trees to grow in new places. Some birds build their nests in trees.
- Each type of living thing thrives where all its needs are fulfilled. For example, tigers live in grasslands and aquatic plants live in water.
- Changes in seasons affect living things. In winter, trees shed leaves and animals' coats grow thicker. At the start of summer, trees get new leaves. In the rainy season, it becomes green all around, frogs appear and crops grow in fields.



Always remember –

The environment changes with the seasons.

Living things have to adapt themselves to those changes.



Exercises

(A) What's the solution ?

Gurpreet has to go for a hobby class on a hot summer afternoon. She needs to be told what to do to protect herself from the heat.

(B) Think and tell.

1. If water collects in fields due to heavy rains, the crops growing there rot. Why ?
2. Why do we not get a good crop if we do not get good rains ?
3. Why does the Indian rat snake (*dhaman*) live around fields ?
4. If there are furry animals living in snowy regions, would their coats be thick or sparse ?

(C) Find out :

1. Which fruits are the following places in Maharashtra famous for ?
 - Nagpur
 - Gholvad
 - Saswad
 - Deogad
 - Jalgaon
2. Why do you think these fruit trees grow in those particular regions ?
Find out and write down the information you get. Share it with your classmates.

(D) Answer the following questions.

1. How are plants useful to us ?
2. What is meant by ‘arboreal’ animals ?
3. What changes do we see in trees at the beginning of March ?

(E) Fill in the blanks.

1. After , winter comes again.
2. We keep animals because animals meet some of our
3. We spray to prevent insects from attacking plants.
4. Winter is also known as the season of

Activity

- Observe the changes that take place in living things in the different seasons and make a note of them.

3. Storage of Water



Try this.

1. Make a small hillock of mud and stones in the school yard. Set some stones into the hillock. Pour water over the hillock from a watering can, like rain. Use the following points to study how the water flows over the hillock.
 - In which direction does the water flow?
 - How does water flow on the steeper slopes?
 - How does it flow on the gentler slopes?
 - What happens when the stones cause an obstruction?
 - Where do puddles form?
 - When does the direction of flow change?



2. Now stop watering the hillock. Make observations using the following points :
 - Why did the hillock dry when we stopped pouring water?
 - How long did the hillock take to dry?
 - Which part of the hillock dried quickly?
 - Which part took longer to dry?
 - Why did it take longer to dry?

You will realize that some rainwater flows away over the ground. Some water seeps into the ground. All the water we get comes from the **rain**. The rainy season lasts for three or four months. Along with us, all living things use this water all year round.

If we do not store water, we will not have enough water for our needs. That is why, we have to save water. Water must be used economically. In this lesson, we will see different ways of storing water.

Old water stores

In the olden days, several methods of storing water were used in our State. Nowadays, these old water stores are rarely used. However, their remains can be seen in all places. Some of them are very beautiful. Water in some of these stores never gets depleted.

(1) Wells

Some rainwater seeps into the ground. Wells are dug to obtain this water.



(2) Water tanks in forts



A tank on Fort Shivneri

People lived on the hill forts in the past. They also needed water. The forts had reservoirs and tanks dug into the stone.



A Draw-well (*Aad*)

(3) Draw-wells (*Aad*)

In the past, draw-wells were dug to get drinking water. They were small wells from which water was drawn using a small pot (*pohra*) tied to a rope.

Atpadi in Sangli district had a draw-well in every Wada. The draw-wells had water all year round. When the tap-water system was introduced, the draw-wells went out of use. Many were sealed. Now there are very few left in Atpadi. This can be seen in many villages.



A bund on a river

(4) Rivers and bunds

Earthen or masonry bunds were built across rivers to store their water.



A tank at Chandwad in Nashik district



A tank in Aurangabad city

(6) Old tanks (*Houd*)

Earlier, tanks were used to store water. Some large cities still have these old tanks. Some of them are still in use.

Find out if your locality has such old water storage systems.



What's the solution ?

Savani and Ameya get tap water in their house. As a result, the water from the draw-well which had been used since the old days is not used any longer. Because of this, grandmother is upset. Suggest how Savani and Ameya can use the draw-well water for purposes other than drinking.

Recent Systems

(1) Dams



The most important of all recent water storages is the dam. Dams made it possible to store huge quantities of water. As a result, more land was brought under cultivation. Cities began to grow. It became possible to set up factories and generate electricity. Maharashtra has several large dams such as Jayakwadi, Koyna, Ujni and Yeldari.

Find out exactly where these dams are located on the physical map given in your textbook.

(2) Borewells

Earlier, wells were dug to reach the water under the ground, but it was not possible to draw deep-seated ground water. Now, with the help of electric pumps, it is possible to do so. Borewells are dug for this purpose. These wells are very deep, but very narrow.



Use your brain power !

- (1) Find out if there are any old water stores in your locality. Think about how these old stores can be used again.
- (2) Where do water stores like rivers, dams, wells and lakes get their water from?



Panpoi (Drinking water stands)

People out on the roads need water when they are thirsty. In some places, big clay jars of drinking water are kept for the use of such people. This water is offered free of charge. This is known as Panpoi. Panpois are set up by individuals or institutions. Panpois are very useful, especially in summer.



Do you know ?

Chhatrapati Shivaji Maharaj gave the following instructions for the construction of hill forts.

‘A fort (hill fort) should be built after first finding out if there is water in the place. If there is no water, and if it becomes necessary to fortify the place, then by breaking the rock, reservoirs and tanks should be built.’

‘... One should not wholly depend upon the supposition that there is a spring of water in the fort and that it would somehow or other supply enough water.’

‘... For storing water, 2-4 reservoirs should be constructed. Water from them should not be allowed to be spent. The water in the fort should be well protected.’



What we have learnt –

- Traditional methods of water storage.
- Modern methods of water storage.
- Economical use of water.



Always remember –

Water is a natural resource.
All living things need water.
We must keep this in mind
when we use water.



Exercises

(A) Answer in short.

1. Why should we store water?
2. What were the traditional ways of storing water in the house?
3. What is a dam built on?
4. What must we keep in mind while using water?
5. What is water pollution?

(B) How can water be saved in places with water shortage?

Suggest what can be done.

(C) What good habits must we cultivate in order to use water economically?

4. Water Safe for Drinking



Try this.

- Take a glass half full of water. Add a spoonful of sugar to it and stir it with a spoon.

See what change takes place.

- Repeat this experiment with each of the substances mentioned below.

(Wash the glass clean every time you take the next substance.)

Common salt, honey, washing soda, powdered alum, sand, wheat flour, sawdust, turmeric powder and some oil.



What do you see?

Sugar, salt, washing soda, alum disappear in the water. They dissolve completely in the water. But sand, sawdust, turmeric powder, oil do not disappear even on stirring. They do not dissolve.

What does this tell us?

Some substances dissolve in water, while some substances do not.

•••
**The substance that dissolves in water spreads throughout the water.
When salt dissolves in water, the water in the container tastes salty.
When sugar dissolves, the water tastes sweet.**

A new term !

solution : When a substance dissolves in water, a mixture of that substance and water is formed. This mixture is called the solution of that substance.



If someone gets loose motions, we give them a solution of salt and sugar to drink. This solution is called ORS or oral rehydration solution.

A patient in a hospital is sometimes put on 'saline', that is, on a solution of salt in water. Sometimes, other medicines may also be given through saline.

These are examples of useful solutions.



Do you know ?

- Seawater is salty to taste because it is nothing but a solution of salt that occurs naturally. We cannot use seawater for drinking.
- Water of different wells may have different tastes. Why is that so? Some substances from the ground dissolve in the water. They give a taste to the well water. But if there is nothing dissolved in water, water has no taste.
- When we remove the lid of a soda-water bottle, bubbles fizz out of it. To make soda-water, a gas called carbon dioxide is dissolved in water under pressure. When the lid is removed, the pressure reduces and the gas bubbles out.



Try this.

- Fill a large container with water.
- Collect the following articles.

From your compass box : a plastic ruler, an eraser, a pencil, a sharpener, a rubber band, the compass.

From your house : a steel spoon, a plastic spoon, some groundnut shells, an iron nail, a screw, a coin.

From outdoors : stones, little twigs, leaves, soil.

- Put these things in the water and see whether each of them sinks or floats.



What do you see?

The eraser, sharpener, steel spoon, nail, screw, stones, coin, the compass and the soil sink in the water while the other things float.

What does this tell us?

Some things float on water while some things sink in it.



The things that float are lighter than water. The things that sink are heavier than water.



Try this.

- Take some muddy water in a big beaker. (If you do not find muddy water, then make some by adding some soil, pieces of dry twigs, straw, leaves, etc. to water.)
- Now allow this beaker to stand still for four or five hours.



What do you see ?

- The particles of soil sink in the water and form a layer or sediment at the bottom. But twigs and other rubbish float on the water. It takes a long time for the sediment to form.



What does this tell us ?

- Particles of soil are heavier than water. But because they are very small, they take a long time to settle to the bottom of the water. Leaves, twigs, etc. are lighter than water.
- Now the water appears much cleaner and transparent than it was.



The process of allowing heavier particles to settle to the bottom of still water is called ‘settling’.

①



Without disturbing the sediment, pour the water above it into two smaller beakers. Even though this water appears much cleaner than before, there are still some fine particles of soil and some rubbish floating in it.



Now carry out the following experiments using these two beakers. Label them 1 and 2.



②



Try this.

- Take a piece of alum and swirl it once in the water in the first beaker.
- Leave this beaker undisturbed for two or three hours.



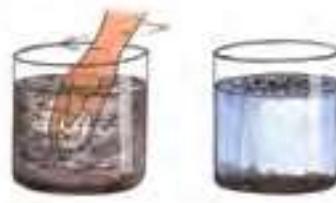
What do you see ?

- The particles floating in water slowly settle to the bottom. And the water in the upper part becomes transparent. The twigs and straw still keep floating on the water.



What does this tell us?

- Swirling alum in water helps the soil particles in muddy water to settle down.



- Take another beaker. Place a tea strainer over it. Fold a piece of fine cotton cloth into four layers. Make it moist and spread it over the strainer. Now pour the water in beaker 2 in a thin stream on the folds of the cloth.

What will you see?

- The rubbish and soil particles remain on the cloth.
- The water collects in the beaker below. It looks transparent.



What does this tell us?

- If we strain muddy water, it helps to make it clean. This process is called filtration.



After doing this experiment, throw the water into the soil and wash your hands with soap and clean water.

A new term !

potable water (water safe for drinking) : Water that does not endanger our health in any way when we drink it is called safe drinking water or potable water.

We have seen some methods of making muddy water clean and transparent. However, such water may still not be potable.



Can you tell ?

- In the rainy season, the water of rivers and streams becomes muddy. Why do we not drink that water ?
- When on an excursion, if you find that the water of a spring or well there has a bad smell, would you drink it ?

Water safe for drinking : potable water

Drinking water must be safe for our health. Pure water has no taste, smell or colour. If water has a colour or a foul smell, one must avoid drinking it. It can make us ill.

When we get muddy water during the rains, we allow it to settle before using it. If necessary, we use alum or we filter the water. Its muddiness disappears, and the water looks clean and transparent. Can we say that it is now safe for drinking?

Let us learn some more about this.

New terms !

micro : very, very small.

organism : a living thing.

micro-organism : a living thing that cannot be seen by the naked eye or even with a magnifying glass.

microscope : an instrument for looking at very very small things which we cannot see with our eyes or even through a magnifying glass.



Do you know ?

If we take a bit of yoghurt or a drop of buttermilk on a glass slide and place the slide under a microscope, we see very tiny living things in it.

They are called micro-organisms. These micro-organisms convert milk into yoghurt. They are useful for us.

But all micro-organisms are not useful. Some micro-organisms cause diseases when they enter our body. They are said to be harmful micro-organisms.



There are numerous kinds of micro-organisms around us. They are in the soil, in water, in air, on rocks, that is, anywhere and everywhere.

Even if harmful micro-organisms are present in water, we are not able to see them. Now though the water with such micro-organisms looks transparent, would it be safe for drinking?

You may know that during the rainy season, we often hear of an outbreak of diarrhoea or gastritis. At such times, we need to boil the water that has been cleaned by settling and filtration. Only then does it become safe for drinking.

Boiling the water kills the micro-organisms in it and prevents diseases.



Use your brain power !

Some substances do not dissolve in water.

What could be the advantage of this?



What's the solution ?

Mother had brought some cumin seeds (jeera) from the shop. But some sand got mixed with it. Mother wants the jeera seeds cleaned.



What we have learnt –

- Some substances dissolve in water. Some substances do not.
- Some things float on water. Some sink and settle at the bottom.
- In order to obtain clean water, muddy water is allowed to settle. After settling, the water is cleaned further by swirling alum in it or by filtration.
- Even in clean transparent water, micro-organisms can be present. It is necessary to have safe water for drinking. So water must be boiled to destroy any micro-organisms in it.



Always remember –

Even such tiny living things like micro-organisms which our eyes cannot see have great importance in our lives.



Exercises

(A) Use your brain power !

Some *rava* has got mixed with sago pearls or sabudana. What sieve should we use to separate the two – the one that allows *rava* to pass through or the one that allows sago?

(B) Answer the following questions.

1. Name the substances used to make the solution called lemon sherbet.
2. Why is it that water that looks clean and transparent may not be fit for drinking ?
3. When making a sherbet, what do we do to make sugar dissolve quickly ?
4. Does oil float on water or sink in it ?

(C) Complete the table.

1. Write the information you obtained from the floating-sinking experiment, in the table below.

Repeat the experiment with other things besides those mentioned in the lesson. Write their names, too, in the proper places in the table.

Things	These sink.	These float.
Given in the lesson		
Other things		

2. Repeat the experiment in the lesson related to dissolving using some other substances. Make a table like the one above and fill in your findings in it.

(D) Fill in the blanks.

1. Substances like salt and sugar after some time when added to water.
2. The mixture obtained on dissolving a substance in water is called a
3. ORS is an example of solutions.
4. All micro-organisms are not useful. Some can cause if they enter our body.
5. Things that float in water are than it and things that sink are.....than it.
6. A substance called is swirled in muddy water to help clean the water.

(E) True or false ?

1. Alum powder does not dissolve in water.
2. Micro-organisms cannot live in water.
3. If muddy water remains still, a sediment is formed at its bottom.
4. An eraser floats in water.
5. Tea leaves can be separated from tea by filtration.

(F) How can we tell that water has become transparent ?

Activities

- One day, as soon as you come to school, take some muddy water in a large container.
- When much of the mud has settled, pour the water near the top very carefully into two containers. Label them 1 and 2.
- In the first container, swirl a piece of alum.
- Now leave them undisturbed, and observe the two containers every 30 minutes.
- Which water becomes clean first? How long does it take?
- How long does the water in the other container take to become equally clean?

5. Water for Every Household

Can you recall ?

- What are the different purposes for which we need water?



Can you tell ?

The picture below shows some containers used for storing water at home.

- Which of these have come into use more recently ?
- What materials are used to make these different containers ?
- What are the advantages of having a lid and a tap on the container ?



We need water all the time. We have to store water in the house so that we can get it when we need it. Earlier, brass and copper pots as well as earthen pots were used to store water. Ask your parents or grandparents for the names by which these different pots were known. People also built tanks in their houses to store water. Nowadays, steel or plastic is also used to make different containers for storing water.

Care of drinking water

To ensure good hygiene, we must have safe drinking water. If we consume contaminated water, it can cause diseases. That is why, we take special care of the water we store for drinking and cooking.



We keep the drinking water containers covered. This prevents dust and other rubbish from entering the water. If we dip our hands in the water to take it out, the dirt on our hands can enter the water. So we use a dipper to take the water and we replace the lid at once.

But the best method of taking water is to have a tap on the container. This way, it becomes easier to take the water, and it also prevents contamination.

When the water in a container is finished, we wash the container well before refilling it. If we take such care, drinking water remains clean.



Do you know ?

Water does not become stale ...

Some people believe that the previous day's drinking water must be thrown away and fresh water stored every day, because the previous day's water becomes stale. But, this is a misconception. Throwing away that water amounts to wasting good water. We should use drinking water for other purposes only if it gets dirtied due to some reason.



Use your brain power !

Why have people begun to use plastic or steel containers for storing water?



Try this.

Do this under adult supervision.

- Take a plastic bottle. Cut off its upper narrow portion. Make four small holes on the four sides of the bottle near its base.
- Cut a spent ball-pen refill into four pieces. Fix one piece into each of the four holes tightly.



- Fill the bottle with water.

What do you see?

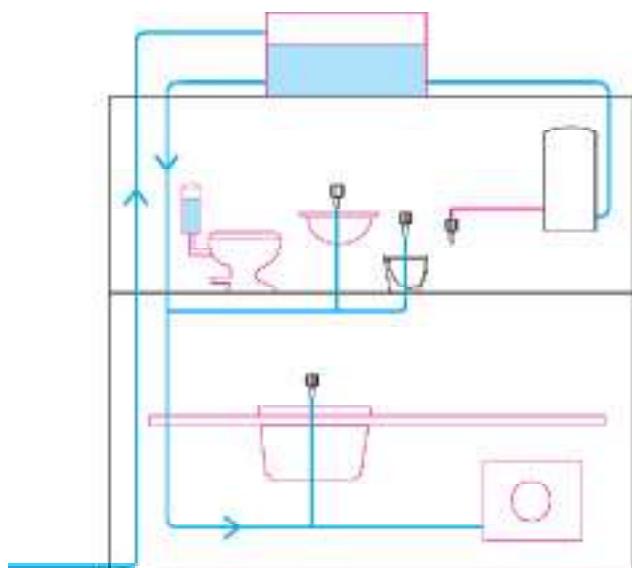
- Water flows from all the four tubes.

What does this tell us?

- Using pipes, we can distribute water stored in one place to several different places at the same time.



Large cement or plastic tanks are installed on the roofs of big buildings. Water from these tanks can be piped to the kitchens, bathrooms, toilets in these buildings. When taps are fitted on the pipes, water can be taken or shut off according to the need. This is how water from just one tank can be obtained at several places in a building at the same time.



Water supply in a house



Overhead water tanks



Can you tell ?

- If the rule is for everyone in the house to cook for themselves, what would be –

- the advantages?
- the disadvantages?

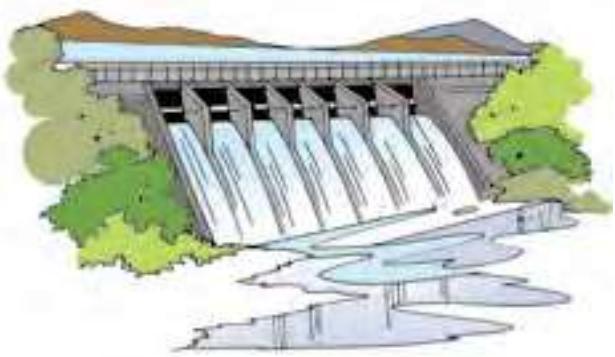
- If every family had to collect the water they need every day from the river, what would be –

- the advantages?
- the disadvantages?

Water supply for a human settlement

Lakes, rivers, reservoirs are our sources of water. They are often at long distances from our houses. It is difficult to collect water from such distant places. Besides, we cannot be sure that the water can be used as it is for drinking.

That is why, a large water source is identified near a settlement. Water from it is brought through large pipes to a common place. There, the water is made safe for drinking. This is called purification of water. Arrangements are made to distribute this water all over the town or city. This is called distribution of water.



Can you tell ?

When we draw water into a spray pump from a bucket of water, in which direction does the water flow?



Water tanks at a height

We know that water flows downwards. But, if we want to lift water upwards, we have to use some force. To do that, we need to use a machine. Machines used for lifting water are called pumps. Pumps run on diesel or electricity.

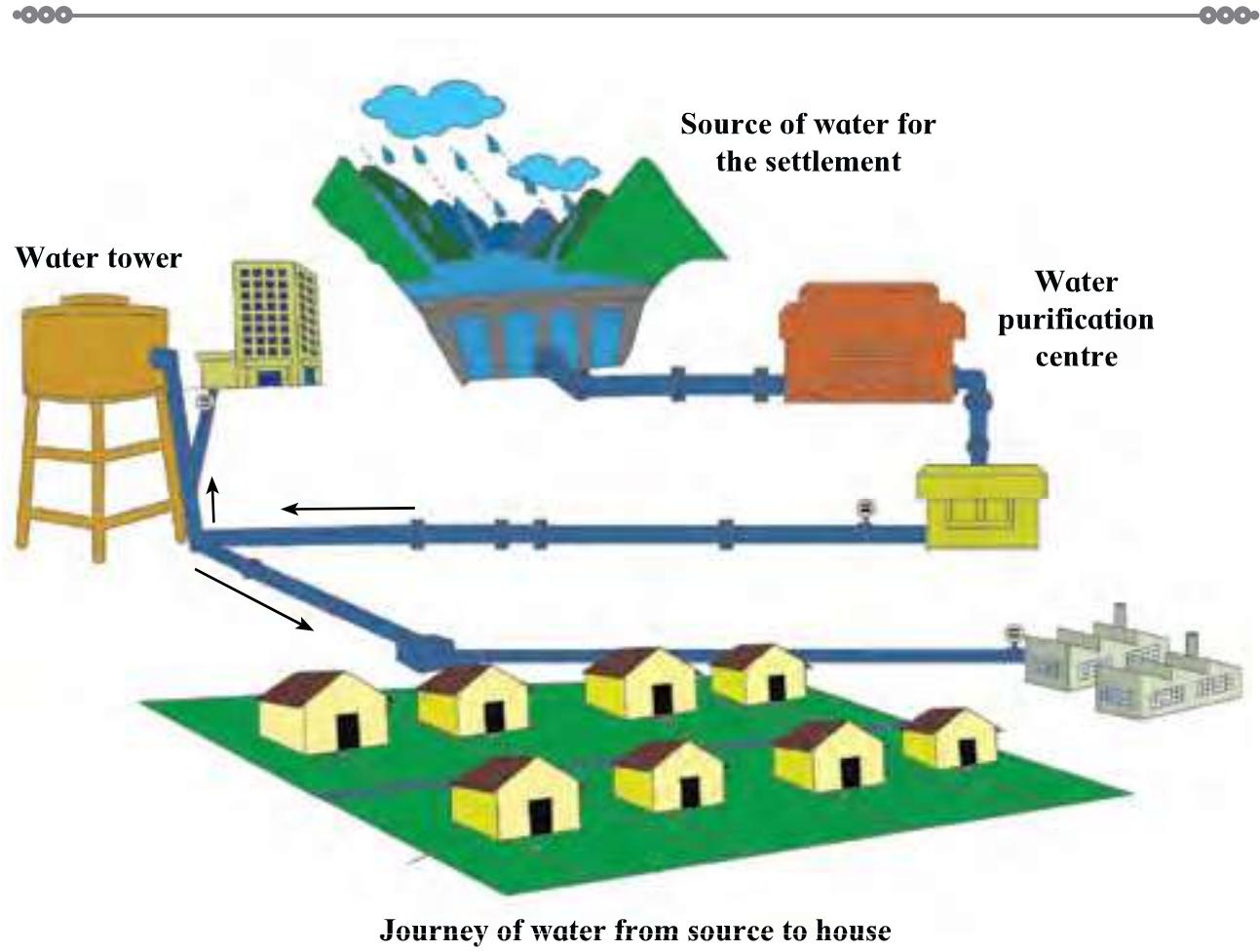
Before electricity was discovered, it was not possible to raise water to very great heights. But electric pumps can help us do so. Hence, water can be filled in tanks at a height (water towers) and supplied from there to towns and cities.



Water tower

Such tanks are used to store the water that leaves the water purification plant. According to need, water is released from these tanks through big pipes. This pipe branches out into many smaller pipes which lead the water to different areas around the large water tank. In a particular area, the pipe branches out into smaller and smaller pipes which take water to every house.

In some places, there are two or three common taps for the whole area. People living in that area come there to fill water for their families.



Do you know ?

Human beings cannot live without water. Hence, it is necessary to have a source of water as close as possible to where we live. That is why, in olden days, cities grew on the banks of big rivers. There are many such cities in our country. Delhi is the capital of our country. It is situated on the banks of the river Yamuna in north India. Patna, on the banks of the Ganga in Bihar and Nashik in Maharashtra on the banks of the Godavari are other examples of such ancient cities.

Even today, in some places, water is drawn from wells or borewells for use at home. But, it needs to be ensured that the water is potable. If it is not, then it should be boiled for the purpose of drinking, so that it will not endanger our health. In some places, water is supplied by transporting it by means of tankers.



Can you tell ?

- How much water is required in your house every day?
- Who fills this water?



Try this.

Take an empty bucket. Lift it to get an idea of its weight.

Now half fill it with water and see how much heavier it becomes. It must be quite a hard chore to carry a bucketful of water from one place to another, don't you agree?



Remember how much water you need in your house?

Now you can understand how much work is done to fill that much water.



Can you tell ?

Which fuel is used to run the following machines?

- The hand-pump that lifts water from a borewell.
- The pump used to store water in the water tower.
- The tanker that brings water to a certain area.

Many people are engaged in the work of water purification, storage and distribution. Electricity or diesel are used to run the machines for these purposes. A lot of money is spent for this work. Hence, potable water proves to be an expensive substance. We must take care of water just as we take care of our other valuables.

We must not allow stored tap water to be wasted or become contaminated.

What can we do to use water without wastage ?

- If the water you have taken in a mug to wash your face is left over, will you throw it away or keep it to use later ?
- While you brush your teeth, do you keep the tap running, or do you turn it off in between ?
- Do you throw away the water used for washing vegetables, fruits, etc., or do you water your plants with it ?
- When rinsing things under a tap do you turn it on fully or just enough ?



Use your brain power !

The garden is to be watered. Tap water and well water are both available. What will you use ?



What we have learnt –

- We need water continually. So we store water at home.
- A lid and tap on a water container help to keep the water clean and make it easier to use.
- If drinking water is not potable, it can cause diseases. Therefore, special care must be taken of drinking water.
- Cities and towns have water purification centres and distribution systems.
- If we use water from other sources, we should ensure that it is potable.
- Obtaining potable water involves labour as well as expense.
- Water should be stored properly and used carefully.



Always remember –

Water is valuable. Take good care of it.



Exercises

(A) What's the solution ?

- The common tap in the locality is seen dripping all the time.

(B) Use your brain power !

- What can you do to ease the work of filling and storing water in your house ?

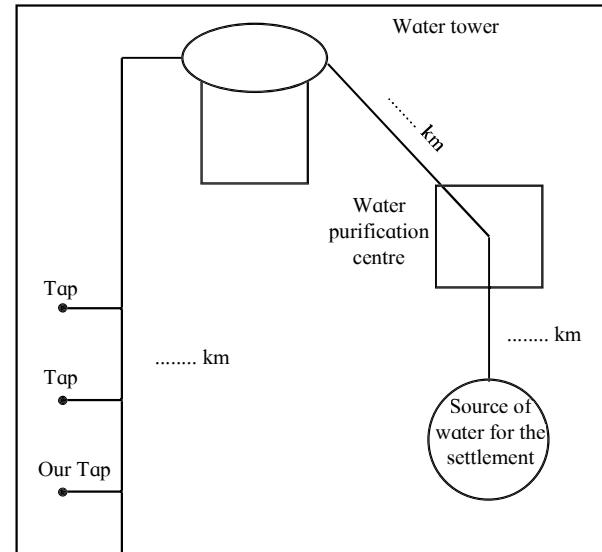
(C) Right or wrong?

- Sameer drank water from the pot and left the lid beside it.
- Nisha waters her plants with the water she has used for cleaning the dishes.
- When water comes in the tap, Sai empties her pot and fills it again.
- Reshma carries drinking water with her when she goes for a picnic.

Activities

(1) Find out :

- Which is your city's common source of water? Where is it located?
- Where is the water purification plant?
- Where is the water tower which supplies water to your area?
- What are the distances between these places?
- How far is your house from the water tower?
- Write these distances in the diagram given alongside.
- Add all these distances to find out the total distance that water travels from the water source to your home.



Total distance travelled by water

= km + km + km

= km.

- (2)** Meet the person who is in charge of distributing water from the tank to different parts of your locality.

Ask him to explain the work they do.

To which parts does he supply water every day?

How does he ensure that all parts will get enough water?

6. Variety in Food



Try this.

We use the vegetables and grains bought from the market to prepare the different dishes in our meals. Let us carry out the following activity related to food.

Find out :

- Which grains and vegetables does your family buy from the market?
- As shown below, make a table of the different dishes prepared from the different grains or vegetables at home.

No.	Grain or Vegetable	Dishes made	Total number
1.	Rice	Bhakari Idli Rice	3
2.			

- Look at your list. If a grain or vegetable is used to make more than one food item (dish), write the total number of such items in the next column.
- Compare your list with that of your friends.
- In your table, add the foods that are in their lists but not yours. For example,

No.	Grains and vegetables in friend's list	Different food items
1.	Rice	Modak Dosa
2.		

- You will realize that various dishes can be made from the same ingredients.
- Even when there is a variety in the dishes, the basic ingredient remains the same. In the example above, we saw various preparations of rice.
- Note that there is diversity in the food items of the different States of our country.

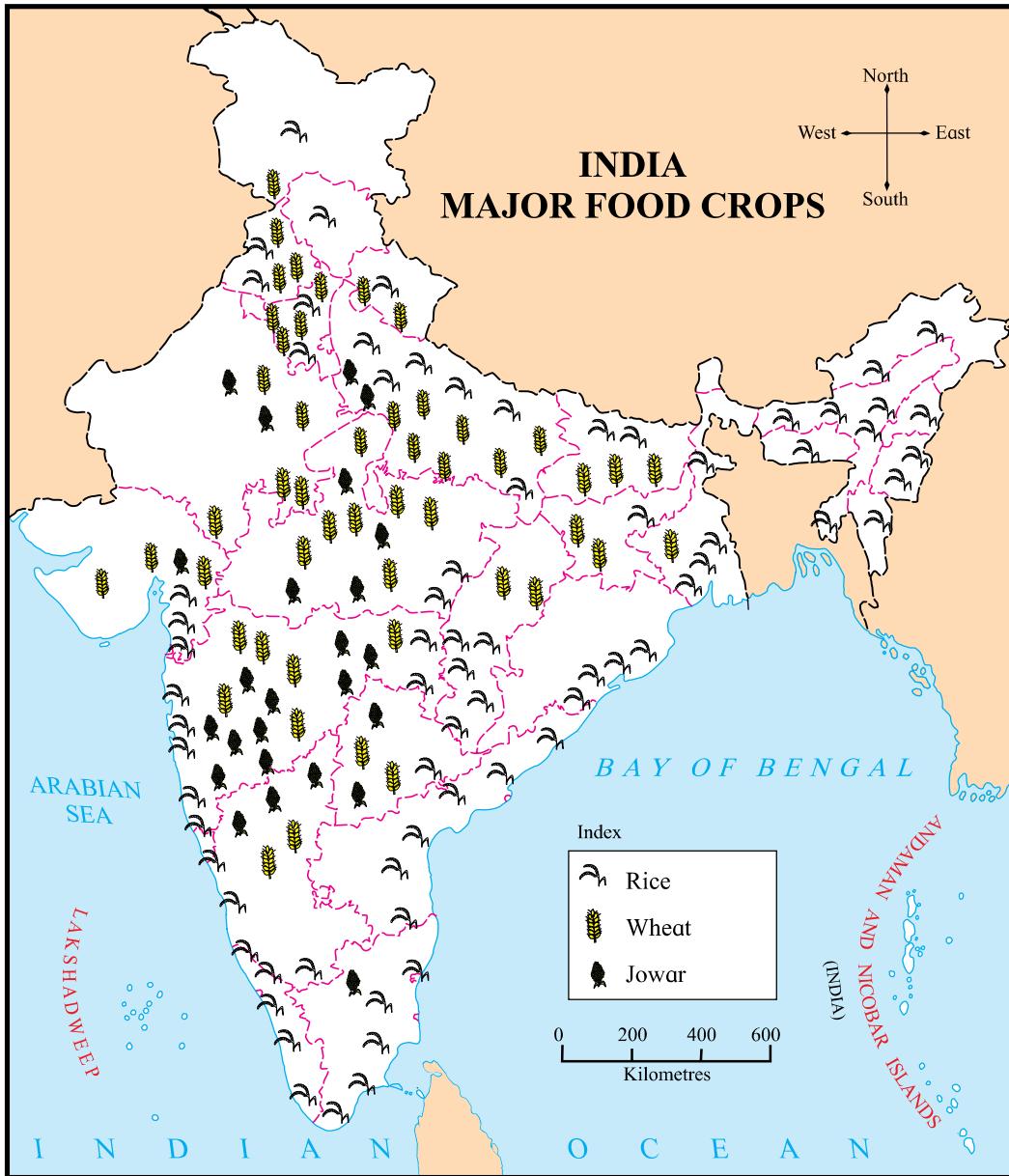


Use your brain power !

- In every region, there is one staple food. What is the reason for that?
- Why does the staple food of people vary according to region?



Can you tell ?



- Study the map given above.
 - Observe the distribution of food crops in the country.
 - Study how the distribution of crops varies in the different regions.
- (1) Which food crop is grown on a large scale in the coastal regions ?
 - (2) Which food crops are grown in North India ?
 - (3) Which is the major food crop in the central region ?
 - (4) Rice is grown on a large scale in the southern part of India. Why is this so ?

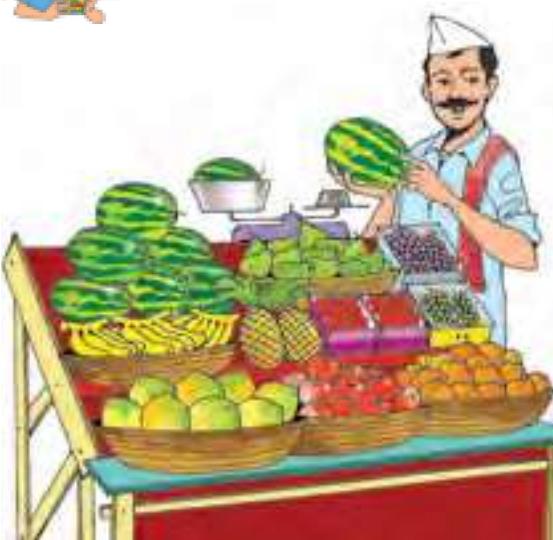
Agriculture is the main occupation in all parts of our country. It is mainly dependent on rainfall. The rainfall received in all regions is not the same. In regions of high rainfall, crops such as rice, coconut, ragi and varai are grown. Wheat, toor and soyabean are grown in regions of moderate rainfall.

Jowar, bajra and moth beans are grown in regions of low rainfall.

To help crops to grow well, good seeds, fertile soil, sufficient sunlight and water are needed. According to the seasons, a variety of grains, fruits and vegetables are grown in our country.



Try this.



Use your brain power !

Look at the fruits in the picture.

- Make a table as shown below of the fruits that are available in each season.
- Include the names of fruits you know even if they are not shown in the picture.



Summer	The rainy season	Winter



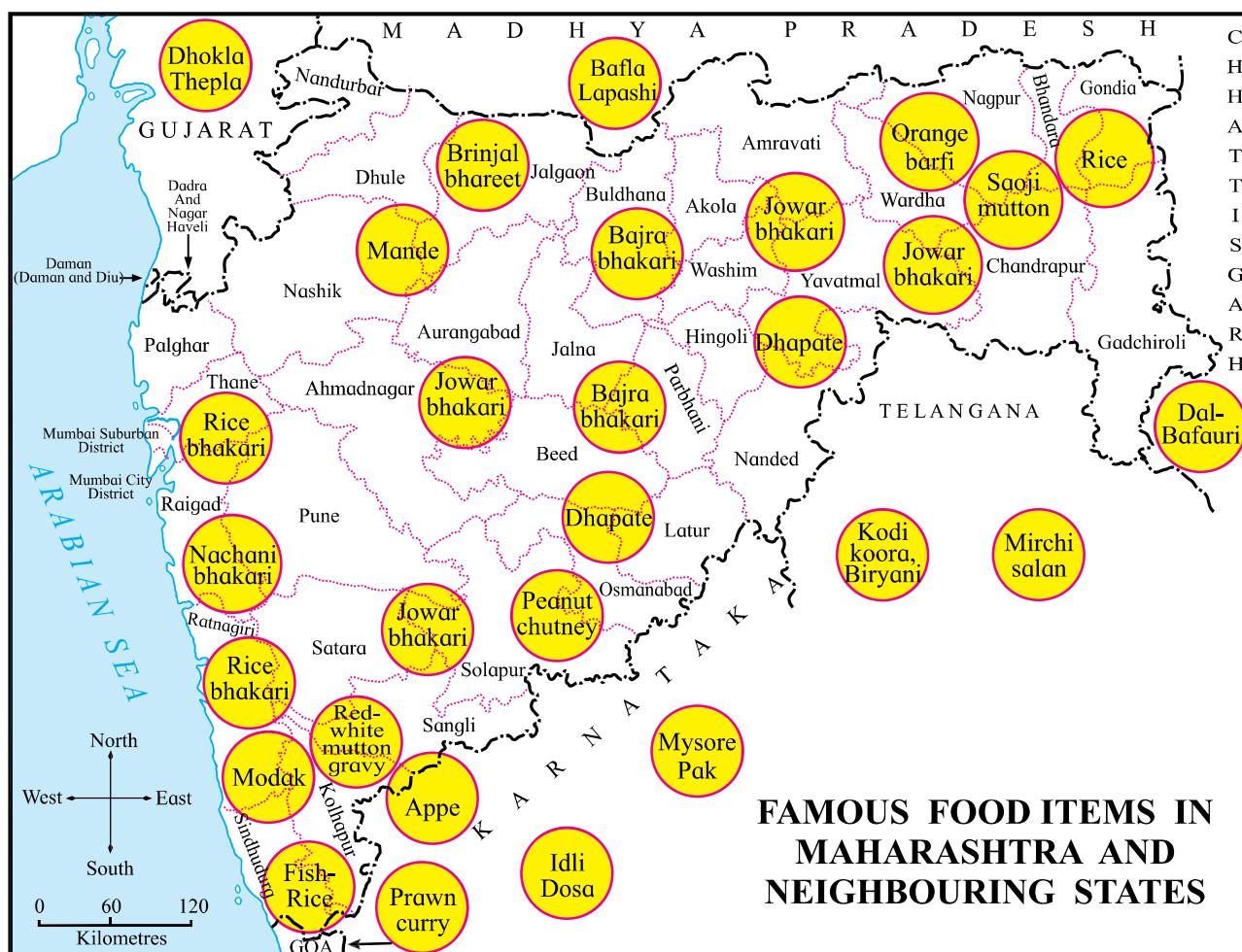
What's the solution ?

- Irfan and Supriya bought potatoes because they were very cheap. But they are tired of eating potato *bhaji*. Suggest different preparations of potatoes to them.



Can you tell ?

The map given below depicts famous food items from Maharashtra and its adjoining States. Study the map and complete the table given below.



- Draw a table like the one shown below.
- Make a list of districts/States and their famous food items.
- Find out which grain/fruit/vegetable these items are made from and write that in the third column.

District/State	Food item	Main ingredient

The main crop grown in any region is used to make various items in that region. For example, jowar is grown on a large scale in the plateau region of Maharashtra. *Hurda, lahya, bhakari, ghugrya, papad, sandge, ambil, dhapate, dhirde*, etc. are all preparations of jowar enjoyed in that region.

In Konkan or the coastal region, rice, coconut and coconut oil are widely used. In central Maharashtra, jowar, bajra, groundnuts, soyabean, sesame and mustard are more commonly used. Note that this variety in crops is due to the change in climate and soil. The crops grown in a region determine the diet of the people in that region.



Do you know ?

Some fruits and vegetables which were previously available only in a certain season are now available all year round. There are several reasons for this.

- (1) Availability of water throughout the year.
- (2) Availability of improved seeds.
- (3) Importing fruits and vegetables from various parts of the world.
- (4) Faster transport facilities.



Use your brain power !

- Suppose you are not able to get food items made from jowar, bajra, wheat, rice and corn. Think of the food items that you will have to eat in that case. Make a list of such items.



Always remember –

A region's climate, soil, water and people's needs determine the crops that are grown in that region and also their staple diet.



What we have learnt –

- Diversity in food items.
- Food items vary according to the region.
- The availability of grain, fruits and vegetables depends on the seasons.
- The various food items in Maharashtra and the neighbouring States.



Exercises

(A) Answer in short.

1. Which food items can be prepared from wheat?
2. Write the names of different edible oils.
3. Which is the special food item prepared in your village, town or city? What is it made from?

(B) Circle the odd one out in the given food items. Write why it is the odd one.

1. Mango pickle, mango, mango jam, mango pulp.
2. Pulao, paratha, dahibhat, biryani.
3. Mysore pak, *puranpoli*, *thalipeeth*, *jhunka-bhakar*.

(C) Guess whether each of the following items is a grain or a vegetable and make a list of the food items that can be prepared from each.

- Maize ● Pumpkin ● Cluster beans (guar)

Activities

- Obtain information about one food item made in other regions and make that item at home with the help of your parents.
- Make a list of the famous food items you have eaten when out of town. Find out the main ingredient of some of those items.

Can you recall ?

- Why do we need food ?
- What is meant by diet ?
- What are the reasons for variations in diet ?



Can you tell ?

- Some of the food items in our everyday meals are given below. Read their names : rice, moong dal *amtī*, chawali *usal*, chapatis, jowar bhakari, cabbage *bhaji*, pumpkin raita, carrot salad, onion pakodas, garlic chutney, lemon pickle, yoghurt, papad.
- Which of these dishes are served with large spoons or ladles and which ones with very small spoons ?
- Now divide these food items into two groups : those which are eaten in large quantities and those which are eaten in very small quantities.



Staple food

Chapati, bhakari or rice form a part of every meal we have. We eat more of these foods than of the others. Therefore, wheat, jowar, rice are said to be our staple foods.

However, with chapatis, bhakaris or rice, we eat several other items which make our meals tastier. Besides, for reasons of good health, it is important to include these food items in our meals.



Variety in foodstuffs

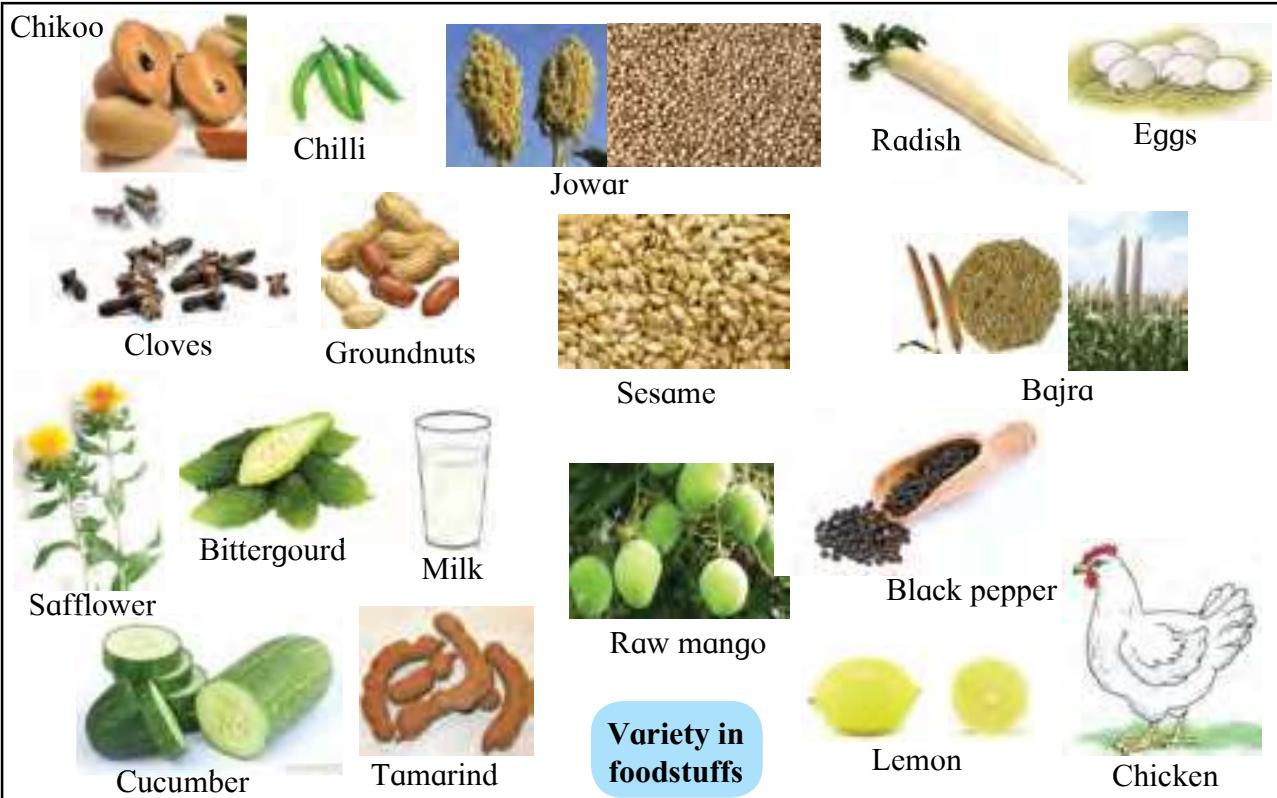
What foodstuffs are used to prepare the other items in our meals ?

Some of these foodstuffs and their names are shown in the box on page 43. Which ones are you familiar with ? If there are some which you have not seen, try to get a look at them.



Can you tell ?

Look at the foodstuffs in the box.



1. From which ones do we get flour ?
2. From what do we get butter, ghee and yoghurt ?
3. From which ones do we get oil ?
4. Which of these do we get from animals ?
5. Which ones give a sweet/ sour/ bitter taste or are spicy hot ?
6. Which ones do we eat raw ?
7. Which ones do we use in small quantities ?
8. Which ones are used in larger quantities ?

You have seen what a wide variety there is in our foodstuffs. We use different foodstuffs for different purposes. We use milk to get butter. We get flours from jowar, bajra to make bhakaris. To add a sour taste, we may use lemons or tamarind or raw mangoes. When making sweets, we may use either sugar or jaggery which we get from sugarcane.

Just as there is variety in the foodstuffs we use, there are differences in people's likes and dislikes. We tend to eat the items we like again and again. We also tend to always avoid what we don't like. However, the most important thing is to ensure that the food related needs of our body are all being met.

The food constituents that meet the different needs of our body are present in all our foodstuffs in varying quantities.

- Some of these constituents give our body the energy it needs. We work or play all day long. Also, work like respiration and digestion of food goes on inside our body. The body needs energy for all this work.
 - Some constituents help our body to grow. They also help to repair the wear and tear of our body that takes place in everyday work.
 - Some food constituents help to nourish our body. They help to create a store of substances that give energy to our body.
 - Some food constituents are necessary for certain special reasons. For example, some constituents make our bones strong. Some constituents give the body the ability to fight disease.
 - And for all the functions of our body to go on smoothly, we need to drink plenty of water.
-

If our body is to work properly, it must remain healthy. So, we must include all the food constituents in our diet.

We get all these food constituents from different foodstuffs in different quantities. That is why we keep using different foodstuffs in our daily meals. Such a diet ensures proper nourishment for our body.



Do you know ?

Some people believe that costly foods are more nourishing than inexpensive foods.

But that is not always true. All expensive foods are not more nourishing. Similarly, all cheaper foods are not less nourishing.

Preserving the nourishment in food ingredients

While preparing food items, some of the constituents in the foodstuffs can get destroyed. We can take the following precautions to avoid that.

- When cooking food, add only as much water as is necessary.
- Use a pressure cooker or cover the food with a lid while cooking it.



- Sprout pulses before using them. Use them while the sprouts are still small. Do not wait for them to grow long.
- Use whole grain flour without sifting.
- Eat fruits like chikoos, figs, grapes, apples along with their skins.

Besides, vegetables like carrots, radishes, cucumbers, beetroot should be eaten raw in the form of salads.

Whenever possible, mix two or three foodstuffs in a dish. For example, add onions and potatoes to *usals*. Add drumsticks to curries. Add some soaked dals while cooking vegetables.



A tongue for tasting

As usual, we had all gathered in the garden in the evening.

Monikatai said, ‘Shall I tell you something funny about our tongue?’

As we drew closer to her, she said, ‘How do we make water sweet without sugar? Just try this. Chew an amla well and drink water right after that. The water tastes sweet!’



‘Really! I never knew this!’ said Mary.

Then Balu said, ‘We learnt last year that our tongue helps us to taste things. But how does only one tongue tell us all the different tastes?’

Subhash piped up, ‘So, do you want a different tongue for every taste?’

That made everyone laugh.

Monikatai said, ‘Balu, we have only two eyes, and how many colours do we see with them? So, one tongue can also tell us many tastes.’



Observe this.

Wash your mouth, clean your tongue and stand in front of the mirror. Stick your tongue out and look at it carefully.

You will see tiny peaks on the tongue. They are called taste buds. These taste buds tell us the different tastes.



Know the different tastes –

Let us see how the tongue tells us the different tastes.

Collect the following things :

- sugar candy or jaggery
- salt
- tamarind or lemon
- fenugreek (methi) seeds
- a piece of an amla

Taste each of these things. After tasting each one, rinse your mouth with water, wait for two minutes and then taste the next one. Copy the following table in your notebook and complete it :

No.	Foodstuff	Taste
1	Sugar candy/jaggery	
2	Salt	
3	Tamarind/lemon	
4	Fenugreek (methi) seeds	
5	A piece of an amla	



Play a game

Four or five of you can play this game together.

One person is the It. Each one of the others tells ‘It’ the name of a foodstuff.

For example, raw mango, green chilli chutney, rock salt, a bundi laddoo, khari boondi, a chikoo, a medicine, etc.



Miming - ‘I ate a chilli!’

The child who is ‘It’ must show by miming what it tastes like.

Take turns to be ‘It’.

When everyone has had a turn at being ‘It’, the game is finished.



What we have learnt –

- Our diet includes many different food items.
- There is great variety in the foodstuffs we use to prepare different dishes.
- The food constituents that meet our food related needs are present in these foodstuffs in different proportions.
- Our food related needs are met if our body gets all these food constituents in the right quantities.
- Our taste buds help us to know the different tastes.



Always remember –

Our diet should include all kinds of foodstuffs.



Exercises

(A) What’s the solution ?

Sumedh and Madhura do not like green leafy vegetables. On the day their mother cooks leafy vegetables, they skip their meals.

(B) Use your brain power !

1. Is a *thalipeeth* more nourishing than a bhakari made of only jowar or bajra flour?
2. If we add crushed peanuts or fresh coconut to a dish, will it make the dish more nourishing?
3. Why do we squeeze lemon juice on to rice and dal?
4. Which crop growing in a field contains the most sugar?

(C) Find out.

Find out how dahi is made from milk, **or**, how moth beans (*matki*) are sprouted. Try to do it yourself.

Write the steps you followed and tell others in your class about what you did.

(D) Draw pictures.

Draw pictures of those fruits that we eat along with their skins.

(E) Make a list.

Make a list of those fruits which we cannot eat along with their skins.

(F) Fill in the blanks.

1. Fruits taste sweet because they contain
2. Rice, wheat, jowar, bajra are our foods.
3. The tiny peaks on our tongue are called

(G) Give reasons.

1. We must take certain precautions while cooking food.
2. Our body must be healthy.
3. Just because we like them, we must not eat the same dishes all the time.

(H) Answer in brief.

1. What new thing did Monikatai tell about the tongue?
2. Fruits are sweet. Does that mean that they contain only sugar?
3. Which food ingredients contain sour elements?

(I) Match the following.

A Group

milk	()	sugar
sesame	()	flour
jowar	()	oil
chikoo	()	butter

B Group

Activity

- In groups of five, make any one of the following things in class.
Do this with the permission of your elders.

- (a) Banana Delight (b) dahi-pohe (c) mattha

Write down the recipe and share it with others in the class.

8. The Value of Food

Arjun and Varsha are brother and sister. They love to eat hot bajra bhakaris with butter.

Mother makes a number of other dishes for them to eat with bhakaris. They like those, too.



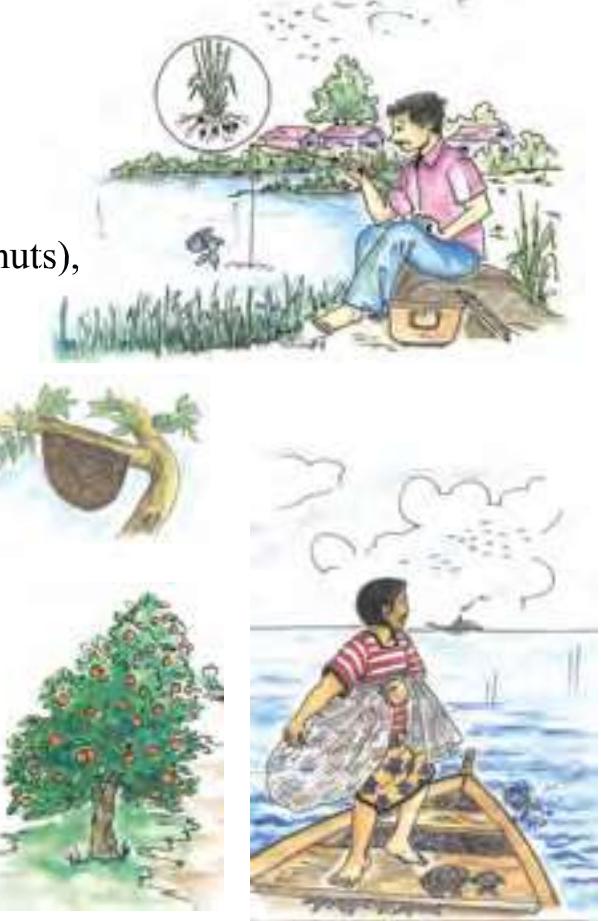
Can you tell ?



What could be those dishes that mother makes to go with bhakaris?
What are those dishes made from?

In Varsha and Arjun's home, they use a lot of other foodstuffs, too. From where are they obtained?

- Wheat, rice, jowar, pulses, sugarcane.
- *Karavanda*, jamun, *bor*, honey.
- Salt-water fish and salt.
- Fresh water fish, singadas (water chestnuts), makhanas (lotus seed).
- Fruits and vegetables.
- Meat and eggs.



Often when serving Varsha and Arjun a meal, Mother says, 'Take only as much as you want. Food shouldn't get wasted.'

One day Arjun asked her, ‘Mother, why do you tell this to us every day?’

Mother answered, ‘Why should we waste any good thing? Besides, we must give a thought to how we get the food we eat. Let me tell you the story of a bhakari.’

The story of a bhakari

You know Dada, my father, is a farmer. And you know that schools have summer vacations. When I was small, we often went to my father’s fields riding on his tractor. That would be the time for readying the fields. Father would attach different implements to the tractor to carry out various farming tasks. First he would plough the fields and then, crush the lumps of soil. Finally, he would level the field to make it ready for sowing.



A tractor being used for farm work

The pre-monsoon showers would make the hot soil humid. That was the time father would sow bajra.

Within some days, the bajra seeds sprout and the seedlings are seen above the ground. Along with the bajra, weeds also flourish. But they have to be removed. My father would employ labourers to do that. The labourers have to be paid.

Rainwater is enough for bajra to grow vigorously.

After a while, ears of bajra appear on every stalk. The grain forms and the ears grow fuller. As the grains grow, birds come in flocks to eat the tender grains. Then scarecrows have to be set up and slingshots used to frighten the birds away.

When the ears of corn are full, it is harvest time. That is, all the ears of bajra must be cut and gathered. Then follows threshing and winnowing. That is how we get the grain from the ears of bajra.



Seedlings growing in the field

grain to fall to the ground. The chaff is carried away by the draught and the grain falls down in a heap. The machine helps to finish the work quickly but labour and expense have to be put in, in any case.



Do you know ?

- If a machine is not available, bullocks do the threshing. A round space is cleared in the field and the threshing floor is prepared. A post is erected at its centre and a bullock is tied to it. The bullock walks in circles around the post. The harvested ears are spread in the round space so that they get trampled upon by the bullock. If the crop is large in quantity, a bigger place is prepared and more bullocks are used together. Threshing may go on for several days. For the bullocks too, this is heavy work.



Threshing

The grain obtained after winnowing is filled in sacks. Proper care is taken to make sure that it will not be attacked by insects or other pests such as mice and rats. After putting aside some grain for the family, the remaining sacks are sent to the market-place to be sold. When the traders there buy the grain, the farmer gets money for the crop that he has grown.

Arjun : But the bhakari is not ready yet!

Mother : No, of course not. And the story is not finished either. Listen.



The grain that the traders buy is sold all over the country. It is transported by means of trucks or goods trains. It is the turn of porters and truck-drivers to put in their labour. Transport costs a lot, too.

Now, the sacks of grain reach the provision stores.

People buy the grain from them. They sort out any stones or rubbish to clean the grain. They get it milled into flour.

Then, while cooking, the flour is kneaded into lumps. The lumps are then flattened into a bhakari and roasted. We spend on fuel too. And thus, at the end



of all this, the bhakari appears in Varsha's and Arjun's plate.

Now, would it be right to waste food that we get through the efforts of so many people?

•••—————•••



Do you know ?

- Singadas and makhanas are some special foods that are not very common. They are obtained from freshwater plants. Much work has to be done to collect, clean, dry, store and transport them.

Other foodstuffs : We get fish from water. Fishermen work hard to catch them. There are people who gather and sell fruits like amla, jamun, *karvanda*, *bor* which grow in forests. Some people have vegetable farms while some people have orchards for growing fruit crops. Some people keep poultry. Some rear animals for milk and meat.

All these people put in a lot of hard work in their own occupations. We get a great variety of foodstuffs as a result of their efforts. The efforts and labour of many other people are also required for storing, transporting and marketing them as well as preparing the various dishes we eat. All these processes are expensive.

Therefore, it is necessary for all of us to take care that food is not wasted.

•••—————•••



What we have learnt –

- The foodstuffs we use come from many different places such as fields, lakes, the sea and forests.
- Starting from preparing the fields till storing the grain in warehouses, many different kinds of tasks are carried out for growing crops. Harvesting, threshing and winnowing are some of these tasks.

- After that the crop is transported, sold and prepared for eating. Only then do we get food on our plates.
- As with growing grain, much hard work goes into producing other foodstuffs, too.
- We must all take care to ensure that food is not wasted.



Always remember –

We get a variety of foodstuffs through the efforts of many different people.
Let us always be grateful to them.



Exercises

(A) What's the solution ?

Your friend wants to know where big round amlas come from.

(B) Find out.

1. What is the place called where salt is obtained from seawater ?
2. Potatoes and radishes grow underground. Which other bulbs and roots do we get from plants ?
3. What is a ‘kanagi’ ? For what purpose do farmers use it ?
4. For what does a farmer use an implement called a ‘tiphan’ ?
5. Which ingredients are required for making a lemon sherbet ? From where are these ingredients obtained ?

(C) Fill in the blanks.

1. When the soil becomes hot and the crop is sown.
2. The grain is separated from the ears by a process called
3. The light are blown away by the wind.
4. Some people gather like *karavanda* and jamun from the forests.
5. Machines and vehicles are used for the production and transport of foodstuffs. Money is spent on to operate them.

(D) Answer in brief.

1. How is a field prepared for sowing?
2. How is grain transported to all parts of the country?
3. Why should we not waste food?
4. What are the tasks that are carried out to make a bhakari after the grain has been brought into the house?

(E) Match the following.

A Group

- | | |
|---------------|-----------------------|
| (1) salt | (1) a freshwater lake |
| (2) sugarcane | (2) the sea |
| (3) bor | (3) fields |
| (4) makhana | (4) forests |

B Group



Can you tell ?

What are the people in the pictures doing ?



Try this.

- Take water in a big container.
- Take a small narrow container.
- Hold it upside down on the surface of the water and without tilting it, push it down into the water.
- Now allow it to tilt.



What do you see ?

- Bubbles rise at once to the top.

What does this tell us ?

Air is lighter than water. So air bubbles rise to the top as soon as the container is tilted.

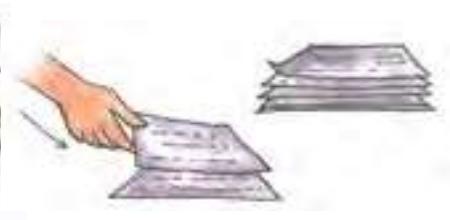
It means that there was air even in the container that appeared to be empty.



There is air all around us. It is present even in places that appear to be empty. Then, how far around us does air spread?



Try this.



Take large sheets of any waste paper. Or, obtain old newspapers of about one month and tear each of the sheets into four pieces. Now place these sheets of paper one at a time in a pile on the floor.

As the pile grows, observe the difference that can be seen in the layers of paper at the top of the pile and those near the floor.

When all the sheets have been placed, observe the difference in the upper and lower layers of the papers.

What do you see?

As we place more and more papers on the pile, the sheets at the lower level are pressed down by the sheets above them. The distance between the papers in the lower part of the pile becomes less while the papers in the upper part appear to be further apart.

What does this tell us?

The nearer a sheet of paper is to the floor, the greater is the number of papers above it. It means that the lower layers bear more weight than the upper layers of paper. Compared to that the upper layers bear less weight.



The atmosphere : The earth on which we live is round in shape like a ball. There is air all around the earth. If we go higher above the earth, we find that there is air till a height of almost 50 km.



The air around the earth

This covering of air around the earth is called the atmosphere.

As we go farther from the earth, the layers of air become thinner. That is, the layers of air closest to the earth are very close to each other, while the ones at higher levels are not so close. The air at greater heights is rare.



Try this.

- Take a slightly deep dish like a saucer.
- Stand a candle at its centre.
- Fill water in the dish.
- Light the candle.
- Now place a glass tumbler over the candle.



What do you see?

Soon the candle goes out and the level of water inside the tumbler rises up to a certain level.

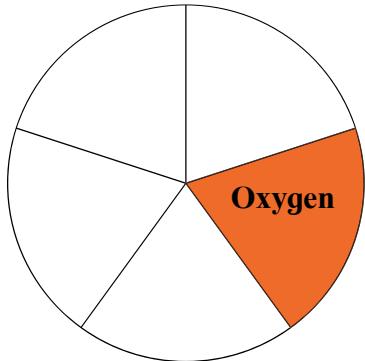
Why does this happen?

One of the constituents of air helps burning. As it gets used up, water rises in the tumbler. When that constituent is finished, the candle goes out. The water level too stops rising.

This constituent of air that helps burning is called oxygen gas.

- The earth's atmosphere is made of air. The circle in this picture shows all the air in the atmosphere. If we divide the circle into five equal parts, then the oxygen in the air will be equal to one of the parts.

Apart from oxygen, there are other gases in the atmosphere. Which could those be?



The oxygen in the air is used both for burning as well as respiration.

Which are the other uses of air you know about?

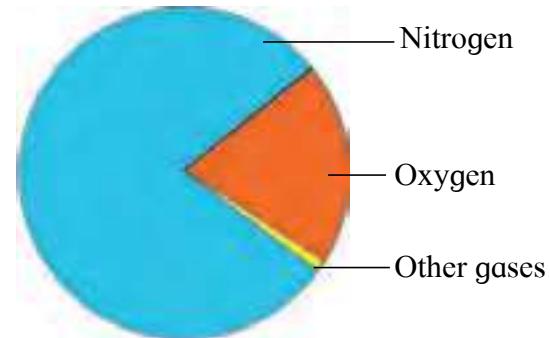
- You have learnt that the gas that fizzes out of soda-water is carbon dioxide. This gas is present in small quantities in air, too. You have also learnt that

plants make their food using air and water in the presence of sunlight. When plants make their food, they use the carbon dioxide from the air.

- You have seen that when you place ice in a glass and it becomes very cold, droplets of water settle on its outside. It means that water, too, is present in air in the form of a gas.
- However, the largest part of air is made up of still another kind of gas. This gas is called nitrogen.

Thus, there are several gases present in air. In other words, air is a mixture of several gases.

Now if we draw a circle to represent air, then the quantity of each gas in the mixture will be as shown alongside.



Do you know ?

- The burning that takes place in factories, vehicles, stoves in kitchens, etc. gives out smoke. This smoke, too, mixes with the air around us.





What we have learnt –

- Air is present all around us even in places that appear to be empty.
- There is a covering of air all around the earth. It is called the atmosphere.
- The layers of air in the atmosphere close to the earth are pressed closer to each other while the upper layers are rarer.
- Air is a mixture of several gases. Oxygen, nitrogen, carbon dioxide and water vapour are its main constituents.



Always remember –

Fuels like coal, petrol and diesel give out smoke while burning which mixes with the air. This can cause ill health.



Exercises

(A) Find out.

Before drawing a medicine into the syringe, why is the plunger first pressed to the bottom of the barrel?

(B) Think and tell.

1. Name some things of everyday use in which air is filled under pressure.
2. What is seen mixing with the air when wood or coal burns ?
3. What gets mixed with the air when water boils ?

(C) Fill in the blanks.

1. There is even in an empty container.
2. The air at a greater height from the earth is than the air nearer to the earth.
3. If all the air were divided into five parts, the oxygen in the air would equal part.
4. There is air till a height of about km from the earth.
5. The layers of air nearer the earth bear weight than the upper layers.



Try this.

- Do the following activity and make a note of your observations.
- Take a piece of cloth and observe it under a magnifying glass. What do you see?
- Study a sack closely. Can you see how it was made?
- Visit a tailor. For stitching clothes, the tailor cuts cloth. Take a piece of cut cloth that he does not need. What do you see at its edges?
- You will see that cloth or fabric is made by intertwining threads together. Intertwining threads together is called weaving. Long threads are woven together to make cloth.
- **Where does this thread come from?**



Try this.



- Take a wad of cotton wool. Pull at it from either side to make it as long as possible.
- Lay it on your palm and pressing it with the other hand, roll it in one direction.
- Note what happens.
- You will see that the wad of cotton gets twisted into a long wick. Earlier, a spinning wheel was used to draw yarn from cotton. Nowadays, the same process is carried out on machines. Cloth is made of cotton yarn.
- **Besides cotton, what other materials can be used to make cloth?**



Do you know ?

In order to win independence for our country, Mahatma Gandhi started a people's movement. He called upon them to use only those things that were produced in our country. For this purpose, he began to use a charakha or a spinning wheel to make thread. Charakha Mandals were then established nationwide which gave the message of using only 'swadeshi' goods.



Try this.

- Visit a cloth shop. Discuss the following points with the owner and make notes.
 - What kinds of cloth does he stock ?
 - Do the types of cloth have special names ?
 - What material are they made of ?
 - What is the original source of that material ?
 - Which region has the cloth come from ?
- Ask the owner for samples of different kinds of cloth.



Make a table of the information you get from the shopkeeper as shown below.

Type of cloth	What it is made of	Source of material	Where the cloth is made
Cotton cloth	Cotton	Plants	Bhivandi

You will have realized that cloth is made of different materials, for example, cotton, wool, jute, nylon, rayon, etc. Plants are the source of some of these materials. Some are from other sources.

- **Make a collection of the cloth samples obtained from the shopkeeper.**



Use your brain power !

Nylon and rayon are made of a tar-like material. But, then, what is the source of tar?





Do you know ?

Cloth can be woven in two ways :

- (1) Sweaters, caps, etc. are woven with the help of knitting needles at home.
- (2) Handlooms and powerlooms are used to weave cloth on a large scale.



Try this.

- (1) Take clean water in a small bucket.
- (2) Soak the clothes you have worn all day, in the bucket.
- (3) After an hour, take the clothes out of the bucket.
- (4) Before taking them out, wring them out tightly in the bucket itself.
- (5) Now observe the water in the bucket.
- (6) Is the water in the bucket still clean or do you see any change in the water?
 - You will see that when we use clothes, they become dirty.



Can you tell ?

- Can you give some reasons why clothes get dirty?
- Make a list of the reasons.
 - The list shows that our clothes become dirty for various reasons. That is why it is necessary to clean our clothes. **Wearing clean clothes is a good habit.** We must always have clean clothes in order to remain healthy and look neat and tidy.



Try this.

- (1) With what do we wash our clothes at home?
 - (2) What is used in the laundry for washing clothes?
 - (3) Which different types of soaps for washing clothes are sold in grocery shops?
- Find the answers to the above questions and make a list.

You will realize that various types of soap are used to clean clothes, e.g. soap bars, detergent powder, liquid soap, etc.
 - **What can you use to clean clothes if these substances are not available ?**



Try this.

- Buy some *ritha* (soap nuts). Soak them in warm water. Stir the water. What happens?
 - Add washing soda to water and stir the water. What happens?
 - Soap nuts, washing soda, *hinganbet*, limestone, etc. are used to wash clothes. These are all natural substances.
-



Can you tell ?

- Do you still use the clothes you wore in the first standard ?
- If you do not, what clothes do you use now ?
- Why do you not use your old clothes ?
- Why can you not wear a dress now, which was your favourite when you were younger ?
- What happens to clothes that we do not use any more ?
- Talk to your parents and grandparents and ask them what happens to old clothes.



Try this.

- Did you know that old clothes can be exchanged for new utensils? Talk to people whose occupation it is to trade old clothes in exchange for new utensils. Use the points given below for the discussion.
 1. What do they do with the old clothes ?
 2. Are the good clothes and torn clothes separated ?
 3. What do they do with clothes that are still good ?
 4. Who takes them ?
 5. What do they do with torn clothes ?
 6. Do they keep some of the clothes for themselves ?
 7. How can they afford to take old clothes in exchange for new utensils ?



Make a note of the information you have obtained. Check whether your notes match the information given on the next page.

- Clothes are durable. Therefore, even if they become old, they can still be used.

- If old clothes are still in a good condition, they can be given to those who need them.
- Torn clothes can be made into useful articles like quilts or dish cloths, doormats, etc.
- Old clothes can be used to make new cloth.
- Threadbare clothes can be pulped and used to make paper. This pulp is used to make paper plates, flowers, etc. It can also be used to make models.



Try this.

Study the pictures. Observe the differences in the different types of clothes. You will see people wearing these types of clothes in your own locality or when you go out of town. Meet these people. Obtain information about their clothes and write it in your notebook.



Do they wear such clothes all year round? Are any changes made depending on the weather? Are any changes made during festivals and other celebrations?

There is diversity in clothing in Maharashtra due to cultural and geographical differences. Considering the climate, people in Maharashtra mainly wear cotton clothes.



Try this.

Gather old as well as recent photographs of your grandparents, parents and relatives. Ask them when the photographs were taken and write the date behind each. Arrange them according to the year in which they were taken. With the help of the pictures observe how the style of clothing has changed. Find out the reasons behind these changes.



What we have learnt –

- Cloth is made from yarn. Yarn may be made from cotton, wool, etc.
- Clothes become dirty on being used. We must always wear clean clothes.
- Soaps or natural substances like *ritha* can be used for washing clothes.
- Old clothes should not be thrown away. They can be reused.
- We see diversity in clothing because of cultural and geographical differences.
- There is a difference in the types of clothing worn in earlier times and those worn today.



Exercises

(A) Match the following columns correctly.

Sheep	Cotton yarn	Sack
Cotton	Fibres	Sweater
Jute	Wool	Cloth

(B) Which of the following can be used to wash clothes ?



soap



detergent powder



ash



perfume

(C) Which of the following persons trades old clothes for new utensils ?

– *Kalhaiwala* – *Boharin* – *Kasar*

(D) Arjun's body is itching today. What should he do ? Find the right group.

- | | | |
|---------------------|---------------------|-------------------------|
| (a) Have a bath. | (b) Have a bath. | (c) Have a bath. |
| Put on perfume. | Change his clothes. | Put on clean clothes. |
| Change his clothes. | Apply ash. | Take medical treatment. |

(E) What changes in clothing do we make according to climate? Write four sentences.

(F) Draw a picture of your favourite dress.

(G) Wool is made from sheep's hair. Name another animal which yields thread for making fine cloth.

11. A Look inside the Body



Can you tell ?



- Why does the chest expand when we breathe in?
- The doctor puts her fingers on your wrist to feel your pulse. You, too, can feel your pulse. What causes this throbbing?



Internal Organs

We have many different tasks to do. We use certain specific parts of the body to do them.



Can you recall ?

- Which parts of our body do we use for the following?
(1) Seeing (2) Walking (3) Hearing (4) Writing.
- What is meant by external organs? Give some examples.
- Which parts of the body are called sensory organs? Why are they called so ?



A part of the body that is used to perform a certain function is called an organ. We use our legs to walk. Hence, our legs are our organs for walking. We use our ears for hearing. Hence, our ears are the organs for hearing.

Organs on the outside of our body are our external organs. Ears, nose, arms and legs are on the outside of our body. Hence, they are our external organs.

They can be easily seen.



Some external organs

Organs that make us aware of the situation around us are called sensory organs. Eyes, ears, nose, tongue and skin are our sensory organs.

A new term !

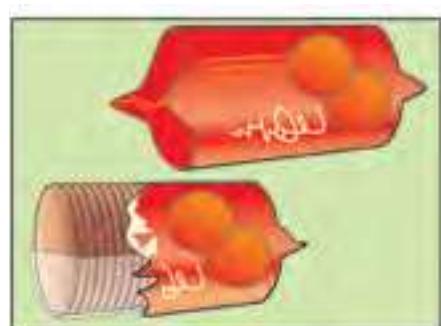
internal organ : an organ that is situated inside the body. It cannot be seen from the outside.

Many functions of the body go on inside the body. A network of blood vessels is spread throughout the body. Blood flows through them continuously. The air we breathe in is carried to all parts of the body through the blood. The food that we eat is digested. These functions are carried out by different organs called internal organs. Let us learn a few things about them.

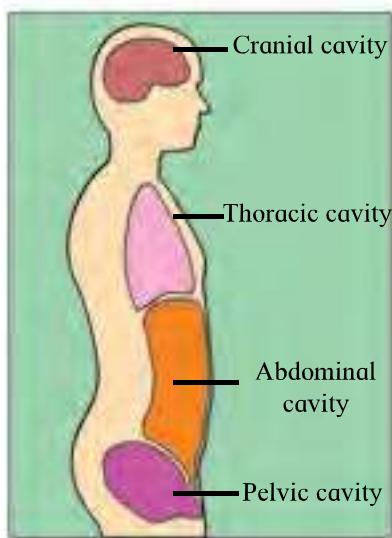
Special places for internal organs



Can you tell ?



- Some biscuits were put in a glass jar. The jar was then shaken and turned over. What happens to the biscuits ?
 - A pack of biscuits was shaken in the same way. What happens to the biscuits ?
 - The biscuits in the jar could break into pieces. But not the ones in the pack. Why ?
-



The cavities in our body

The organs inside the body that perform certain important bodily functions need to be secure. The structure of our body is such that our internal organs can remain in their places no matter how much we move. There are hollow spaces for these organs inside the head and the torso. They are called cavities.

The cavity inside the head is called the **cranial cavity**.

The cavity in the torso has three parts. The cavity in the chest is called the **thoracic cavity**.

The cavity inside the abdomen has two parts. They are the **abdominal cavity** and the **pelvic cavity**.

All the internal organs of the body are situated in these cavities. They are situated in such a way that they will not leave their places and move here and there.



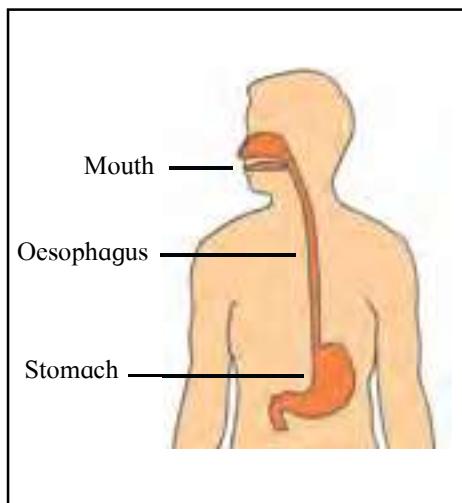
The oesophagus



Can you tell ?

- This man is filling the water from the tap into a drum. The drum is some distance away from the tap. Still, the water from the tap is flowing into the drum.

Why is this so?



Oesophagus

The picture alongside shows two internal organs – the mouth and the stomach. These organs help in the digestion of food. The stomach is situated in the abdominal cavity. There is a tube in the thoracic cavity to transport food from the mouth to the stomach. It is called the oesophagus or the gullet.

We use our mouth to eat our food. The tongue tells us the taste of the food. We chew food with our teeth. As we chew it, our saliva mixes with the food. As a result, the food forms

a moist ball. It is easy to swallow this soft ball. This food passes through the throat into the oesophagus. The wall of the oesophagus is flexible. This makes it possible to carry the food from the throat to the stomach easily.



Use your brain power !

- The organs which help digest our food are in the abdomen. Only the oesophagus is in the thoracic cavity. Why?
- How are the flexible walls of the oesophagus useful?



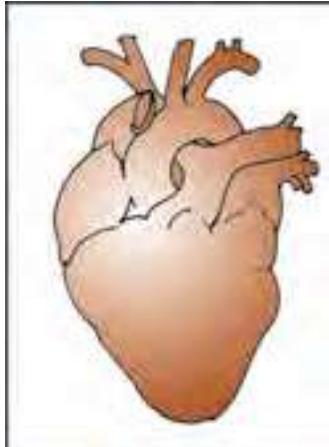
Do you know ?

- The journey of food in our body begins in the mouth. The internal organs in the abdomen help to digest it. The undigested, unwanted part is passed out through the anus in the form of faeces. That is where the journey ends.
- Food travels through a pipe-like pathway from the mouth to the anus. It is called the alimentary canal. It is about 9 metres long. It is made up of a number of internal organs.
- The oesophagus is a part of the alimentary canal.

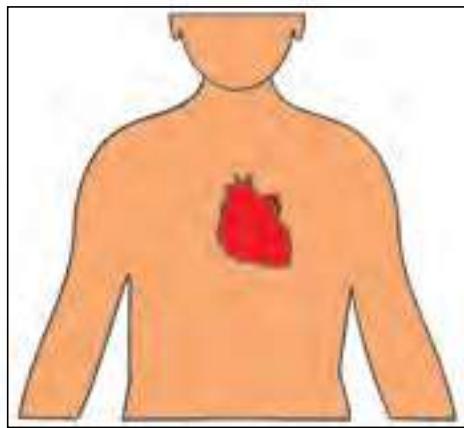
The heart

There is blood in our body. We take in air when we breathe in. Our blood carries the air to all parts of the body. The food that we eat gets digested. It is again blood that carries the digested part to every particle of the body. For these purposes, it is necessary to keep blood flowing through the blood vessels that spread throughout the body. It is the function of the heart to keep the blood flowing.

The heart is an important internal organ. It is in the centre of the thoracic cavity, a little to its left. It is slightly bigger than one's fist. The walls of the heart too are flexible.



The heart



The location of the heart

A new term !

The heart contracts : The heart becomes smaller.

The heart relaxes : The heart returns to its original size.



Try this.

- Take a bottle made from flexible plastic.
- Take a spent ball-pen refill.
- Make a small hole in the centre of the lid of the bottle. The refill must fit tightly in the hole.
- Now fill the bottle with water.
- Fit the lid with the refill tightly on the bottle. Make sure that most of the refill is inside the bottle and only a short tip projects outside. It will make it easier to do this experiment.
- Now hold the bottle upright in both hands. Press the bottle and then leave it loose. Do this three or four times.



What do you see?

- When the bottle is pressed, water flows out in a jet. When you let it go, water stops flowing out.

What does this tell you?

- If pressure is applied to a liquid in a closed space, the liquid will gush from wherever it finds a way out.



Try this.

Place your palm a little to the left of the centre of your chest. You can feel your own heartbeat.



The heart contracts and relaxes alternately without stopping. When it contracts the blood in the heart is pushed into the blood vessels. At every contraction, it is pushed further and further.

A contraction of the heart is called a ‘heartbeat’. If you place your hand on the middle of the chest a little to the left, you can feel the throbbing of your heart due to the heartbeats.

At the wrist, there is a blood vessel that flows very close to the skin. If you place your fingers there, you can feel the heartbeats. This is called feeling the **pulse**.



Do you know ?

- When we are sleeping quietly, the pulse becomes slower.
- When we are running, the pulse becomes faster.

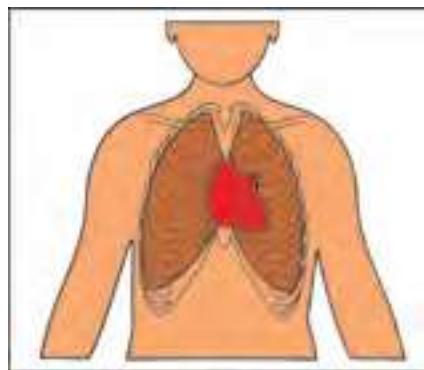


Use your brain power !

- When the heart contracts, the blood in the heart is pushed into the blood vessels. What could be the reason for that ?

Lungs

When we breathe in, we take air in through the nose. The internal organs through which this air is supplied to the body are called lungs. We have two lungs. They are situated in the thoracic cavity, one on the right and the other on the left. The heart is between the lungs a little to the left. There, the left lung has a slight depression. The right lung is slightly bigger than the left lung.



Lungs

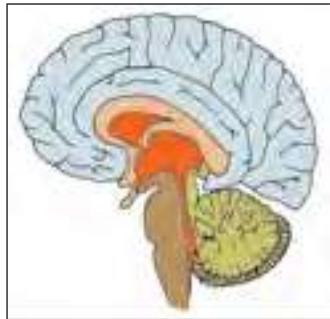
A pipe-like internal organ carries the air we breathe in into the lungs. It is called the windpipe. The windpipe separates into two branches. Each branch is called a bronchus. When we breathe in, the lungs expand a little. That is why our chest swells up when we breathe in.

The functions of the heart and the lungs depend on each other. Both these internal organs are very important. They are situated in the thoracic cavity, inside a cage made of bones called the ribcage. That is why, they are safe and secure.

The brain

The brain, situated in the cranial cavity, is a very important internal organ. It controls all that we do. It is in the brain that we become aware of emotions such as anger, joy, sorrow, etc. The meaning of the information collected by our sensory organs is also understood in the brain.

Injury to the brain can make one disabled for life. It can even cause death. Hence, the brain needs to be totally protected. That is the function of the shell or casing formed by the skull around it.



The brain



The brain in the cranial cavity



Do you know ?

- When we learn a poem, it is registered in the brain. That is why, we can remember it. This work of remembering is called memory.

The structure of our body is very complex. There are a large number of organs inside our body which help it to perform all its functions smoothly. It is very interesting to learn about all these organs. Do find out more about them as you grow up.



What we have learnt –

- The numerous important functions that go on inside our body are carried out by different organs. These organs are inside our body. They cannot be seen from the outside. They are called internal organs.
- The body is structured in such a way that the internal organs remain safe within the cavities inside the head and the torso.
- The oesophagus carries the swallowed food from the throat to the stomach. It is situated in the thoracic cavity.

- The heart keeps the blood flowing through the blood vessels spread throughout the body. The heart is continuously contracting and relaxing. The contractions of the heart push the blood from the heart into the blood vessels.
- The lungs are the organs through which the air we breathe in is supplied to the whole body. The right lung is a little bigger than the left lung.
- The heart and the lungs are held safely in the ribcage in the thoracic cavity.
- Our brain is a very important internal organ. It has a safe place inside the skull. Controlling movements, becoming aware of emotions and interpreting the information collected by the sensory organs are the functions of the brain.



Always remember –

In any accident, if the head is hit, the skull can get broken. If that happens it can cause injury to the brain. Then the person can become disabled for life or even die. That is why, one must always wear a helmet when riding a motorcycle or scooter.



Exercises

(A) Think and tell.

Why do we pant when we have been running hard for some time ?

(B) Answer the following questions.

1. What is meant by ‘internal organ’ ?
2. Name the two cavities in the abdomen.
3. Which important organs are situated in the ribcage in the thoracic cavity ?
4. Why does the chest swell when we breathe in ?
5. Why is the brain situated in the casing of the skull ?

(C) Fill in the blanks.

1. The internal organs that help digest food are
2. We have lungs.
3. Every of the heart is called a heartbeat.

4. We becomeof all our emotions in the brain.
5. The structure of the human body is very

(D) True or false ?

1. The oesophagus is in the thoracic cavity.
2. The heart is a little bigger than our fist.
3. The food in the mouth forms a moist lump.
4. In the brain, we interpret the information collected by the sensory organs.

(E) Give reasons why.

1. The structure of the body is such that all internal organs remain secure in their places.
2. Blood must be kept flowing in the blood vessels throughout the body.
3. The brain has to be kept completely safe.

(F) Match the following :

'A' Group

- Blood supply
Breathing
Carrying food to the stomach
Controlling movements

'B' Group

- Alimentary canal
Heart
Brain
Lungs



- Using small plastic funnels and plastic tubes make a stethoscope like the one a doctor uses.

12. Home Remedies for Simple Illnesses



Can you tell ?

- Observe the pictures given below, and answer the following questions.



**Why is this boy's arm in plaster ?
Could we have put his arm in plaster at home?**

Why has this girl been brought to a doctor ?

Illness

When we are well, we feel hungry at the right times. We sleep well at night. We have no complaints about digestion. And most importantly, we feel refreshed on getting up in the morning. We do not feel tired even if we have been at work.

But sometimes, for some reason, we fall ill.



Sakhu had a slightly sore throat. Still, she had some ice-cream. The next day, her throat hurt and she found it difficult to swallow. Mother made her gargle with warm salt water before and after school for two days. On the third day, Sakhu's throat had stopped hurting. This was a simple illness and she soon felt better again.

A fortnight later, Sakhu's Tai fell ill. She was running a temperature. Her eyes had become yellow. She did not feel like eating anything. Mother took her to the doctor. The doctor said that Tai had jaundice.



The doctor advised her to take complete rest for three weeks. She also told her to eat as little as possible of things which contain oil, ghee or butter. This was not an illness that could be cured easily.

Right or wrong ?

Shripati and his younger sister Tara were working in the field. A snake bit Shripati. After biting Shripati, the snake wriggled away. Neither of them got a proper look at the snake. But, knowing that it was a snake that had bitten him, Shripati was very frightened. He shouted loudly for help. People came running.

Tara was saying that Shripati should be taken to the taluka place at once. The government hospital there would have the anti-snakebite injection to give Shripati. But no one paid any attention to her.

People quickly got the bullock-cart ready, and putting Shripati in it, took him to the village temple. They called the village *mantrik*. He laid Shripati on a bed of neem leaves and began to chant mantras against the action of the snake's poison.



What do you think ? Do the mantras act against the snake's poison ?

Was it right or wrong to bring Shripati to the village *mantrik* ?

Would you have taken Shripati to the *mantrik* or to the Government Hospital ?

Soon, Shripati felt better. But, was that because the mantras acted against the snake poison ? Or, was the snake non-poisonous and the *mantrik* got the credit even when he did not deserve it ?

Home remedies

If an illness is one that gets cured readily, one can try a home remedy. Do you remember, Sakhu's mother made her gargle her throat with warm water. And Sakhu felt better in a day or two.

Elderly, experienced people in the family sometimes suggest such cures.

If we have a cold we can inhale steam at bed-time or take hot fomentations on the chest.

If someone is vomiting as a result of a fever or indigestion, it is better not to insist on him or her having a meal. At most, they should be given a cool lemon sherbet and something light, like dahibhat, to eat the next day.

If someone has a cut, bruise or a small wound, it should be washed with clean water and dabbed dry. A tincture of iodine may be applied to it. Then it should be covered with clean cotton and bandaged.

Even if an illness appears to be minor, it should never be neglected. Remember, home remedies have limits. If a person does not recover in a day or two or if the illness worsens, one must go to a doctor.

Without a doctor's advice, one should never take any medicine that must be swallowed.



People who provide health services to society

A service that takes care of the health of the people and provides treatment for those who are ill is called a health service or medical service.

Big towns and cities have doctors' clinics and hospitals. But, in most cities and in rural areas there are Government Hospitals and Primary Health Centres too. Patients can get treatment at concessional rates there.

The municipal corporations of big cities also run hospitals that provide medical treatment.



What we have learnt –

- Some illnesses are cured quickly. But, there are some that do not get cured easily.
- Minor illnesses can be cured with home remedies. Experienced, elderly people in the family know of such home remedies.
- For a cold, one can inhale steam or take hot fomentations. A lemon sherbet is good for someone who is vomiting.



Always remember –

Mantras, incantations, magic spells and charms do not cure any diseases or illnesses.



Exercises

(A) What's the solution ?

Helen is in the fourth Standard in a school in Mumbai. One day, on her way home, she was hit by a moving vehicle. She fell down and became unconscious. Her leg was also badly injured.

(B) Use your brain power !

1. For what purpose is the extract of vasaka leaves useful ?
2. What are the signs which tell you that someone has a cold ?
3. What is a balm used for ?
4. What tells you that the temperature of someone who had a fever is coming down ?

(C) Complete the table.

Given below are the names of some diseases and illnesses.

- (1) cold (2) chikungunya (3) malaria (4) bruising (5) stomach upset (6) typhoid
(7) scorched fingers (8) sprained ankle

Determine which of these get cured quickly and which ones do not and complete the following table.

Get cured quickly	Do not get cured quickly

(D) Answer in brief.

1. Why did Sakhu get a throat-ache?
2. When Tai had jaundice, for how long did the doctor advise her to take complete rest?
3. What is the home remedy for a cold?
4. Should one take medicines that must be swallowed, without a doctor's advice?

(E) Fill in the blanks.

1. Tai's eyes had become
2. Knowing that it was a that had bitten him, Shripati was very frightened.
3. One must wash and a wound before applying a tincture of iodine on it.

Activity

- Visit a nearby hospital and interview the doctor there. Find out about some first aid measures.

13. Directions and Maps



Can you tell ?



North



West



East



South



Guess which picture is in which direction and complete the table.

Picture	Direction	Picture	Direction

Now answer the questions given below.

1. Which directions could you guess correctly?

2. Which directions did you find it difficult to guess?

3. Which are the main directions that you learnt last year?



Can you tell ?

The pictures of the mountain, well, street lamp and fort are not towards the main directions. Find out between which two main directions they are located and write your answer in the table below.

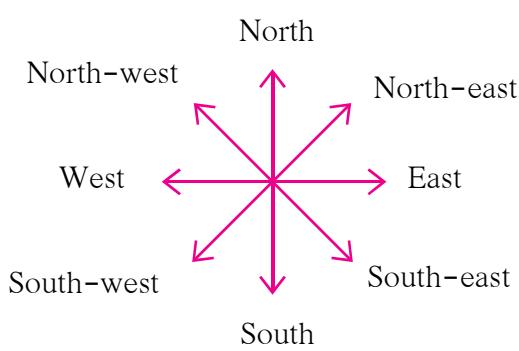
Picture	Main Directions
Mountain	North and West
Well	
Street Lamp	
Fort	

Many things lie between two main directions. To determine the direction in which they lie, we use sub-directions.



Can you tell ?

Study the following circle of directions and sub-directions carefully.



Note the sub-directions that lie between every two adjacent main directions. You will find that the name of every sub-direction begins either with north or south. Now, look at the objects given at the beginning of the lesson once again. Check your answers and correct them if necessary.

Draw the diagram showing the directions and sub-directions on a small card. It is known as the compass rose. We will use this compass rose later in the lesson.

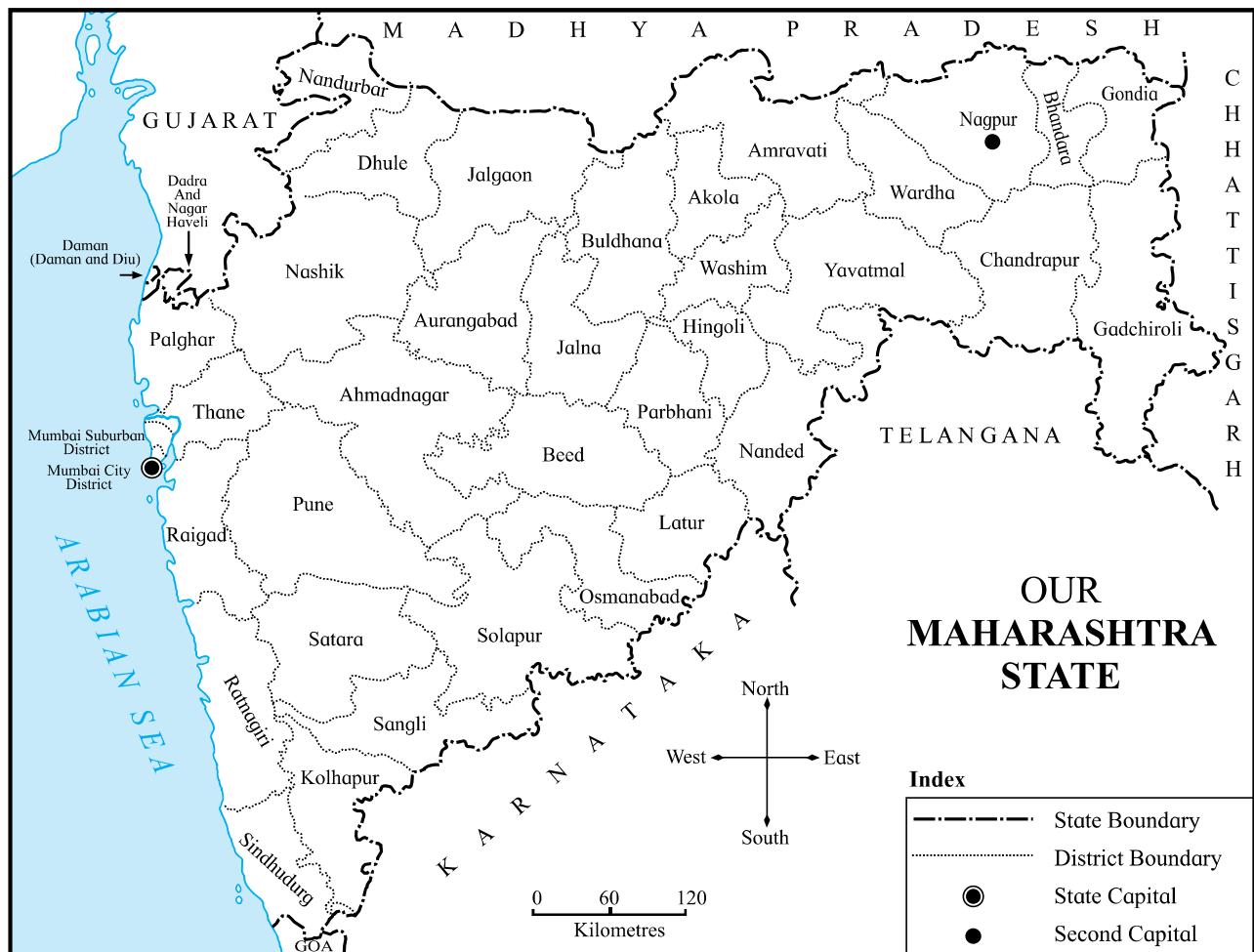


Do you know ?

Directions are always parallel to the ground. That is why a map must always be aligned to the local directions. This makes it easier for us to understand the map and the region.



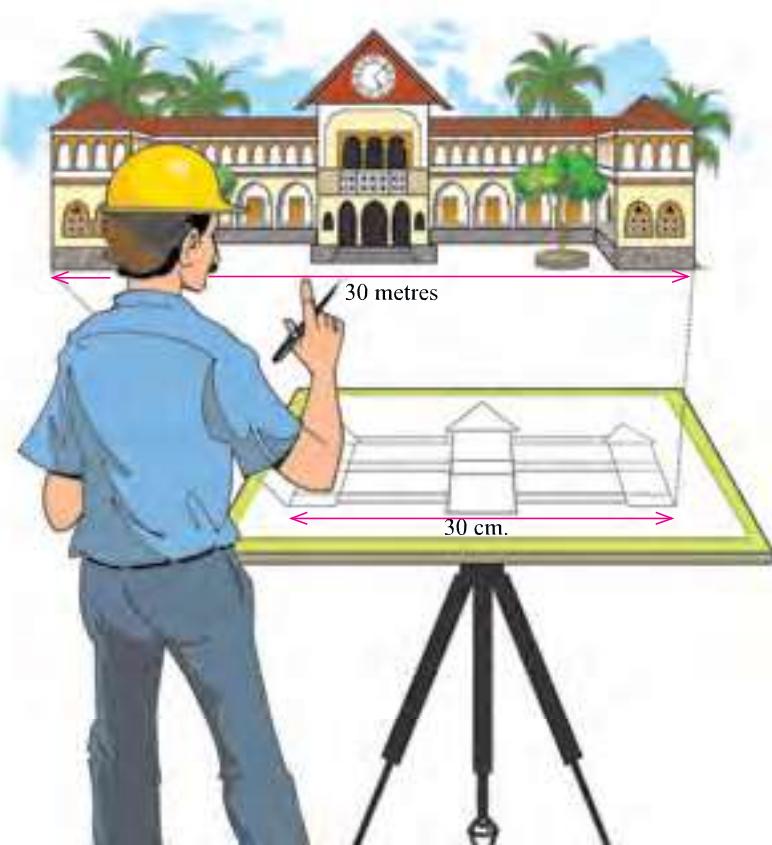
Use your brain power !



- Use the compass rose made earlier to read the map given above.
- Place the rose on Beed and make a list of all the districts that are situated along the main directions and sub-directions. Repeat this activity for other districts.
- Place the rose at the centre of our State and note the location of your district in the State.

Places in our surroundings are often located at some distance from one another. These places are also large in size. Maps are comparatively quite small. Therefore, the distance between these places has to be shown in a very limited space on a map.

When we draw pictures of houses, mountains and people, we draw them to fit the size of the paper we are drawing on. It is the same while drawing maps. While drawing a map, the distance between two places on the ground has to be shown in such a way that it fits the paper. The distance on the map is proportionate to the distance on the ground. Try to understand this with the help of the picture given here.



Use your brain power !

The distance between Rasika and Reshma's houses is 10 kilometres (km). The scale used on the map is $1 \text{ cm} = 1 \text{ km}$. On the map, what would be the distance between the two houses?

Using a ruler, draw the distance in your notebook.



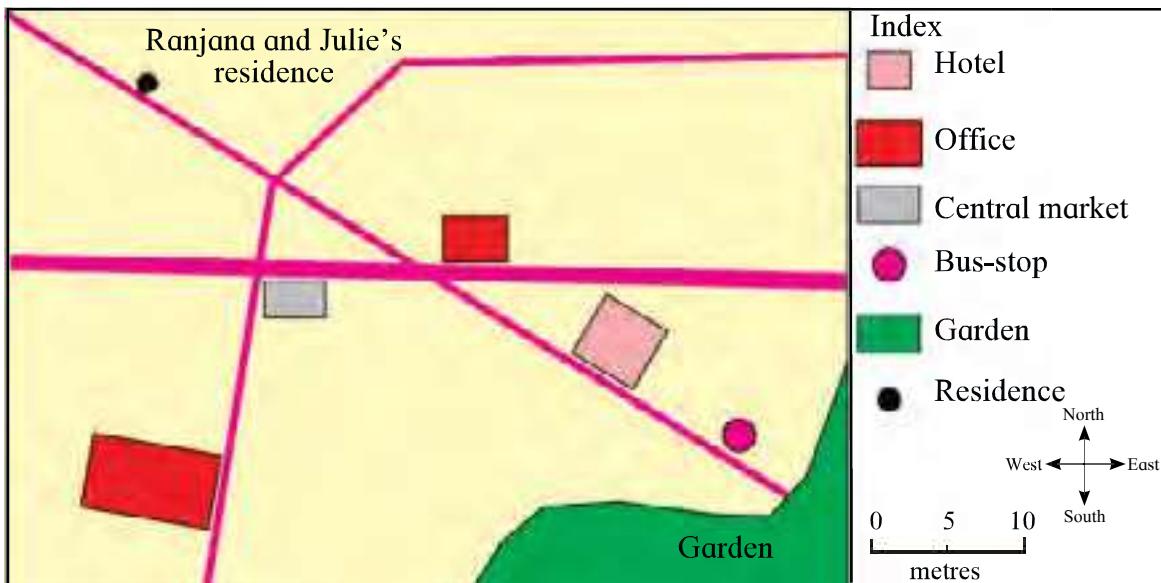
Always remember –

Directions and sub-directions have been determined by man on the basis of the rising and setting of the sun. Thus, Nature can be our guide.



What's the solution ?

- Ranjana and Julie are going on a picnic. They want to go from their residence to a garden. They have a map of the area.
1. Help them find out the distance from their residence to the garden.
 2. Help them find out the direction of the garden from their residence.



What we have learnt –

- Identifying sub-directions.
- The compass rose.
- The proportionate nature of maps.
- The relation between distances on a map and on the ground.



Exercises

(A) What do we use to find out the location or position of a place ?

(B) Why is a scale given in maps ?



Activity



- With the help of your teacher, make a relief map of your locality. You can use clay, papier mache and cardboard for this activity.



Try this.

- Observe the area around your school/house carefully.
- Make a list of all the things you find in the area.



Try this.



There are eight different things in the picture shown above. Of these, some things are man-made, while others have formed naturally. They can be classified as shown below.

Natural	Man-made
A river	A school
Trees	A water tower
A hill	A house
Grass	A road

You have also made a list of the things seen in your area. Classify the items in your list into natural and man-made things.



Always remember –

Man-made objects are made from natural resources. For example, we make chairs, tables, benches, etc. from the wood obtained from trees.



Can you tell ?



The picture above shows the area around Anju's house and school. Complete the activity below with the help of the picture.

- Find Anju's house in the picture.
 - Find her school in the picture.
 - Find a route from Anju's house to her school. Colour it.
 - Note the things seen on the way from the house to the school.
- You have found the route that Anju will take to go to her school. Anju

passes along a narrow lane and a main road on her way to school. There are several things on both sides of the lane as well as the road.

- (1) Write the directions in which the places on the narrow lane are situated.
- (2) Write the directions in which the places on the main road are situated.
- (3) Mention the directions in which she must turn on the way to school.

A smaller picture of Anju's house and locality is given on the next page. However, realistic pictures of trees and buildings are not shown in it. In their place, certain symbols are drawn. What these symbols represent is also mentioned against each of them. Note that some of the things seen in the locality have not been shown in this picture.

Such a picture is called a sketch.



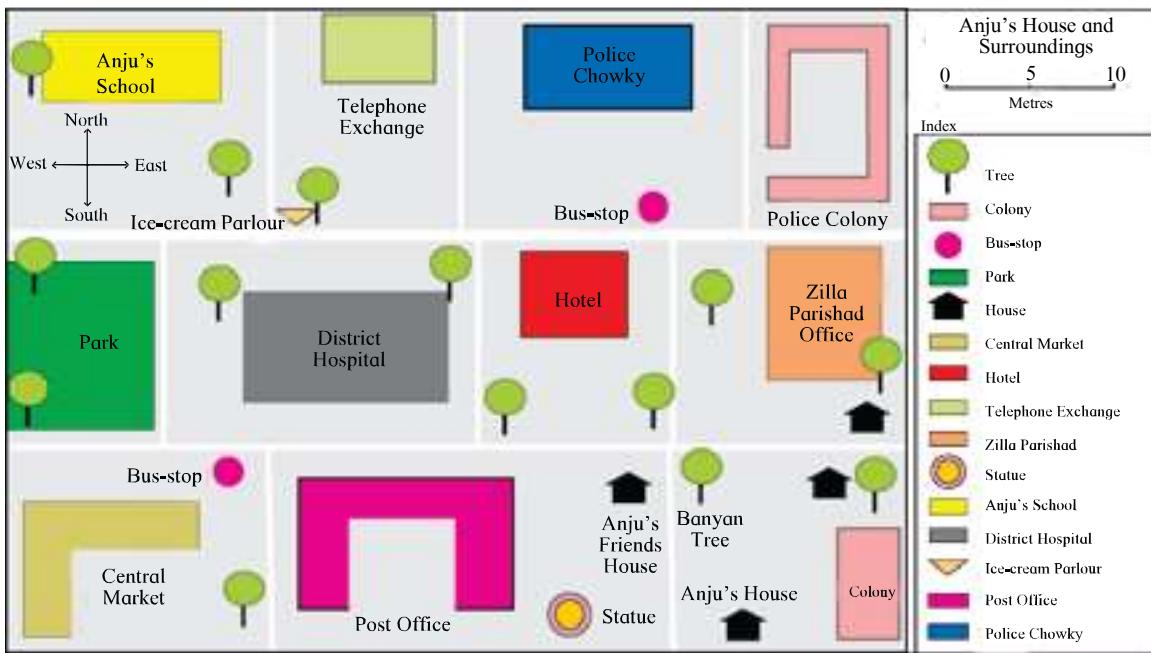
Can you tell ?

Study the sketch and do the following.

1. Draw the symbol used to represent a house.
2. Next to the symbol, write the number of times it appears in the sketch.
3. Draw the symbol used to represent a tree.
4. Next to the symbol, write the number of trees seen in the sketch.
5. List the things in Anju's locality that do not appear in this sketch.



- We made use of different symbols while making this sketch.
- To convert a sketch into a map, you need to show the directions, and include an index, a title and a scale.
- **Moving objects are not included on a map. For example, people walking, moving vehicles, etc.**
- A winding road in an area is shown to take exactly the same turns on a map. That is how roads, rivers and railway lines are always shown on the map.
- **A map of Anju's house and locality is given below. When you make a map of your locality, compare it with this map. Are there any components missing in your map ? Add them.**





Do you know ?

The art of mapmaking has now advanced greatly. Our ancestors also used to make maps. They used animal skins, bones, cowries and clay or stone tablets to make maps. Approximately 5000 years ago, there was a civilization called Mesopotamia. A clay tablet of those days showing some parts of Mesopotamia is shown alongside. Take a look.



Try this.

Design simple symbols for the list of natural and man-made objects that you prepared earlier. You have to make a sketch of your locality on a piece of paper using those symbols.

- First draw roads, rivers and railway lines exactly as they are in your locality on the piece of paper. Then show other things using the symbols you have designed.

- Along with the sketch, make an index of the symbols you have used. Against each symbol, write what it stands for.

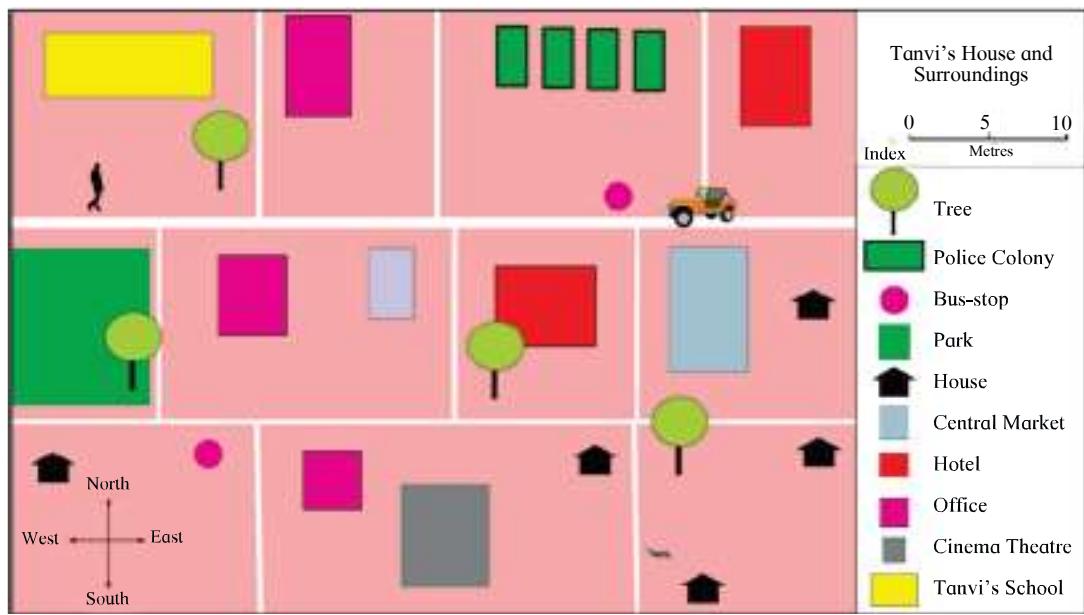
- Show a compass rose in your map taking into account the direction in which the sun rises in your locality. Now name this outline, 'My Locality'.

The outline you have prepared is a map but it is not to scale.



Use your brain power !

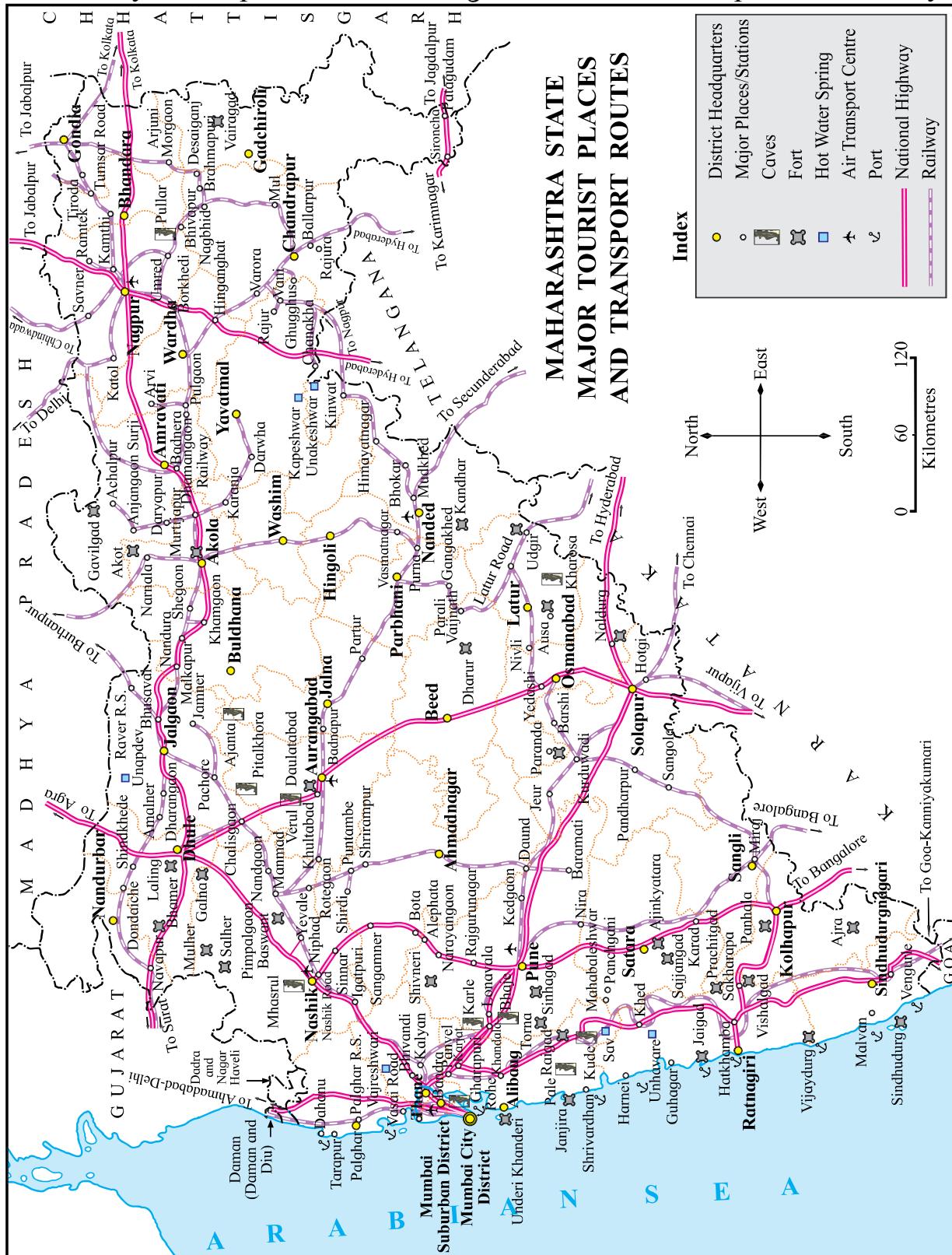
- Find and circle the mistakes in the map.





Make friends with maps !

Study the map of Maharashtra given below and complete the activity.



- (1) Our State has a historical heritage. Maharashtra has forts near the sea, in the mountains and on the plains. Write the names of districts which have forts.

- (2) Write the names of districts with hot water springs.
- (3) Underline the names of districts which have caves.
- (4) Find the districts which have ports and circle their names.
- (5) Classify man-made and natural objects with the help of the index.
- (6) There is a national highway and a railway line between Pune and Kolhapur.
In your notebook, write which of these is shorter.
- (7) Trace the Gondia-Chandrapur railway line and write the names of the places on the line.



What's the solution ?

Jacob has to make a map of his locality. He saw the things shown in the box alongside in his locality. Which of these things should he show in his map? Help him.

A house, a flying crow, a police station, cows, a post office, buffaloes, a school, a vehicle, a square, a road, a tower and a farm.



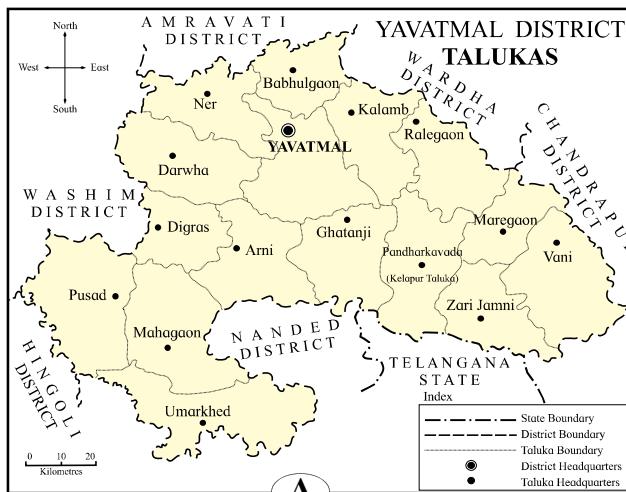
What we have learnt –

- Identifying man-made and natural elements on a map.
- Our environment has both natural and man-made objects.
- Special symbols are used for making a map.



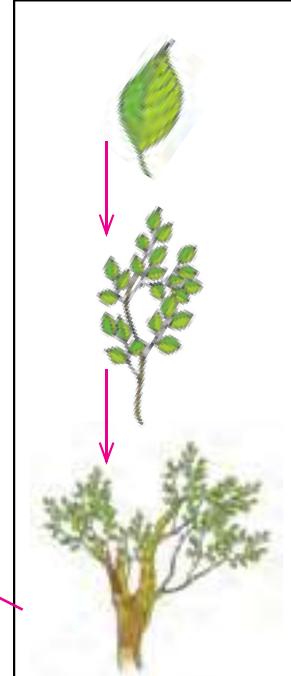
Exercises

- (A) Where do materials for man-made objects come from?
- (B) Which elements of the environment are not shown on a map? Why?
- (C) What do we use to show elements of the environment on a map?
- (D) Which of the maps shown below is complete?





Try this.



Study a big tree in your locality using the following points.

- (1) What are the different parts of the tree ?
- (2) Which of these parts are seen on a tree most of the time ?
- (3) Which is the smallest part of a tree and what is it attached to ?
- (4) A tree has many small branches. What are they attached to ?
- (5) How many big branches does the trunk of the tree have ?

To be complete, a tree must have several components such as leaves, small branches, big branches, a trunk, etc. In the same way, our State too is made up of many settlements, villages, towns, talukas and districts. You will understand this better by looking at the diagram on the facing page.



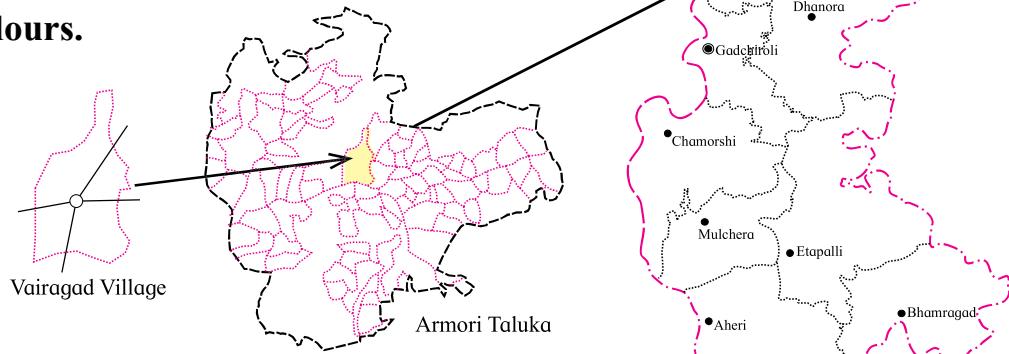
Do you know ?

Man began to farm the land. His fields were near water. He settled near his farms and began to live there. In this way, hamlets and settlements were formed. These hamlets and settlements grew into villages which then developed into cities.



Make friends with maps !

- Colour the town, taluka, district given below in different colours.



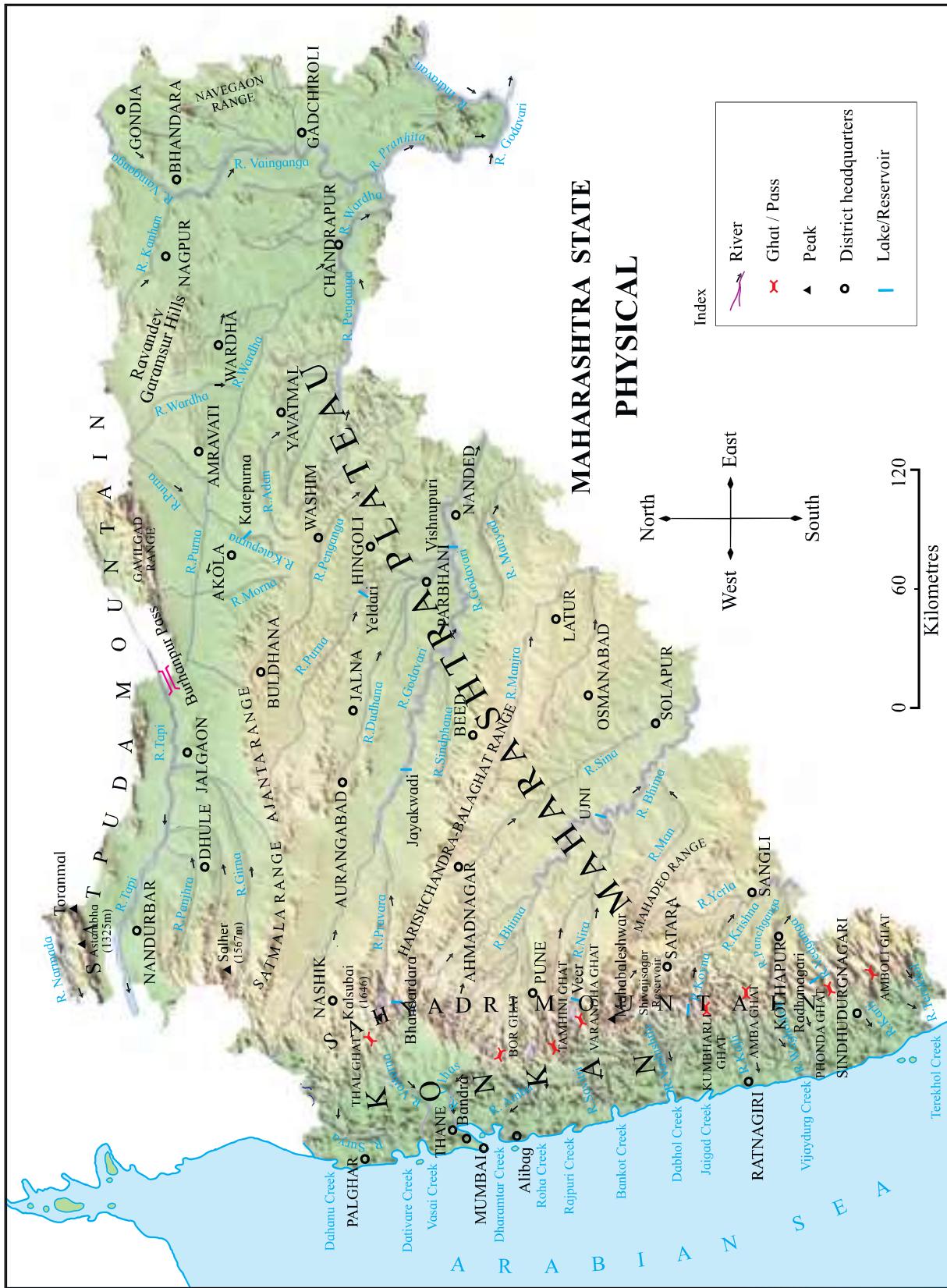
- By following the pictures given here, you can see how villages, cities and towns form a taluka, talukas form a district and districts form a State.





Make friends with maps !

The physical map of our State is given below. Study it carefully and write the answers to the following questions.

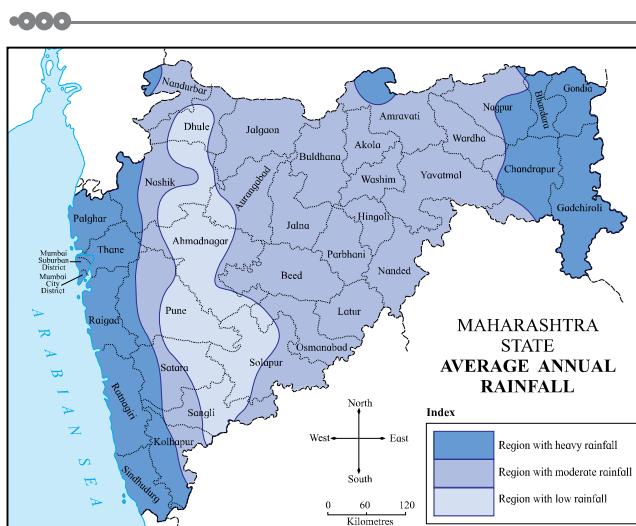


- What is the name of the mountain that spreads from north to south in our State?
- What is the name given to the region to the west of this mountain?
- On the shore of which sea does this region lie?
- What is the area to the east of the Sahyadri mountain called?
- What is the name of the mountain in the northern part of our State?
- Which is the river in our State which flows from the east to the west?
- Write the names of two rivers which flow from north-west to south-east.
- Write the names of any two rivers which have their origin in the Sahyadri mountain and flow into the Arabian Sea.
- Find the ranges which originate in the Sahyadri mountain and spread to the east. Write their names.
- Write the names of any three dams shown on the map.
- Which rivers are these dams built on?
- Name the important ghats in the Sahyadri mountain.



Do you know ?

- | | |
|--|---|
| <ol style="list-style-type: none"> Mumbai is the capital of Maharashtra State. Nagpur is the second capital. According to its physical features, Maharashtra is divided into three regions – (a) the coastal region, (b) the mountainous region and (c) the plateau region. The Godavari river is the longest river in Maharashtra. | <ol style="list-style-type: none"> The Satpuda mountain is in the northern part of Maharashtra. The highest peak in the Satpuda mountain is Astambha. The Sahyadri mountains are also called the 'Western Ghats'. 'Kalsubai' in this mountain is the highest peak in Maharashtra. The Arabian Sea is to the west of the State. |
|--|---|

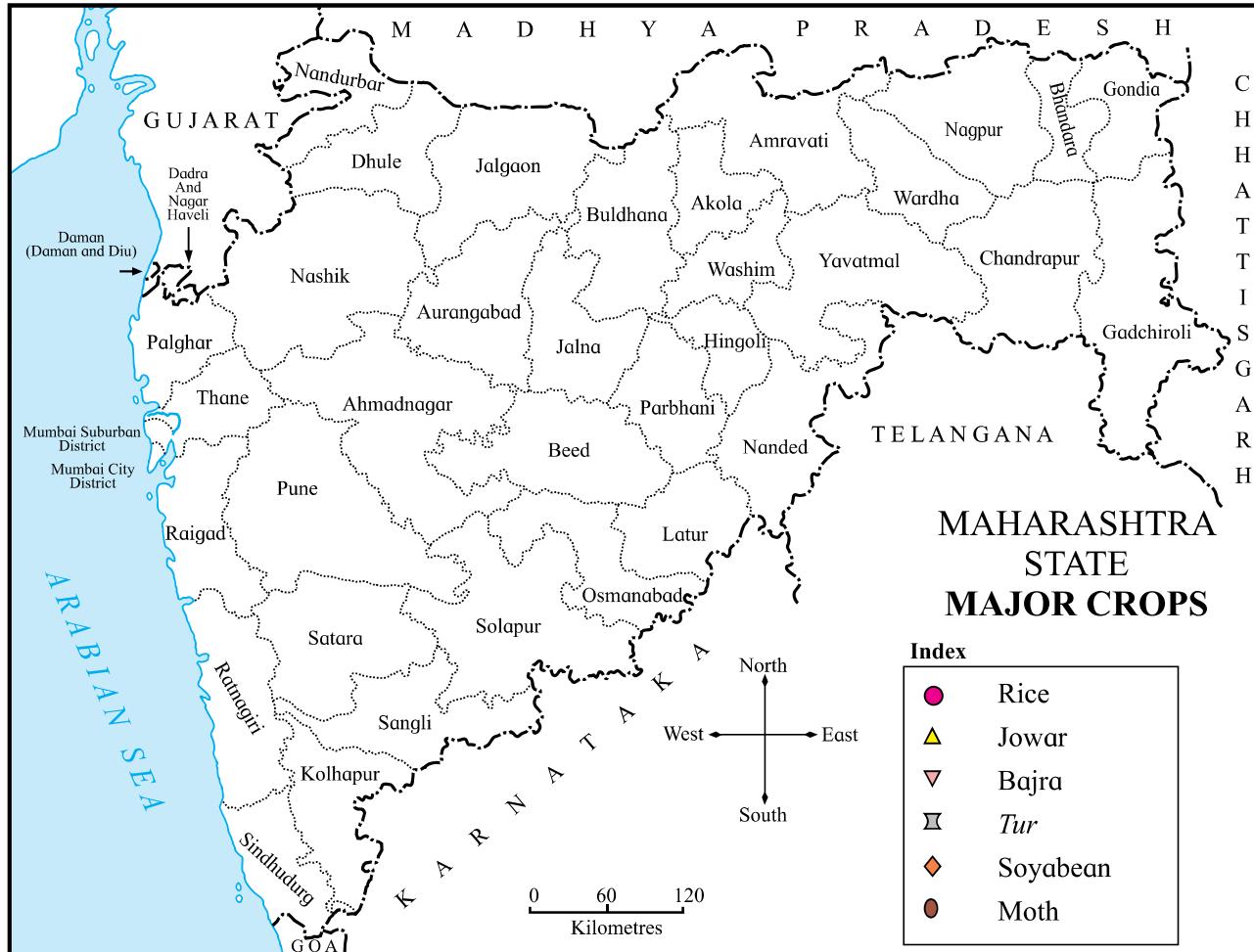


Can you tell ?

Regions of high, moderate and low rainfall are shown on the map given here. Rainfall has an effect on agriculture. A table is given on the next page. It shows the crops grown in regions of high, moderate and low rainfall. Carry out the following activity based on the map and the table.

Look at the map of rainfall given on the previous page and the table of crops given below. Find out which crops will grow in which region of Maharashtra. A map with an index is given below. On the map, show the distribution of crops according to rainfall.

Regions of rainfall and main crops		
High	Medium	Low
Rice	Jowar <i>Tur</i> Soyabean	Jowar Bajra Moth beans



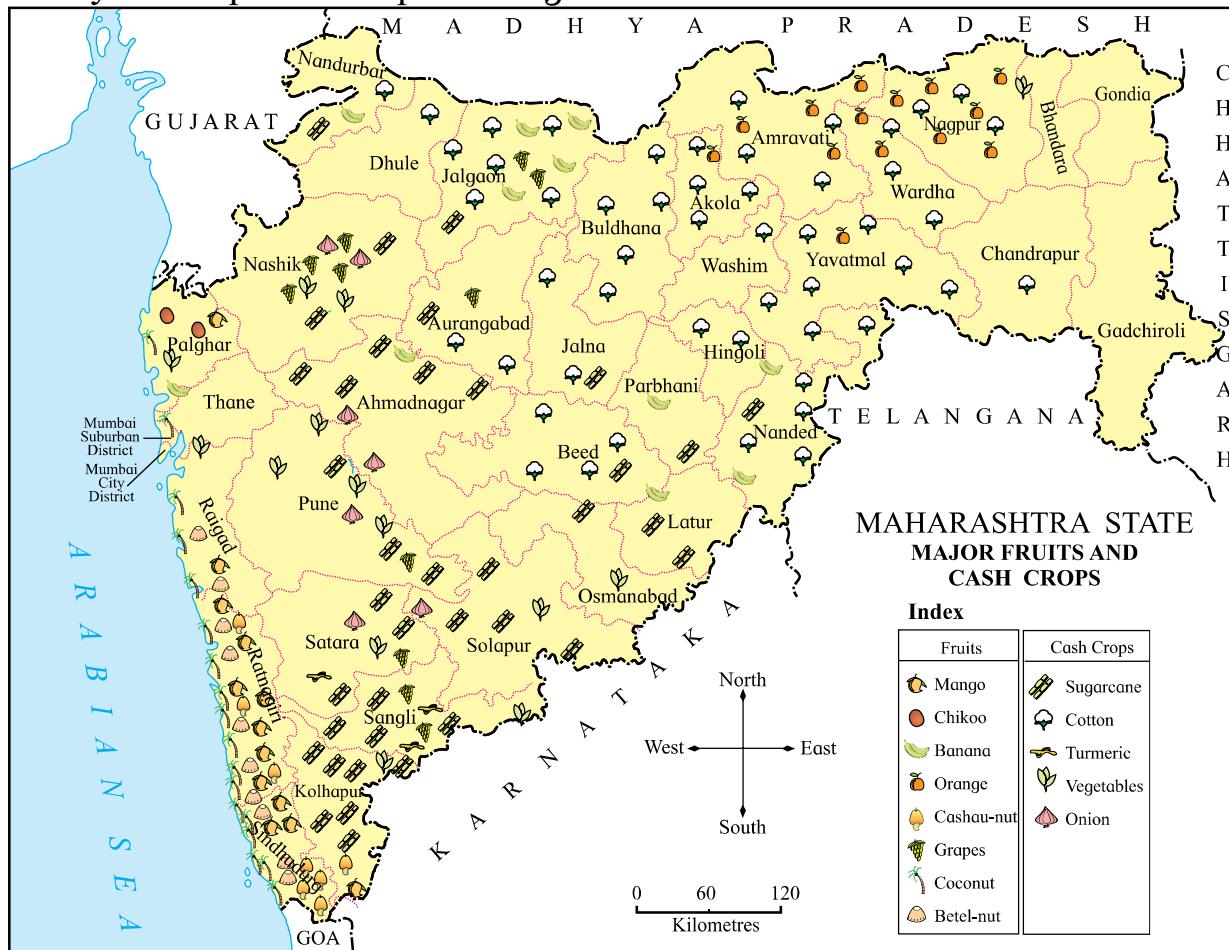
The production of crops depends on the climate, soil and availability of water. Different regions of Maharashtra get different amounts of rainfall. As a result, there is variety in the crops grown. Agriculture is the main occupation in Maharashtra. Agriculture in the State depends mostly on rainfall. This is called rainfed (jirayati) agriculture. In some places, water obtained through irrigation is also used. This is called irrigated (bagayati) agriculture.

The agricultural season that falls during the monsoon period is called the kharif season and the one that falls during winter is called the rabi season.



Can you tell ?

- Study the map and complete the given activities.



- Underline the names of districts which grow grapes.
- Circle the names of cotton growing districts.
- Circle the symbols of the crops grown in Thane and write their names in your notebook.
- In which districts is coconut an important crop? Write their names in your notebook.
- Find the districts which grow the orange crop. Colour them using a different colour.

All the crops shown above are based on irrigation. Their distribution is influenced by climate and soil. They are also known as commercial or cash crops. Chemical fertilisers and pesticides are used for these crops.



Always remember –

The use of chemical pesticides and fertilisers to increase the yield of crops has risen. However, this results in greater soil pollution. We should use chemical fertilisers sparingly. Organic fertilisers should be used more. In this way, we will be able to prevent harm to the environment.



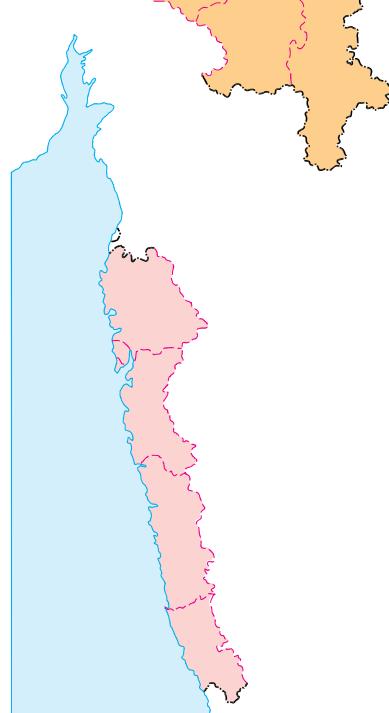
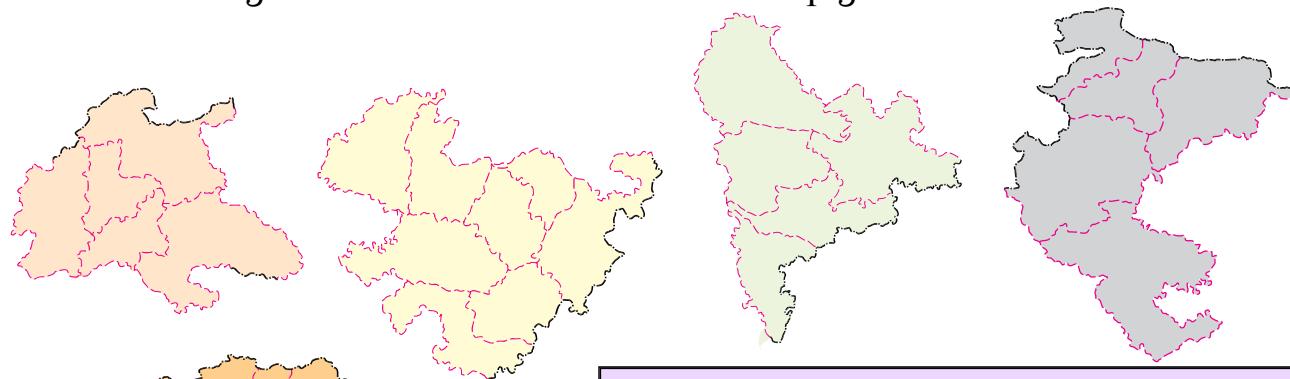
Try this.

- (1) Visit a farm. Make a list of the various crops grown there in the different seasons.
 - (2) Discuss with the farmers, the various means of irrigation available on the farm.
 - (3) Find out which factors affect farming.
 - You will realize that several different crops are grown in one field.
 - Availability of water is essential for farming.



Use your brain power !

The administrative divisions of our State are given below. Observe them and colour these regions in different colours in the map given below.



Language and dialects

Maharashtra State was formed on 1 May, 1960. States in India have been formed on the basis of language. ‘Marathi’ is the State language of Maharashtra. In Maharashtra, there is similarity as well as diversity in languages. The pronunciation of Marathi varies in different regions. We see a variety in the dialects that are spoken. We should welcome this diversity.

Regions	Some Dialects
Konkan	Konkani, Malvani
Vidarbha	Varhadi
Khandesh	Ahirani (Khandeshi)

Gormati, Kolami, Korku, etc. are the traditional dialects of adivasi tribes in Maharashtra.



Can you tell ?



We find variety in the festivals of our State, according to the different traditions.

Everyone celebrates Diwali, Dasara, Christmas, Eid etc. In the Konkan region, festivals such as Naralipournima, Holi and the Ganesh festival are mainly celebrated.

In the plateau region, people celebrate festivals such as Dasara, Diwali and Bailpola on a big scale. We celebrate our national festivals 15 August and 26 January all over the country with great enthusiasm.





What's the solution ?

Sudhir and Swapnil have come to your town. They wish to take home a famous food item from your district. Which food item will you give them?



Use your brain power !

- Are villages, towns, cities, talukas, districts, States and countries man-made or naturally formed ?



What we have learnt –

- The physical set-up of our State.
- Variety in crops according to climate, soil and availability of water.
- The State language Marathi and its different dialects.
- Variety in celebrations and festivals.



Exercises

(A) Answer the following questions.

1. Which parts of Maharashtra grow oranges ?
2. Which parts of Maharashtra grow the crops of coconut, betel-nut and mango ?
3. Mention the dialects of Marathi spoken in your locality.
4. Which river in eastern Maharashtra flows from the north to the south ?
5. Which districts in the State grow jowar ?
6. Why is the 1st of May celebrated in our State ?

(B) Draw a picture of your favourite festival.



Activity



- Study and understand the climate of your district. Make a list of the main crops grown in the district according to the climate.

16. Day and Night

Shevanta wakes up at a quarter to seven every morning.

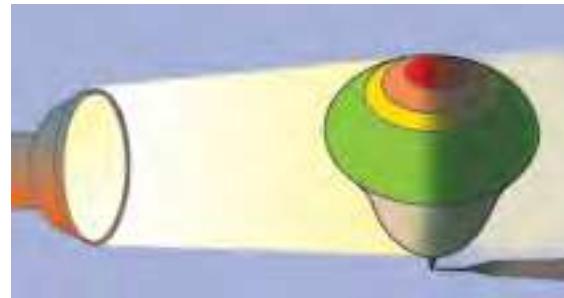


What differences do you see in the two pictures? What causes these differences?

We live on the earth. The earth gets light from the sun. The earth's shape is like that of a very large ball. Therefore, light from the sun does not reach the entire earth at one and the same time. Half the earth gets sunlight while the other half remains dark.

We say that it is **day** in the half that gets light, while in the other half where sunlight does not reach, it is **night**. Every day we see day chasing night and then night chasing day. Night comes after day and then day follows night. This cycle goes on without stopping. What could be the reason for this?

Just as a top spins about itself, the earth, too, turns around itself. So, the part of the earth that is getting sunlight goes into darkness and the part that is in darkness comes into the light. That is, where there is day it becomes night after some time and where there is night, it becomes day.



Do you know ?

- The sun rises in the east in the morning and moves towards the west. In the evening, the sun sets in the west. So we feel that the sun goes around the earth. But that is only an impression. Actually, the earth turns around itself. That is why we have day and night on the earth.
- This spinning of the earth around itself is called the rotation of the earth.

The whole day has 24 hours. But, are there always twelve hours of daylight and twelve hours of darkness? If that were true we would have sunrise every morning at six o'clock and sunset every evening at six o'clock, too.

Let us see what really happens.



Try this.

Some calendars give the times of sunrise and sunset for every day. Take such a calendar for this year and use it to complete the following tables.

Table 1	Date	4	8	12	16	20	24	28
	Sunrise							
May	Sunset							

Table 2		4	8	12	16	20	24	28
	Sunrise							
November	Sunset							

What do you see?

- In November, the sun rises a little later every day while it sets a little earlier every day.
- In the month of May, the sun rises a little earlier every day and sets a little later every day.

What does this tell us?

- In November, the days become shorter and shorter, while nights become longer.
- In May, the days become longer and longer while the nights become shorter and shorter.

Thus, we are now sure that day and night are not of 12 hours each all year round.



Do you know ?

- In the whole year, 22 March and 22 September are the only dates on which day and night are of equal length, that is, of 12 hours each.

On March 22, day and night are both 12 hours long. Then, in our part of the earth, daytime increases slowly and night time decreases. This goes on till June 21. On June 21, our day is the longest and the night is the shortest.

From June 21, in our part of the earth, daytime becomes shorter and shorter and nights become longer. This goes on till September 22. On September 22, our day is of 12 hours and the night too is of 12 hours. After that, the days continue to become shorter. The nights become longer. This goes on till December 22.

On December 22, our night is the longest and the day is the shortest. From December 22, the day grows longer and the night, shorter. This goes on till March 22. From March 22, this cycle repeats itself.



Do you know ?

- When the days are longer and the nights are shorter, it is summer.
- When the nights are longer and the days are shorter, it is winter.



What we have learnt –

- As the light of the sun does not reach the whole earth at the same time, there is daylight on half the earth while there is darkness on the other half.
- The earth spins around itself. So, the part that faces the sun goes into darkness and the part that is in the dark comes into the light. That is why, we have day and night on the earth alternately.
- The whole day has 24 hours, but, in the whole year, only on March 22 and September 22, do we have both day and night of 12 hours each.
- From December to June, the day gets longer while from June to December, the day gets shorter.



Always remember –

There is a connection between the seasons and the changing lengths of days and nights.



Exercises

(A) Think and tell.

1. On a new moon day, we cannot see the moon even though it is there in the sky. Why is that so?
2. Why do birds return to their nests earlier in winter than in summer?

(B) Answer in brief.

1. From where does the earth get light?
2. What is the earth shaped like?
3. When do we say that it is daytime?
4. When do we say that it is nighttime?

(C) Describe.

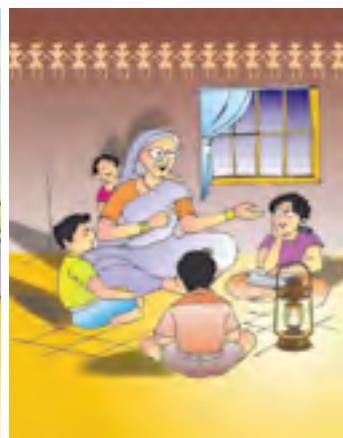
1. The spinning of the earth.
2. The cycle of day and night.

(D) Fill in the blanks.

1. The whole day has hours.
2. The sun appearing in the sky in the morning is called.....
3. The disappearance of the sun from the sky in the evening is called
4. From March 22 tillour days become longer and the nights shorter.

(E) True or false?

1. The number of hours in the day and the night on March 22 are equal.
2. In our part of the earth, on June 21, the day is the longest and the night, shortest.
3. On September 22, the lengths of the day and the night are unequal.
4. In our part of the earth, on December 22, the day is the longest and the night, shortest.



Can you tell ?

- What do you see in these pictures?
- What are the kids in the pictures learning from the grown-ups?

We learn many different things while we are growing up. They lead to the development of certain habits, likes and dislikes. They shape our views and thoughts. This is what is known as our upbringing.

You must have seen photographs of your childhood. You began to crawl. You learnt how to walk and how to talk. And apart from this, you learnt many more things – how to brush your teeth, how to bathe, how to eat without spilling, how to behave with people older than you. You learnt many more things besides these basic ones. How to fill your schoolbag, how to ride a bicycle, how to play a cell phone game, when to feed the cattle, how to buy groceries, how to behave with strangers. The list can go on and on.

How did you learn all these things? Who taught you all these things?

You must have learnt many of these things from your parents and relatives. Holding our hands, our parents teach us to walk. They teach us how to behave and how to talk to others. When we make mistakes, they show us how to correct them. They want us to become good people.



Do you know ?

How does a lion cub learn how to hunt?

A lion cub is not able to hunt as soon as it is born. It is taught how to hunt by its mother and other lionesses in the pride. These cubs are quite helpless for about the first two weeks. They do not even open their eyes. Therefore, their mother keeps them hidden away from others. When the cubs are about eight weeks of age, they are introduced to the other members of the pride. All the lionesses take care of the cubs. A cub is pampered by all of them until it is three months old. Then, it begins to learn how to hunt. It takes two to three years for a cub to become adept at hunting.

Our loved ones, too, try hard to see that we develop good habits. Our close relatives like our grandparents, uncles and aunts also have great affection for us. We learn many things from them, too. People who are close to us, teach us how to carry out our own tasks ourselves. They appreciate it when we can do all these things properly. They commend us saying that we have grown up.



Do you know ?

Have you heard the names Hali Raghunath Baraf or Sameep Anil Pandit? Hali is a girl from Shahapur taluka in Thane district. Hali rescued her older sister from a leopard. Sameep rescued buffaloes tied in a cowshed from a fire. For these brave acts, the two were felicitated with the National Bravery Award by the Prime Minister of India in 2013.



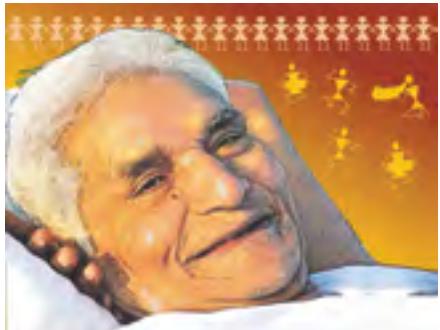
Can you tell ?

What did you learn from your parents and relatives? Make a list. How did you learn these things? Think about it.



Do you know ?

Baba Amte spent his entire life in social service. His lifelong goal was to serve people suffering from leprosy and also other handicapped people, and to help them stand on their own feet. In this mission, he was helped



Baba Amte

immensely by his wife, Sadhanatai. His work is being carried on by his sons and his daughters-in-law. Now, even the third generation of the Amte family is carrying on this mission. This example of social service carried on relentlessly by three generations of a family is really inspiring.

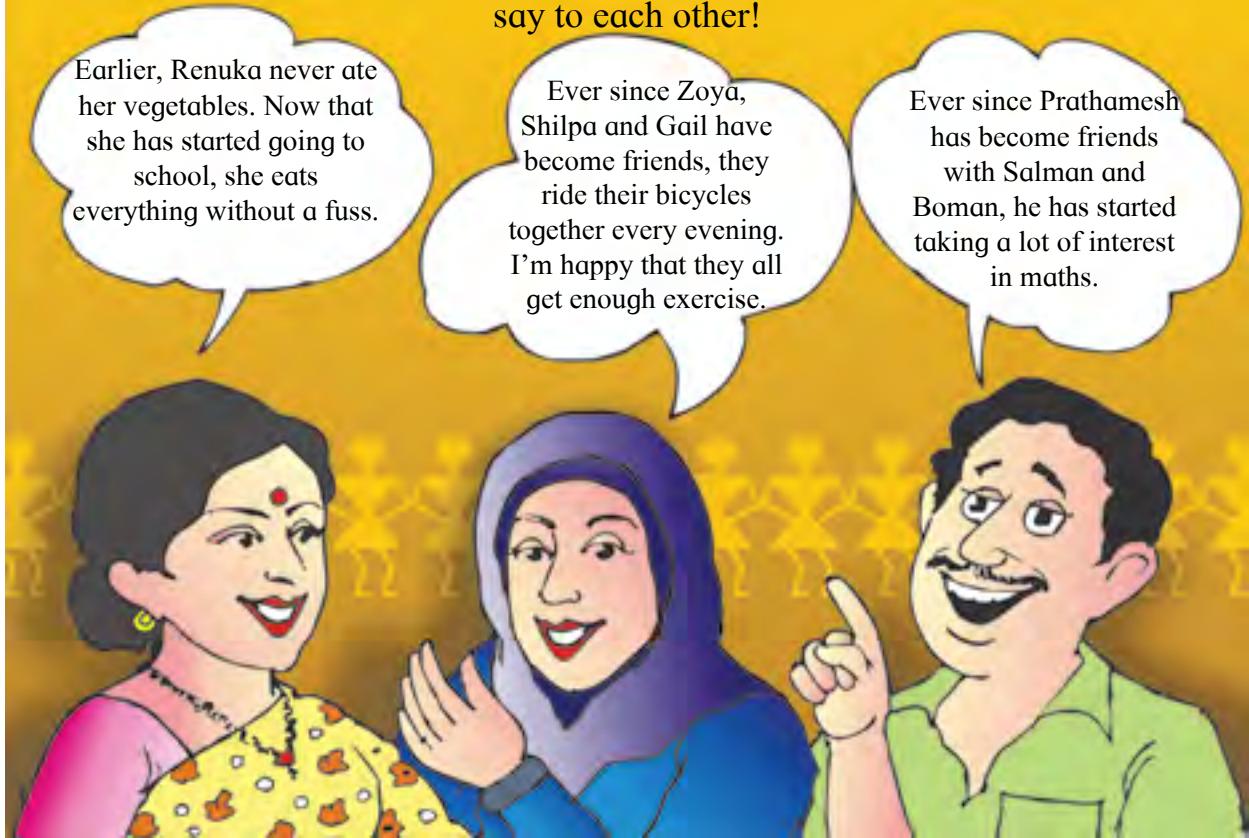
Everything that we learn is not ‘taught’ to us by somebody. We pick up many things through observation and through exposure. How do our friends speak? What clothes do they wear? What games do they play? How do they study? We pick up many of these things unconsciously. Many times, we also begin to behave like our friends.

These parents have come for a parent-teacher meeting at school. See what they say to each other!

Earlier, Renuka never ate her vegetables. Now that she has started going to school, she eats everything without a fuss.

Ever since Zoya, Shilpa and Gail have become friends, they ride their bicycles together every evening. I’m happy that they all get enough exercise.

Ever since Prathamesh has become friends with Salman and Boman, he has started taking a lot of interest in maths.





Can you tell ?

- What do you like about your friends? What do you not like?
- What would you like to learn from your friends?

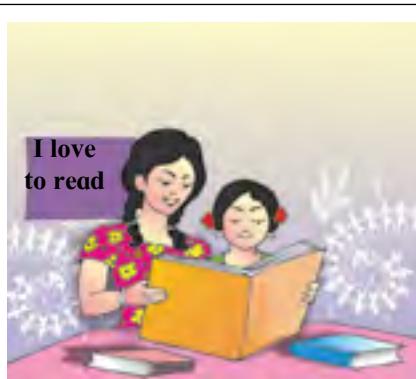
We are influenced by other people around us just as we are influenced by our friends. We meet our neighbours every day for some reason or other. We observe their ways of behaving, speech and eating habits from up close. This, too, has an influence on our upbringing. If people from another place happen to be our neighbours, we naturally get to know about their food and festivals which may be different from ours. This is how we become familiar with diversity.

Many of our neighbours know us from our childhood. They, too, feel affectionate towards us. We learn some good habits from our neighbours, too. Our neighbours also influence our upbringing.



Pratap:
This is my neighbour.
He likes to go for walks every morning.
I call him Ajoba.
Sometimes,
I go to the hill with him.

Heena:
This is my neighbour. She is very old. Even then, she sweeps her front yard every day without fail. She does her own work herself. Because of her, I realized that we all must be self-reliant.



Supriya:
Didi living next to us loves to read. She often gives me nice storybooks to read.



- Like Pratap, Heena and Supriya, have you learnt anything from your neighbours? Write about it in your notebook.



What we have learnt –

- The many things we learn as we grow up, together make our upbringing.
- Our parents and close relatives play an important part in our upbringing.
- We also learn many things from our friends and neighbours.
- We learn from the conscious efforts taken to make us good people.
- We also learn through observation and exposure.



Exercises

(A) Fill in the blanks.

1. Our loved ones try hard to see that we develop habits.
2. Our neighbours also influence our

(B) Answer in one sentence.

1. How do we develop certain likes and dislikes ?
2. How do we learn about diversity?

(C) Guess who ?

1. climbs the hill with the Ajoba next door.
2. Supriya loves to read because of her
3. The lady next door taught about self-reliance.

oooooooo Activities ooooo

- Find other pictures and stories about girls and boys who have won a Bravery Award.
- Make a list of the new things that your friends have learnt during the vacation.

* * *

18. Changes in the Family and Neighbourhood



Year 1950



Year 1970



Year 1990



Today



Try this.

Gather the following information about your family from your parents and grandparents.

- How many people were there in your family in each year shown above ?
- Did the number of people in your family change every time?
- How did the changes occur?

Each family may have a different number of people. This number does not remain the same. As time passes, it may increase or decrease. Marriage is one reason for such a loss or gain. You may have seen an aunt or a cousin's wife joining your family after getting married, or another aunt or cousin getting married and joining another family. The number of people in a family also changes due to births and deaths. A family grows when the new generation is born. When members of a family pass away due to reasons like old age, illness or accidents, the number of its members is reduced.

Sometimes, children in a family go to other places for their education. Also, some members take up jobs or occupations in other places. Moving from one place to another in order to live there is called 'migration'. Thus due to migration, marriages, births and deaths, the number of people in a family goes on changing.

It is not only in our family that we see these changes. They occur in the entire society.



Do you know ?



birds also migrate.

Many birds migrate in search of food and shelter. Have you seen a flock of swans flying in a 'V' formation in the sky? Have you heard about the beautiful flamingoes? Every year they migrate from one place to another at a fixed time. Some birds fly far away, while others do not go very far. We can see flamingoes at several places in Maharashtra between October and March. Birds fly in a flock. Even though they stay together in a flock, they do not have families or neighbours like human beings!



Can you tell ?

Look at the pictures of stamps given alongside.

- Which changes are depicted on these stamps?

When a member of the family goes far way for some reason, he stays in touch with the family through letters, telephone calls and now, the internet. These modern means of communication have brought the world closer together.



From ancient times to the present, the nature of a family has undergone many changes. When man took up agriculture for his livelihood he settled down in one place. A lot of people are required to do the work needed in agriculture. Therefore, many relations stayed together and formed a big family.

As the family grew, it became impossible to feed everyone through farming alone. Trade and other new occupations developed. Cities began to grow. People began to migrate to places where they could find work. Big families were scattered into many small families.

In recent years, the number of people going to other States and countries for work and education has increased greatly. Many families have one of their members living abroad or in another city in our own country. Therefore, the family system is also changing.

**Just as there are changes in a family,
there are changes in their neighbourhood, too.**



Try this.

Collect the following information about any three families living near you.

- Which is their home town/native place ?
- When and why did the family move from their home town to this place ?
- What changes did they see here ?

People migrate for jobs, occupations or education. As we migrate, we see the diversity in our country. We are introduced to different festivals, food and customs and traditions. At the same time, we also realize that as human beings, we are all alike.



Do you know ?

Some people need to migrate frequently for work. Sugarcane harvesters or construction workers and others like them keep moving to places where they can find work. Wherever and whenever they migrate, their children are given admission in the local schools.



Can you tell ?



- What do you see in these pictures ?
- What kinds of things do you exchange with your neighbours ?

Apart from our family, we also have daily contact with our neighbours. We live in the same locality. We need each other's help to solve problems of garbage, security, water and electricity. In times of need, it is our neighbours who help us till our relatives can reach us.

Due to the help we give each other, our relations with our neighbours become friendly. Friendly and harmonious relations make for joyful community life.



What we have learnt –

- The number of people in a family does not remain the same.
- The number of people in a family may change due to marriage, birth, death and migration.
- As we migrate, we see the diversity in our country. We get to see the variety in festivals, food items, customs and traditions.
- Just as our family changes, so do the other families in our neighbourhood.
- Because of the help we offer each other, our relations with our neighbours become friendly. Friendly and harmonious relations make for joyful community life.



Exercises

(A) Fill in the blanks

1. Moving from one place to another in order to live there is called
2. As we migrate, we can see the in our country.

(B) Answer in one sentence.

1. Why did it become impossible to feed everyone in the family by farming alone?
2. Why does man migrate?

(C) Give reasons.

1. Big families were scattered.
2. Relations with neighbours become friendly.



Activities



- Obtain some information about five families in the neighbourhood.
- Write a composition of ten sentences about ‘My Neighbourhood’.
- Make a collection of postal stamps.

* * *

19. My Delightful School



Can you tell ?

The above pictures show how children are learning happily.

- Which of these pictures did you like the most?
- Why did you like that picture the most?

We go to school to learn. We make many friends in school. We study with each other's help. We play together and share our tiffins. We take part in school functions and go on trips together. We come together to clean and decorate the classroom. There are so many things which we do together. It is great fun to do so. What can we do to make sure that every child in the class finds it is fun to learn?



Do you know ?

“I got a letter!”

This is the story of a school in Kolavali in Ratnagiri district.

The teacher took his students to the post office to show them how the postal system works. He explained its working to the students, but to give them a first-hand experience of how it works, he used a novel idea. He wrote a letter to every child, telling them about their progress in studies, in sports, their interests and activities. The children were thrilled to see the letters. They showed their letter to everyone, saying ‘I got a letter!’ Some even sent a reply to the letter. They sent greeting cards to the teacher at the time of Diwali. A few days later, the teacher taught the students how to send e-mails. One letter sent by the teacher awakened a new enthusiasm in the students. The school became an enjoyable place for them.



Try this.



- Have a three-legged race with the other students in your class.
- Why could some pairs reach the finish line without stumbling or falling?
- Why did some pairs fall while running?

If we help each other, we can succeed at anything. Work becomes enjoyable. In order to help one another, we must first understand our mutual needs and difficulties. Do we try to understand the needs of our classmates? There may be a new student in class or a student who lives far away from their parents. There may be someone who speaks a different language at home. Some may have an older brother or sister to help them and some may not. Because of this diversity, everyone has different needs. We must try to understand these needs.

In school, we meet different kinds of students. There are a few people who cannot see and a few who cannot hear. A few cannot walk easily. The needs of students such as these are different and special. We can understand them only by getting to know them well.



Can you tell ?

- Are there any children with such special needs in your neighbourhood?
- Do they attend school?
- When you were in the first standard, how many girls were there in your class?
- How many girls are there in your class, now?

Every child should get the joy of learning in school. All children with special needs have the right to education. Many parents of children with special needs send their children to school with great determination. The government also has many schemes for them. If you know any children with special needs, do tell the teachers and parents about this. They, too, will encourage the children to go to school.



The government has also provided many facilities for the education of girls. Most parents try to make sure that the girls are educated. However, sometimes girls are expected to carry out household chores such as taking care of their siblings, drawing water from the well, etc. all by themselves. As a result, they lag behind in school or even leave it. A girl's education should not stop for this, or for any other reason. Girls, too, have a right to the joy of learning.



Try this.

- Find out which language your classmates speak at home with their parents.

Even if we learn in a common language at school, we all speak in our mother tongue at home. The mother tongue of some students may be Gujarati. Some may speak Hindi at home while others may speak Telugu or Kannada. Because of school, we get friends who speak different languages.

We all wear a uniform in school. However, on days when the uniform is not compulsory, the classroom becomes colourful. It is fun to attend a class where there is a lot of diversity. Our customs, languages and eating habits may be different, but as human beings, we are all alike. When we respect this diversity and help each other, we enjoy being in school. School becomes delightful.



What's the solution ?



Pintu and Pinky have both got admission into kindergarten. Every day, when the school bus comes to take them to school, they cry and cry. How will you explain to them why they must go to school?



What we have learnt –

- We get many different friends in school.
- In school, we come to know about the diversity in our country.
- Every child must get the joy of learning in school.
- All children including those with special needs have the right to education.
- When we offer and seek help, learning becomes more enjoyable.



Exercises

(A) Answer in two or three sentences.

1. What do we do in school every day besides studying?
2. How does the joy in learning increase?

(B) Fill in the blanks.

1. If we each other, we can succeed at anything.
2. Every must get the joy of learning in school.

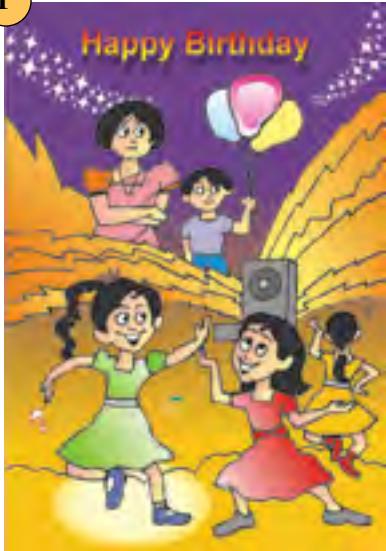
Activities

- Wear the costumes from different parts of the country when you take part in school functions.
- Write the sentence ‘Give me water, please’, in different languages with the help of friends who speak those languages at home.
- There is a new student in your class who has come from another town. Talk to him/her about the school he/she attended previously.

* * *

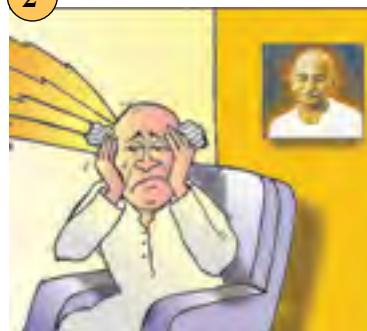
20. I'll be responsible and sensitive.

1



It was Deepika's birthday. She had invited all her friends to her house. When her friends came, she put on music at a loud volume and all of them began to dance and have fun.

2



Her neighbour was an elderly person. He suffered from high blood pressure. He could not tolerate very loud music.

3



He asked Deepika to turn down the volume. Deepika realized that he was suffering because of the loud music. She turned down the volume at once.



... and he realised his mistake !

Rahul's grandmother used to wait for him to return from school every day. When he returned, she would give him something to eat. She asked him about what had happened in school that day. As for Rahul, he couldn't wait to finish eating and watch cartoons on TV. Grandmother felt very bad that Rahul didn't talk to her properly. When Rahul's parents noticed this, they also felt bad about it. One day, Rahul's father explained to him, how his behaviour hurt his grandmother. Rahul realized his mistake. From then onwards, he began to talk to his grandmother lovingly.



Can you tell ?

Discuss both the above incidents in class.

- Why was Rahul's and Deepika's behaviour wrong?
- How did they correct their mistakes?
- Are there old people living in your home or neighbourhood?
- What help can you offer to them?

We all either live with or are related to old people. They love us and pamper us. However, they cannot run about and play like us. They often need small tasks done for them like fetching medicine or other products from the market, removing things from lofts or threading needles. If we carry out these tasks for them, it is of great help to them. If the TV or music is played loudly, it can be very disturbing for them. At such times, we must lower the volume.

Grandparents are often at home all day. Their only pastime is talking to their children and grandchildren. They are curious about what their grandchildren do at school all day. They have great affection for us. They feel happy when we speak to them lovingly.



Can you tell ?

If someone at home or in the neighbourhood is suffering from an illness, what should you do ?

Put a ✓ in front of the statements you agree with and a ✗ in front of those you disagree with.

We should visit the patient frequently at any odd hour.	
The patient should be given medicines at the proper times.	
The patient should be offered fried food.	
The patient should not be given unwanted advice.	
The patient must be given meals at the right time.	
One can watch TV at a loud volume in a patient's room.	
The patient must be bathed only as per doctor's orders.	
When the patient is better, medicine should be stopped immediately without consulting the doctor.	

We all wish for a patient to get well soon. For this, we should follow the doctor's advice and take care accordingly. After giving first aid for injuries, the patient must be taken straight to a hospital or a Primary Health Centre. Do not depend on talismans, amulets and incantations. Consult a doctor on time.

Responsibility towards people with special needs

Some people have physical handicaps because of illnesses or accidents or, they may be born with them. They suffer many inconveniences and much discomfort at public places. That is why they are in need of special services and assistance.



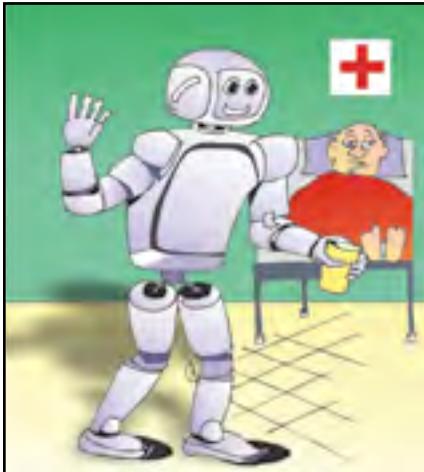
Do you know ?

We have been successful in eradicating polio in our country. The World Health Organisation has praised India for this achievement. Since the campaign against polio was carried out with dedication over many years, the disease was eradicated.

- What is the phrase 'Do boond zindagike' related to?



Do you know ?



A robot taking care of a patient



Try this.

Divide all the students in class into two groups. Blindfold the students in group 'A', but not those in group 'B'. Pair off each student from group 'A' with a student from group 'B'. Each pair will go from the classroom to the main gate of the school. On reaching the gate, remove the blindfold, and now, blindfold the student from group 'B'. Return to the classroom in the same pairs.

- What difficulties did you face while walking blindfolded?
- Could you walk at your normal speed while blindfolded?
- When not blindfolded, did you wait for your blindfolded classmate or leave them behind?

Nowadays in many hospitals abroad, robots are used for the service and aid of patients. Will it be fun to have robots work for you? Or will it be boring with no other human beings present?

- If your partner leaves you behind, how would you feel?



A Ramp

Blind people can read and write by using their sense of touch. This system of writing is called Braille. Braille characters make use of raised dots created on paper. Each character has a fixed number and arrangement of dots. A blind person can read the paper by feeling these raised dots. However, all of the books written in ordinary script are not available in Braille. Blind persons can listen to the stories if they are read out.

You may have seen a blind person with a white cane walking along the street. Blind people can walk about in public places freely with the help of the white cane. In some buildings, the floor numbers on lifts are written in Braille. That helps a blind person to go to any floor they wish without help. A blind person can also vote secretly like other citizens because of Braille signs on voting machines.

In schools, universities and in some other buildings, you may have seen a concrete slope next to the stairs. This slope is called a ramp. The ramp makes it possible for people in wheelchairs to enter the building. Some buildings also have special toilets for people in wheelchairs.

These facilities exist so that people with special needs can live their daily lives easily. However, these facilities are not available everywhere. We must treat people with special needs with care, whether these facilities exist in public places or not.

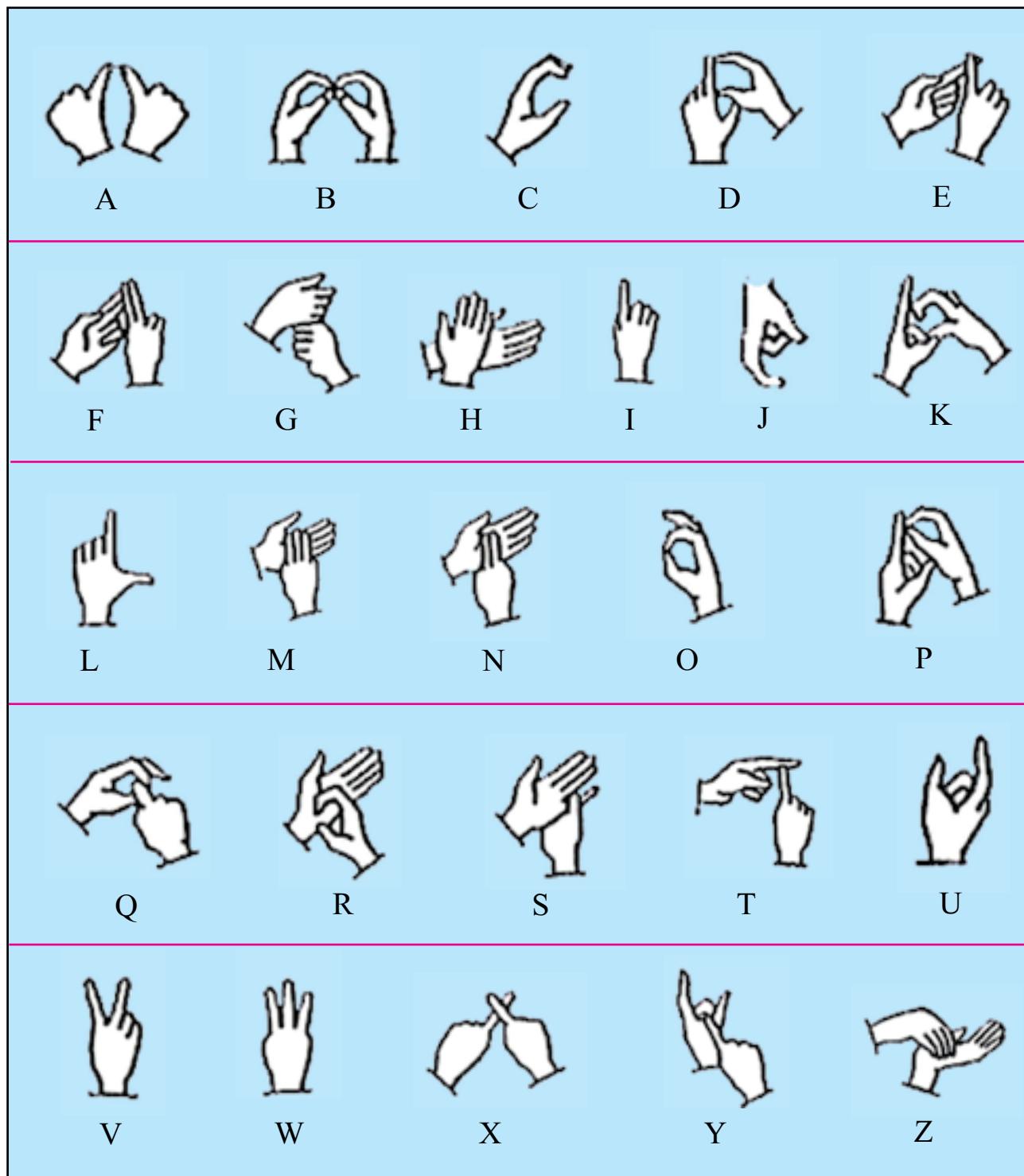


Try this.

- Write your name using the Braille characters given below.
- Tell us your friend's name using the signs in the sign language.

THE BRAILLE ALPHABET												
a	b	c	d	e	f	g	h	i	j	k	l	m
n	o	p	q	r	s	t	u	v	w	x	y	z
NUMBERS												
#	0	1	2	3	4	5	6	7	8	9	Literary Code	

Braille Script



A Sign Language used in India

People who cannot hear use sign language. They are also taught how to 'lip read' to follow what other people are saying. They can follow other people's speech, if they speak slowly and clearly. Special signed news programmes are broadcast on television for people who cannot hear.



Do you know ?

- Sudha Chandran is an expert Bharatnatyam dancer. She lost a leg in an accident. However, even with an artificial leg, she continues to dance and act with great determination.
- Ravindra Jain is blind. He has composed music for many movies and television programmes. He has also received many awards for his music.
- Sharath Gayakwad is disabled in one hand. However, he has made the country famous worldwide in swimming competitions.



What we have learnt –

- Being sensitive is understanding the difficulties of the people in our family and locality, and helping them when needed.
- We must treat old people, patients and those with special needs with care and respect.
- If we are sensitive, our capacity to help others increases.



Exercises

(A) Answer in one sentence.

1. What are the pastimes of old people?
2. Whose advice should we take while caring for a patient?

(B) True or false ?

1. The TV or music should be played at a loud volume.
2. We must depend on talismans, amulets and incantations to cure illnesses.

(C) Strike off the wrong word.

1. Deaf people use Braille/sign language.
2. Blind people can cross the road using their white cane/wheelchair.

Activities

- Visit a school for the blind. Find out more about the Braille script.
- Learn about schemes for people with special needs with the help of your teacher.
- Find some information about an institute that works for people with special needs.

21. Management of Community Life



Can you tell ?

Shraddha, Ayesha and Emily's parents decided to take a trip in the summer vacation. They booked a special mini-bus for the trip. In the morning, everyone got ready. They waited for the bus for a long time, but it did not arrive. When they made enquiries on the phone, they realized that the driver of the bus did not know where exactly they were all waiting. Finally, the bus arrived, and they set off on their trip.

- What caused the confusion in the trip?
- What would you suggest to avoid this kind of confusion?

To do any kind of work smoothly, some management is required. What is management? The first step in management is to prepare an outline of how and when the work is to be done. If we are going to be working in a group, the outline must be clearer and more detailed. One has to decide what task each person will carry out. Each person must know clearly, how to carry it out. Proper co-ordination has to be maintained among the people involved. We also need to make sure that each person is doing his/her work properly. An estimate of the amount of money needed for the work needs to be made in advance. If all these things are done properly, the work gets completed smoothly. Even if one person makes a mistake or slacks off on the job, the work does not get completed properly.

Some management is required even when guests are invited home for lunch. What dishes will we make for lunch? What ingredients are needed to make them? Do we have all those ingredients at home or will they have to be bought from the market? How will we receive the guests? Parents decide many such details in advance and act on them. If everything is decided properly and carried out as planned, the party will also be a success. If something is left out, or if a task is not done, it can spoil the party.

If management is necessary even for small functions such as these, how important it must be in running a school, a town, a district, a State and the country!



Do you know ?

If you manage your studies properly, you learn better. How can you do this?

- Fix a time for studying every day and follow it strictly.
- Make a list of things to be studied every week. (e.g. reading Environmental Studies, Part One, Lesson 3 or solving sums with fractions.)
- Study the items in your plan.
- Take enough time to study each subject.
- Do not avoid studying difficult subjects. In fact, finish studying them first.
- If you have free time, put it to good use by studying.
- Fix a particular time for playing, watching TV and resting. However, remember to spend only that much time for those activities.



Can you tell ?

- What tasks are necessary for the management of your classroom?
- How will you choose your representatives to carry out those tasks?

Has the classroom been cleaned properly? Is there chalk and a duster in the classroom? Is the board clean? Checking these things regularly, writing good thoughts on the board and maintaining discipline in the classroom is the responsibility of class representatives. Similarly, to make sure that the school is run smoothly, a ‘School Management Committee’ is formed.

The School Management Committee consists of parents, teachers, local experts and student representatives. The Committee tries to understand the

difficulties of parents, students and teachers. It gives guidance so as to solve these difficulties. It prepares and recommends a school development plan. It keeps an eye on the regular attendance of students and teachers in the school. It helps in carrying out schemes such as the mid-day meal. In this way, teachers and parents work together through the School Management Committee to ensure the all round development of the students.

- Obtain information about the School Management Committee in your school.



Can you tell ?



- Why do accidents occur on the streets ?
- Why must we follow traffic rules ?

Why does school always begin at a fixed time? Why is a timetable of all the subjects made? Why do vehicles only run on the left hand side of the road? You must have wondered about these things before. If there is no fixed time for school to start, what will happen? Students would come to school and go home whenever they wished. We would not know when to study. If there were no timetable, students would bring the textbooks and notebooks of all different subjects to school.

Rules guide us about how to behave in society. Because of rules, we can be sure that everyone will behave in a particular manner. For example, because we know that everyone will drive their car on the left hand side, we can also drive our car in the same way, safely. If we did not know whether the vehicle coming towards us would come from the left or right, we would also get confused.

Rules are made so that community life can go on in a smooth and orderly manner. Earlier, customs and traditions formed the basis of rules. Now it is the government that makes the rules. After independence, a ‘Constitution’ was framed for our country. The Constitution provides the fundamental framework for governing the country. It lays down the principles on which a society is organised and developed. The elected representatives run the country according to the Constitution.

The local administration is run by the local government bodies.



Can you tell ?

- Find out which local government body works in your area.
- Have you seen any name plates related to them in your locality? (For example, the name of the ward, the house of your corporator/mayor/sarpanch, gram panchayat headquarters, etc.)



Women drawing water at a well



A park



Street lights



A van collecting garbage in a city

We are dependent on many people for things needed in our daily life. We need water for drinking, washing, for agriculture and also for animals. It is

necessary to clear the garbage in our neighbourhood every day. We need roads, street lights, schools, hospitals, public parks and gardens. Fulfilling these needs is the responsibility of the local government body. People elect their representatives to the local government body to attend to these needs.



What we have learnt –

- Management is necessary for any work to be done properly.
- A detailed plan is necessary for group work.
- If work is carried out according to the plan, it is done smoothly and on time.
- The School Management Committee works to ensure the all round development of children.
- The local government body provides facilities for the daily needs of people.



Exercises

(A) Answer in one sentence.

1. What is the first step in management?
2. Why are rules made?

(B) Fill in the blanks.

1. is necessary to do any work.
2. must be maintained among the people involved.
3. People elect their to the local government body.

(C) Guests have been invited home for lunch. What management is required for that? Make a plan.

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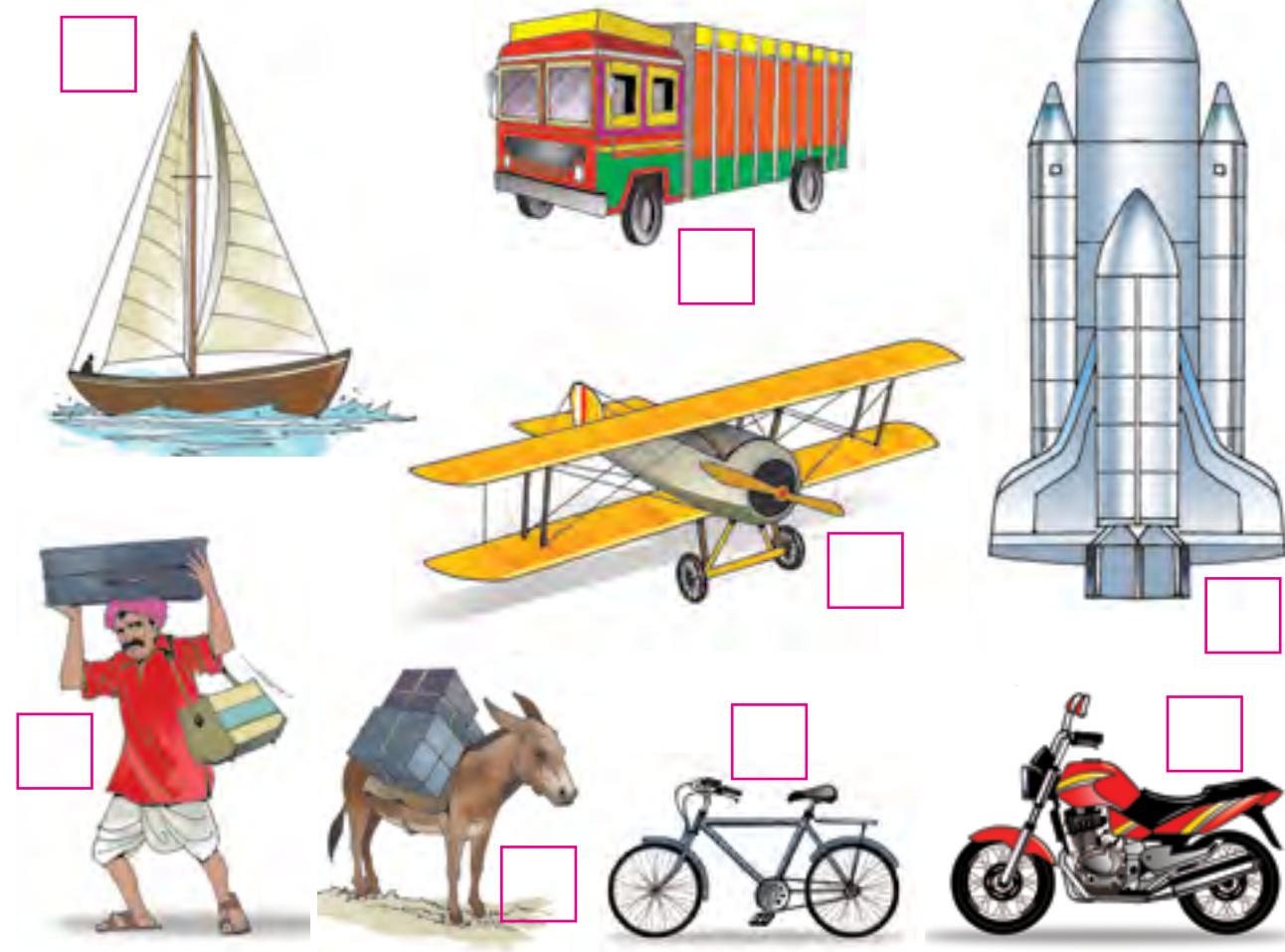
- Prepare a timetable for your daily studies and play. Make a note of whether you follow the timetable, and how it helps.
- Organise your daily chores. Discuss how planning is useful.
- Invite the representatives from your local government body to your class and interview them.

* * *

22. Transport and Communication



Can you tell ?



- Study the pictures shown above. Among them, find the means of transport you have used or seen and put a ✓ in the box next to its picture.
- Find the means of transport used to travel high above or away from Earth. Draw a circle in the box next to it.
- Have you seen the remaining means of transport anywhere before ? In which period of time do you think they were used ? Discuss it with your friends and teachers.

From the activity above, you can see that we used different means and modes of transport at different times in history. The means of transport we use nowadays are faster and safer than the older ones.



Can you tell ?

Study the pictures.



1. For what purposes do we use each of the above means of transport?
2. Which of these three was the first to be used by man?
3. Which part is common to all the three?



Man used to see logs of wood and round boulders rolling down mountain slopes. It is thought that these observations gave him the idea of the wheel.

In olden days, planks of wood were used to transport objects. Later, by attaching wheels to these planks, the speed of transport increased. Time and effort were saved. The invention of the wheel is an important step in the progress of mankind.



Do you know ?



Even if ultra-modern means of transport have been invented in modern times, in some parts of the world, men and animals are still used for the purpose of transport. For example, yaks are used in inaccessible parts, camels in the desert and palanquins or *dolis* in mountainous areas.

Water and wind are substances that flow. Pipes are used to transport these substances. Water has been transported through pipes or canals since ancient times. It is safer to transport combustible substances such as mineral oil and natural gas through pipes. Crude oil is transported from the oil well to the refinery through pipelines. Similarly, after refining, it is transported to the marketplace, in some parts.



Try this.

Manjeet and Salim have to bring water from a mountain. However, since the weight of the water is too much for them, they cannot carry it down themselves. Which of the following options should they use?

- (1) A horse (2) A pipeline (3) A palanquin



Can you tell ?



Various means and methods of communication are shown above.

- (1) Which of the means of communication that we use at home are shown in the pictures? Put a Δ next to them.
- (2) Which of the other means of communication have you seen before? Put a \circ next to them.
- (3) Find out about the remaining means of communication from your teacher.

Obtaining or sending various types of information is called **communication**.

A few centuries ago, messages were sent by tying a letter to the foot of a pigeon. Messages were also sent through runners. In later times, telegrams and the postal service came into use. All these methods were very slow as compared to modern methods.

Nowadays, we have new techniques for very quick communication. Communication is now used in every field. With the help of media such as radio, television, internet, mobile phones, etc. we can easily communicate with several people at the same time. Man-made satellites are used for this purpose. Newspapers, periodicals, books, radio, television, internet etc. are all means of mass communication.



Do you know ?

In the beginning, man used gestures and facial expressions and different kinds of sounds to communicate. Later, different sounds came to mean different things. This led to the development of language. After spoken language, man invented writing. He began to carve his thoughts onto the walls of caves and pieces of wood. Communication began in this way in very ancient times.



Use your brain power !

Read the passage given below and answer the following questions.

- Which are the means of transport mentioned in the passage?
- Which are the means of communication mentioned in the passage?
- Arrange these means in order from the fastest to the slowest. Which of them have you used?
- Which device has not been represented by a picture? What is it used for?

“As today was a holiday, Rohan was at home. He was watching a cricket match on . Just then the door rang. When he opened the door, he saw the postman standing there. The postman gave him a and a . Then he sat on his and rode away. Rohan’s aunt had sent the . She was coming to town for the Christmas vacation. According to the sent eight days ago, Aunt was to arrive from Nagpur by today. Just then, the rang. When Mother picked up the , it was Aunt on the line. Aunt had reached the station. When Mother went to Sania’s room to give her this

news, she was listening to music on her  . Mother then called Dada. Dada was chatting with his friends on the  . At last, Mother told Rohan, “Rohan, your father has gone to the farm on the  . Give him the message on his mobile.” “Mother, I cannot reach Father’s mobile.” Just then, Dada came. He said, “I will take the  to the station to pick up Aunt.” Saying this, he left.



Try this.

- Study the birds and animals in nature.
- See how they communicate with each other.
- Animals make certain specific sounds when they are in danger, when they recognize someone, when they see food or when they are injured. Listen to these sounds carefully and make a note of them in your notebook.
- Study the responses of the birds and animals when such sounds are made near them.

Cats, dogs, sparrows and crows make different sounds in different circumstances. You will find that other animals also make such sounds. This means that animals also communicate with each other. They also send and receive messages.



Do you know ?

Fish live in water. How do they communicate?



Can you tell ?

1. What act does the picture show?
2. What is the man in the picture doing?
3. Have you seen such a performance in your neighbourhood?
4. Make a list of similar acts that you know.
5. Why do we watch such programmes?





Shahir



Magic show



Street play



Puppet show



Bioscope



Clown



Try this.

Activity 1 Talk to the magicians, shahirs and other artists who perform in your neighbourhood.

Activity 2 While watching your favourite TV show, try to talk to your favourite artist.

- In the two activities above, who were you able to talk to?
- Which were the artists that you could not talk to?
- What is the reason why they could not speak to you?

We use the radio, TV, computer and projector. We enjoy the programmes on these devices. These programmes are performed somewhere far away. They are filmed and recorded there and then transmitted to us. We can see and hear the programmes using the devices listed above. The radio, TV, etc. are means of entertainment that transmit programmes.



Use your brain power !

- Which of the following is/are not a means of transmission ?

 (1) Radio (2) Television
 (3) Puppet theatre (4) Cinema



What's the solution ?

- Meena has to send a very important message to a distant place right away. Which means of communication do you think she should use?



What we have learnt –

- Information about modes of transport in different periods of time.
- The importance of the invention of the wheel.
- Means of communication in different periods of time.
- Live entertainment and means of transmission.



Do you know ?

Recently, the use of mobile phones has increased. However, our beloved sparrows are disturbed by the waves coming from mobile phones. That is why sparrows are disappearing from our environment.



Always remember –

Means of transport and communication are to be used as needed. Excess use of these means is harmful for us, for all living beings as well as for the environment.



Exercises

(A) Match the following.

- | | | |
|-----------------------------------|-------|----------------------------|
| 1. To travel far from Earth | () | a. A boat |
| 2. To carry heavy loads (on land) | () | b. A rocket |
| 3. To travel through water | () | c. A push-cart with wheels |

(B) Answer the following.

1. Which means of communication can be used to promote the pulse polio campaign in rural areas?
2. What means of communication do you use to watch a cartoon film?
3. What is a textbook used for?

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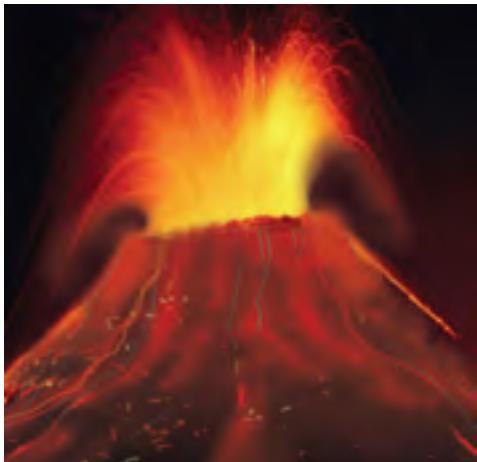
Activity

- Make posters to give the message of avoiding unnecessary use of means of transport and communication. Put up a small exhibition of the posters in your school.

23. Natural Disasters



Can you tell ?



Which frightening natural events can be seen in the pictures below?



Can you tell ?

- Sometimes during the rainy season, suddenly there is a downpour which lasts for two or three days. The river flows in full spate. It may even overflow its banks and enter nearby settlements. What is the name given to such a rise in the level of river water?
- Name two places in Maharashtra where earthquakes have occurred.
- An earthquake under the sea gives rise to very high waves. What are these gigantic waves called?



Natural Disasters

Many a time, we hear of serious mishaps. An earthquake happens here, a flood occurs somewhere else. A storm occurs in one place, another place is struck by lightning. There can be a landslide or a hailstorm.

In these incidents, several people are injured. Some even lose their lives. Houses collapse. Animals die. Standing crops get destroyed. There is great damage to property. Day to day life is disturbed. It takes several days for life to get back to normal.

A new term !

disaster : a very serious mishap. One in which people or animals can get injured or die. Crops and other property is destroyed. Houses collapse.

These and some other mishaps have natural causes. They are called natural disasters. We do not have enough knowledge about when and where they might happen. And it is impossible for us to prevent them. We must not get frightened by such disasters. Instead, it is more useful to find out how to face such a disaster if it happens.

Untimely rains

In our country, we get rains only in a certain period of the year. In Maharashtra, it rains in the months of June, July, August and September. This period is called the monsoon or the rainy season.

In Maharashtra, on some day before the start of the rainy season, the sky suddenly gets overcast. There is lightning and thunder. It rains heavily for a short while. These are called pre-monsoon showers.

However, when it rains at other times besides the monsoon or pre-monsoon period, such rain is said to be untimely rain.

Untimely rain comes without warning, when we least expect it. People who have left their houses without umbrellas and raincoats have to run helter-skelter for shelter. Or, they have to get soaked in the rain.

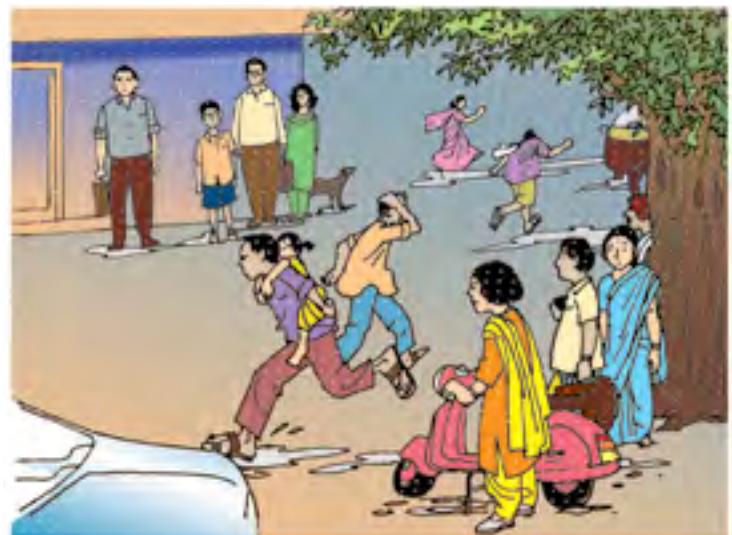
But, untimely rains can also cause serious damage. People grow winter crops. Occasional, light showers are good for this crop. But if it rains too much, fields get water-logged. And the crop may rot causing much loss.

Often, a hailstorm accompanies with untimely rains. Severe hail causes injuries to people and animals. It shatters roof tiles. It can damage crops in fields and fruits in orchards.

If mango trees are in blossom at that time, the blossoms may rot or fall off. This leads to a fall in mango production.



Pre-monsoon rains



People caught in untimely rain

Floods

Sometimes during the monsoons, it rains heavily and continuously for three or four days. This causes the level of water in a river to rise. That is, the river gets flooded. If it does not stop raining, settlements on its banks can also get flooded.

Mud houses on the riversides collapse during a flood. People and animals may die due to drowning. Flooding of settlements causes problems in everyday life.

At such times, we should go to a safe place at a height and come back only when the flood waters recede.

The current of flood waters is very strong. It is dangerous to swim in flood waters.

Earthquakes

Sometimes, the rocks in the bowels of the earth move. As a result, waves are produced in the layers of rock.

If a stone is thrown into a pool of still water, we see circular ripples around it. They move to the edges of the pool. After some time, the waves settle and the water becomes still as before.

Exactly the same kind of waves are produced inside the earth. For a few seconds, the ground shakes. That is the earthquake. Then everything quietens down again. Where the earthquake occurs, buildings are



shaken. Things inside the house all fall from their places. Houses that are not strong enough, simply collapse into heaps. People get trapped under the heaps and get injured or even lose their life. The most damage occurs near the centre of the earthquake. An earthquake also causes injuries or death of animals we keep.

When an earthquake occurs, one should not panic. It lasts only a few seconds. During that time, heavy things around us can fall on us. This can cause harm. So, as soon as we feel the earthquake, we should go under a strong bed or table, or stand under a doorframe. This can prevent injuries from falling objects.



Do you know ?

If an earthquake occurs while you are at school, sit under your desk or bench. Once the quake stops, come out in single file and gather together in the open school ground. Crowding, chaos and stampede can cause more damage than the quake itself.



Tsunami

If the origin of the earthquake is in the sea, it produces gigantic sea waves. Each wave is the height of a three- or four-storey building. These waves come with tremendous force towards the coast and crash into the land. These waves are called tsunamis.

If there are people living on the coast where a tsunami occurs, it causes much devastation. People or animals who come in the way of these waves are completely helpless. They drown and die. A tsunami comes with so much force that vehicles on the coast along with the people in them get thrown away to quite a distance. Vehicles are crushed. People inside get injured or die. The tsunami can also shatter houses and shops on the coast.



Do you know ?

In every city and district headquarters, there is a fixed drill to be followed in case of a natural disaster. There are specially trained volunteers for that purpose. If necessary, soldiers of the army are also called to help.



What we have learnt –

- Rain that falls at times other than in the rainy season is called untimely rain. Fields become waterlogged and crops rot. Hailstorms may also occur with untimely rains. Hailstorms can injure people as well as animals. It damages crops and orchards.
- If it rains heavily during the rains, the level of water in the river rises. This is called a flood. Sometimes flood waters enter areas where people are living. Houses collapse. People and animals drown and die. Everyday life becomes difficult. One should go to a place at a height till floods recede.
- Some movements in the bowels of the earth give rise to waves. This is called an earthquake. It causes houses to shake, things to fall down. Houses collapse into heaps. People and animals get trapped in them and die. During an earthquake one should sit under a table or bed or stand under a doorframe.
- When an earthquake has its starting point in the sea it gives rise to gigantic waves. They are called tsunamis. If they reach the human settlements on the shores they cause great devastation.



Always remember –

We must obtain information about natural disasters to learn how we can prevent the loss that they can cause.



Exercises

(A) What's the solution?

Your village is uphill. There is a flood in a neighbouring village.

(B) Use your brain power!

1. A table for natural disasters and man-made disasters is given below. Complete the table with the help of the list that follows.

No.	Natural disaster	No.	Man-made disaster
1.		1.	
2.		2.	
3.		3.	
4.		4.	

- (1) Cyclone
(2) Collapse of an old ramshackle house
(3) Death due to lightning
(4) Collision of two railway trains
(5) Children on a playground getting injured when a termite ridden tree falls
(6) Normal life getting disturbed due to heavy snowfall
(7) A fire caused by the explosion of a cooking gas cylinder
(8) An air crash due to a mechanical fault.
2. What is the difference between a hailstorm and snowfall?
3. If there are animals with fur coats living in places where it snows, would the coat be thick or thin? What could be the reason for that?

(C) Find out.

There are fire brigades in cities. Obtain information about them. Find out the different kinds of accidents where firemen come to the rescue. Share the information with your class.

(D) Answer the following questions.

1. What kind of rain in winter is good for the crops?
2. What are the ill effects of a hailstorm?
3. Should one go for a swim in flood waters?
4. How does a tsunami affect vehicles on the coast?

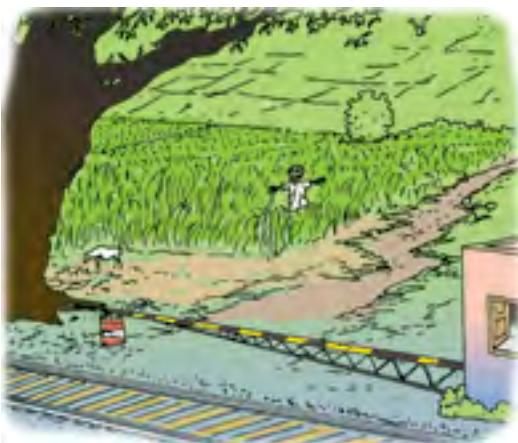
(E) Fill in the blanks.

1. just like the ones we see in water, are produced in the bowels of the earth.
2. If it does not stop raining, the rainwater enters the
3. People and animals are against the force of a tsunami.
4. People get trapped under the and die.

ooo ————— **Activity** ————— ooo

- Practice how, after an earthquake, you would leave your class in single file and gather in an open space near your school.

24. Are we endangering our environment?



Twenty years ago



Today

- Twenty years ago, there were open fields around the city. Today there are new colonies there. There was a big spreading tree near the railway gate. Different kinds of birds and insects lived happily in the tree.
- Where have those birds and insects gone today?



City



Village



Forest

- What similarities do you find between a city, a village and a forest?
- What differences do you find between them?

The progress made by human beings

Man is more intelligent than all other animals. He makes use of his intelligence to make his life more comfortable. All living things make use of what they find in their environment. But only man can carefully study the things in the environment. He produces new things from materials in the environment. Let us see how!

This is a story of about 150 years ago. Researchers found out how to use mineral oil. Man now had a new and useful fuel to use. He then invented some vehicles that would run on this new fuel. These include the motor-car, bus, truck and scooter. They also developed railway engines that would run on coal.

Previously, if one had to travel to another town, one had to walk or ride horseback or on a bullock cart. Various animals were used to carry burdens or to draw the carts. Now, we go by bus or railway trains. That helps to save both time and labour.



We take up various schemes to make our life easier and prosperous. We build dams to satisfy our need for water. We build roads and railways for transportation. Factories are set up to manufacture all the things we need. We build houses so that everyone can have a shelter of their own.

The things we need to do all this have to be obtained from the environment. We get them from places like forests, farms and mines. Water is used in the factories and then the waste water is let into rivers. All this has an effect on the environment. If the environment is harmed, it has harmful effects on all living things. And man is no exception.

Growth of the population



Find out.

- A census was done in 1951. What was the population of our country then?
 - A census was done in 2011. What was the population of our country then?
-

In the last sixty years the population of our country has tripled. It is still growing. So, the demand for all those things that we need to take from the environment has increased many times over.

People could not get employment in villages. So they began to leave and to go to the cities in search of work. Cities became crowded. The population in the cities grew beyond limits. Cities began to experience a shortage of water. There were not enough houses for everybody. So people could not find a place to stay. There used to be open spaces and fields around the cities. New colonies came up there. And to build these new houses and colonies, the trees there had to be cut down.

In cities, one has to travel long distances to get to work. So people in cities began to buy vehicles that run on fuels. In all big cities, these vehicles spew smoke as they are driven around. The smoke mixes with the city air. As a result, people began to have breathing problems. Instances of asthma and other lung disorders began to increase.

Trees have been banished from cities. So, birds do not find places to build their nests. They also find the smoke in the city air troublesome. They are no longer sure of getting water when they are thirsty. So there are fewer and fewer birds in cities now. The number of butterflies and other insects is also falling.

Because of the increasing population, the drainage system in cities fails sometimes. Then water collects in the midst of living areas. Mosquitoes grow in it. They spread diseases like malaria, dengue, filaria, chikungunya.

Do you see how the increase in the population spoils the life we lead in cities?



Ground water is drying up.

Water is an important need of all living things. We use water for keeping ourselves and our houses clean, for cooking, farming, industry and construction.

As the rainy season ends, the water in rivers decreases. Water in wells too recedes. Their water barely lasts up to the month of March the following year. Later in summer, many villages face a serious scarcity of water.



Do you know ?

People settle only where water is available from one source or the other.



Dam



Hand-pump

The population keeps growing. The rainfall, however, remains the same. So, there is a shortage of water. Much of rainwater flows away unused. So we began to build dams to store rainwater and use it later.

Some people began to use borewells rather than draw-wells and to use hand-pumps to lift water. Then, pumps that worked mechanically on diesel or electricity were invented. Now the use of such pumps has become widespread.

The population has so greatly increased that now every summer we face severe water scarcity.

Another problem that the population growth caused was that of availability of food. The food produced in the country began to fall short of the needs of the growing population. So, our scientists developed improved methods of farming. Previously, farmers would grow only one crop in the year. Now, they can take

two or even three crops every year. As a result, food production increased but, so did the demand for water for agriculture.



Use your brain power !

Previously, water was needed for farming only during the rainy season. Now it is needed for eight months in the year. Where three crops are taken, it is required all year round. It only rains during the rainy season. Then, from where do we get the water for farming and for all our other needs?



We experience a scarcity of water soon after the rains. Then from where do we get water for the fields in summer and the winter?

Rainwater that has seeped into the soil can be used in this situation. Water found in wells and borewells is nothing but rainwater that has seeped into the ground.

Let us learn about some traditional methods of drawing water from wells.

In the Konkan region, there are groves of coconut, betelnut and bananas. They are watered using the waterwheel to lift water from the wells. A horizontal beam is placed over the mouth of the well. It supports a large wooden wheel which turns around. This wheel is called the '*rahat*'. Several pots (*gadge*) are fixed on the wheel. When the wheel turns, the chain of pots turns with it. One by one, they dip into the water in the well and get filled as they come up. As the wheel turns, each pot turns over and the water gets poured into a channel. From there, it is taken to the groves. The waterwheel is turned with the help of a bullock or a male buffalo. Such waterwheels or '*rahat-gadge*' are still in use in some places in the Konkan region.



Rahat-gadge



Mot

In other parts of Maharashtra, a *mot* was in use for lifting well water. A *mot* is a large leather bag. It is lowered into the water at the end of a rope. When it is full, it is lifted out of the well. The water is used for the fields. Bullocks move to and fro on a ramp to help lower the bag and lift it. The *mot* is used in very few places, now.

Nowadays, fields are watered using diesel or electric pumps. These mechanical pumps can lift many times more water than the *mot*s ever could. Besides, because more than one crop is taken every year, the pumps are used to lift water even after the rainy season. As a result, the water stored underground is getting used up rapidly.



What we have learnt –

- Vehicles like motor-cars, buses and scooters that run on mineral oil were invented. So, too, were railway trains. It made travelling easier.
- We build dams, roads and railways. We set up factories and build houses. We release waste water from factories into rivers. This causes harm to the environment as well as to the living things in it.
- As the population keeps growing, the demand for things we get from the environment also grows in leaps and bounds. Cities became crowded as people left their villages in search for work. Trees were cut down to build new houses. The number of vehicles increased. Their smoke began to cause breathing disorders.
- As trees are felled, birds do not find nesting places. There is smoke too. As a result, the numbers of birds, butterflies and other insects in cities are falling.
- The greater the population, the greater is the demand for foodgrain. Farmers now take multiple crops. The demand for water, too, increases.
- Previously, in Konkan, the waterwheel was used to draw well water while the *mot* was used elsewhere in Maharashtra. Now, pumps are used for the purpose in most places. So groundwater gets used up rapidly.



Always remember –

While taking things we need from the environment, we must take care not to harm the environment.



Exercises

(A) What's the solution ?

Your uncle who lives in Buldhana has an old scooter. It gives out a lot of smoke when it is started.

(B) Make a list

Make a list of vehicles that run on petrol or diesel.

(C) Think and tell.

1. Waste water from a factory is let into a river. What harmful effects does it have on the people in the neighbourhood?
2. How did the discovery of electricity make human life more comfortable?

(D) Answer the following questions.

1. Which are the different vehicles that man has invented?
2. What has to be done to set up new colonies?
3. Which diseases do mosquitoes spread?
4. How has taking more than one crop in a year affected groundwater?

(E) Fill in the blanks.

1. In summer, there is a of water in many villages and cities.
2. A bullock or a male buffalo is used to turn the
3. is more intelligent than all other animals.
4. A *mot* is a large leather
5. People leave their villages for the cities in search of

(F) Find out.

Obtain information about the following :

1. Using diesel and petrol sparingly
2. Saving water

Write down the information you obtain and share it with your classmates.

Activities

- Go for a walk in your surroundings and observe the changes that have taken place there.
- Make a model of a waterwheel.



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