Elementary Science

Class Three



National Curriculum and Textbook Board, Bangladesh

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National Curriculum and Textbook Board, Bangladesh

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Preface

Primary level constructs the foundation of education. A set of well-defined targets and properly planned primary education provide strengths to the entire education system. Keeping this in mind, the primary level has been given supreme importance in the Education Policy 2010. Increasing the span and inclusiveness of the primary level, as the developed countries of the world, have been emphasised. Special attention has been given to ensure that no child's access to education is hindered by social and economic status, religion, ethnicity, or gender identity.

The National Curriculum and Textbook Board (NCTB) has implemented an integrated curriculum to update primary education. While this curriculum trails the pedagogy and the curriculum of developed countries, it also adopts traditional teaching-learning values of Bangladesh at the same time. This has enabled the education to be more life-oriented and productive. In the context of globalisation, the mental health of the children has also been specially considered in this curriculum.

Textbook is the most important component of curriculum implementation. NCTB has always borne that in mind while designing textbooks for all levels and classes including primary level. Curriculum goals and objectives have been prioritised in the writing and editing of each book. A keen eye has been kept on the diverse curiosity and capacity of the child's mind. Special importance has been given in designing the curriculum and textbooks to make teaching-learning interactive and enjoyable. It is hoped that each book will help in the balanced psycho-physical development of children through educational activities. It will support in acquiring the required skills, adaptability, patriotism and moral values at the same time.

The textbook Elementary Science has been designed as a compulsory subject at the primary level. It includes necessary explanations, images, and examples to present scientific topics in a simple and engaging way. Special emphasis is placed on integrating science and technology to foster human resources capable of leading the Fourth Industrial Revolution. Additionally, the textbook prioritizes two main aspects of science education: acquisition of information-rich knowledge and participation through asking questions, experimenting and verifying data and theories.

Special thanks to the specialists and teachers who worked intensively in writing, editing and revising the textbook. Thanks to those also who have made the textbook attractive to children through its design and illustration. This textbook, written under the curriculum 2012, has been revised to address the need in the changed context of 2024. Despite paying full attention, some errors may still exist. Any constructive advice and guidance from the audience will be considered with due importance.

At the end, I wish every success of the learners for whom the book has been produced.

September 2025

Professor Robiul Kabir Chowdhury
Chairman (Additional Charge)
National Curriculum & Textbook Board, Bangladesh

Major Features of the Elementary Science Textbook

1. Learner-teacher friendly

- Learning contents, illustrations and text presentations are considered taking into account the developmental stage of learners, which emphasize mainly on the conceptual development rather than rote learning.
- Enquiring of pupils' prior knowledge and experience are tried to address in the lesson.
- Grade fitting simple texts and child friendly description.
- Clear titles, subtitles, and large number of illustrations and photographs.
- Abstract things of science are portrayed with pictures/photographs as well as proper description.
- Introduction of symbols to make lesson easy-to-understand & attractive for the children
- Two characters are used to engage learners and encourage their thinking abilities.
- New scientific terminologies used in each chapter are highlighted with coloured and bold letters.
- Addition of glossary at the end of the textbook, where new scientific words are explained.

2. Emphasis on inquiry-based and active learning

- The key questions highlighted as the core points of teaching learning in each lesson.
- At the end each activity or experiment a summary of the activity or experiment results are presented.
- At the end of the summary/results, sufficient information has been added under the heading 'Let's Learn more.'
- To visualize students` learning, improve learning skills and ensure active-learning graphic organizers have been added where necessary.
- Experiment related alternative equipment/teaching aids are suggested.
- Coding has been incorporated in this textbook to develop systematic and critical thinking.

3. Emphasis on the holistic development of learners

- Adequate scopes for hands-on works are designed to acquire scientific process skills such as observing, experimenting, comparing, measuring etc.
- Group works and pair works have been introduced to develop learners' communication skills, expressive abilities and positive attitudes.

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Characters and Symbols

1. Characters



Hea



Reza

Hea and Reza will give you some tips or clues about learning of science. Let's learn science together!

2. Symbols



Activity: Let's observe, investigate and experiment!



Discussion: Let's discuss with classmates!

Chapter 1

Introduction to Plants

There are many living things in the world. Plants are one of them. We can see lots of plants around us such as mango, blackberry, lemon, guava, rose, chili and mustard plants. All of them are of different shapes, sizes and colours.

1. Different Parts of Plant

Plants are different, but they have some similarities in their structure.

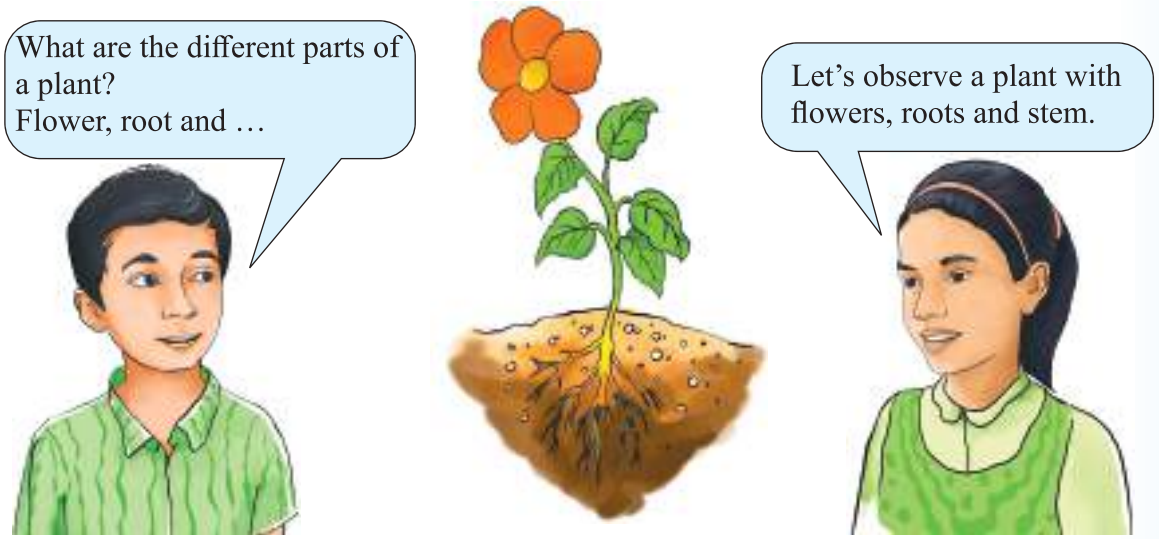
What are the common parts of plants?

Activity: Observing the different parts of a plant

What to do

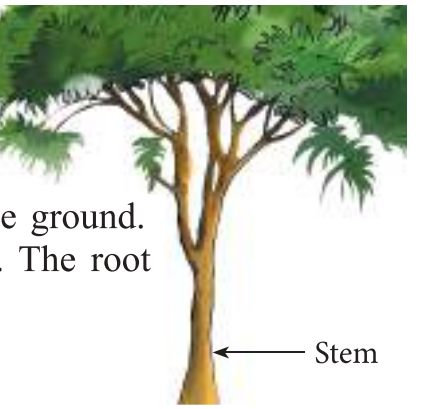
Let's…

1. closely observe some familiar plants outside the classroom.
2. draw a picture of a plant that you know in your exercise book.
3. name the different parts of the plant in the picture.
4. compare your picture with those of your classmates.



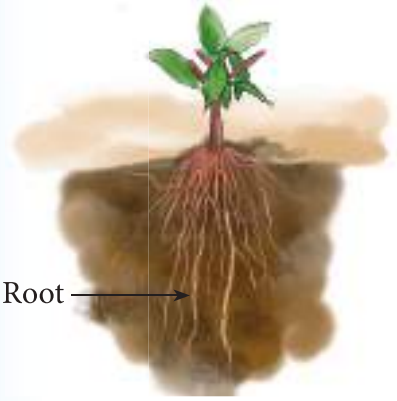
Let's learn more about the common parts of plants…

Almost all plants have roots, stems and leaves. Some of them also have fruits and flowers.



Root

Generally the root of the plant remains under the ground. The plant is attached to the ground by its roots. The root helps trees to stand upright.



Stem

The most important part of the plant above the ground is the stem. It connects the other parts of the plant. It has branches, leaves, flowers and fruits.



Leaf

The leaf of plants is mostly flat and green. The leaf consists of a stalk, blades and veins.



Flower

Flowers are a special part of the plant. It is usually colorful. Different plants have flowers of different shapes, sizes and colours. Not all the plants have flowers.



Fruit

Fruit is a special part of the plant that contains seeds. For example, mango is a fruit. It has seeds inside. Different plants bear fruits of different shapes, sizes, and colors. Not all plants have fruits.

2. Functions of Different Parts of Plants

We have already learned about the different parts of a plant. Every part is important for the plant. The plant's root, stem, leaf, flower, and fruit have their own functions.

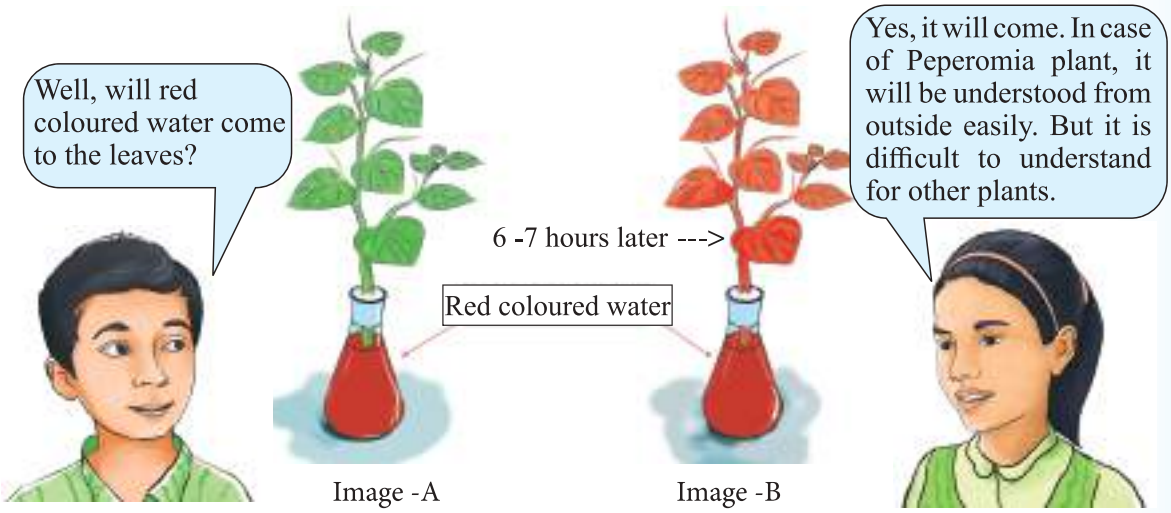
What are the functions of the different parts of a plant?

Activity: Observing the transport of water through the stem

What to do

Let's …

1. observe the given images and observe the changes carefully .
2. think about the causes of the changes.
3. discuss with your classmates how the stem of a plant works.



Summary

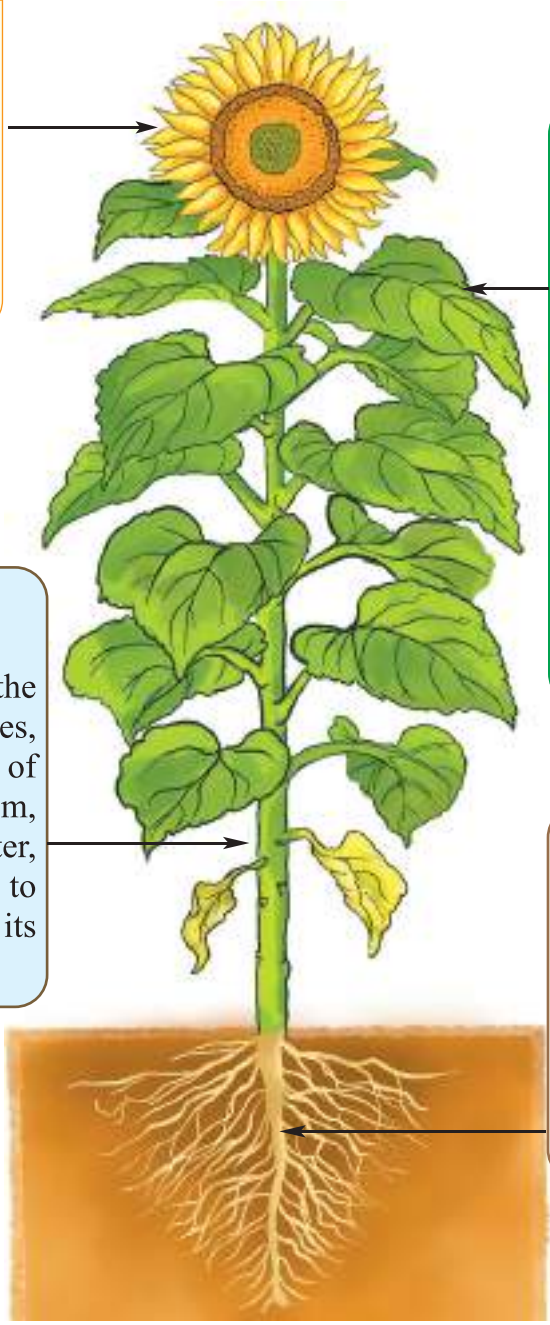
The water flows through the stem to different parts of the plant.

Let's learn more about the different parts of the plant…

Plants use different body parts to fulfill their basic needs. For example, plants use their roots to collect water and nutrients from the soil. Every part of the plant has a specific function.

Flower

A flower is a part of the plant that makes seeds. When a seed is planted, it will grow into a new plant.



Leaves

The food required for plants is prepared in the leaves. The plant produces food with the help of carbon dioxide and water in the presence of sunlight. During this time, the plant releases oxygen for us into the air.

Stem

Stem holds up the branches, leaves, flowers and fruits of plants. Through stem, plants transport water, minerals and food to different parts of its body.

Roots

Roots absorb water and nutrients from the soil and transport them to the stem. They help the plant stick to the soil.

3. Classification of Plants Based on Stem

Stem is one of the parts of a plant. Are the stems of all the plants the same or different?

How can we classify plants based on stem?

Activity: Comparing plants based on stem

What to do

Let's…

1. make a table like the one given below:

Similarities	Dissimilarities

2. observe the pictures carefully. Examine the stems of the different plants and write their similarities and dissimilarities in the table drawn in the exercise book.

3. discuss with classmates how to classify the plants based on their differences.



Summary

Not all the plants have similar stems. There are differences in their colors, hardness or softness and sizes.

Let's learn more about the classification of plants based on their stems . . .

We can classify plants based on their structure of stem.

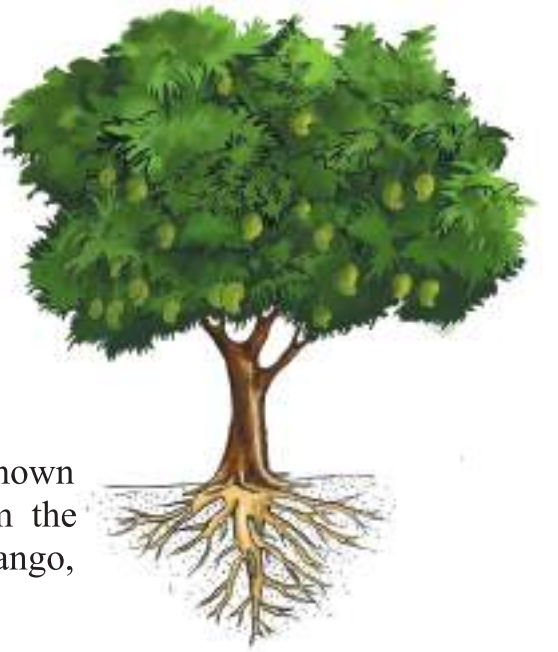


Herb



Some plants have soft, thin, and green stem. Plants with soft and green stems are called herbs. Paddy, mustard, tomato and chili are herbs. These plants are smaller than shrubs in size. Their roots stay in the uper layer of the soil.

Shrub



Plants like roses, ixora and hibiscus are shrubs. The stems of these plants are hard and the size is bigger than the stems of herbs. Their branches start to grow from the base of the stem. Their roots do not go too deep into the soil.

Tree

Plants with long and strong stems are known as trees. Branches and leaves grow from the stem. Their roots go deep into the soil. Mango, jackfruit, wood apple, etc. are trees.

4. Classification of Plants Based on Flower

So far, we have learned that we can classify plants based on their stem. Can we classify plants based on flower?

Can we classify plants based on having flower?

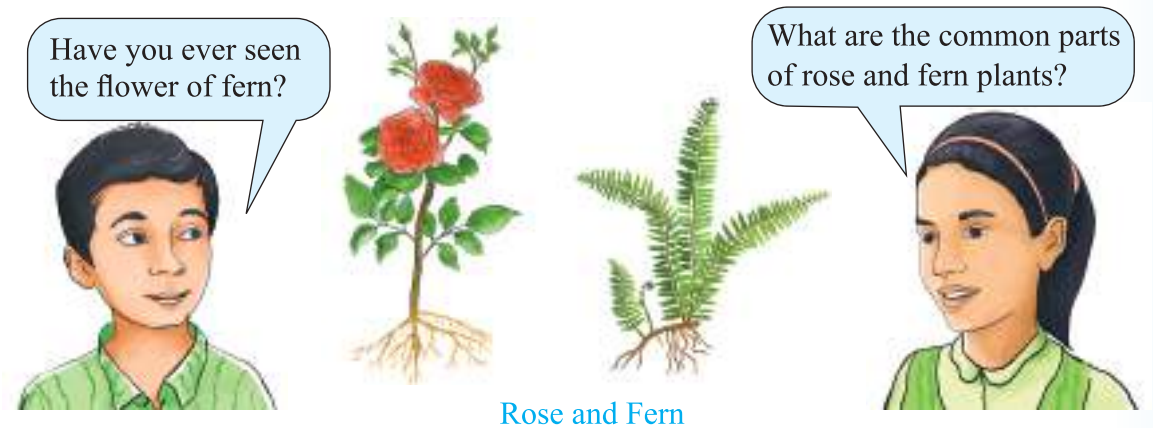
Activity: Classifying plants based on flower

What to do

1. Make a table in the exercise book like the one shown below.

Rose plant	Fern plant

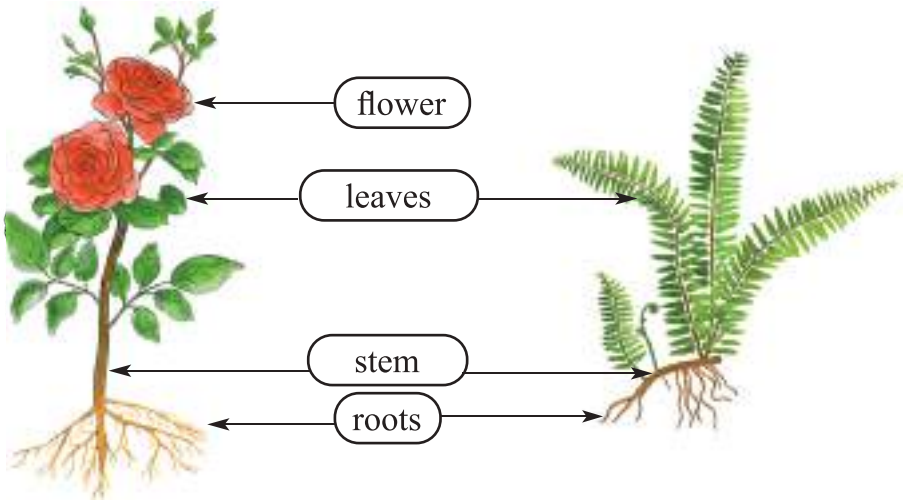
2. Observe the pictures carefully. Write down the different parts of the rose and fern plants in the table.
3. After making the table, let us think of the answer to the following question based on the table. Do the different parts of the rose and fern plants look similar or different?
4. Share opinions with classmates.
5. Discuss with classmates how we can classify plants based on having flowers.



Rose and Fern

Summary

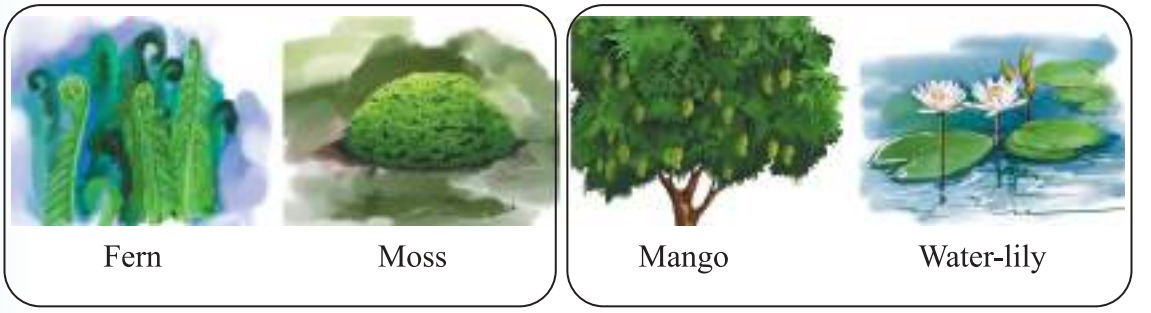
Rose and fern plants both have roots, stems and leaves. However, fern does not have flowers



Rose Fern

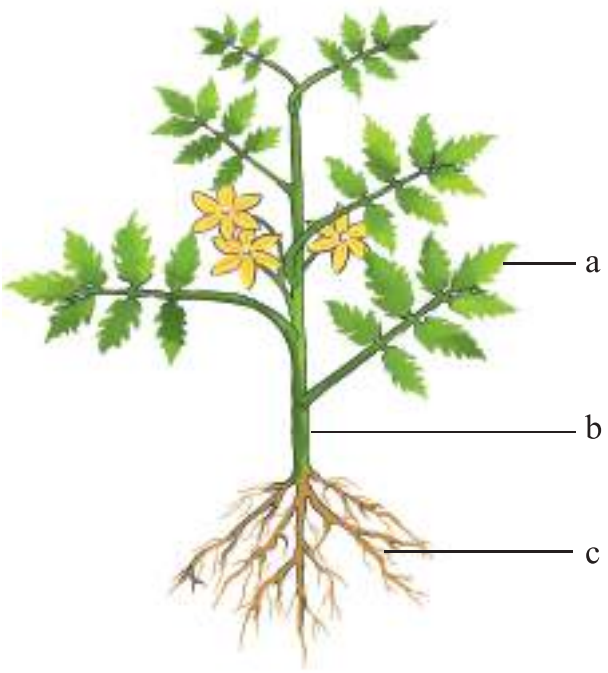
The plants that grow flowers are known as flowering plants. Almost 90% of the plants have flowers. For example, mango, rose, water lily, etc.

On the other hand, the plants that do not have flowers are known as non-flowering plants. Most of these kinds of plants grow in shady and cool moist places. For example, moss, fern, etc.



Non-flowering Plants Flowering Plants

Let's see if we can do it!



A picture of a known plant

1. Name the parts of the plant shown in the picture marked a, b and c and write at least one function of them in the table.

Name		Functions
a		
b		
c		

2. What will happen to the plant if the part mentioned in no. 'a' is missing and why?

3. The characteristics of tomato, hibiscus, jackfruit and fern are summarized in Table-1. Complete Table–2 using the information from Table–1 and classify the plants.

Table–1	
Stem	Soft/ Thin/ Strong/ Woody/ Less woody
Root	Goes too deep into the soil / Does not go too deep into the soil / Does not go deep into the soil
Flower	Has flower/ Has no flower

Table–2				
	Root	Stem	Flower	Class of the specific plant
Tomato				
Hibiscus				
Jackfruit				
Fern				

Exercise

1. Let's tick (√) the correct answer.

A. Which of the following plants does not have flowers?

a) Wheat b) Paddy

c) Fern d) Water Lily

B. Which part of the plant prepares food?

a) Leaves b) Flowers

g) Roots d) Stem

C. Which of the following plants root go deep into the soil?

a) Black plum b) Rose

c) Paddy d) Water Lily

2. Short-answer questions

a) How many main parts does a plant have, and what they are?

b) In which environment do non-flowering plants grow?

c) With what do plants absorb water?

3. Descriptive questions

a) What are the characteristics of tree-type plants?

b) What will be the problem if the flowers of the plant are plucked?

c) Let's draw a known plant and identify the roots, stem and leaves.

d) How many types of plants are available according to the structure of the stem? Write with examples.

Chapter 2

Introduction to Animals

There are many kinds of beings things in the world. Animals are a kind of living beings. We can see a plenty of animals around us. There are differences in their movement, food intake, body structure, size, shape, colour, etc.

1. Different parts of animal body

There are many types of animals in the world. Different animal bodies have different structures. But are there any common characteristics in all animals?

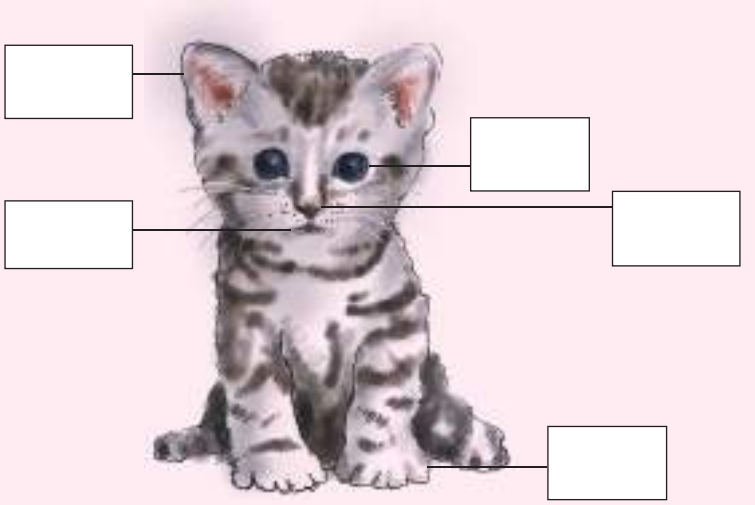
What are the common organs in animal body?

Activity: Observing animals

What to do

Let's…

1. draw a picture of a familiar animal and write the names of different organs of its body.
2. compare the drawings with those of our friends.
3. discuss the common parts of the drawing with our classmates.



Summary

Animals generally have eyes, ears and mouths.

Let's learn more about different organs of animal…

Animal bodies are made up of different organs. Different types of animal bodies have different organs.

Fish



Fishes have eyes, mouth, fins, scales and gills.

Bird



Birds have eyes, beak, wings, tails, feathers and legs.

Crocodile



Crocodiles have eyes, nose, mouth, scales, tails and legs.

Frog



Frogs have eyes, nose, mouth, skin and legs.

Tiger



Tigers have eyes, nose, mouth, ears, hairs, tail and legs.

2. Functions of different organs of an animal body

Animals live a healthy and proper life with the help of different organs of their body. Every organ has its particular function.

What are the functions of the different organs of an animal body?

Activity: Finding the functions of different organs of animal body

What to do

1. Make a table in your exercise book like the one given below.

Different parts of an animal body	Function
Eyes	
Ears	
Nose	
Mouth	
Fins	
Wings	
Legs	

2. Think about how an animal uses its various body parts and write them in the table.

3. Discuss this activity with classmates.





Summary

Animals use their different organs to fulfill their various needs. Every organ of an animal body has a different function.

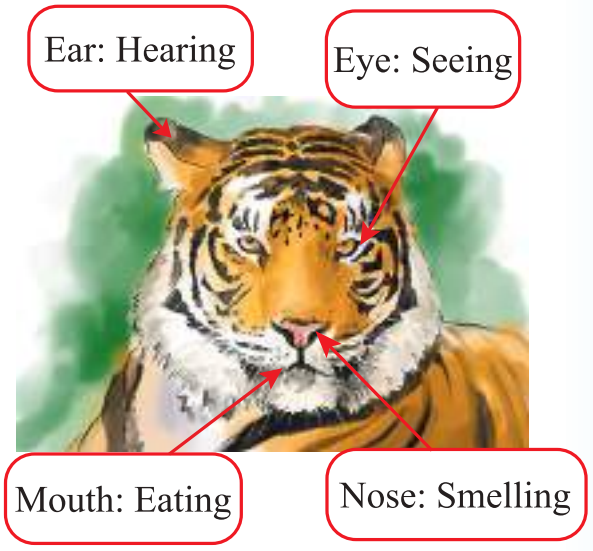
Let's learn more about the function of different organs of animals …

Seeing

An animal uses its eyes to see everything around it. Animals need their eyes to look for food and save themselves from enemies.

Hearing

Animals use their ears to hear anything. Some animals can use their ears to sense upcoming dangers.



Functions of eyes, nose, ears and mouth

Breathing and Smelling

Usually, animals use their noses to breathe and stay alive. They also use their noses to smell.

Eating and Drinking

To stay alive an animal requires food and water. Animals usually use their mouths to eat and drink.

Movement

Animals need to move to collect food and protect themselves. Again, they need to move from one place to another for different purposes. Animals move in different ways. They move with the help of different organs. Some animals use their legs to walk, run and jump. Almost all birds fly with their wings. Fishes use their fins to swim in water.



Use of animals' legs

3. Classification of Animals

Our earth is home to various living things. We can easily know and understand this vast animal kingdom through classification.

How can we classify animals into different groups?

Activity: Classifying animals into different groups

What to do

Let's…

1. Make a table in the exercise book like the one given below.

Vertebrates	Invertebrates

2. Observe the pictures below.
3. Classify them into two groups- vertebrates and invertebrates- based on the observation and write it in the table.



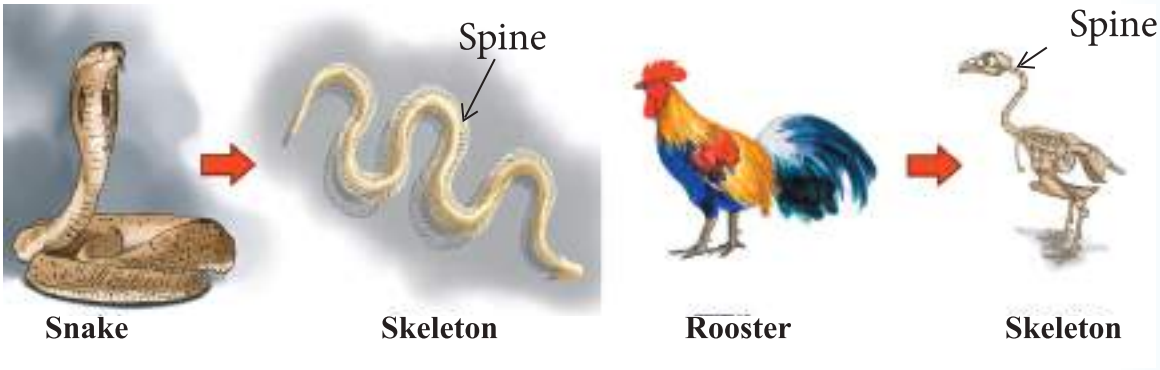
Summary

Animals on earth are classified based on the basis of various characteristics. Considering the presence of bones, there are two types of animals. For example, animals with bones and animals without bones. Based on the presence of spines or backbones, animals can be divided into two types – vertebrates and invertebrates.



Vertebrates

Spine is made up of a line of short bones at the back part of animal. Spine makes the body firm and strong. Animals with spines or backbones are called vertebrates. These animals have spines in the endo-skeletal structure of their body. Some examples of vertebrates are tigers, snakes, frogs, human, etc.



Invertebrates

Some animals do not have spines. Animals without spines are called invertebrates. Earthworms, snails, crabs, octopuses, shrimp and butterfly are some examples of invertebrates.



4. Classification of Vertebrates

Can vertebrates be further classified?

How can vertebrates be classified?

Activity: Comparing vertebrates based on their characteristics

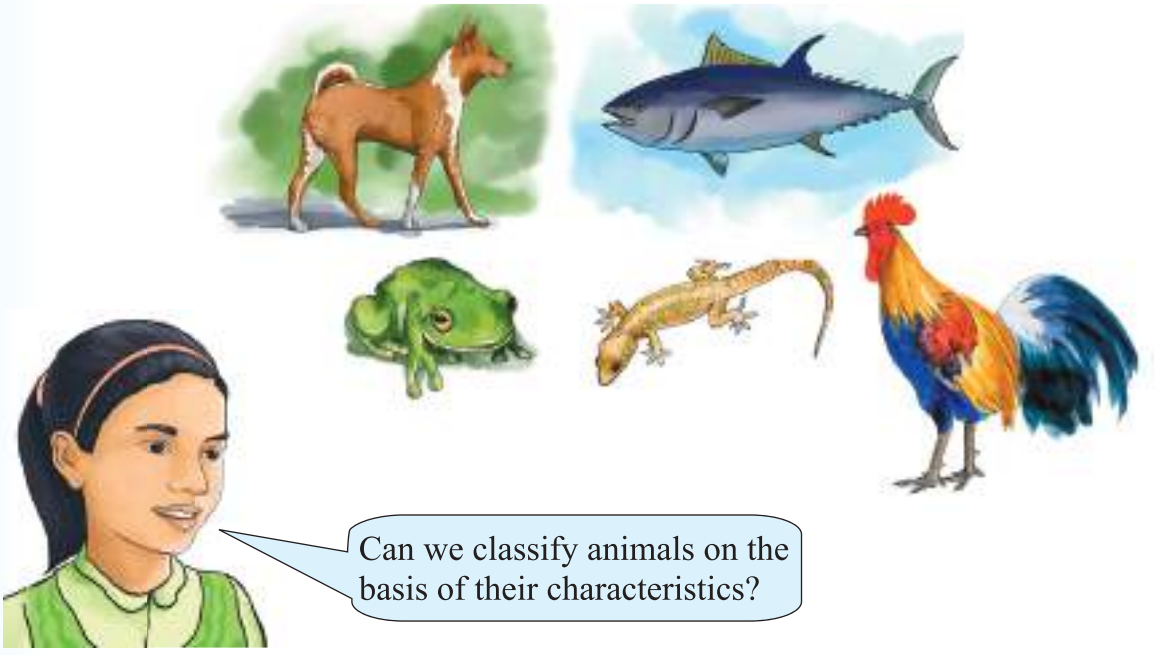
What to do

Let's…

1. draw a table in the exercise book like the one given below.

Characteristics	Fish	Frog	Lizard	Chicken	Dog
How do they move?					
Where do they live?					
What is their body covered with?					
Do they lay eggs or give birth?					

2. look at the images below, observe them closely, and fill up the table based on their characteristics.
3. discuss this activity with classmates.



Summary

Vertebrates can be classified into different groups or classes according to their characteristics.

Let's learn more about vertebrates…

Vertebrates can be classified into five different groups according to their characteristics, such as fish, amphibians, reptiles, birds and mammals.

Fishes



Fishes live in the water. They lay eggs and swim in the water using their fins. Most fishes have scales covering their body.

Amphibians



Amphibians who are vertebrates live in both land and water. They lay eggs. Their body is covered with smooth and wet skin. Frogs are amphibians.

Reptiles



Most of the animals that are classified as reptiles live in land or water. Their body is covered with one kind of dry, scaly skin. They lay eggs. Snakes, lizards and crocodiles are reptiles.

Birds



Most of the birds can fly with their wings. Their body is covered with feathers and they lay eggs.

Mammals



A mammal's body is covered with fur, hair or skin. They use their legs to walk or run. They give birth to babies. Babies drink their mother's milk. Most of the mammals live on land such as cats, dogs, human etc. Some mammals live in water such as whales and dolphins. Some mammals can fly such as bats.

5. Observing Invertebrates (Insects)

Animals that do not have a spine or backbone are invertebrates. Insects are one of the invertebrates. Most of the animals on earth are insects. Some common characteristics along with the absence of spine are seen in insects. By observing insects, we can get an idea about their characteristics.

What are the general characteristics of insects?

Activity: Observing different parts of insects

What to do

Let's…

1. Go outside the classroom and catch an insect.
2. Observe the different body parts of the insect and draw them in the exercise book.
3. Show your drawing to your classmates and discuss the common characteristics of the different body parts of the insect.



Summary

There are different parts in the body of an insect such as heads, legs, wings, abdomen, etc.

Let's learn more about an insect's body…

Insects are invertebrates. Not all insects can fly. Insects help maintain environmental balance. Butterflies, bees, dragonflies, grasshoppers, ants, etc. are some examples of insects. There are some similarities in their different body parts.



Legs
Usually, insects have three pairs (six) of legs.

Body Parts
Most of the insects have mainly three body parts. They are head, thorax and abdomen.

Body Coverings
Insects do not have bones in their body. Their body is covered with a hard shell. This protects them and helps them to keep a particular shape.

Antenna
Usually, insects have one pair of antennae.





Discussion

Is a spider an insect?

1. Look at the image of a spider on the right.
2. Think about the following questions:
   - Is a spider an insect?
   - What do you think? Why?
3. Discuss with classmates and find out the answers to these questions.



Let's see if we can do it!

Let's observe the picture of the animals and answer the question given below.



1. Observe the pictures given above and write down the names of the animals in the following table based on their groups.

Group of animals	Name of the animals
Fish	
Bird	
Amphibian	
Reptile	
Mammal	

2. Observe the picture above and write in the table below what the animal's body is covered with according to the group.

Group of animals	Cover of the animal body
Fish	
Bird	
Amphibian	
Reptile	
Mammal	

3. Some of the animals that are shown on the pictures lay eggs and others give birth to children. Observe the pictures carefully and complete the table.

Lays eggs	Gives birth to children

4. Several characteristics of animals of different groups are given in the following chart. Write down the name of the animal group based on these characteristics.

Characteristics	Animal group
Lives both in water and on land	
Has a beak and a pair of wings	
Has three pairs of legs and one pair of antennae	
Gives birth to children and produces milk for its young	

5. Vertebrates can be classified into different groups. Such as-

……., ……., ……., ……., and,

…….

Exercise

1. Let's tick (√) the correct answer.

A. Which of the following animals is a mammal?

a) Whale b) Fish

c) Pigeon d) Lizard

B. Which of the following animals is a vertebrate?

a) Earthworm b) Spider

c) Snake d) Cockroache

C. How many legs do insects have?

a) 6 b) 4

c) 2 d) 8

2. Let's fill in the blanks with the correct words from the words given below.

(spine, grasshoppers, insects, feathers, dolphins, hilsa fish)

a) ……. lives in water but give birth to babies.

b) …….. strengthens the animal's body.

c) Antennae are found in the body of ……....

3. Short-answer questions

a) Let's write two characteristics of insects.

b) Let's write about the body type of amphibians.

c) Let's write about the functions of feet of animals.

d) Let's write three characteristics of amphibians.

4. Descriptive questions

a) Why are whales called mammals?

b) Let's write four differences between vertebrates and invertebrates.

Chapter 3

Food for Good Health

We eat different kinds of food every day. Why do we eat these foods? What does food do for us? Where do our foods come from? Let's try to learn about foods.

1. Sources of Food

Where do we get foods from?



Activity: Finding out the sources of food



What to do

Let's…

1. make a table in the exercise book like the one on the right side.
2. see the pictures of the foods below.
3. write down the foods in the table according to their sources.
4. discuss the sources of food with classmates.

Foods obtained from plants	Foods obtained from animals



2026

Summary

We get our daily foods from plants and animals.

Let's learn more about the sources of foods…

Foods that come from plants include rice, roti, lentils, vegetables, fruits, etc. But foods like fish, meat, eggs, milk, etc. come from animals.

We can eat some foods directly, such as fruits. Again, some foods need to be prepared, such as bread. Bread, biscuits, etc. are prepared from flour. This flour comes from wheat, and we get wheat from plants. So, bread, biscuits, etc. are foods that come from plants.

Similarly, butter, ghee, curd and cheese are prepared with milk. And milk comes from animals. So, the source of these foods is animals.

2. Seasonal Fruits

In our country, we enjoy fruits with different tastes throughout the year. Fruits are very good for our health. Usually, different fruits are found in different seasons. They help us resist different dieseases.

Which fruits are available in different seasons in our country?

Activity: Classification of fruits based on seasons

What to do

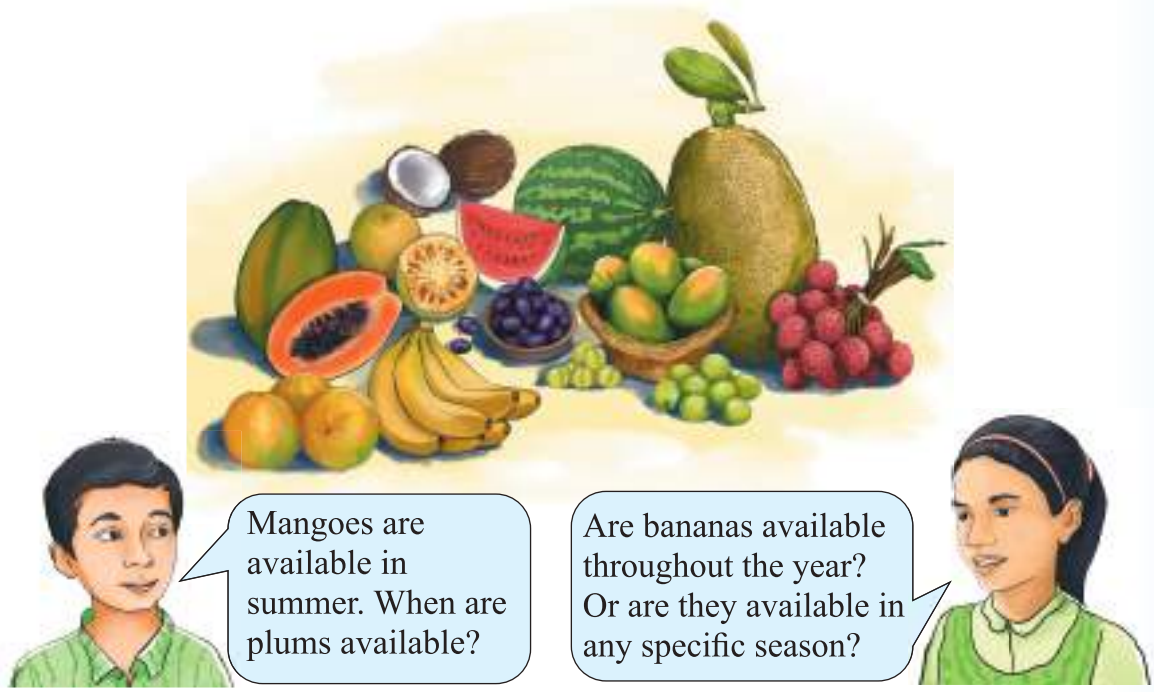
Let's…

1. make a table in the exercise book like the one below:

Summer Fruits	Winter Fruits	All-season Fruits

2. classify the fruits of the following picture into three groups namely summer, winter and all-season and write them in the table.

3. discuss the activity with classmates.



Summary

We have many fruits like mango, blackberry, banana, papaya, orange and guava in our country. Some fruits are available in specific seasons. Again, some fruits are found all the year round.

Let's learn more about different seasonal fruits…

The fruits available in our country can be divided into three groups: summer, winter and all-season.

Summer fruits

Summer fruits include mango, blackberry, jackfruit, wood apple, watermelon, lichi, palm, guava, hog-plum, pomelo, pineapple, rambai (lotkon), java apple (jamrul), etc.	

Winter fruits

	Winter fruits include plums, oranges, amla, olives, etc.

All-season fruits

All-season fruits include banana, papaya, coconut, etc. These fruits are more or less available throughout the year.	

3. Seasonal Vegetables

We grow many different vegetables in our country all the year round. Different vegetables are found in different seasons. We need to eat vegetables regularly for good health.

Which vegetables are available in our country in different seasons?

Activity: Classification of vegetables based on seasons

What to do

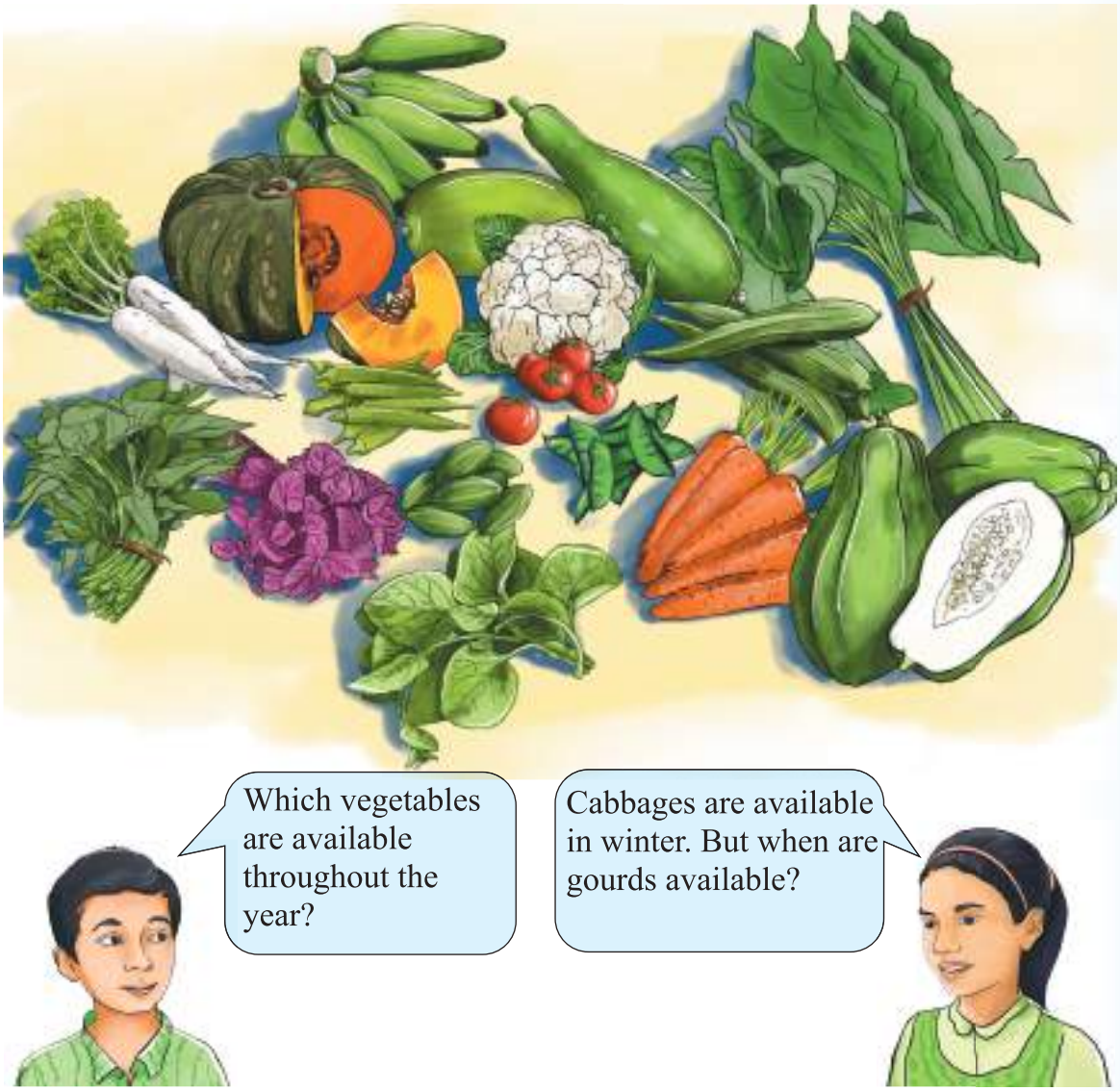
Let's…

1. make a table in the exercise book like the one below:

Summer vegetables	Winter vegetables	All-season vegetables

2. classify the vegetables of the following picture into three groups- summer, winter and all-season and write them in the table.

3. discuss the activity with classmates.



Summary

The vegetables available in our country can be divided into three categories: summer, winter and all-season.

Let's learn more about different seasonal vegetables…


Summer vegetables


Winter vegetables


All-season vegetables

Summer Vegetables

Different kinds of vegetables are available during summer. For example, pointed gourd, bitter gourd, pumpkin, wax gourd, spiny gourd, luffa, sponge gourd, snake gourd, etc. We can also find green leafy vegetables like malabar spinach and green amaranth. Cucumbers and swamp taro are also available in summer.

Winter Vegetables

Legumes, gourd, radish, tomato, cabbage, cauliflower, carrots, etc. are winter vegetables. Red amaranth, spinach, bottle gourd leaves, etc., are also available in winter.

All-season Vegetables

Vegetables like papaya and green banana are available throughout the year. Water amaranth and taro leaves etc., are among such all-season vegetables. However, with the advancement of agricultural science, many vegetables and fruits can be grown throughout the year.

4. Nutrients

Every food we eat has different types of nutrients. The major nutrients in food are carbohydrates, proteins, and fats. Food also contains vitamins and minerals. Each nutrient has a speicific function in our body. So, to stay healthy, it's important to eat regularly foods rich in different nutrients.

Carbohydrates



The main sources of carbohydrates are rice, roti, flattened rice (chira), puffed rice (muri), potato, sweet potato, etc.

Carbohydrates give us the necessary energy to do all our activities, including movement.



Proteins

Fish, meat, pulses, beans, the white portion of an egg, etc., contain proteins. We need proteins to build up our body and repair its decay.

Fats

Foods like groundnuts, milk, butter, ghee, cheese, etc., contain a lot of fat or oil. We can also get oils from certain plants. For example- sesame (Til), flax seed (Tishi), mustard, coconut, olive, sunflower, soybean, etc. Just like carbohydrates, fat or oil also gives us energy. Fat also improves the beauty of our body. Our body needs fat for the absorption of certain nutrients and vitamins.



Vitamins and Minerals



We get vitamins and minerals from fruits and vegetables. Vitamins and minerals keep us active and healthy and increase our power to fight against diseases. Deficiency of vitamins causes different diseases in our body such as nyctalopia (night blindness). People with this disease cannot see well at night.

Water



Water is not an element of nutrition directly. We need water for various functions in our bodies. We need to drink enough pure water for the digestion of food and absorption of nutrients in our body. The waste produced in the body comes out with sweat and urine.

5. Sources of Nutrients

What are the sources of nutrients?

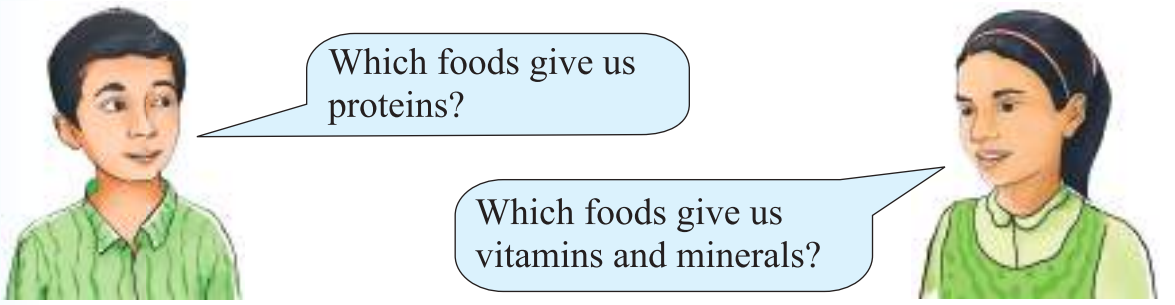
Activity: Finding out the sources of nutrients necessary for our body

What to do

Let's…

1. make a table like the one below.
2. think about the sources of nutrients necessary for the body.
3. write in the table which of the following nutrients are found in which food of the picture.
4. discuss the sources of nutrients with classmates.

Nutrients	Names of foods
Carbohydrates	
Proteins	
Fats or oil	
Vitamins and minerals	



Summary

The main nutrients present in food are carbohydrates, proteins, fats, vitamins and minerals. The main sources of carbohydrates are food grains like rice, roti, etc. Fish, meat, lentils, beans, the white portion of an egg, etc. contain proteins. Foods like groundnuts, milk, butter, ghee, cheese, fatty fish, etc. contain a lot of fat or oil. Moreover, we get vitamins and minerals from fruits and vegetables.

Let's learn more about the sources of nutrients…

We have found one food as a source of one nutrient. But sometimes, one food can have more than one nutrient. For example, milk contains all the nutrients like carbohydrates, proteins, fats, vitamins, minerals and water. The white part of the egg contains proteins, and the yolk contains fats. Fruits that taste sweet, like bananas, ripe mangoes and jackfruit, have sugar along with vitamins and minerals. Note that here we have learned about the main nutrients of foods. But in addition to these nutrients, there are other necessary nutrients in foods. We will learn about them in higher grades.



Discussion

Which one is healthier? Coconut water or bottled water?

Which one is healthier among singara, cake and fruits?

6. Necessity of Nutrients

What are the necessities of different nutrients for our body?



Activity: Knowing about the functions of different nutrients







Let's…

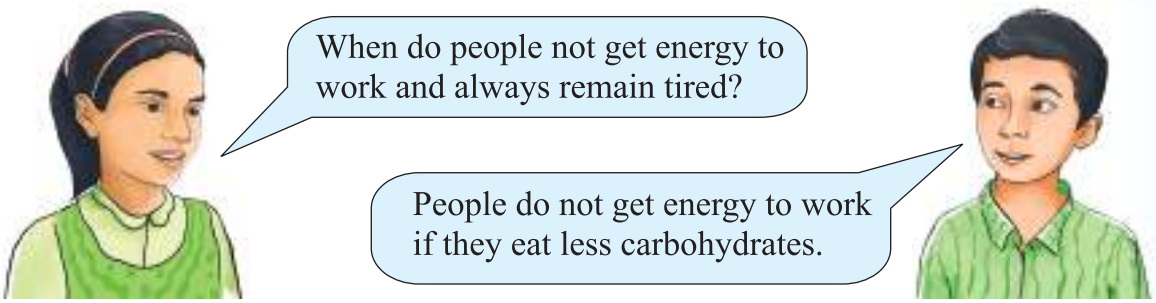
1. make a table like the one below.

2. see the images above. Notice who has got what problem. Write in the table what kind of food they should eat.

	Problem	**Types of food to be eaten**
First image	He doesn't have the energy to work. He remains tired most of the time.	
Second image	His body structure is not well-balanced. His muscles are not properly formed.	
Third image	He cannot see at night. He has night blindness. He becomes ill frequently.	

3. A table is given below. In this table, the information on the left side does not match with the information on the right side. By drawing lines, let's match the information on the right with the information on the left.

Nutrients	**Function**
Carbohydrates	build up the body.
Proteins	give energy to work.
Fats	build immunity.
Vitamins and minerals	useful to absorb vitamins.



Summary

Carbohydrates give us energy to work. Proteins build up our body. Fats or oils store energy in the body. Vitamins and minerals increase the power of the body to fight against diseases.

Let's learn more about the sources of nutrients…

To live a healthy life, we need to have all kinds of nutrients so that the body gets all the necessary nutrients. It is better to eat foods from different sources than to eat the same food again and again. Because, different foods contain different nutrients. When we eat different types of food, our bodies get all kinds of nutrients. Local and seasonal fruits are generally more beneficial for us.

7. Healthy Food

We eat food to live a healthy life. Some foods are good for our health. Again, there are some foods that are harmful to our health. It is very necessary for us to have a clear idea about healthy, safe and unhealthy foods.

Which are healthy foods?

Activity: Identifying healthy foods

What to do

Let's...

1. notice the two pictures given below.

2. which picture shows healthy and safe foods? Why? Let's discuss it and decide.





Summary

Fresh vegetables, fruits, rice, roti, potato, etc., are healthy foods. Fried and oily foods are not good for our health. Chips and other such types of packaged foods often contain different types of elements that are harmful to our bodies. That's why eating too much of these foods is not good for our health.

Let's learn more about the sources of nutrients…

We get necessary nutrients from fresh vegetables, fruits, rice, roti, milk, egg, lentils, fish, meat etc. These are safe and healthy foods. On the other hand, fried and oily foods, biscuits, cakes, chips, different types of junk food or fast food, etc., are not healthy foods. The quality of these foods decreases because of excessive frying or heating. Again, they can contain some harmful elements such as harmful fats. Extra sugar, salt or harmful chemicals are usually added to these foods to increase their taste and preserve them for a long time. These artificial chemicals are harmful to health in the long run. They cause different diseases in the body. If we eat too much fast food, chips, soft drinks, etc., we will become weak and fat. So, we should avoid these foods as much as possible.

8. Healthy Drinks

Like eating healthy foods, we should also be careful about drinks. Some drinks are safe and healthy, such as coconut water. This drink gives us the necessary nutrients and fulfills the demand for water in our bodies. Again, some drinks cause harm to our bodies. For example, drinking polluted water can cause different water-borne diseases like cholera, dysentery, jaundice, etc.

What is a healthy drink?

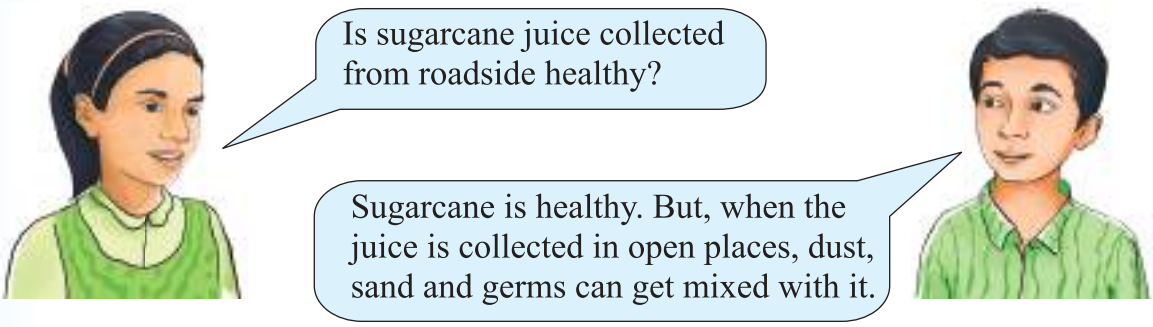
Activity: Identifying healthy and unhealthy drinks

What to do

1. Images of some drinks are given below. Which of the drinks are healthy? Why?







Summary

Fruit juice, lemon juice, coconut water, etc., are healthy drinks. Various types of bottled drinks, the juice sold beside streets, etc are unhealthy drinks.

Let's learn more about the sources of nutrients…

Drinks are usually prepared using pure water at home. So, they are safe to drink. We get clean water from tube wells or fountains. Besides, we can purify pond or river water by boiling it. Different types of mineral salts are mixed in these waters. Again, fruit juice contains different nutrients. For example, lemon juice contains vitamins, minerals, and other useful elements. Therefore, lemon juice prepared using pure water is beneficial to the body.

We should drink healthy and safe drinks. In many cases, bottled drinks contain excessive amounts of sugar and various chemicals. Drinking these kinds of drinks for a long time can be harmful to our health. So, it's better not to have too much of these drinks.

Let's see if we can do it!






1. Observe the pictures above and write down the name of the nutrients in following chart.

Name of food	Nutrients
Bread	
Fish	
Oil	
Mango	

2. Make a chart of balanced diet by observing the pictures above.

Chart of a balanced diet

- .....
- .....
- .....
- .....
- .....
- .....

2026

Jujube (Boroi), Guava, Cauliflower, Banana, Okra, Black berry, Papaya, Puishak, Lalshak, Arum leaf

3. Based on the seasons, arrange the shak/ leaf, vegetables and fruits given above.

Summer vegetables	Winter vegetables	Vegetables throughout the year
Shak/ Leaf		
Vegetables		
Fruits		

Coconut water, Lemon juice made at home, Sugarcane juice made at road-side, Soft drinks

4. Classify the drinks listed above in the table given below.

Healthy drinks	Unhealthy drinks

5. Why "Chips" (fast food) is an unhealthy food? Write 3 reasons in the table below.

Chips is an unhealthy food because

1.

2.

3.

Exercise

1. Let's tick (√) the correct answer.

A. Which food is made only from milk?

a) Payesh b) Butter

c) Semai d) Firni

B. In which season do mangoes grow?

a) Summer b) Rainy season

c) Late Autumn d) Early Autumn

C. What kind of function does guava mainly do in our body?

a) Provides energy b) Repairs the decay of the body

c) Prevents disease d) Enhances beauty

2. Let's fill in the blanks with correct words from the following words.

(Fast food, energy, fat, minerals, nuts, all kinds of nutrients)

a) We get ……. from carbohydrates.

b) Different types of ……. are mixed in tube well water.

c) The white part of an egg is protein, and the yolk is a ……. based substance.

d) When people eat ……., their bodies become overweight.

3. Let's match the phrases on the left with the words on the right.

Left	Right
Coconut water	Protein
Soft drink	Vitamin
Vegetables	Germs
Bean seeds	Healthy
Uncovered food	Fatty

4. Short-answer question

a) Let's write the names of the two main sources of our food.

b) What role does high-protein food play in our bodies?

c) What is meant by safe and healthy food?

d) Let's give two examples of safe drinks.

5. Descriptive questions

a. Let's describe the importance of nutrients in food for our body.

b. Let's make a table to classify the following fruits according to their seasons. Let's classify the fruits according to the table.

(Banana, Guava, Jackfruit, Mango, Palm, Plum, Papaya, Watermelon)

Chapter 4

Matter

There are different kinds of objects around us such as books, exercise books, pens, chairs, tables, sand, water, air, soil, insects, animals, etc. These are all matters. Are all matters the same?

1. Properties of Matter

What is matter?

Activity: Comparison between two objects

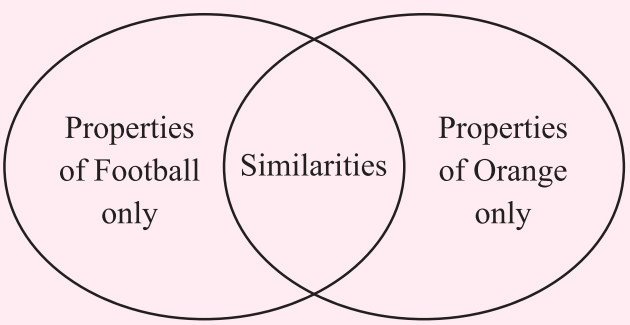
Materials required: A football, an orange

What to do

Let's…

1. draw a venn diagram similar to the one below.
2. look at the two pictures given below and find out the characteristics of both objects?
3. write down the similarities and differences between them in the venn digram.
4. discuss this activity with classmates.





Summary

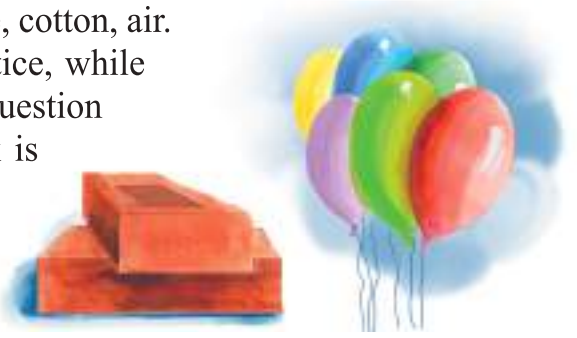
Both the orange and the football are round in shape. The orange is small in size and the football is big. The football is heavy whereas the orange is light. Both objects have weight. Their colours are different. The orange is soft and has a sweet smell. When the orange is pressed, it gets flattened.

Let's learn more about matter...

Things that have weight and volume are called matter. Different matters have different properties. But almost all matters must have weight and volume.

Weight

According to science, both football and orange are Matters. Because both matters have weight. Weight means about how heavy a substance is. Some matters weight much. For example, brick, stone. They are called heavy matters. Some matters have a low weight. For example, cotton, air. They are called light matters. Let's notice, while we say 'much' or 'less', there comes a question of comparison. The weight of a brick is more than the weight of cotton. But it is insignificant in comparison with the weight of an aeroplane.



Volume

Almost all matters must have volume. This means matter occupy space. Some matters occupy more space. They have large volume. Some matters occupy less space. They have small volume. If we look at the picture below, it is evident that the elephant is much larger in size than the chicken. Elephant occupies more space than chicken. That's why the size of an elephant is more than the size of a chicken.

Shape



Many matters have a specific shape. Again, all substances do not have a specific shape. Shape refers to the external structure of a matter. For example, football is round shaped. We will learn more about shape in Lesson 4 of this chapter. Idea regarding shape will help us to identify different types of matters.

2. Volume of Matter

How can we estimate the volume of matter?

Activity: Finding out the big-small

Materials Required : Two similar glasses, water, two pieces of stone of different size, four rubber bands

What to do

Let's…



1. look at the picture on the right.
2. keep two glasses as shown in the picture.
3. fill the glasses upto half full with water using the same procedure. The water level of both glasses should remain at same height.
4. tie a rubber band at the maximum height of the water level in the glass or mark the highest level of water with a chalk or marker pen.
5. now drop the small stone in the glass on the left. Then, drop the big stone into the glass on the right.
6. observe carefully the new water levels in both glasses. Mark the new height of the water level with a rubber band or a chalk or a marker pen.
7. did you see any differences in the water level of the two glasses? Why did this happen? Let's discuss with classmates.

Result

Dropping a stone in the glass raises the water level. Dropping small stone in the glass raises its water level less than dropping a large stone into it.

Discussion



Why does water level in the glass raises when a stone is dropped into it?

Why does the water level rise more with big stone than that with small stone? What does it mean?



Summary



Dropping a stone into a glass half full with water causes the water level to rise. What is the reason behind? Here, the stone immerged in the water has occupied some space of the water. This occupied space is the volume of the stone. As much space as the stone occupies, that much water rises from it. As a result, the water level rises. Now the stone which is bigger in size, occupies more space. That means, its volume is larger. So the bigger stone pushes more water upwards. For this reason, if you drop a big stone in the glass, the water level rises more. The volume of water that rises in the glass is equal to the volume of the immerged stone.

3. Air is a Kind of matter

We have learned that all substances have weight and volume. Does the air have weight and volume?

Let's try to find out if air is a substance through the following activity.

Is air a matter?

Activity: Checking if air has weight and volume



Materials Required: A balloon, a shrinked football, a pump to fill the air in football

What to do

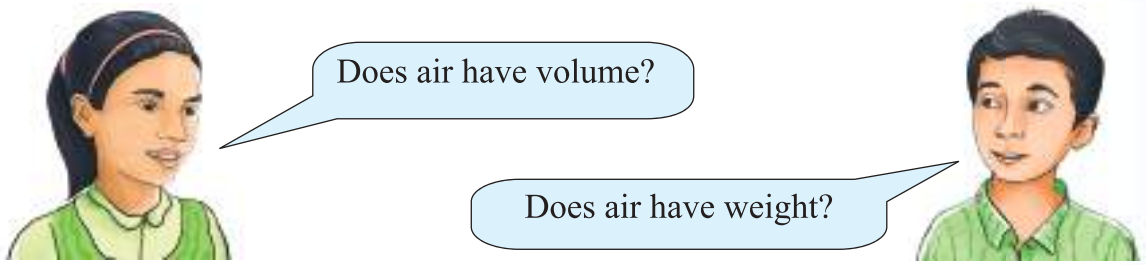
1. Make a table like the one below.

2. Blow the balloon. Let's notice the change in the volume of the balloon and write it in the table.

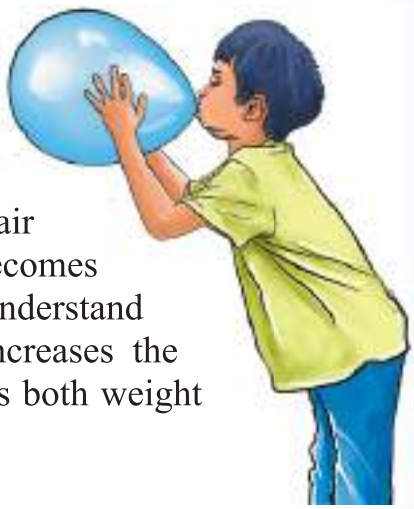
3. Hold the shrinked football and feel how heavy it is.

4. Fill the ball with air using the pump. After filling air, let's check whether the weight and volume of the ball have changed or not.

What happens when the air is filled?	Result
Does the size of the balloon increase?	
Does football get heavier?	
Does the volume of the football increase?	



Summary



When a balloon is filled with air, it becomes larger in size. The more air is filled, the balloon becomes larger. More air occupies up more space. It shows that air has volume. If there is no air inside a football, it gets compressed. The ball becomes heavy when it is filled with air. As a result, we understand that the air has weight. Again, the air also increases the volume of the compressed football. Since air has both weight and volume, it is a matter.

Discussion

Let's think about the question below:

Is light a matter? Give logic in favour of your answer.

Let's discuss about it with classmates.

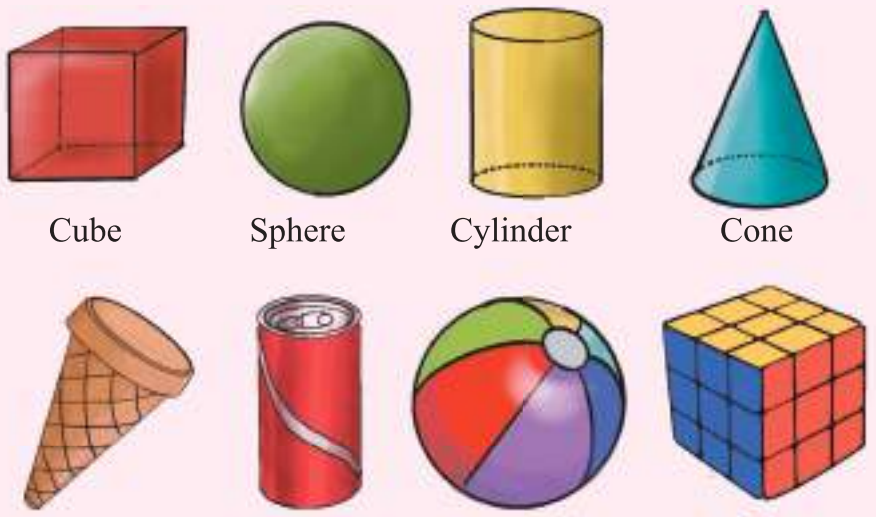
4. Shape of Matter

What is shape?

Activity: Finding the similarities between shapes

What to do

1. In the picture below, we see two rows or lines. The top row has pictures of four shapes and their names, and the bottom row has pictures of four objects in a random order. Which of the shapes above is similar to which of the following? Match the similar shapes by drawing a line with a pencil.



Result

Each object in the top row has different shape. The shape of the Rubik's cube is like a cube; the ball is round shaped; A can of soft drink looks like a cylinder. The ice cream in the image is cone-shaped.

Discussion

It has been observed that the shape of each matter is different. Do all matter have the same shape? What kind of substance has shape? Does water have any shape? Does air have any shape? Let's discuss with classmates.

5. Variation of Shape in Different Materials

We already learned that some matters have specific shape. Again, some matters do not have any specific shape. Following the variation in these properties, we can divide matter into different groups.

Do all matters have a specific shape?

Activity: Shape test for eraser and water

Materials required: A eraser, water, a few bowls or containers of different shapes, glass of water

Do all matters have a specific shape?

What to do

Let's…

1. take a eraser in a container.
2. observe and write down the shape of the eraser.
3. now observe the eraser in different containers.
4. has the shape of the eraser changed? Write it down in the exercise book.
5. now pour some water in a glass. Write down the observed shape of water.
6. now pour the water of glass into different containers. Is there any change of the shape of the water? Write them down.

Materials	Observation		Comments
	Container 1	Container 2	
Eraser			
Water			



What is the shape of the eraser? Is it different in different container?

What is the shape of water? Does the shape of water change when it is poured from a jug into a glass?



Result

A piece of eraser has a specific shape. The shape of the eraser remains same even if it is kept in different containers. The shape does not change. On the other hand, the container in which the water is kept takes the shape of that container. Water becomes the shape of a bottle when it is placed in the bottle, the shape of a jug when it is placed in the jug, the shape of a bowl when it is placed in the bowl. From this, it can be concluded that some matters have definite shapes, whereas some matters do not have specific shapes.

Let's do more

1. There are some other matters that can change their shapes like water. When these matters are placed in a container, they take the shape of that container. Let us make a list of some such matters.

2. There are many other matters like ice that have particular shapes. Make a list some more matters that do not change their shapes.

Let's learn more about the shape of matter…. ...

We can understand whether air has its own shape or not from a known phenomenon. Balloons are usually sold in the market. They have different shapes such as bird, fish, airplane, people, cartoon's character like Meena, Raju, Mithu, etc. They are made by filling air in plastic balloons of various shapes. Air has no shape of its own. When a balloon is filled with air, the air takes the shape of the balloon.



6. State of Matter

By the term external state of matter, we mean- weight, volume, shape, etc. Matters can be classified into different classes based on the external state. Let's try to identify different states of matter through the following activity.

How many states of matter?

Activity: Classification of substances

What to do

Let's . . .

1. make a table similar to the adjacent one.

2. see the pictures below. Identify the similar kinds and put them into three groups.

3. discuss about special characteristics of each group with classmates and write them down.

Group-1	Group-2	Group-3



Different kinds of matters



Are water and oil the same matters? Why?

Water and oil take the shapes of the containers in which they are placed.



Summary

Marble, doll and book are similar matters in the picture. Each of them has its own shape. There is no change in shape even if they are kept in different places. Water, oil, fruit juice are the other types of matters. They take the shape of that container where they are placed. Air inside a balloon, air from a fan, etc. are the other types of matters. Air also has no shape of its own. Air takes the shape of the container or the baloon in which it is kept. But, there is a difference between air and water. For example- water poured in the glass will occupy that much space as its amount. The unoccupied space remains free of water. But, even a balloon is filled with a small amount of air, the air will spread throughout the entire balloon; It means, the air occupies the entire volume of the balloon.

Let's learn more about states of matter…...



In the above activity, marble, doll, book, etc. are similar materials. Each of them has its own shape. There is no change in shape even if they are kept in different places. Such are called solid matters. Solid smatters have fixed volume and shape. For example, stone. Stone cannot change its shape and volume by itself. Even if a stone is dropped from a height, its shape and volume remain the same. Ice, table, pencil, brick, etc., are solid matters.



Fruit's juice, water, oil, syrup, milk, etc., are liquid substances. They do not have specific shape. For example, A glass of fruit juice when placed in a glass takes the shape of glass, when it is placed in a bowl it takes the shape of a bowl. Again, if it falls on a table or floor, it spreads around. Liquid matters have definite volume even though they have no definite shape. A fixed amount of liquid occupies a fixed amount of space.



Air filled balloon, air from fan, smoke, etc., are gaseous matters. Volume and shape of gaseous matters are not fixed. If a gaseous matter is placed inside a closed container, it occupies the entire volume of the container. For example, if a little amount of smoke enters into the house or car, it spreads throughout the whole house or car. It occupies the entire space. This means that gaseous matters do not have their own volume. It takes the entire volume of the container in which it is kept. Again, if the same amount of air is placed in balloons of different shapes, it fills the entire balloon and takes the shape of that balloon. Gaseous matters do not have its own shape.

7. States of Water in the Environment

If water is kept at lower temperature in the fridger, it turns into ice. What happens when you heat this ice?

Activity: finding Changes in the states of water

What are the possible states of water?

Materials required: Ice, water, pan, stove

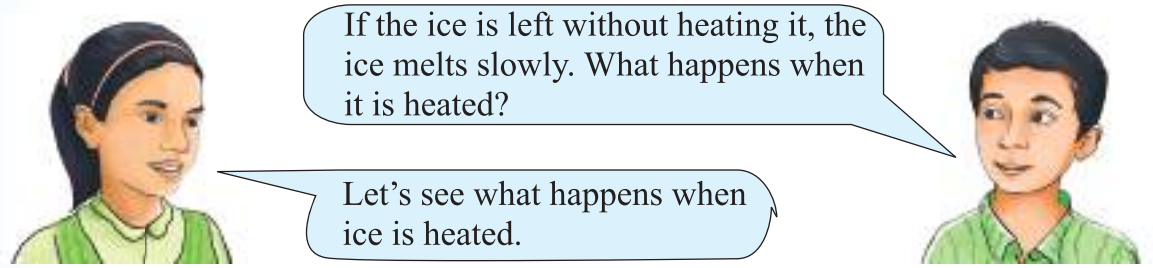
What to do

Let's . . .

1. take a few pieces of ice in the pan.
2. observe the ice for 15-20 minutes.
   What is going on? Write it down.
3. now heat the ice pieces. If we apply heat what will happen in the end? Write it down.
4. then keep heating the pan. What do we see?
5. hold a dry spoon above the pan.
6. remove the spoon and let it be cool.







Result

If ice is placed in a container, it slowly melts and turns into water. It melts quickly when heated. It is seen from the above activity, if water is boiled, smoke comes out through the spouth of the kettle's tube. This is called water vapor. If this water vapor is cling to a spoon for a while and cooled, small drops of water can be observed.

Discussion

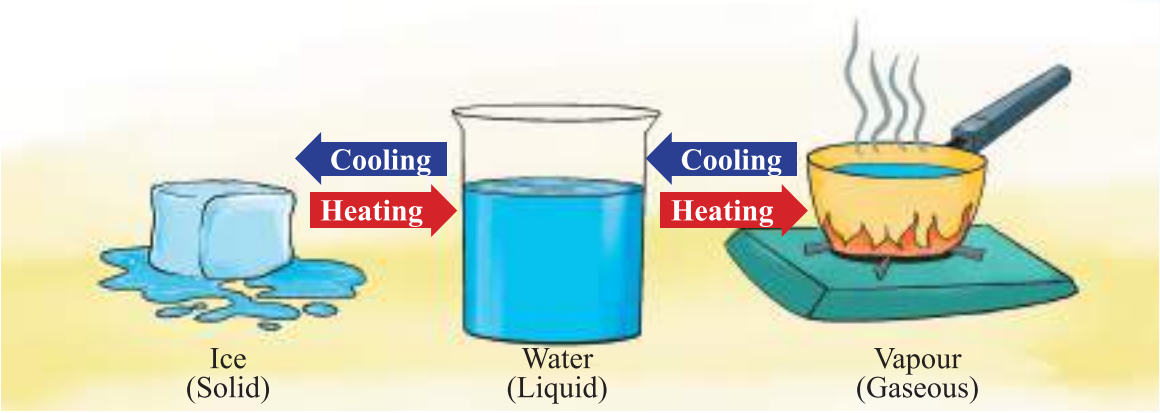
1. When water is cooled it turns into ice. Again, ice turns into water when it is heated. What can be understood from this test? Let's discuss about this with classmates to find the answer.

2. Water boils when it is heated. Gas moves out through the kettle's tube. This gas is converted into water like dew drops when it is cooled. What can be understood from here? Let's discuss with classmates and write it down.

3. What happens if you leave an ice cube in a bowl without heating it? What is the difference between heating and not heating?

Summary

Ice is a solid matter. Ice melts and turns into water when it is heated. It melts slowly when left it outside under normal condition. It melts quickly when heated. When this water is heated, it turns into water vapour. Water vapour is a gaseous matter. From the above experiment we can understand that ice, water and water vapour are the same matter. Their state only changes depending on their external condition of heating-cooling.



Let's learn more about the different states of water…...

Water exists in three states in nature. For example, ice can be seen in the polar region of the world and on top of the mountains. Water is found in pond, river, lake, ocean in liquid state. Water also exists in gaseous state in vapor form.





8. Various Solid Substances

We see a lot of solid substances around us. Some are hard, some are soft. Through the following work, we can get an idea of the different types of solids.

How many types of solids exist?

Activity: Identifying different types of substances

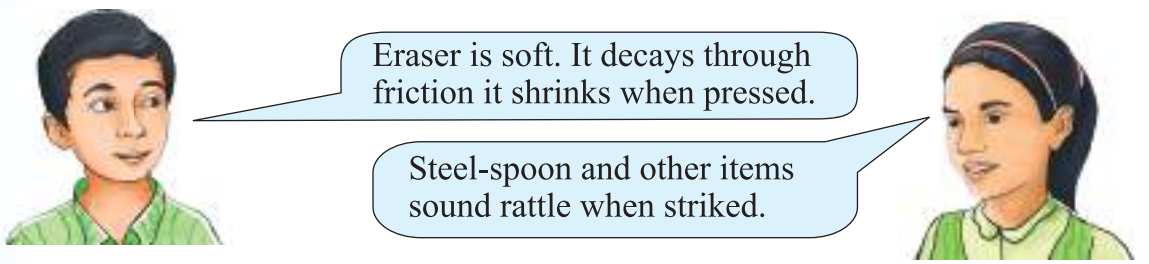
What to do

Let's . . .

1. draw a table similar to the adjacent one.
2. hold the solid substances given in the picture below. How does it feel to hold these substances? Discuss with classmates.
3. what properties of a substance that is not available in the remaining substances? Write down in the table discussing with classmates.
4. write a special function of each substance.

Name of the object	Properties	Applica-tion





Result

There are different types of solids. Some substances are hard. Some are soft. For example: stone is hard; Eraser is soft. Glass is fragile; Paper can be folded. Wax melts easily when heated. Plastic is flexible. Metal sounds rattle when striked.

9. Concept of Magnet

Have you seen an object attracts other objects made of iron (such as, safety pin, needle, etc.)? They sometimes attract and sometimes repel each other. These objects are called magnets. Magnets can be made with certain substances, such as iron, iron-like substances. Let's know more about magnets.

What can be done using magnet?

Activity: Examining the behavior of magnets towards different materials

Necessary materials: Magnet, Safetypin, paper, plastic mug, clay, pieces of iron, window grill, iron nut bolt

What to do

Let's . . .

1. make a table similar to the adjacent one.
2. touch the substances shown in the picture below using magnet.
3. see what is happening.
4. write the results of observation in the table on the right.

Substances that are attracted by magnet	Substances that are not attracted by magnet





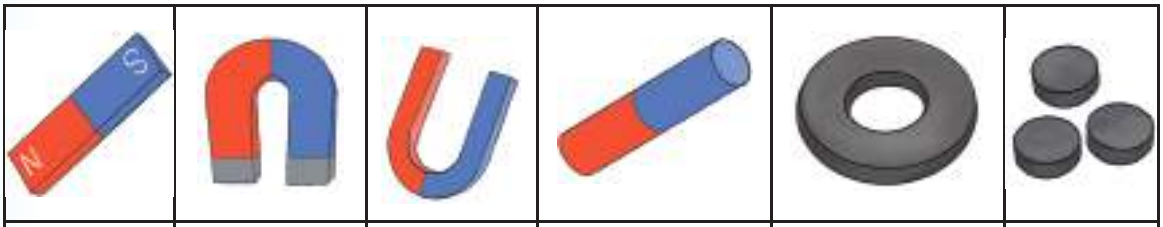


Result

Some substances are attracted by magnet whereas some substances are not attracted by magnet.

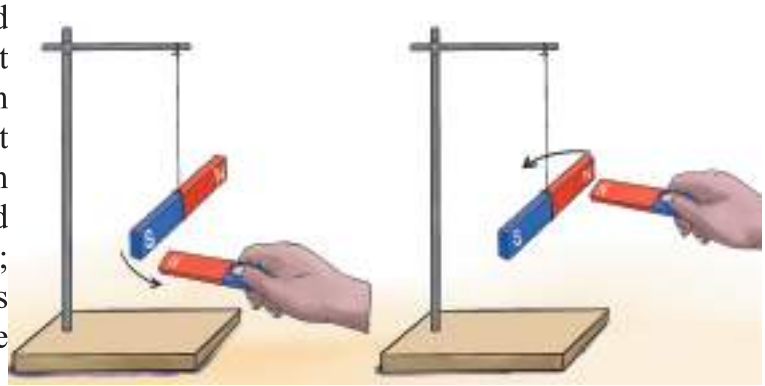
Let's learn more about magnets…...

We have seen that magnet attracts iron or iron type materials. Materials that are attracted to magnets are called magnetic materials. Materials that are not attracted by magnets are called non-magnetic materials. For example: paper, clay, plastic etc. Different shaped magnets are available. For exzmple: bar magnet, horseshoe magnet, cylindrical magnet, U shaped magnet, button magnet, ring magnet are examples of the available magnets.

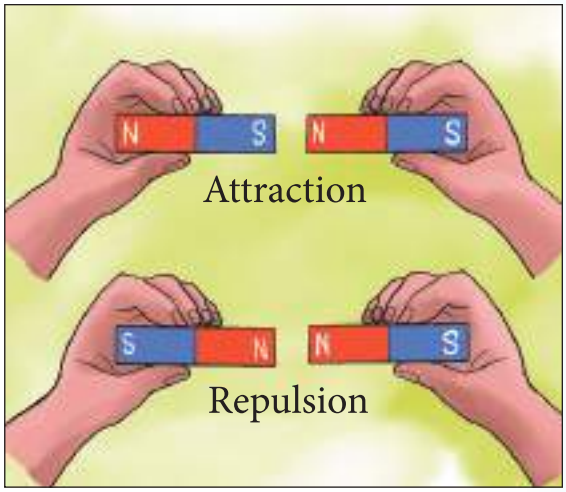


Bar magnet	horseshoe magnet	U shaped magnet	cylindrical magnet	ring magnet	button magnet

Magnets have some interesting properties. For example, a bar magnet remains always in the north-south direction when suspended horizontally using threads. If the magnet is turned around using hand and released, it returns to the north-south direction again. If a magnet is suspended, the north end of the magnet is called north pole of the magnet; And the edge that faces south is called south pole of the magnet.



When the north pole of a magnet is brought closer to the south pole of another magnet, they will pull towards each other. This is called attraction. On the other hand, when north pole of a magnet is brought close to the north pole of another magnet, they push away each other. This is called repulsion. Similarly, when the south pole of one magnet is brought closer to the south pole of another magnet, two poles repel each other.



10. Careful and Responsible Usage of Materials in Daily Life

We use different objects every day. Some of these objects are dangerous. Some objects are fragile. Some objects are very valuable. We should be careful and responsible in the usage of objects according to their type.

How to be responsible and careful in the use of objects?

Activity: Identifying problems that may occur when handling object and taking necessary precautions to avoid those problems.

What to do

Let's . . .

1. draw a table similar to the adjacent one.
2. look at the material in the image below. What kind of problems may happen when using them?
3. what needs to be done to avoid problems? Discuss with classmates and write in the table.

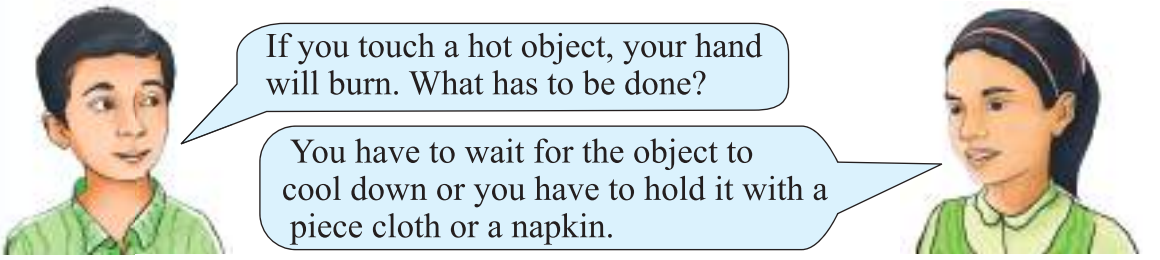
Name of object	What can be done with uncareful usage?	How to use them?

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Summary

If you touch a hot object, your hands will burn. So you have to wait for the object to cool down. If you have to hold it in hot condition, hold it with the help of cloth or napkin. Glassware should be handled in such a way that they do not fall from hands and break. You have to be careful while using sharp materials like knife so that you or others do not get hurt or injured.

Let's see if we can do it!

1. Write down two main properties of a matter.

a.
b.

2. Let's find out the matters among the things mentioned above. Write down the reasons why do you think these are matters and those are not.

Name	Is it a matter?	Why?
Heat		
Bed		
Iron		
Magnetic force		
Plastic container		
School bench		

3. Let's identify the type/ category of the following objects (solid, liquid, and gaseous). Write down why these objects are said to be solid state of matter, or liquid state of matter, or gaseous state of matter?

Name	What kind of matter is it?	Why?
Milk		
Stone		
Smoke		

4. Some pairs of objects are given below. Find out the differences in properties of each pair of objects and write it down in the following table.

Name of the object pair/ Object pair name	Difference between properties of the object pairs
Stone pieces and pith balls	
Spoons of steel and wood/ Steel spoon & wooden spoon	
Wax & Iron rod	

5. Let's identify the type/ category of the objects (magnetic, non-magnetic) given below.

Book, Iron cupboard, Soil, Pin

Magnetic substance	Non-magnetic substance

6. Write the precautions that we should take in case of using the following objects.

Objects	Precautions
Any hot object	
Glassware/ Objects made of glass	
Any sharp objects such as knives	

Exercise

1. Let's tick (√) the correct answer.

A. Which of the following is not a property of liquid?

a) Has weight b) Has a specific weight
c) Has a specific size d) Has a specific volume

B. How many states of matter are there?

a) 1 b) 2
c) 3 d) 5

C. Which property is common to both water and air?

a) Have a fixed shape b) Have a fixed weight
c) Have a fixed size d) Have a fixed volume

2. Let's fill in the blanks with the correct word from the options below.

(three, increase, solid, magnetic, non-magnetic, decrease, liquid, two)

a) When a piece of stone is dropped into a half-filled glass of water, the water level will …….

b) Eraser has a fixed size because it is a ……. matter.
c) In nature, water usually exists in ……. state.
d) Iron-rich materials are a type of ……. matter.

3. Let's match the words on the left with the words on the right.

Left	Right
Cotton	Spherical
Ice	Magnetic material
South poles of two magnets	Solid
Football	Repulsion
Iron	Less weight

4. Short-answer questions

a) What is meant by non-magnetic material?

b) When does a bar magnet attract another bar magnet?

c) Why does the balloon inflate when you blow it with your mouth?

5. Descriptive questions

a) Let's write the names of three objects used in daily life and describe their proper uses.



b) Let's make a list of items in the above picture and classify them based on their states of matter.

Chapter 5

Energy

There are different kinds of energy around us. Energy has been used in any sorts of works. For example, energy is required for driving car, litting up lamp, running television, cooking different staffs.

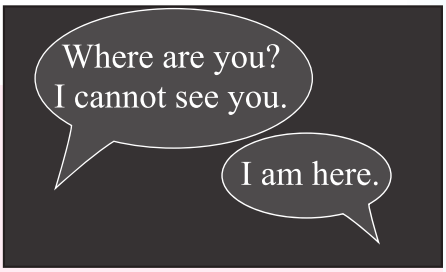
1. Different forms of energy

There are different types or forms of energy. We can find out different forms of energy from the surroundings.

What kind of energy is around us?

Activity: Identifying different forms of energy

What to do



Let's . . .

1. think about the following questions.
   * What will happen if there is no light?
   * What will happen if there is no electricity?
   * What will be the problem if heat is not available?
   * What will happen if we cannot hear the sound?
2. think about the usefulness of light, electricity, heat and sound, and discuss with our classmates.



Summary

Energy is something must required for doing any work.

More about the different forms of energy...

Light



Light is an energy which helps us to see any object. We cannot see anything without light. We get most of the light energy from the Sun.

Electricity



Electricity is the type of energy with which we run different types of electrical appliances. We get electricity mainly from the electrical connection or battery of the house.

Heat



Heat is a type of energy which warms any object. We get heat energy by burning any object. Even if we rub two objects such as the palms of both of our hands, we get heat energy. sun is the main source of heat energy.

Sound

Sound is a type of energy. We can hear something if there is sound. Sound can be produced by striking an object.



2. Uses of Energy

We have learned that there are different forms of enrgy. Energy is required to do different activities in daily life.

How do we use energy?

Activity: Finding the usage of energy

What to do

Form of energy	The place for the use of energy	Uses of enegy

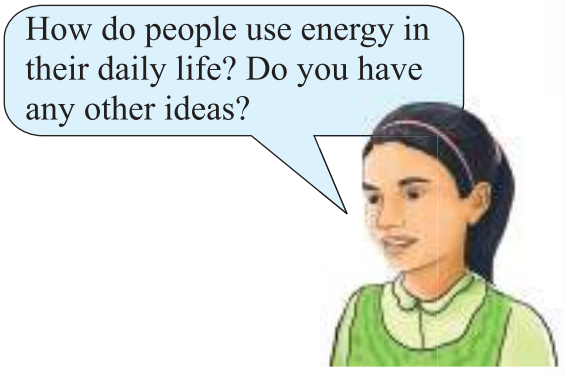
1. Have a look at the picture below. Let's find the usage of light, heat and electrical energy in the picture and write it in the table.

2. Let's discuss the usage of energy with classmates.









Summary

We use energy in different ways. Energy is very important for us.

Let's learn more about the usage of energy……

Light

We usually use light energy to illuminate the room. To control vehicles on the road we use traffic lights. In addition, light signals are used for safety of sea-going ships and aircrafts.



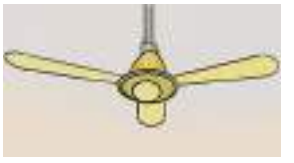


Use of light energy

Electrical Energy

Electricity is required to run various machineries in our daily life. For example, electrical energy is used to run electric lamps, fans, televisions, computers, refrigerators, toy-cars, etc.



Use of electrical energy

Heat

We can heat any object using heat energy. We use heat energy for cooking foods, drying cloths, drying paddy etc. Besides these, we use heat energy to keep the body warm in winter.



Use of heat energy

3. Prevention of Wasting Energy

Energy is very valuable for us. But we waste energy in many ways. If we know the ways how energy is wasted, we can easily prevent misuse of energy.

How can we prevent wastage of energy?

Activity: Finding wastage of energy in different fields

What to do

Let's make a table in the exercise book, similar to the one shown below.

The ways energy is wasted

1. Look at the picture below. From the picture let's find out in what cases the energy is being wasted and write them in the table.
2. Let's discuss about the fileds of wasting energy with classmates.

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Summary

We waste energy in many ways in our daily life. Energy is a very important resource. It is not possible for us to survive without energy. Therefore, we have to prevent wasting energy.



Discussion

We have learned how the energy is wasted in daily life. Let's discuss with classmates how to prevent wasting of energy.

Let's learn more about the prevention of wasting energy

Oil, gas, coal, etc. are usually used to generate light, electricity, heat or any other type of energy. The amount of these are limited in the earth. When they run out, there can be a shortage of energy. As a result, it will be difficult to survive. Therefore, we should stop wasting energy. There are several ways we can prevent wasting of energy. For instance, by turning off electric lights, fans etc. in homes, schools or office rooms after work; by turning off television immediately after watching; by turning off the stove as soon as finished cooking; refraining from repeated opening of refrigerator and closing the refrigerator door immediately after completing the work; by making the best usage of daylight, etc.





Let's see if we can do it!

1. Write down which energies are required in the phenomena mentioned below.

Phenomena	The force that is required
Bright room	
Wall clock	
Using oven to cook	
Talking with teacher	

2. Write down the ways how we prevent the wastage of energy in our daily life. In this way, mention the energy which can be used properly.

Wastage of energy	Types of energy	Ways to prevent wastage
1. TV is on, but nobody is watching anything		
2. The cooking is done but the oven is not turned off		
3. Keeping the electric lights turned on even when there is enough daylight		
4. Honking car horn for no reason		

Exercise

1. Let's fill in the blanks with the correct word from the words below.

(Sound energy, heat energy, light energy, electrical energy, chemical energy)

a) We get the most ……. from the Sun.

b) ……. is needed to run an electric fan.

c) ……. is related to heating and cooling.

2. Let's match the words on the left with the correct words on the right.

Left	Right
Electric lamp	Light energy
Warm body	Electrical energy
Reading books	Sound energy
To hit	Heat energy

3. Let's tick (√) the correct answer.

A. Which is the way to prevent wastage of energy?

a) Using daylight b) Leaving the fridge open
c) Keeping the gas stove on d) Keeping the television on all the time

B. Which is not a source of heat energy?

a) The Sun b) An electric lamp
c) A cooking stove d) A television remote

4. Short-answer questions

a) Let's write the names of forms of energy.

b) What energy do we use to cook?

5. Descriptive questions

a) Let's write down the different purposes in which we use heat energy.



b) The picture above is a picture of a living room. What activities will reduce the wastage of energy while leaving this room?

Chapter 6

Effects of Force on Objects

We learnt about pull and push in our first grade. Pull and push are the two ways of using force.We have to apply force to bring any object to us or to move them away from us.



1. Force in Changing Motion

By applying force, we can make a static object move, stop an object in motion, and change the speed of an object in motion.

How does force change the motion?

Activity: Observing the effect of force on the motion of an object

Necessary Materials: A marble

What to do

Let's…

1. place the marble on a plain floor.
2. tap the marble with a finger.
3. place a hand in the motion path of the moving marble and block its motion path.
4. stop the marble by placing a hand or finger on the new motion path.

Result

The marble in rest can be set in motion by applying force through tapping. By blocking its motion path, the value and direction of its speed can be changed, and it can also be stopped.

2. Force in Changing Shape

What else can force do?

Activity: Observation of the effect of force on objects

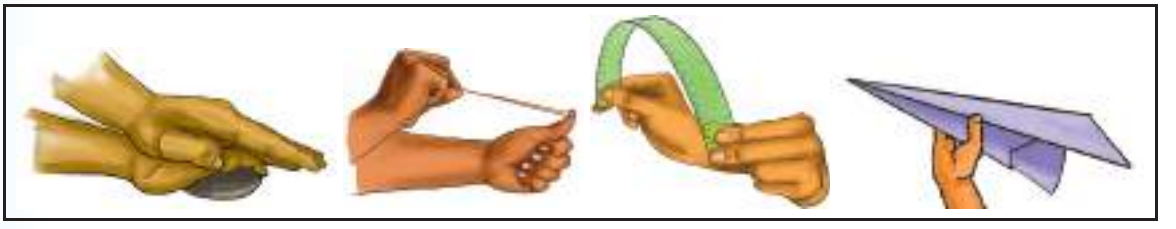
Home Work/ Class Work

Necessary Materials: Clay, rubber band, plastic scale, etc.

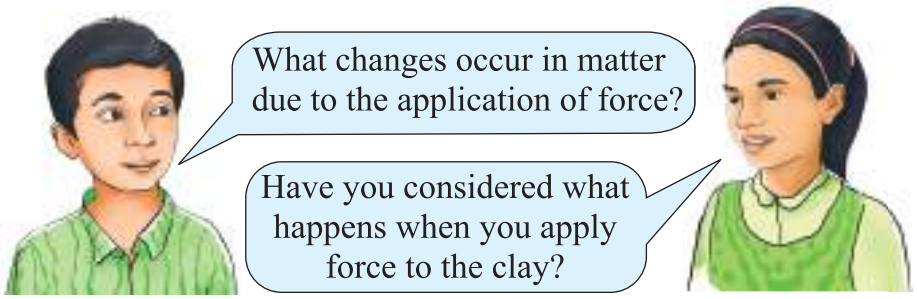
What to do

1. Let's make a table similar to the one shown below.

Name of object	What kind of force have you applied?	What is shape of the object after applying force?
Clay		
Rubber band		
Plastic scale		
Paper		
Pencil		



2. Apply different kinds of forces on the objects and observe the changes in shape of the objects.
3. Note down the changes.
4. Let's share the opinions with classmates.

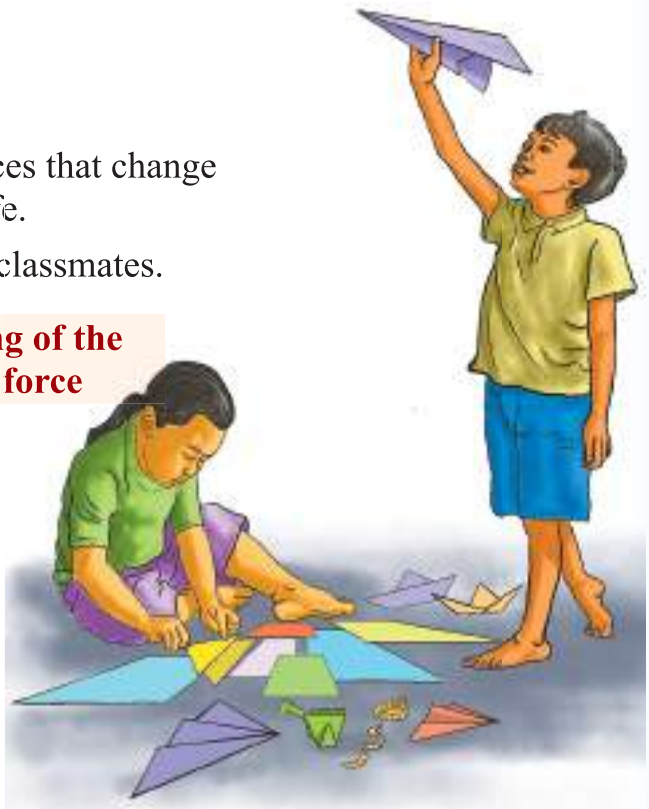


Result

The shape of objects like clay, rubber bands, and plastic scale changes when force is applied to them by pulling, pushing, or bending. By applying the similar force, the shape of the paper can be changed by folding and making it sharp.

Discussion

1. Find out some examples of forces that change the shape of objects in daily life.
2. Share your opinions with your classmates.



Let's learn more about changing of the shape of objects due to applied force

Force is required to change the shape of an object. We can give the clay a new shape by pushing, presurizing or pulling it. By pulling the rubber band we can change its shape. When you bend the plastic scale, it takes the shape of a bow. When the force is removed, many objects such

as plastic scale, rubber band go back to their original shape. Many objects do not return to their original shape even if the force is removed, such as clay. In real life, shapes are changed with the help of forces in different objects. Forces are required to make pottery, such as plate, glass, and wooden furniture. In the blacksmith shop, an appropriate amount of force is applied to the hot iron plate to make knives, scissors, and spades. Long strips of steel are bent by applying force to create a bridge-like structure. A variety of jewelry can be made by applying force on the metal wire and bending it. By applying force, pieces of paper can be folded to make different shapes including airplane, boat, and flower.



Effect of force in changing the shapes of rubber band and clay

3. Force in changing volume

The volume of the object can be changed by applying the force.

How can the volume be changed by applying force?

Activity: Observation of the change in volume under applied force

Necessary materials: A syringe

What to do

Let's . . .

1. take a syringe in one hand and close its mouth by using the other hand.
2. keeping the mouth closed, compress the air by applying force to the piston of the syringe.
3. observe changes in the volume of the air inside the syringe.

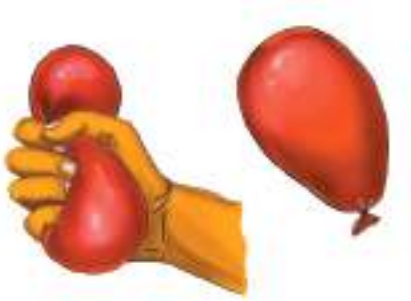


Result

Air in the syringe is compressed by applying force. As a result, the volume of the air decreases. Again, releasing the pressure incrieases the volume of the air.

Let's learn more about the role of the applied force in changing the volume.....

Suppose, you have a small air filled balloon. If you press the balloon tightly, you will notice that its volume has been decreased. The reason behind this is that your applied force is pushing the air inside closer, and thus the balloon gets contracted and takes up less space than before. On the other hand, releasing the balloon will cause the air inside to spread and the balloon will grow larger again and regain its original volume. Thus the force plays an important role in changing the volume of the object.



In real life, the volume is changed by applying force in different objects. To remove the sauce from a plastic bottle, we change its volume by applying force. The volume of air

is reduced by applying force on the piston of a pump. Afterwards, the air enters into the tyres of bicycles or rickshaw wheels. Even during the production of LPG used for cooking in the house, the volume is reduced by applying force on the gas.





4. Force in Everyday Life

We apply force to various objects to move, shake, stop and change the shape, size and volume of objects. Force is used for many other purposes in daily life.

How do we apply force in different areas of our daily lives?

Activity: Investigation of the effect of force on objects

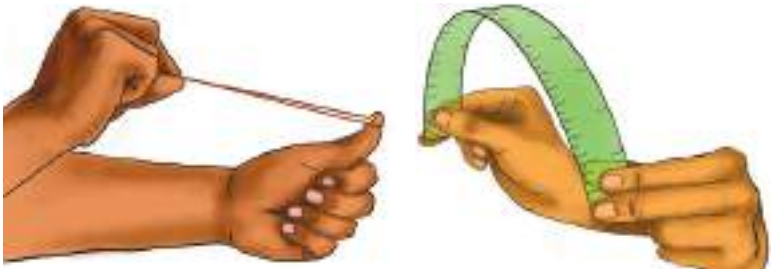
What to do

Let's . . .

1. make a table similar to the one shown below.

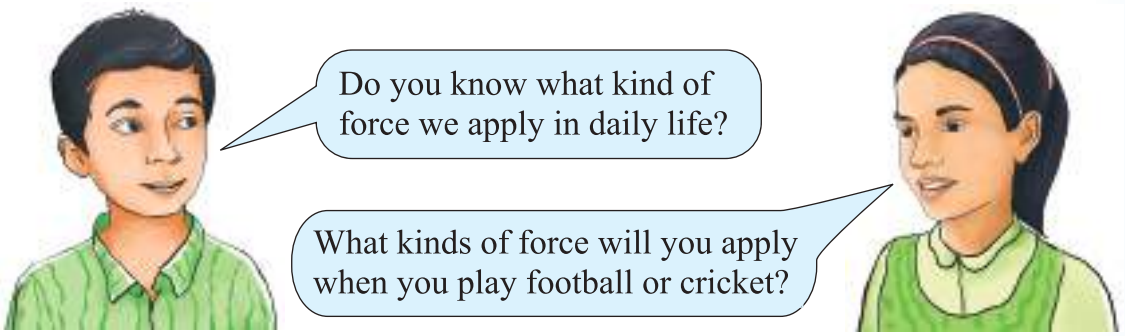
Type of force

2. look at the pictures below and identify what kind of force has been used.
3. write down the type of the applied force.
4. discuss with classmates about what kinds of forces are used in everyday life.









Result

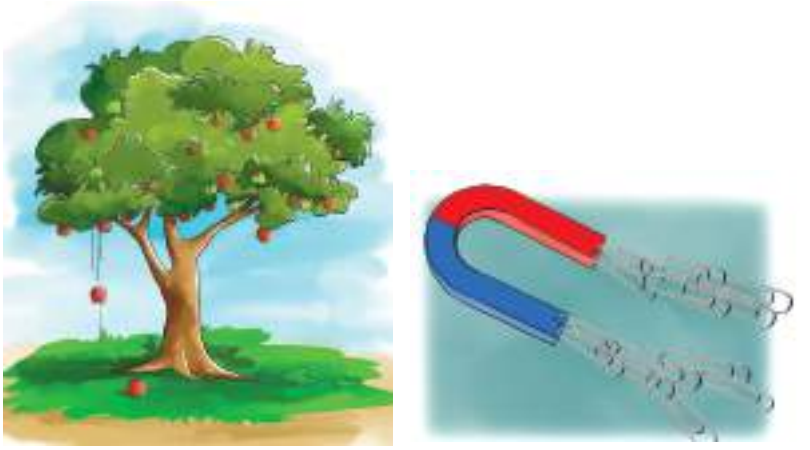
We push the cart, pull the toy car, pull the rubber band. We compress orange or lemon to extract juice from them and we bend the rubber scale.

Let's learn more about the ways to apply force in everyday life...

We apply force in different ways in daily life. There are two types of these forces, namely, contact force and non-contact forces. A contact force is the force that acts between two objects and require direct connection between them. For example, kicking the ball while playing football, throwing the ball while playing cricket, writing using a pen on paper. Pull, push and frictional forces are also examples of contact force. Rubbing one of two objects against the other produces a frictional force. Direct contact between two objects is not required for non-contact forces. Examples of non-contact forces are magnetic force and gravitational force. Magnetic force is a non-contact force by which a magnet pulls iron or iron-like metals towards it. Under the influence of the gravitational force, the fruit falls from the tree to the surface of the earth.



Contact force



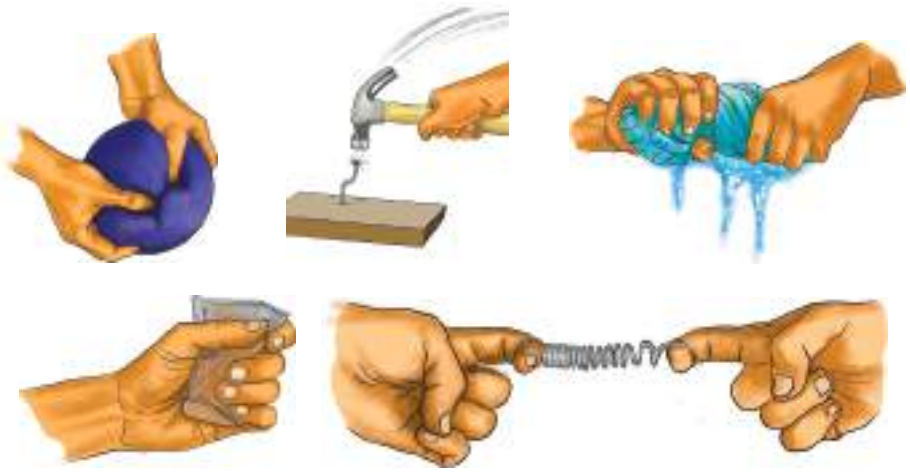
Non-contact force

Let's see if we can do it!

1. Take two plastic bottles, with and without cap. Apply force to the bottles by hand. Observe what happens and write it in the table.

Plastic bottle	Changes in bottle due to the applied force		Causes of changes
A bottle without cap			
A bottle with cap			

2. What kind of force did you apply in the activities shown below? What happens to the shapes of these objects due to the impact of applied force?



Name of the objects	What kind of force did you apply?	What happens to the shapes due to the applied force?
1. Foam ball		
2. Iron nail		
3. Wet clothes		
4. Plastic cup		
5. Spring		

3. Identify the contact force and non-contact force among the forces mentioned below and write them down in the table.

Magnetic force, Frictional force, Kicking on a football, Gravitational force, Contact force

Contact force	1.
	2.
Non-contact force	1.
	2.

4. Identify and make a list on what changes occur to the objects in different events as shown in the following pictures.





Event of applying forces	Types of changes occur to the objects
1. Pulling a rubber band	
2. Crushing a can (made of tin) with the car wheels	
3. Pressing a small sized balloon tightly	

Exercise

1. Let's fill in the blanks.

a) A change in ..... of matter requires the application of force.

b) Many objects return to their original shape when ..... is removed.

c) The ..... of a gas can be reduced by applying force to it.

d) Two ways of applying force are ..... and .....

2. Let's match the words on the left with the correct words on the right.

Left	Right
When pressure is applied to clay,	it becomes flat.
When a marble is tapped,	it becomes longer.
When a small air-filled balloon is squeezed tightly,	it is in motion.
When a rubber band is pulled,	its volume decreases.

3. Let's tick (√) the correct answer.

A. Which of the following objects returns to its original shape when the force is removed?

a) Clay b) Paper

c) Rubber band d) Pencil

B. Which of the following objects can be shaped like a bow by applying force?

a) Rubber band b) Plastic ruler

c) Clay d) Pencil

C. Which of the following forces causes the fruit to fall from the tree to the ground?

a) Magnetic force b) Gravitational force

c) Frictional force d) Contact force

4. Short-answer questions

a) Let's give an example of how the application of force can change the shape of a matter.

b) Let's give two examples of daily life activities that can be done by applying force.

c) What is the change in shape of a plastic bottle without a lid, when pressure is applied to it?

5. Descriptive questions

a) How many types of changes occur in a matter due to the application of force, and what are they?

b) "Writing on paper with a pen is an example of contact force." Why?

c) What is the change of a plastic bottle without a lid, when pressure is applied to it by hand, and what causes this change?

Chapter 7

Water

Let's look at the world map. What do you think? Almost three-fourths of the earth's surface is water. But all this water is not suitable for use, is not it? Why? Let's think about it.

1. Sources of Water

We use a lot of water for various purposes. We drink water. All animals and plants need water to survive. Water is very important for humans.

Where do we get all this water from? Let's think about it.



Where do we get water from?

Activity: Let's find out the sources of water in the environment around us.

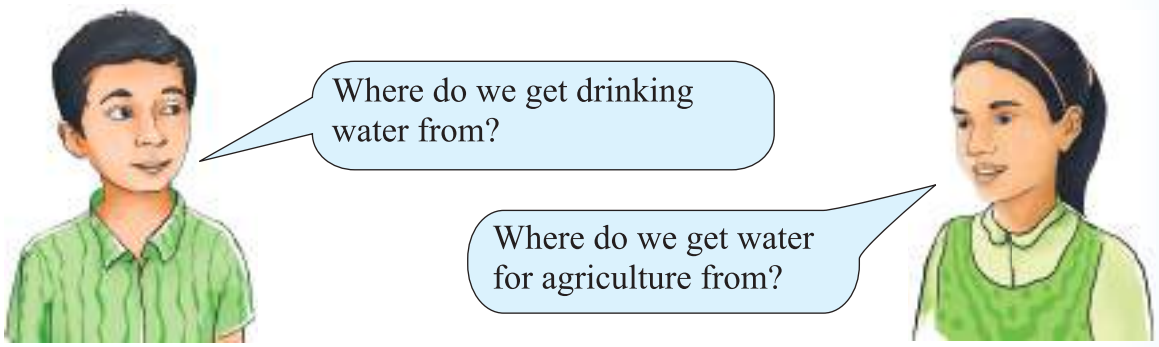
Sources of Water

What to do

Let's . . .

1. make a table in the note book like the one shown on the right.
2. think about the different sources of water and make a list of these sources in the table.
3. discuss the sources of water with classmates.

Sources of water



Summary

The main sources of water are ponds, rivers, canals, lakes, rain, and the seas. In addition, we get water from taps and tube wells.

Let's learn more about the sources of water....

The sources of water can be divided into two types: natural sources and man-made sources.

Natural Sources of Water

Rain, rivers, canals, lakes and seas are the natural sources of water.

Rainwater

Rainwater is the purest among the natural sources of water. In our country, there is a lot of rainfall during the rainy season. Rainwater gathers in ponds, rivers, haors, canals, lakes, etc. It is stored on the earth's surface and underground.

Surface water

The water found on the surface of the earth is called surface water. For example, seas, oceans, rivers, wetlands and ponds are the sources of surface water. Surface water is continuously evaporating. Later, it falls to the surface in the form of rain, and it seeps into the ground and accumulates underground.

Groundwater

The water stored under the ground is groundwater. We get groundwater in different ways. In hilly areas, this water comes out in the form of fountains. In plain areas, we collect this water by digging wells or through tube wells.





Natural sources of water

Man-made Sources

We also get water from ponds, wells, tube wells, and water taps. These are man-made sources of water.






Men made sources of water



Discussion

In how many categories can we divide the sources of water?

Let's . . .

1. draw a table in the notebook like the one shown on the right.
2. categorize the sources of water into two.
3. discuss the activity with class-mates.

Natural sources of water	Man-made sources of water

2. Types of Water

We see water in various places around us. This water can be categorized into two: fresh water and saline water.

What are the types of water?



Activity: Finding out different types of water



What to do

Let's . . . . .

1. draw a table in the exercise book like the below one.

Sources of freshwater	Sources of saline water

2. notice the pictures below and the next page, find out the sources of freshwater and salinewater, and write them in the table.

3. discuss the types of water with classmates.

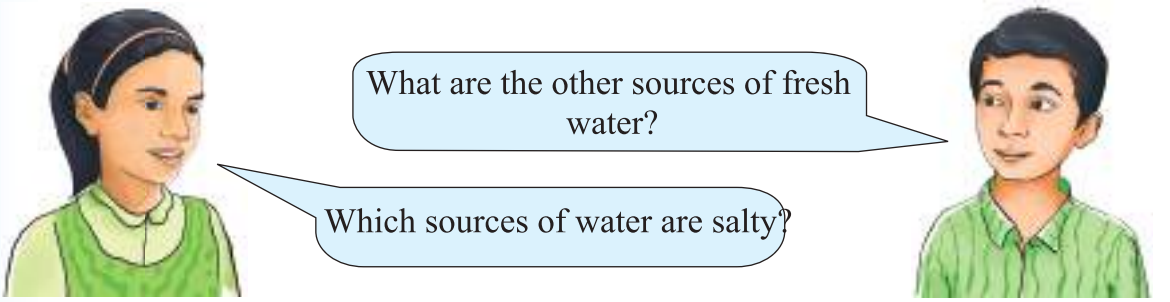








Different sources of water



Summary

We can categorize water into two types: fresh water and saline water.

Let's learn more about the types of water...

Saline Water



Water that naturally contains salt is called saline water. Most of the water on earth is salty. The water in the seas and oceans is salty.

Fresh water



Fresh water is a type of water that either has no salt or has very little salt. The main sources of fresh water are natural lakes, waterfalls, rivers, snowfalls, ice, rain, etc.

We get fresh water from ponds, wells, and water taps.



Discussion

Let's find out drinkable or non drinkable sources of water. Write them in the table.

Let's . . . .

1. make a table in the notebook like the one shown beside.

2. make a list of drinkable water and non drinkable water in the table.

3. discuss the activity with classmates.

Drinkable water	Undrinkable water

Let's learn more about the types of water...

Not all types of water are safe to drink. Humans need safe water for drinking. The types of water that are safe for human use are processed water in bottles, boiled water, and water from green-painted tube wells.

The types of water unsafe for drinking or cooking are pond water, polluted river water, and water from red-painted tube wells etc. Let's find out from the pictures below how water from ponds and rivers can be made safe.

Unsafe water





Safe water







3. Usage of Water

Every day we use water for various purposes. Living beings need water to survive. Human beings use water in many ways in their daily life. Let's find out for what purposes we use water in our daily life.

For what purposes do we use water?

Activity: Finding out the uses of water

What to do

Let's . . . . .

1. draw a table in the notebook like the one below.

The activities where we use water

2. think about the activities where we use water and write down the ideas in the table.
3. discuss the ideas with classmates. Let's talk about the use of water in our daily life.






When or where do we use water?

We wash our hands and faces with water in the morning, drink water, bathe with water.


Summary

We use water for various purposes. We use water for drinking, cooking, washing dishes, cleaning floors, brushing teeth and washing our face, bathing, washing clothes, farming, etc. Electricity is generated by building dams on rivers.



Usage of water

4. The Importance of Water in Our Life

We use water in various ways. We cannot survive without water. That's why, water is very important for our life

Why do we need water so much in our life?

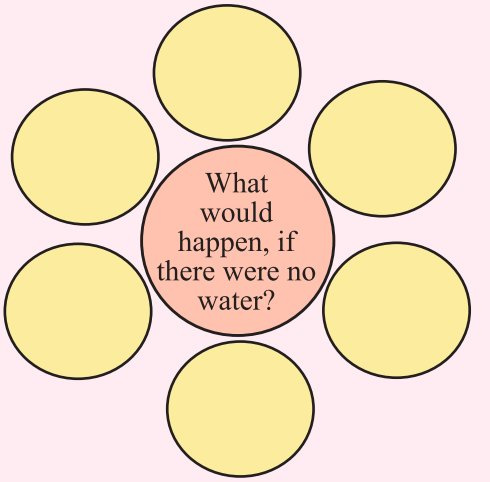
Activity: Finding out the necessity of water.

Homework/Classwork:

What to do

Let's . . . . .

1. draw a concept image in the notebook like the one shown beside.
2. think of the works or scenario where we use water. See the pictures below. Think about what would happen, if there were no water and write it in the concept image.
3. exchange the ideas with classmates. Discuss why water is important for our life









If there is no water, the paddy seedlings will die.

What will happen to our life, if there were no water?



Summary

Animals and plants need water to live. If there were no water, we could not drink water when we were thirsty. We grow crops using water. Most of our food comes from plants and animals. These plants and animals cannot live without water.

Let's learn more about the importance of water...

Water is very important for human beings. The other name of water is life. We cannot live without water. Water is essential for all living beings on earth to survive. About 60-70% of the human body is water. So, we should drink at least 5-6 glasses of safe water daily. It is possible to live without food for a few days. But it is impossible to survive a single day without water. Without water, agricultural fields, wells, rivers and ponds dry up. In some regions of Bangladesh, the water shortage becomes severe during the summer. This situation is known as drought.



A dry field for lack of water



A dry river for lack of water

5. Proper Uses of Water

Water is very important in our lives. So, we should not waste it but use it properly.

How can we stop wasting water?

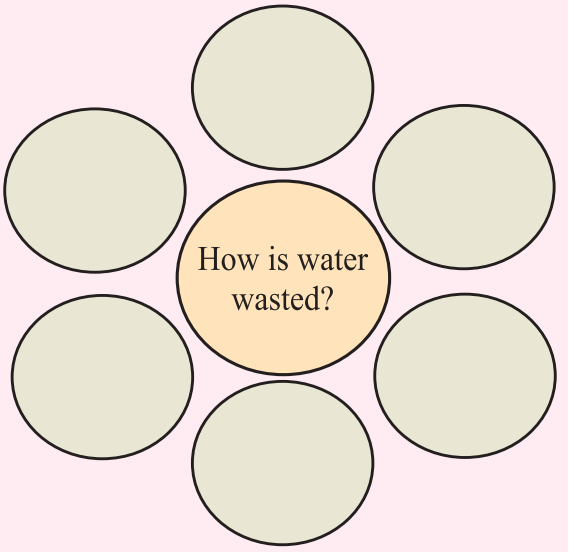
Activity: Finding out the wastage of water

Homework/Classwork:

What to do

Let's .....

1. draw a concept image in the notebook like the one shown beside.
2. look at the pictures below and think about when and how water is wasted and write it in the concept image.
3. discuss the ideas with classmates.









How do we waste water while using it?

We waste water by leaving the basin tap running while brushing our teeth.



Summary

We can prevent the wastage of water in various ways. For example, we can avoid leaving the tap running while brushing our teeth and by turning off the tap after washing our hands or face.



Discussion

How will you use water while washing your face after washing hands and brushing teeth?



How will we prevent the wastage of water?

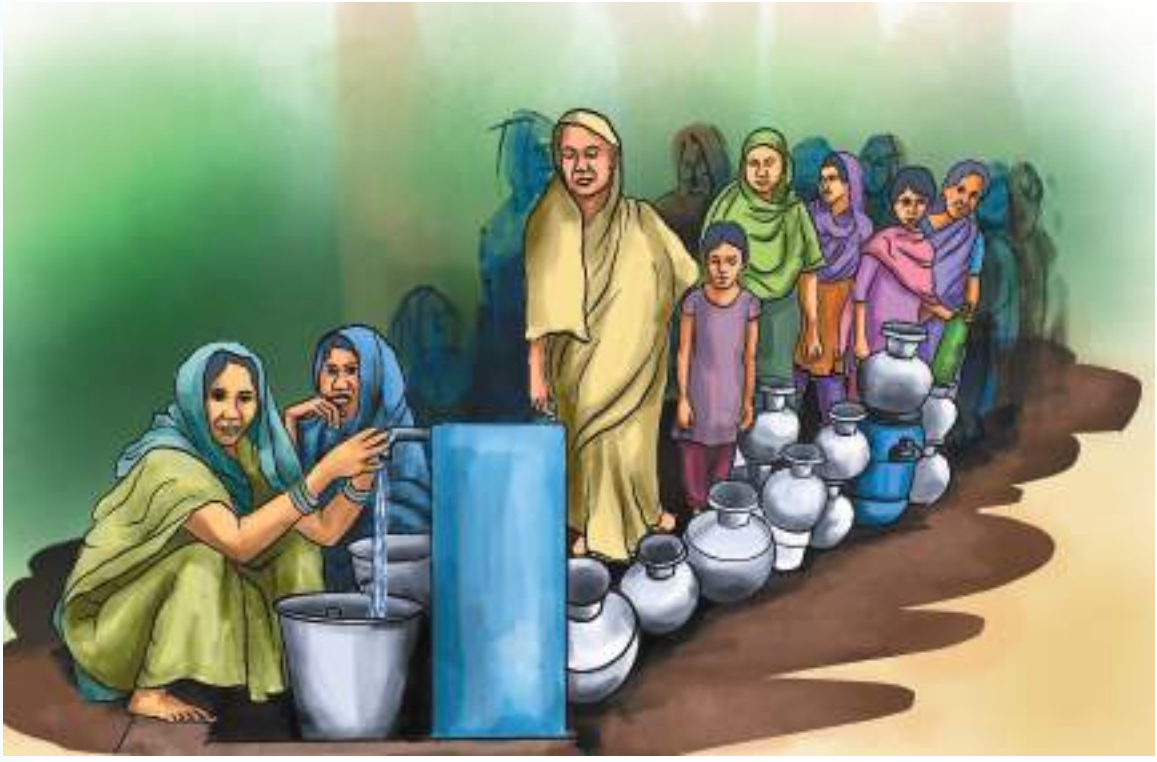
Let's . . . . .

1. create a table like the one below.
2. think about how water is wasted in different places at home or school.
3. write down in the table, the ways to prevent the wastage of water in daily life.
4. exchange ideas with classmates.

Ways to prevent the wastage of water

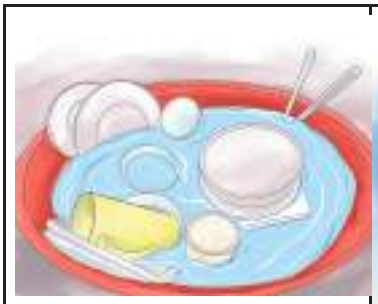
Let's learn more about the proper uses of water...

Although there is a lot of water on the earth, very little of it is drinkable. The more our population is growing, the more people are using water in huge quantity. So, the quantity of usable water is decreasing. For this reason, we need to be careful about the proper uses of water. We should never waste it.



Gathering of many people to collect safe water.

We can prevent wastage of water in many ways. Let's write a few ways of preventing wastage of water in the notebook based on the pictures below.

		
Filling the bucket with water and then washing the dishes	Turning off the tap after using it	Watering plants with the remaining water after use

While washing dishes, washing hands and feet, or taking a bath, many people leave taps, showers, etc. running unnecessarily. But they should not do it. To prevent wastage of water, we can fill a container and then use it. If a water tap is broken, we should repair it quickly. This will ensure proper use of water, and at the same time prevent wastage of water. If there is some water at the bottom of the glass after we drink water, we can use it to water plants or store it in a bucket for washing clothes.

Let's see if we can do it!









1. Sort the given pictures in the following table based on the sources.

Natural sources	Man-made sources

2. Sort the water sources in the following table. Write down the reasons to identify these as safe and unsafe sources of water.

Sources	Types of water		Reasons
	Safe	Unsafe	
Pond			
River			
Sea			
Tube-wells marked in green			

3. Sort the water sources in the following table. Write down the reasons to identify these as salty water and fresh water.

Sources	Types of water		Reasons
	Salty water	Fresh water	
Pond			
River			
Sea			
Ocean			

4. Write 6 uses of water in the following table.

Uses of water
1.
2.
3.
4.
5.
6.

Exercise

1. Let's fill in the blanks.

a) The sea is the ..... source of water.
b) Water that contains salt is called ..... water.
c) Based on the source, water can be divided into ..... types.
d) After washing our hands or face, we can prevent ..... of wa ter by turning off the tap.

2. Let's match the words on the left with the words on the right.

Left	Right
Rainwater	Sea water
Pond	Water from a red-painted tube well
Unsafe water	Boiled water
Saline water	Man-made water source
Safe water	Natural water source

3. Let's tick (√) the correct answer.

A. Which of the following are natural sources of water?

a) Rain, pond, canal
b) Pond, water tap, river
c) Sea, tube well, well
d) Rain, river, sea

B. Which of the following water is not safe to drink?

a) Processed bottled water
b) Water from a green-painted tube well
c) Water from a red-painted tube well
d) Water boiled with heat

C. Which of the following is not a waste of water?

a) Using excess water while washing clothes

b) Leaving the tap running while brushing teeth

c) Turning off the tap after washing hands and face

d) Leaving the tap running after using

4. Short-answer questions

a) Let's write the names of two man-made sources of water.

b) Let's write two problems that could happen in our life, if there were no water.

c) Let's write two uses of water in our daily life.

5. Descriptive questions

a) Let's write four reasons for water wastage.

b) Let's write four things we can do to prevent water wastage.

c) Let's classify the following water sources based on salinity.

(Waterfall, river, pond, sea, ocean)

d) Why is it important to prevent water wastage?

Chapter 8

Soil

Soil is the soft layer covering the earth's surface. Various plants grow on soil. Men cultivate soil.They make their homes on soil and live there. Besides, numerous animals live on soil.

1. Components of Soil

What is soil made of? Let's find out what are there in the soil.

What is soil made of?

Activity: Observing the components of soil

Necessary materials:

One clean plastic bottle, soil, water



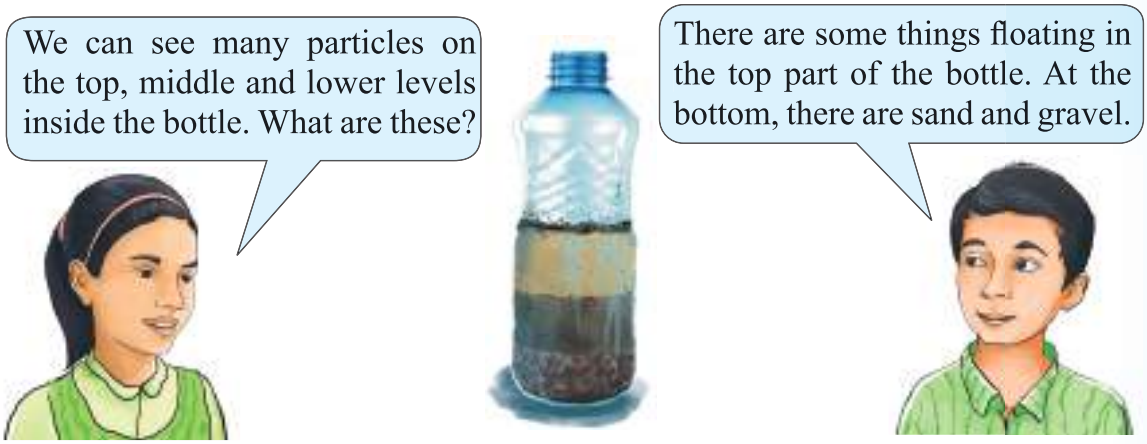




What to do

Let's . . .

1. go out of the classroom, and collect some soil.
2. put some soil into the plastic bottle and then pour water into it.
3. close the lid of the plastic bottle properly and shake the bottle well.
4. guess the components of soil and write them in your exercise book.
5. observe the mixture carefully and note down what we have found in the mixture.
6. discuss the findings with classmates. Talk about the components of soil.



Discussion

What is soil made of?

Home Work/ Class Work

Let's . . .

1. make a table like the one shown on the right.
2. write down the different components of the soil found in the above experiment.
3. discuss the components of soil with our classmates.

Components of soil

Result

Soil consists of pebbles, sand, clay, water and various decomposed plants and animals.

Let's learn more about the components of soil…

Soil is the upper layer of the earth, which covers the earth's surface. Soil is made up of different components. Due to the difference of these components, soils are of different types. From the previous experiment, we get an idea of what the soil is composed of. For example, soil is composed of gravel, sand, silt, mud, water, humus etc. The dead bodies of plants and animals are

decomposed in the soil. These decomposed bodies make organic substances with soil . This is called humus. Humus is usually black or dark in colour. Humus helps plants to grow.



2. Characteristics of Soil

There are usually three types of soil. Clay soil, loamy soil and sandy soil. The characteristics of soil vary depending on its type.

What are the different characteristics of soil?

Activity: Characteristics of different types of soil

Necessary materials: Different types of soil, white paper, etc

Let's . . .

1. make a table like the one given below.

Characteristics	Sample 1	Sample 2	Sample 3
Colour of the soil			
Texture of the soil			
Shape of the soil particles			

2. put the samples of three types of soil on white paper and name them as Sample 1, Sample 2 and Sample 3.
3. observe the three different types of soil and write down their characteristics in the table.
4. share ideas with your classmates. Discuss the characteristics of the different types of soil and find out their similarities and differences.

Result

Types of soil vary based on the characteristics like colour, shape, and size of its particles.

Characteristics	Sample 1 (Sandy Soil)	Sample 2 (Loamy Soil)	Sample 3 (Clay Soil)
Colour of the soil	Light brown to light grey	Black	Reddish
Texture of the soil	Dry and grainy	Soft and dry	Wet and sticky to the touch
Shape of the soil particles	Big	Different sizes	Small

Let's learn more about the characteristics of soil…

Sandy Soil

Usually, the colour of sandy soil is light brown to light grey. The particles of the sandy soil are bigger than loamy soil and clay soil. The sandy soil is dry and granular.



Loamy Soil

Loamy soil is ash in colour. It feels soft and dry when touched. The particles of loamy soil are of various shapes and sizes.



Clay Soil

Clay soil is usually reddish in colour. When in contact with water, clay soil becomes soft, and when dry it becomes hard in texture. The wet clay soil feels sticky when touched but the dry one feels smooth. Among the three types of soil, clay soil has the smallest particles.



3. Water-holding Capacity of Soil

We already have learned various characteristics of soil such as colour, shape, size of its particles and other components. Like these, the water-holding capacity of soil is also one of its characteristics.

Which soil has more or less water-holding capacity?

Activity: Observing the water-holding capacity of soil

Necessary materials: Clay soil, Loamy soil, Sandy soil, water, 3 plastic bottles, a piece of cloth, rubber bands, water glasses, etc.



What to do

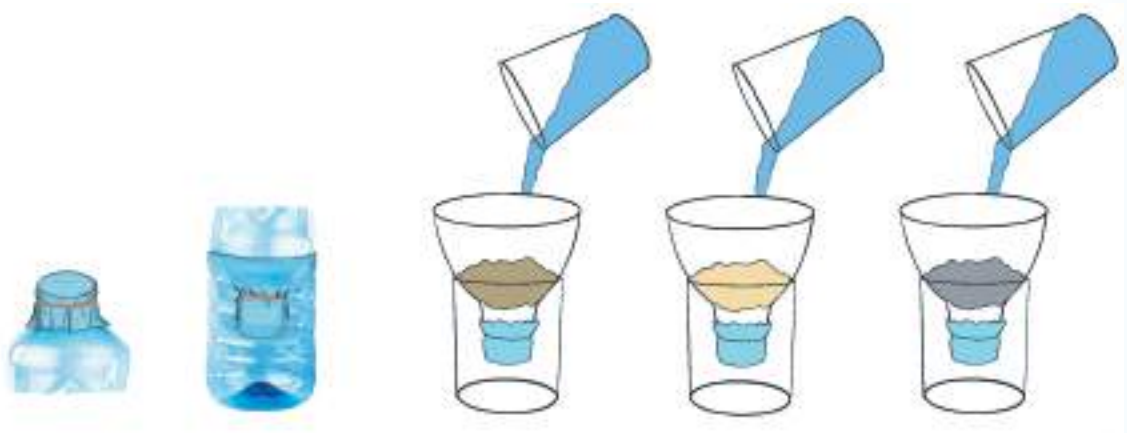
Home Work/ Class Work

Let's . . .

1. draw a table like the one given below.

	Sandy Soil	Loamy Soil	Clay Soil
How fast does water travel through the soil?			
Quantity of remaining water in the container			

2. Cut the top portions of the three plastic bottles and make three funnels by using the cloth and rubber bands with the help of our teacher.
3. Now take three types of soil in equal amount in the prepared funnel.
4. Place the funnels in three glasses as shown in the picture below.
5. Now pour the same quantity of water slowly into the three funnels.
6. Observe how fast water runs down through a certain soil and accumulates in a glass, and write it in the table.



Clay soil Sandy soil Loamy soil

Discussion

What are the different characteristics of soil?

Let's discuss the answers to the following questions based on the observations:

1. Through which type of soil does water run down quickly?
2. Through which type of soil does water run down the slowest?
3. Which type of soil can retain the most water?

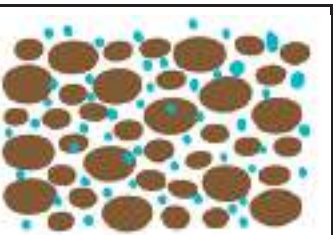
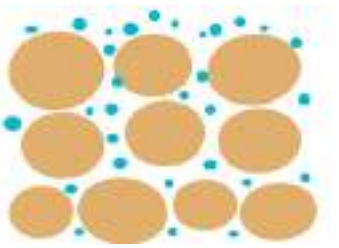
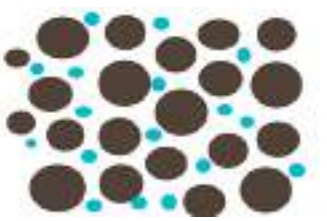
Result

Through our experiment, we have come to know that different soils have different water-holding capacities. For example, sandy soil has a very low water-holding capacity. For this reason, water can flow quickly through sandy soil. Water can also flow through loamy soil easily but slower than through sandy soil. Loamy soil's water-holding capacity is lower than clay soil but higher than sandy soil. Only a very small amount of water can flow through clay soil. Clay soil can hold the most amount of water.

	Sandy Soil	Loamy Soil	Clay Soil
How fast does water flow through which type of soil?	Quickly	Slowly	Very Slowly
Quantity of water accumulated in the container	Huge	Slightly less	Least

Let's learn more about the characteristics of soil…

Due to the various types of soil particles, water flows through different types of soil at different speeds.

Clay Soil The particles of clay soil are the smallest. Due to this, water cannot flow easily through it. Clay soil has the highest water-holding capacity.	
Sandy Soil Sandy soil has the biggest particles. Due to this, it has gaps in the soil which allows water to flow through it very quickly. The particles of sandy soil are larger than the particles of loamy soil and clay soil.	
Loamy Soil The particles of loamy soil are of different sizes. Loamy soil is a mixture of both small and large particles. This soil has moderate water-holding capacity. It drains well and therefore it can hold all other soil elements.	

4. Soil and Crops

There is a close relationship between soil and crops. According to the characteristics of soil, different crops grow well in different types of soil.

Which soil is suitable for which crops?

Water is very important for growing crops. Plants grow in soil and get water from the soil. In which soil do crops grow well?

Activity: Knowing which soil is suitable for which crops

What to do

Home Work/ Class Work

Let's . . .

1. draw a table like the one given below.

Which crops grow well in which soil?		
Sandy soil	**Clay soil**	**Loamy soil**

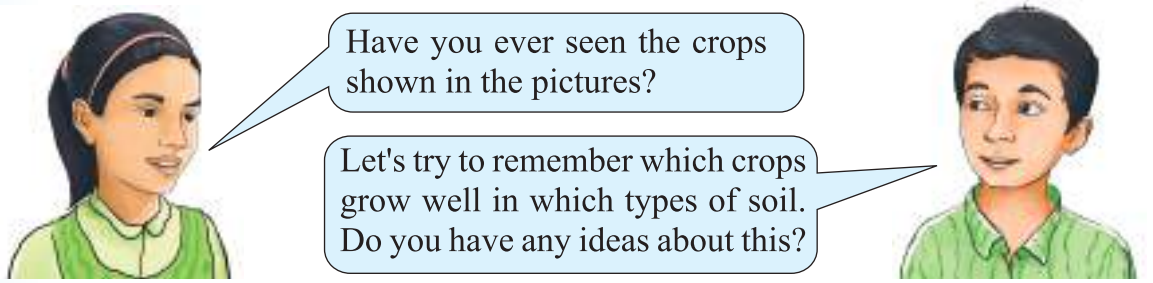
2. observe carefully the pictures below. Then, think about which crops grow well in which soil and write down in the table.
3. discuss the ideas with classmates and find out which types of crops grow well in which types of soil.

Paddy, wheat, maze, jute, mango, legume, jackfruit, watermelon, groundnuts, cucumber, muskmelon.









Summary

Different types of crops grow in different types of soil. Some crops grow well in clay soil. Some crops grow well in sandy soil. Again some crops grow well in loamy soil.

Let's learn more about what crops grow well in which soil…

Clay Soil

Wet clay soil is very sticky. Water cannot easily pass through this type of soil. It has very little air. Different elements of the soil mix with water and stay in the soil. This soil has essential elements that help plants grow. Legumes and jackfruit grow well in clay soils.



Legumes



Jeckfruit

Sandy Soil

The water-holding capacity of this soil is very low. Water goes down very quickly through the gaps between the particles. The necessary elements for crops also flash with the water. That's why, not all crops can grow well in sandy soils. Watermelon, groundnut, muskmelon, *kheera*, cucumber, etc. crops grow well in this soil.



Groundnuts



Cucumber



Watermelon

Loamy Soil

The water-holding capacity of this soil is good. This soil can retain water and other soil elements. But water does not log in this soil. Rice, wheat, corn, barley, jute, sugarcane, etc. grow well in this soil. Most of the areas of Bangladesh consist of loamy soil.



Paddy



Wheat



Jute

5. Importance of Soil in Our Life

Soil is very important in our life. We use soil in different activities of our daily life.

What activities do we use soil for in our daily life?

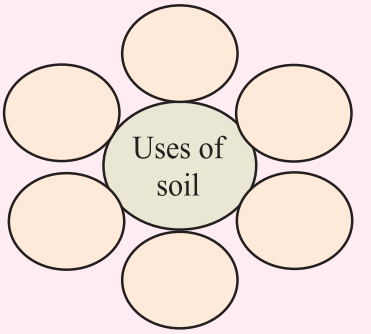
Activity: Finding out what we use soil for in our lives

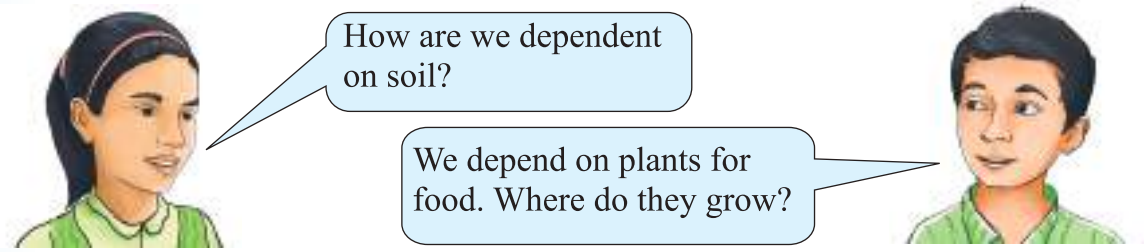
What to do

Home Work/ Class Work

Let's . . .

1. draw a mind map like the picture below in your notebook.
2. write the usage of soil in the mind map.
3. discuss the ideas with classmates.
4. learn, for which purposes we use soil.









Summary

We use soil for various purposes. For example: in agriculture, building houses, making various dolls and toys etc. We depend on the soil in many ways.

Let's learn more about the usage of soil...

Soil has many different uses. People use soil for various purposes. Soil is important for our existence. We cannot live without soil.

Growing crops and making food



Most of the food that we eat comes from plants. Plants grow in soil. Soil provides essential water and nutrients for plants. People grow vegetables and crops in the soil for food. We also depend on animals for food. Again, many animals get their food from plants.

House and building construction



Humans build houses and buildings on the soil. Soil is used to make building materials like bricks or concrete.

Arts and Crafts

Different types of things are made from soil. For example dishes, vases, jewellery, pots, toys, dolls etc. Moreover, various home décor items are also made from soil.





Soil to create a beautiful and pollution free environment

We need soil to grow flowers in gardens. Flowers make our earth beautiful. The trees that make our earth beautiful need soil to grow. Moreover human activities sometimes generate a large amount of garbage. These garbage are dumped or burried under the soil. As a result, we are protected from dirt, garbage and bad smell.



Discussion

Why is soil so important to us?

Home Work/ Class Work

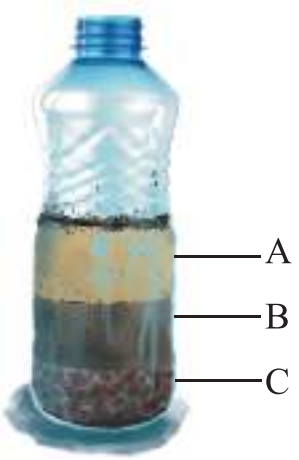
Let's . . .

1. make a table like the one below.

What would happen if there were no soil?

2. remember a scenario where soil is used. Imagine what would happen if there were no soil. Write the ideas in the table.
3. share ideas with classmates. Discuss why soil is important in our lives.

Let's see if we can do it!



Soil mix

1. Observe the picture and name the components of the soil A, B, and C.

2. The component "A" of soil is made up of ……..?

3. Name soil based on the characteristics given in the table below.

Characteristics of different soil	Name of the soil
Light brown to light grey color , grainy and big size particles.	
Black in color , soft and dry different sizes particles.	
Reddish in color , wet and sticky small size particles.	

4. Fill in the table given below by arranging the given corps in the box|

Paddy, Jute, mango, legume, jackfruit, watermelon, cucumber,

Sandy soil	Clay soil	Loamy soil

5. Write down 3 sentences using the words given above box about the importance of soil in our daily life.

Grow crops, burry dead body, building materials, utensils, pollution free environment

a . . . . . .

b . . . . . .

c . . . . . .

Exercise

1. Let's fill in the blanks.

a) Soil is composed of different ……

b) The colour of loam soil is ……..

c) The water-holding capacity of sandy soil is ……..

d) The water-holding capacity of clay soil is ……..

e) Most areas of Bangladesh are composed of ….. soil.

2. Let's match the words on the left with the words on the right.

Left	Right
Sand, silt, mud, water, and air are the	watermelon, peanuts, and cucumber grow well.
Through sandy soil	components of soil.
In clay soil	water can pass quickly.
In sandy soil	beans and jackfruit grow well.

3. Let's tick (√) the correct answer.

A. Which crops grow well in clay soil?

a) Peanuts, beans b) Cucumber

c) Beans, jackfruit d) Rice, wheat

B. Which of the following is a characteristic of loam soil?

a) The soil particles are the smallest and grey in colour.

b) The soil particles vary in size and are black in colour.

c) The soil particles are the smallest and reddish in colour.

d) The soil particles are large and black in colour.

C. The water-holding capacity of soil depends on which of the following properties?

a) Size of soil particles

b) Colour of soil particles

c) Hardness or softness of the soil

d) Dryness and softness of the soil

4. Short-answer questions

a) What are the components of soil?

b) Which crops grow well in loam soil?

c) What are the different uses of soil?

5. Descriptive questions

a) Let's write four characteristics of loam soil.

b) Let's describe the role of soil in creating a beautiful and pollution-free environment.

c) Why is the water-holding capacity of clay soil more than that of sandy soil?

Chapter 9

The Sun for Life

Every morning we get up from bed and see the sun. The sunlight is essential for our survival. The sun is located far away from the earth and so it appears much smaller than our earth.

1. The sun as a source of heat and light

What is the sun?

Activity-1: Knowing the sun

What to do

Let's..

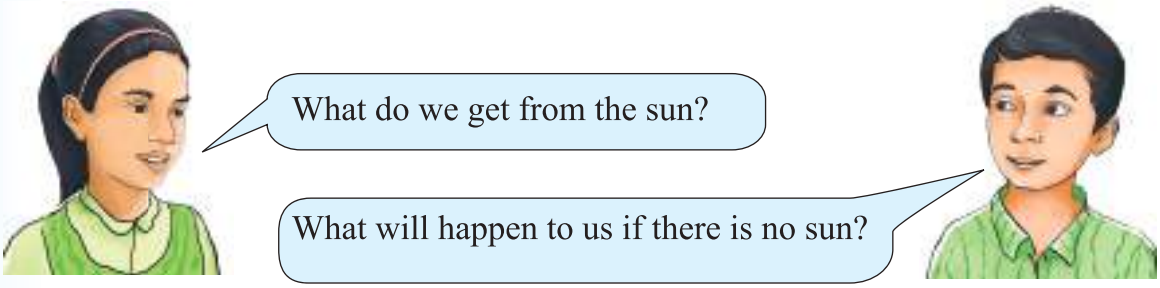
1. make a table like the one shown below:

What do we know about the sun?	What will happen if there is no sun?

2. discuss with classmates what we know about the sun and how the sun helps us.







What can the sun do?

Activity-2: Observing the brightness and the heat of the sunlight

Materials required: magnifying glass, a piece of black paper

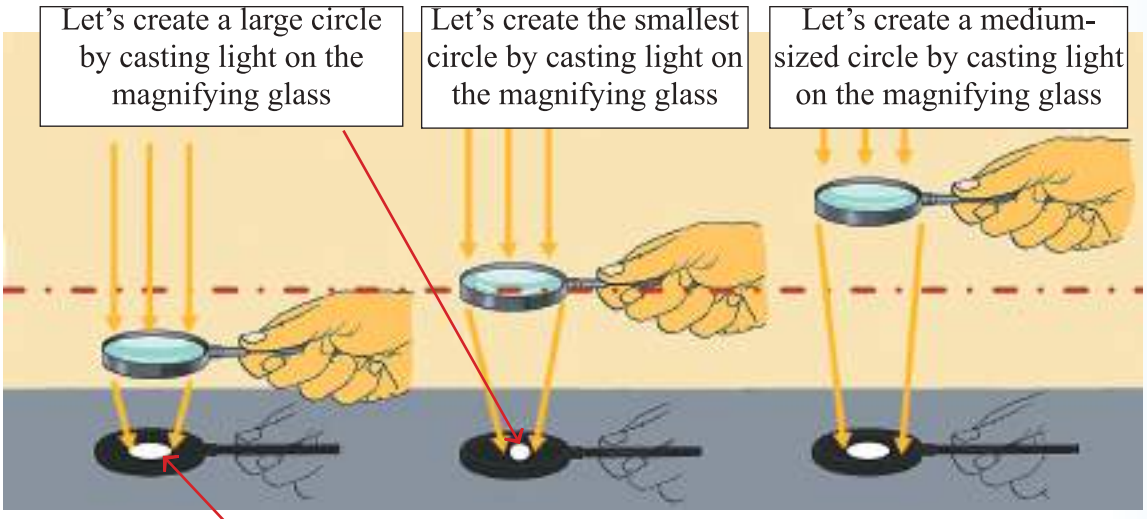
What to do

Let's . . .

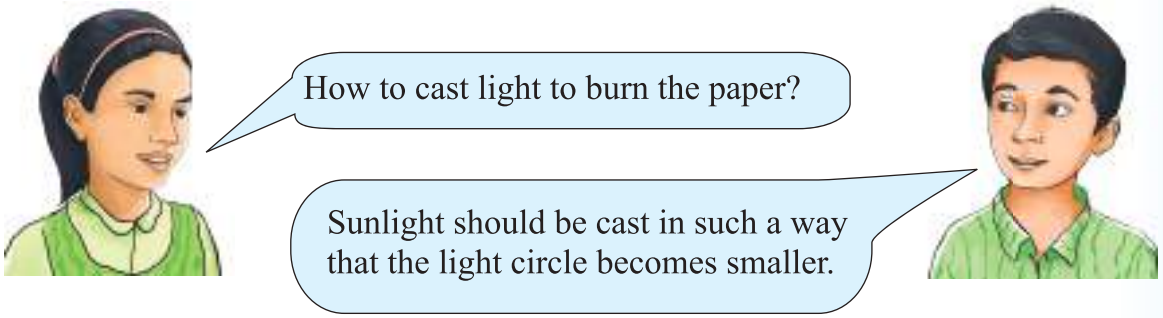
1. make a table like the one shown below.

The size of the light's circle on the black piece of paper	Brightness	Changes seen on the paper
Large circle of light		
Small circle of light		

2. cast sunlight on black paper with the magnifying glass.
3. by moving the magnifying glass up or down, first create a large circle of light on the black paper. Write down our observation of the brightness of the light in the table.
4. by moving the magnifying glass up or down, now create a small circle of light on the black paper. Write your observation of the brightness of the light in the table.
5. write down the changes observed on black paper in case of large and small circles of light.
6. discuss this with classmates.



The shape of the light circle will change in case of moving the magnifying glass up and down.



Result

Paper can be burned by passing sunlight through a magnifying glass. The light becomes the brightest when the circle is small. Smoke can be seen rising from the paper. The paper catches fire in case of the small circle of light.

Size of the light circle on black paper	Brightness	Changes seen on the paper
Large	Less	The paper becomes hot
Small	More	Smoke rises from the paper

Let's learn more about the sun as a source of heat and light

The sun is the primary source of light on the earth. We can see during the day because of sunlight. Without the sun, there will be darkness all the time. The sun is also the primary source of heat. This is why, we feel hot when we are outside on bright sunny days. The sun warms the atmosphere. If the sun were further away from the earth, the earth would be colder. The regions of the earth where the sun shines less are colder and covered in snow. For example, the north pole and the south pole of thee arth. The sun also plays an important role in controlling airflow and rainfall. We can generate electricity by absorbing sunlight with solar panels. Apart from this, solar cookers can also be made using the heat of the sun. It is mentionable that solar cookers and solar panels are pollution-free and environment-friendly sources of energy.



Solar cooker



Solar panel

2. The importance of the sun for living beings

What is the importance of the sun for living beings?

Activity: Understanding the importance of the sun for living beings

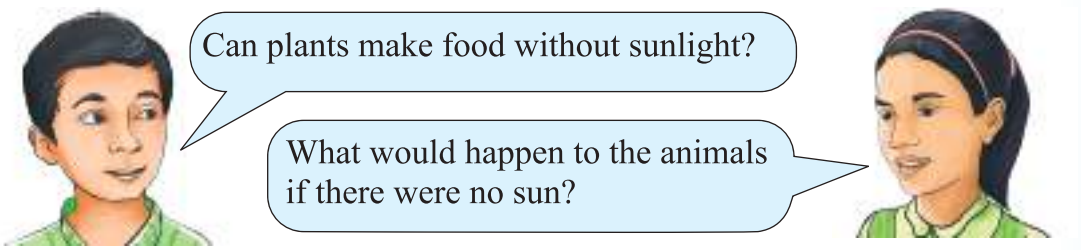
What to do

Let's…

1. Make a table like the one shown below.

Importance of the sun for plants	Importance of the sun for animals

2. Write in the table why the sun is important for plants and animals.
3. Discuss with classmates the importance of the sun for living things.



Summary

The sun is very important for animals and plants. It provides them with the energy they need to survive. Plants make food with the help of sunlight. Animals are dependent on plants for food directly or indirectly.

Let's learn more about the importance of the sun for living things...

Plants make food using sunlight. Humans and other animals depend on plants for food. When plants use sunlight to make food, oxygen gas is released. This oxygen is used by animals for respiration. The sun regulates the earth's temperature. This creates a suitable environment for plants, humans, and other animals to live in. The presence of the sun illuminates the earth and allows us to see the surrounding environment. Without the sun, there would be darkness all around us. The existence of the sun makes life possible on earth.

3. The relations between the position of the sun and the direction of the shadow

The shadow of various objects is related to the position of the sun.

What is the relation between the shadow and the position of the sun?

Activity: Observing the change in the direction of shadows of objects in sunlight

What to do

Let's…

1.make a table like the following:

Name of Object	Position of the sun	Direction of Shadow

2. find the shadow of a tree or a pole on the school grounds.

3. note the direction of the shadow with the help of a compass and also note the position of the sun.

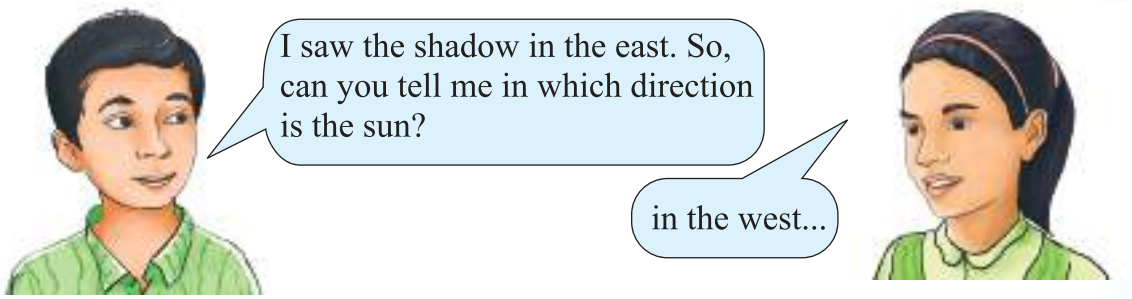




4. write the results obtained at different positions of the sun (east and west) in the exercise book.

5. complete steps 3 and 4 for shadows of different objects.

6. discuss with classmates how the position of the sun is related to the direction of the shadow.



Result

The sun and the shadow stay in the opposite direction to each other. The sun rises in the east. At that time the shadow is in the west. On the other hand, the sun sets in the west, while the shadow is in the east. Depending on the time of the day, the shadow slowly moves from west to east.



Discussion



Let's discuss the following question with classmates.

- How is the shadow formed?

Let's learn more about the creation of the shadow ...

Light travels in straight lines. When an opaque object comes in the path of the light, the light falling on that object cannot reach the other side. So, that particular area gets dark and looks black. In this way, if any object blocks the light, a shadow is created against the light source. By looking at the shadows of different objects, we can understand that the shape of the shadow is similar to the shape of the object.



What is the relation between the length of an object's shadow and the change in the sun's position?



Activity: Observing the shadow

Materials required: a long stick, measuring tape

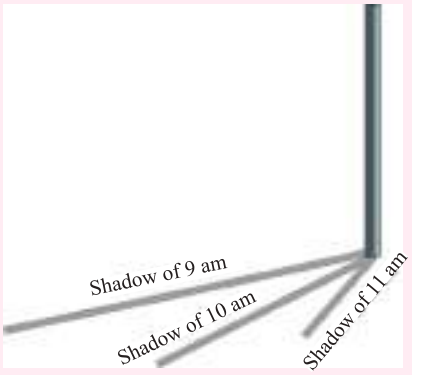
What to do

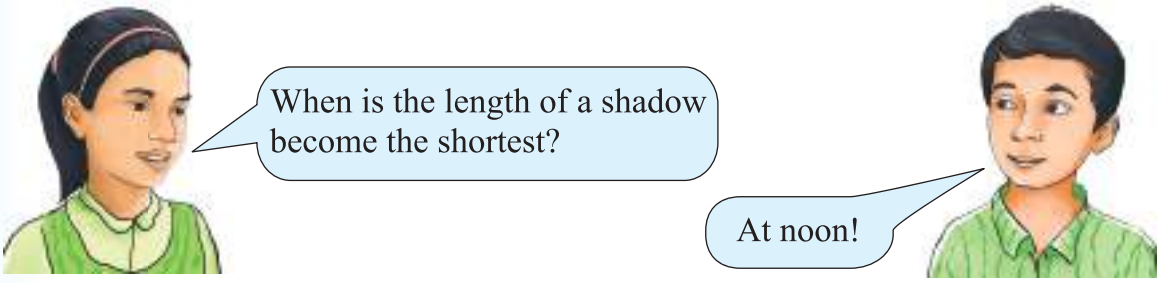
Let's…

1. make a table like the one below.

Time	Length of the shadow

2. go outside the classroom and set up a long stick.
3. measure the length of the shadow with the help of a tape. By looking at the length of the shadow and the clock, record the time in the table.
4. record the shadow length and time in the table hourly during the day.
5. discuss with classmates how the length of a shadow is related to time.





Result

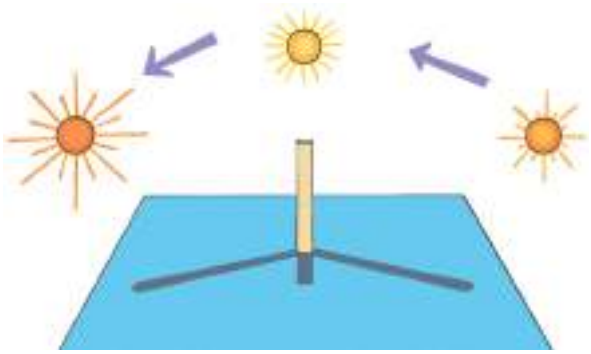
The length of the shadow changes according to the changes in the position of the sun.

Discussion

Let's discuss with classmates the following topics

1. When is the length of a shadow the shortest? Why?
2. When is the length of a shadow the highest? Why?

Let's learn more about the relation of an object's shadow length with the changes in the sun's position...

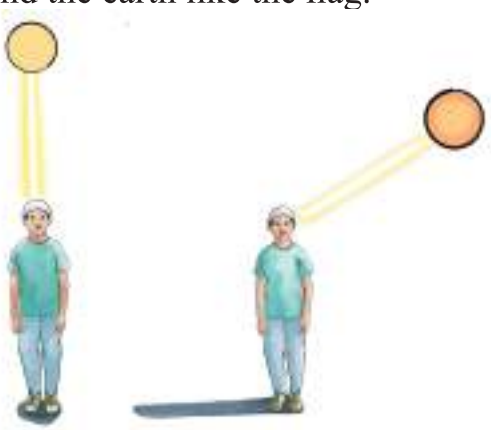


As the position of the sun changes, the length of the shadow changes. The sun is tilted position in the morning and afternoon. As a result, the shadow becomes longer. At noon, the sun is high. As a result, the length of the shadow is the shortest at noon.

Let's learn more about the sun and shadow...

Clocks can be made using shadows. It is called a sundial. A sundial has a vertical stick (see the image above or on the previous page). The time can be told by seeing where the shadow of the stick of the sundial falls in the sunlight. For example, if the shadow is towards the cut of twelve, it indicates 12 noon.

Imagine you are rotating in a swivel chair on the school grounds. In that case, you will feel like the school flag is also moving around you. In fact, just as the flag is stationary, so is the sun stationary at the center of the solar system. And as the chair rotates, so the earth rotates on its axis. As a result, we think that the sun is moving around the earth like the flag.

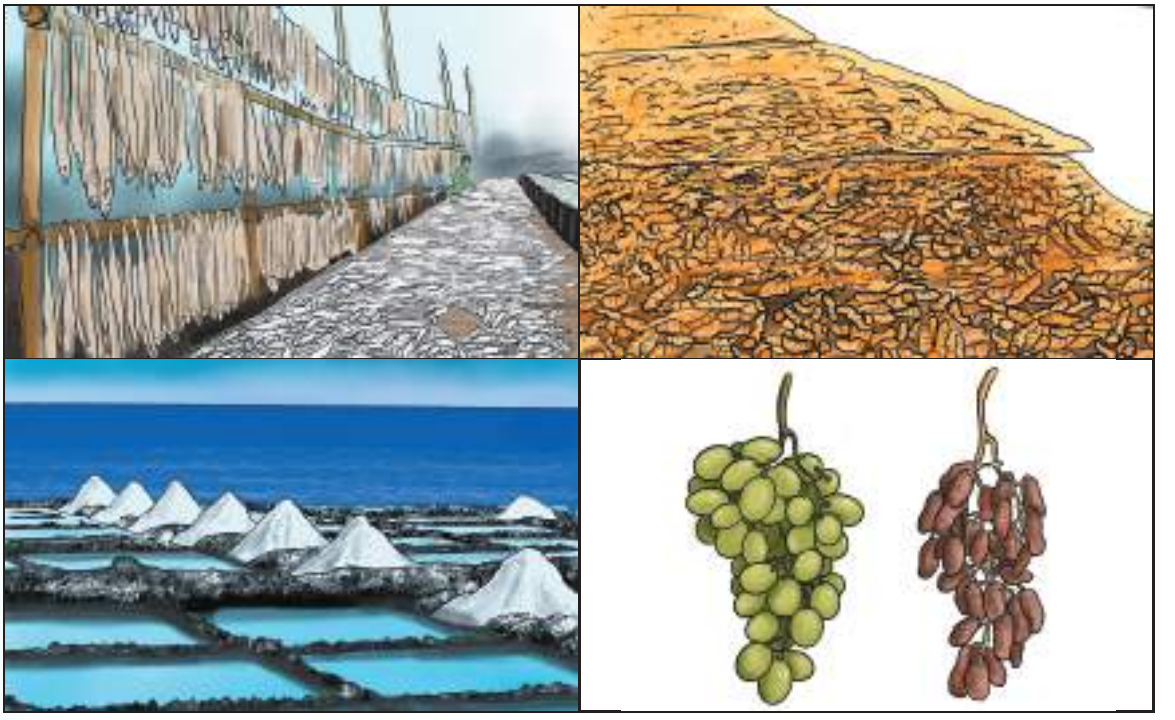


Let's see if we can do it!

1. Use the following three words and write a paragraph of three lines about the importance of the sun.

Makes food	Protects from the cold of winter	Helps to see

2. Observe the following pictures. Write down the things where sunlight is used to dry or make in daily life.



a.
b.
c.
d.

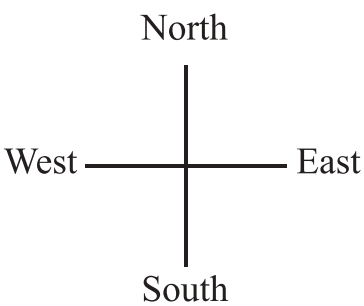
3. The things we need to do: Observe the shadow of a stick by keeping the torchlight at different positions (1, 2 and 3). Complete the table below to understand how the length of the shadow is related to the position of the torch.

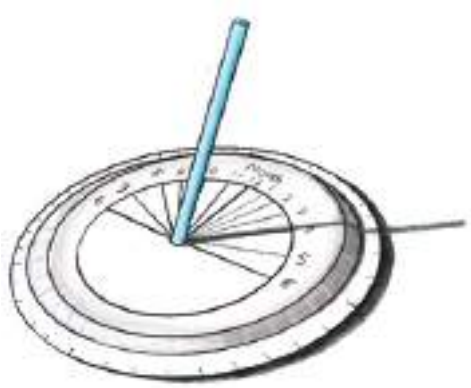
Position of the torch	Length of shadow	
	Prediction	Observation
1.		
2.		
3.		



What is the similarity between the shadow of the sun at morning, afternoon and noon with the shadow cast by the torch at different positions?

4. Place a straw at the middle of a plastic plate and make a sundial as shown in the picture. Measure the length of the shadow cast/ falls at at 4 pm on the prepared sundial. Find out where the shadow will be and how long the shadow will be at 5 pm.





Exercise

1. Let's fill in the blanks.

a) ..... is essential for our survival.

b) By using shadows, a ..... dial can be made.

c) The Sun keeps the ..... close to the Earth's surface warm.

d) Light travels in a ..... line.

2. Let's tick (√) the correct answer.

A. Which of the following is a source of heat and light?

a) Soil b) Water

c) Air d) Sun

B. How is the weather in the regions of the world where the Sun shines less?

a) Very cold and icy b) Very hot

c) Slightly cold and warm d) Temperate

C. When plants make food with the help of sunlight, which gas do they release?

a) Oxygen b) Nitrogen

c) Hydrogen d) Carbon dioxide

3. Short-answer questions

a) What property of sunlight can we learn by burning paper with a magnifying glass?

b) Why can't we see at night?

c) How will our shadow appear if we stand in an open field at 12 pm?

5. Descriptive questions

a) What problems would we face, if there were no Sun?

b) Why do the leaves of a plant turn yellow, if it is kept in a closed room?

c) Let's explain why a person's shadow appears shorter or longer.

Chapter 10

Introduction to Technology

Technology can be any device or technique that is useful in our daily lives and makes our lives easier.

1. Technology in our life

Which technology do we use in our daily life?

Activity: Let's find the use of technology

What to do

Let's…

1. make a table in the exercise book like the one shown below.

Field of use	Technology used	How we use technology
Home	Television	
School		
Agriculture		
Transport		
Healthcare		

2. make a list of technology used in home, school, agriculture, transport, and healthcare and write it down in the table.

3. discuss the activity with classmates.





Summary

Through the above activity, we get an idea about the names of various types of technologies and where they are used. Due to technological convenience, time and labour are saved which makes our life comfortable and safe.

2. Invention of modern technology and its use in our life

From the beginning of creation, human beings are constantly trying to make life easier by inventing various types of technology. The use of technology is remarkable in every field of our life. Below is a detailed discussion of those topics.

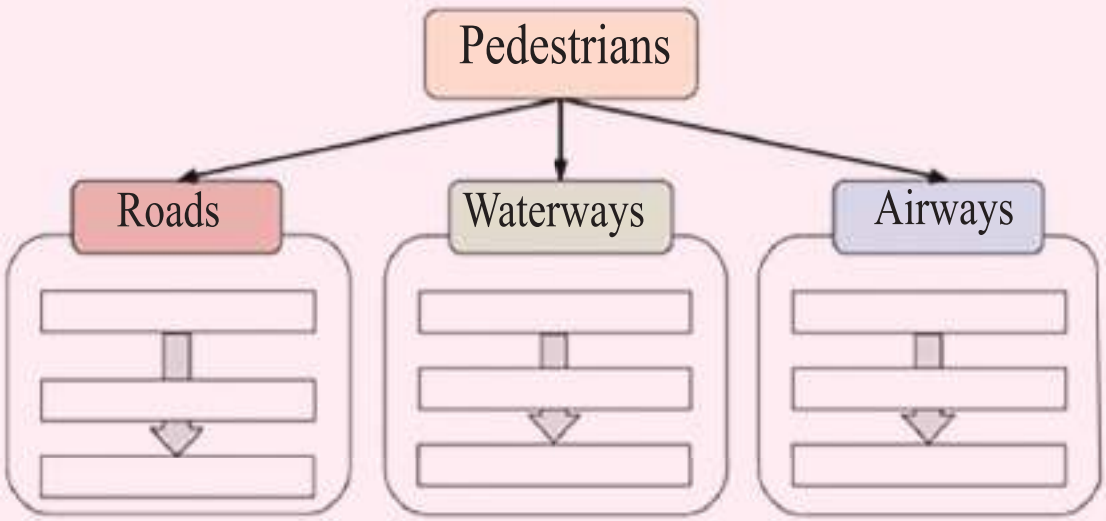
What effects do the development of technology have in our lives?

Activity: Development of technology in travel and transportation

What to do

Let's…

1. make a chart in the exercise book like the one below:



2. arrange the following images according to the above picture. Let's start with old technology and end with new technology. For example: first horse carriage, then the steam engine (train), and lastly bus.










Discussion

Let's think about and discuss the following question

1. Which was invented first - the motor engine or the wheel?

Let's know more about the use of technology in various fields. . .

The technology used at home

At home, we see the use of different types of technology. These include electric lamps, televisions, mobiles, and computers. Some examples of technology used in the kitchen are gas stoves, refrigerators, rice cookers, microwave ovens, etc.



Technology used in education

After the invention of pen, pencil, and paper, education began to change. Printing on paper began after the invention of the printing machine. We now use computers, the Internet, printers, and video cameras as part of educational technology. For example, any necessary information is now saved in the computer through typing.



Type writer



Computer



Printer

Technology used in healthcare

Various technologies have been invented in the medical field. For example, various medical instruments invented are thermometers, stethoscopes, and machines to measure blood pressure. X-ray machines and ultrasonography are also some of the technologies used in the medical field.



Thermometers,



B.P machine



Stethoscope

Technology used in agriculture

The first development in agriculture started many years ago. At that time people invented agricultural tools like shovels, spades, sickles, plough, etc. Back then, animals like cows and horses were used to cultivate the land. Now we use tractors to cultivate the land.


Plough and Bullock


Tractor


Harvester


Irrigation pump

Technology used in transportation

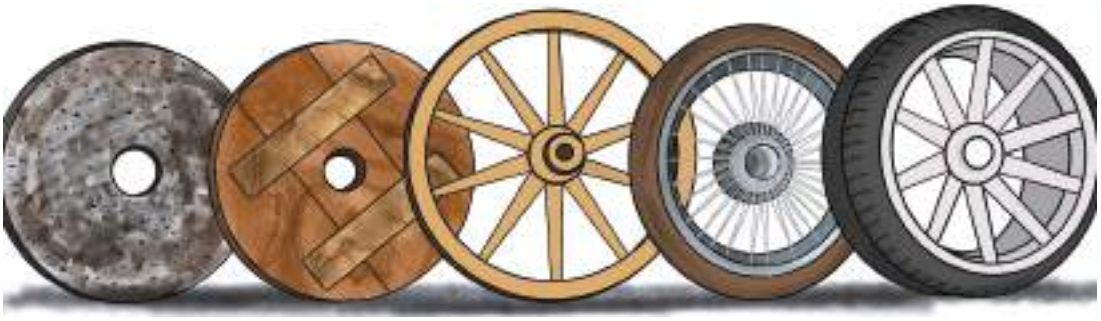
Humans have invented transportation technology to transport goods quickly over long distances. Transportation technology can be divided into three categories. Such as land, water, and air technology. Land transportation technologies include cars, trains, rickshaws, bicycles, etc


Carriage


Train


Car

The invention of the wheel brought about a revolutionary change in transportation technology. After the invention of the wheel, people used ox carts, and horse carts to travel and transport their goods. Later, the engine was invented. The wheel and the engine led to the rapid development of travel and transportation systems. Earlier people used to move from one place to another on foot.



The evolution of the wheel

Boarts, Launch, Steamers, Cargo ships, speedboats, ferries, etc. are used for transportation on water.



Cargo ship



Launch



Speedboat

Aeroplanes and helicopters are invented to travel in the air. Now men can travel to the moon by spacecraft, which is one of the achivements in communication technology.



Aeroplane



Helicopter



Rocket

From all the above discussions we have learned about the continuity of development of technology in each field and the benefits of using it. The use of technology in all the daily activities of people is undeniable.

3. Safe use of technology

What are the safe ways to use technology?

Activity: The safe ways of using technology

What to do

Let's…

1. make a table like the one shown below.

Name of technology	Safe ways to use
Pen	Not to hit anything

2. write down the awareness that can be taken for the safe use of each technology in the above table.

3. share the ideas with your classmates and discuss the aspects of safe technology use.

4. get an idea about what precautions can be taken for the safe use of various technologies through the above activities.

Discussion

Let's think and discuss

Discuss the following questions with teachers and classmates based on the results above.

1. Which technology do you use every day?
2. What problems do you face while using that technology?
3. Who helps you to use the technology?

Let's learn more about the safe use of technology…

We need to be aware of the safe use of technology. Various types of technology used in our daily lives have specific uses. For example, a pen is an educational technology that is used for writing. Therefore, it is not appropriate to use a pen for anything other than writing. For example, a pen or pencil cannot be used to hurt or scratch anything. This can damage the pen and cause someone pain.

Laptops, mobile phones, computers, watches, radios, televisions, etc. should be used with caution. Long-term use of computers and mobile phones can cause eye problems and other physical problems. To avoid this problem, we need to take a break and walk around at regular intervals or do some simple exercises. We should avoid eating or drinking near our laptops or computers because spilled food or drink can damage the keyboard. Electrical short circuits can cause accidents.

In the field of transportation, if a new engine-driven vehicle is not operated with skill, it can cause damage. Therefore, drivers need to be trained before driving new vehicles. Along with promoting technology, we must ensure safe use of it.

Let's see if we can do it!



Pictures of different types of technologies

1. Sort the technologies shown in the pictures in the table given below.

Technology in education	Technology in medical sector	Technology in agricultural sector	Technology in transport

Mobile phone, Eye damage, Headache, Staying healthy

2. Write down 3 sentences using the words given above box about the safe use of technology.

a. ....

b. ....

c. ....

Exercise

1. Let's fill in the blanks.

a) Different types of ……. have made our lives easier.

b) The printing on paper started after the invention of the …….

c) The stethoscope is a technology used in …….

d) Television, rice cooker, and mobile phone are technologies used in …….

2. Let's match the words on the left with the words on the right.

Left	Right
Printer	Communication technology
Tractor	Medical technology
Aeroplane	Agricultural technology
X-ray	Educational technology

3. Let's tick (√) the correct answer.

A. Which of the following is modern technology used in schools?

a) Chalk b) Duster

c) Blackboard d) Computer

B. A thermometer is a type of

a) Agricultural technology b) Medical technology

c) Educational technology d) Communication technology

C. Monir's father wants to cultivate his land in a very short time. Which agricultural technology will he use in this case?

a) Plough b) Sickle

c) Tractor d) Spade

4. Short-answer questions

a) What technologies do we use every day?

b) What does safe use of technology mean?

5. Descriptive questions

a) What precautions should be taken for the safe use of the following technologies?

1) Pen 2) Television 3) Computer.

b) Let's write down our opinion on how the use of technology in education has made students' academic life easier.

Chapter 11

Information and Communication

Information is knowledge about a person, thing, or event. Every day we receive many types of information. For example, information about various events, weather information, news related to various topics, etc. How do we know when the exam will start? When will Bangladesh play in World Cup cricket? Where can we go on summer vacation?

1. Different types of information technology

From where do we get information?



Activity: Types and sources of information



What to do

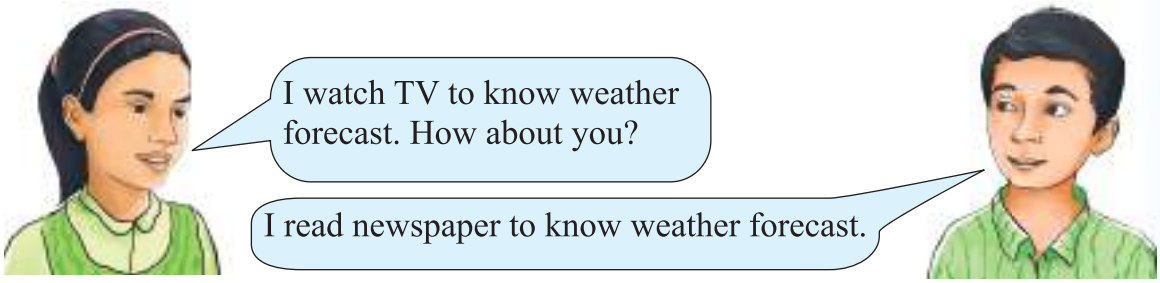
Let's…

1. Make a table in the exercise book like the one shown below:

Information	From where we get the information
Examination Schedule	School notice board, teacher

2. Write the names of different types of information and where we get them from in the table.

3. Discuss the activity with classmates.





Discussion

Let's think and discuss

1. Discuss with classmates how information can be exchanged using various types of communication technology.
2. Discuss with classmates how to verify whether any information is correct or not.

Summary

We get information from various sources such as television, radio, newspapers, and books. We get weather reports on radio and television. We can learn about various subjects from textbooks. Due to the advancement of technology, we now get a lot of information through the Internet. Radio, television, and newspapers are media for providing information. In addition, we get various types of information by communicating with different people. We listen to the experiences of our parents or classmates.

By getting information, we can learn new things or make decisions. It is very important to know the necessary information to make the right decision. Besides knowing the information, it is also necessary to inform others. For example, if you know about a cyclone warning, you need to inform others. If you do not inform others, many people will be affected by the cyclone. For a better life, we will know the correct information ourselves and inform others.

2. Communication / Exchange of information

Humans have invented various technologies such as newspapers, books, radio, television, and computers. Through the use of all these technologies, we can collect information and communicate with people.

How can we communicate using technology?

Activity: Communication technology

What to do

Let's…

1. make a table in the exercise book like the one shown below:

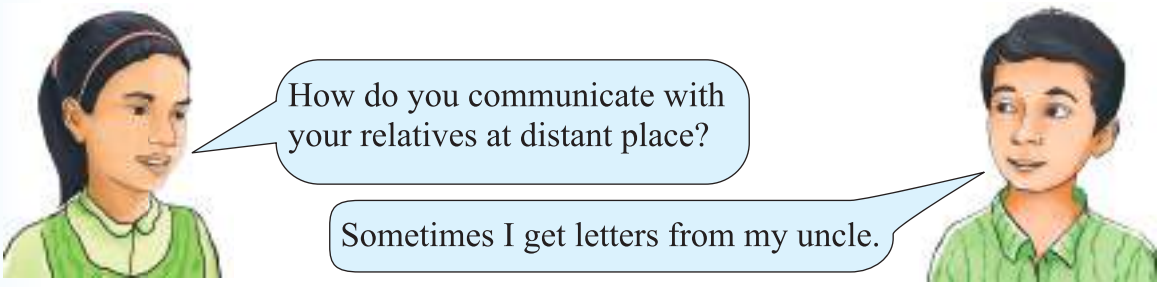
How do you communicate	The technology you use for communication

2. write in the table "how do you communicate with others" and "which technology you use for communication".
3. discuss the activity with classmates.

Discussion

Let's think and discuss

How did people communicate with one another long ago? Discuss the topic with classmates.



Summary

Communication means the process of exchanging information.

Long ago, people used to communicate by drawing pictures or by talking. They used to communicate with people living far away either in-preson or by sending letter. They also communicated by sending message with the help of pigeons, by smoke signals, or by playing drums.





Now a days, we use various technologies for exchange of information. We can now easily communicate with people far away by using telephones or mobile phones to talk to them. We use the internet to exchange information via email. We can also communicate with people by writing letters.

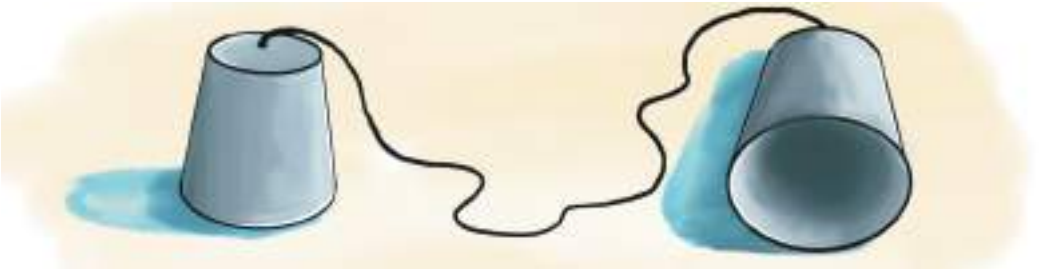


Let's try

Let's make a 'simple telephone'

1. Necessary materials:

- Two cups made of paper or plastic, one needle, thread/wire (5 meters).

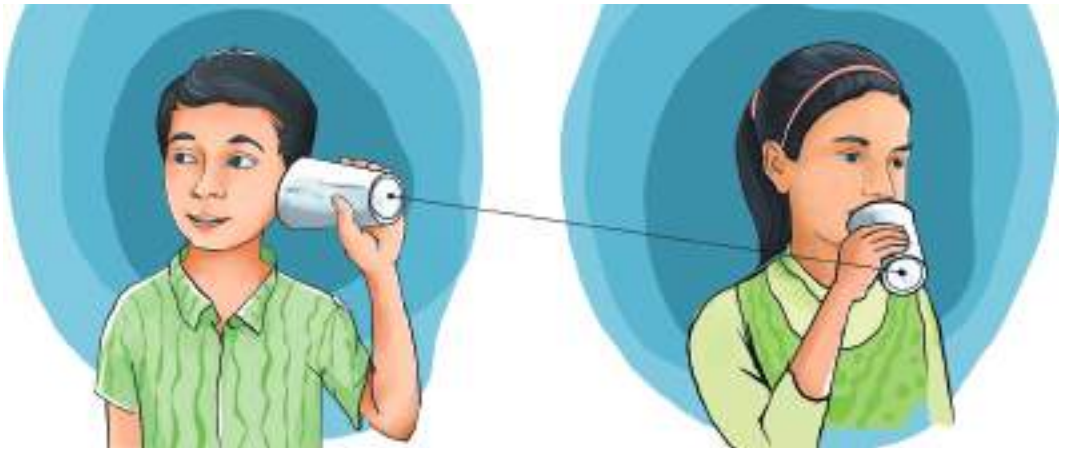


2. How to make

● Make a hole in the middle of the bottom of both cups and thread/wire it through. Attach and hang the thread/wire on the inside the cup so that it does not come out.

● Two of you stand apart with cups in hand so that the thread/wire is stretched.

● When one person will speak into the cup, the other person will listen by putting his/her ear to the cup.



3. What is Machine Language– What is Instruction or Code?

We have learned about various technologies for information exchange. The computer is also such technology. We use computers or mobile phones to do various tasks such as talking, listening to music, drawing pictures, watching dramas or movies, doing calculations, online classes, etc. We may wonder how computers or machines do these tasks.

How do humans or machines work?

Activity: Following instructions to cross the road safely

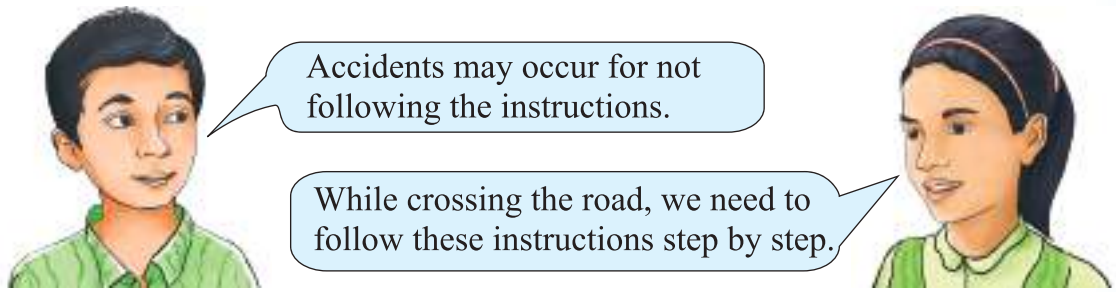
What to do

Some jumbled images of crossing roads are given below.

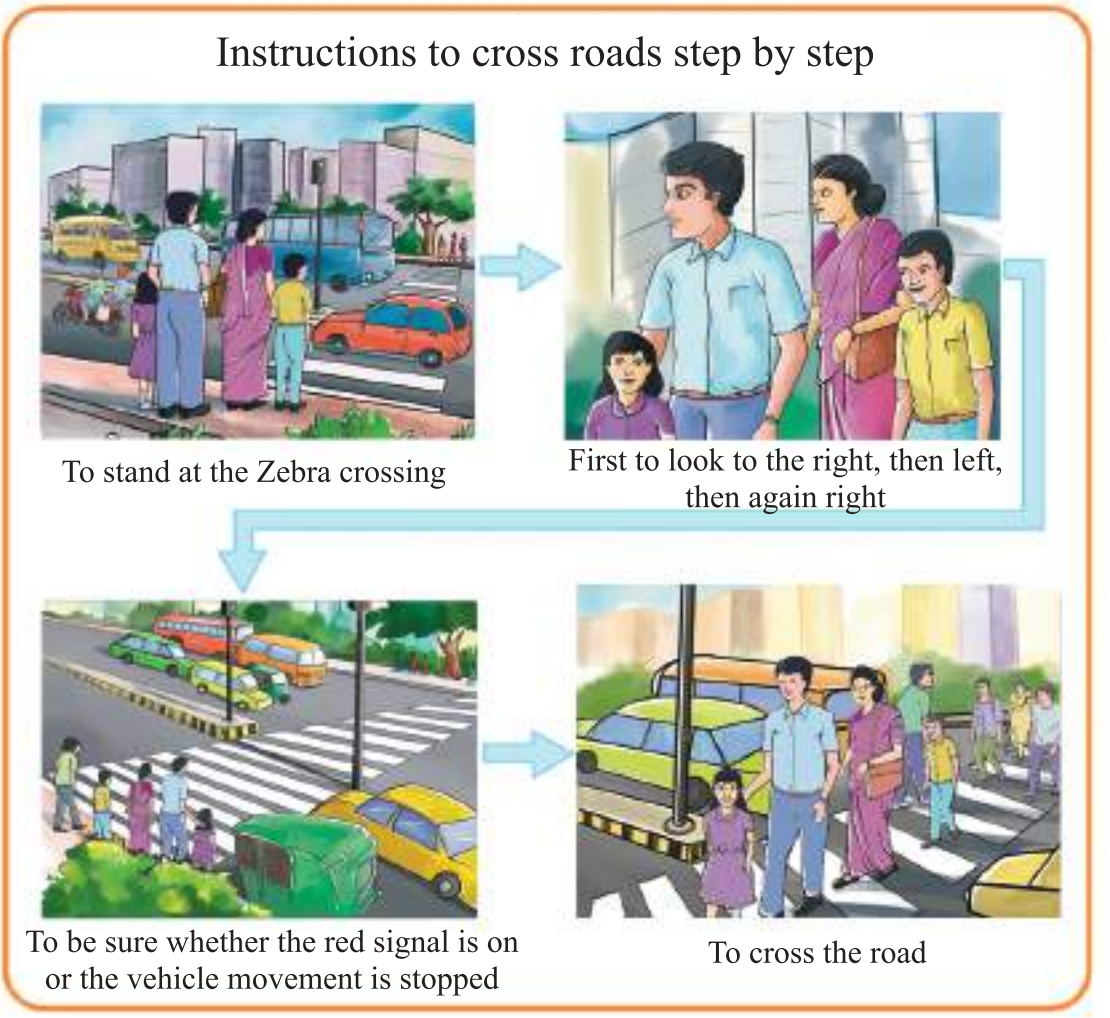
1. Let's arrange the images in a sequence with arrows for safe crossing.



2. Discuss the activity with classmates.



Instructions for crossing roads



Here are four instructions arranged step by step for crossing roads. To cross roads safely we must follow these instructions properly.

Discussion

Let's think and discuss.

1. What are the benefits of following instructions at work?
2. What are the disadvantages of not following instructions?
3. Discuss the issues with classmates.

How machines or computers work

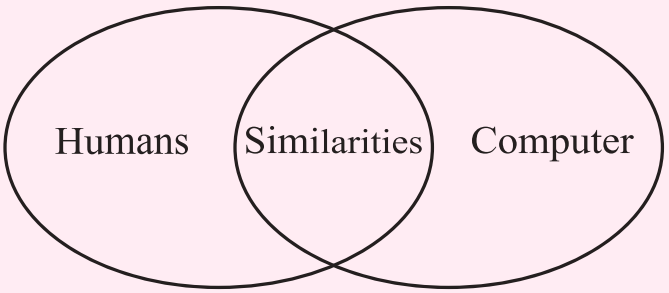
A computer is a smart or intelligent device. This device can perform many vast and complicated tasks quickly and accurately. The device or computer follows some instructions in sequence while doing any work. But do humans and computers work in the same way?

Activity: Difference between human work and computer work

What to do

Let's…

1. draw a figure in the exercise book like the one shown below.
2. find the similarities between human and computer work and write them in the figure.



3. discuss the activity with classmates.

Let's learn more about instructions for humans and machines…

Both humans and computers follow instructions to perform tasks. However, the way they perform the tasks is different. Computers cannot perform any task on their own. They need some sequential instructions to work. Computers can work only if they get instructions. The instructions that a machine or a computer follows to perform a specific task are called codes or commands. We will learn more about how a computer or a machine works by following codes in the next grade.

We also follow certain instructions or codes while doing various tasks. For example, in the classroom and outside the classroom we play sports according to the instructions. Sometimes these instructions are given previously or we create them ourselves as needed.

Activity: Collect the balls following the instructions

What to do

1. Let's stand in two rows facing each other as shown in the image below. The number before which a student stands will become his/her number. Remember the number.



2. A teacher or a student outside the group will give instructions using one or two of the processes of addition, subtraction, multiplication, or division of two numbers. For example - 12 divided by 4 or 3 times 3 plus 2.
3. Listen to the instruction carefully and calculate.
4. After calculation, the two students whose numbers will be the same as the results of the calculation, will quickly collect the ball and return to their respective places.
5. While collecting the ball, ensure that the same number player of the opponent team cannot touch the collector's body.
6. Allow each member to collect the ball at least once.
7. Calculate the number and determine the winning team of the game.

Special instruction: If a player of the opponent team can touch the ball collector's body, the ball collector's team will not score any points. Otherwise, they will get full point (1).



Discussion

Let's think and discuss

1. What factors had to be considered to win this game?
2. What did we learn from this game?
3. Discuss the issues with classmates.

4. Safe use of technology

It is now very common to communicate from one end of the world to another due to the advancement of technology. Personal or any important information can be shared instantly. Therefore, extra caution is needed in sharing information.

Before exchanging any information, it is necessary to verify whether it is correct or not, otherwise, it will cause a crime of confusing information. It is also important to ensure that the information is reliable and the medium through which the information was obtained is trustworthy.

How can we be aware of the safe use of information and communication technology?



Activity: Identification of secure means of communication



What to do

Let's…

1. write down the media we use for communication with everyone every day in the table below.
2. make a list of what could go wrong if we don't remain careful during communication.

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3. compare your list with that of others and discuss.

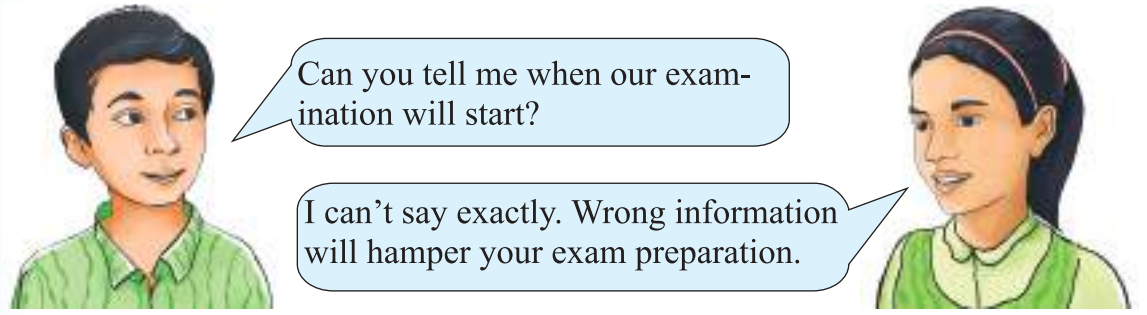
Means of communication	What may happen if we are not careful

Discussion

Let's think and discuss

● Discuss with parents or teachers the appropriate use of information and communication technologies you use.

● Discuss the types of problems that can arise from sharing incorrect information.



Summary

Communication technologies are used for exchange of information. It has made communication much easier. Mobile or computer is one of them. However, while exchanging information and using devices we should follow instructions from our teachers or guardians.

Let's see if we can do it!

1. Write down the sources of information in the following table.

Information	Name of the sources
Weather information	
Schedule of Cricket tournament	
Information of vacation	
Information of historical events	

2. List the ways and technologies that we use to communicate with friends at home and abroad.

	Ways to communicate	Name of the technology used
Native friends		
Foreign friends		

3. Every morning, my mother gives me a bread to eat. Let's think how we get this bread and write down the steps sequentially. We can add more steps if necessary.

1st step .....

2nd step .....

3rd step .....

Exercise

1. Let's fill in the blanks.

a) Before exchanging any information, we have to verify if it is …….

b) Long ago, people used to send ……. via pigeons.

c) To exchange information through email, ……. is needed.

2. Let's tick (√) the correct answer.

A. Through which medium can we exchange information?

a) Radio b) Television

c) Mobile phone d) Newspaper

B. Long ago, what did people do by drawing pictures or speaking?

a) Searching for knowledge b) Exchange

c) Communication d) Data storage

C. What should you do while exchanging personal or important information?

a) Seeking guidance from the guardian b) Receiving instructions

c) Using carefully d) All of the above

3. Let's match the words on the left with the words on the right.

Left	Right
Exchange of information	Intelligent machine
Computer	Email
Pen	Transport
Plane	Educational technology

4. Short-answer questions

a) What technology do we use to communicate with people living abroad?

b) Why is it important for us to know information?

c) Let's write down the names of two modern and two ancient technologies.

Glossary

Amphibian	Animals that live both in water and on land are called amphibians.
Animal	A thing that has life, eats food, and is capable of reproduction is called an animal.
Axis	An imaginary straight line through the center of the earth.
Bird	Birds are warm-blooded animals that have fins/ wings and can fly.
Bottled drinks	Drinks of various flavours are sold in bottles. These are called bottled drinks.
Coding	The instruction or instructions that are followed by a machine or computer.
Communication	Process of sharing news/information.
Cylinder	Specially shaped gas container.
Drinks	Any drinkable food other than water.
Electrified	The presence of electricity in an appliance as a result of being connected to an electrified power source.
Excessive	Beyond limit. More than normal.
Fast food/junk food	Burgers, sandwiches, French fries, cakes, potato crackers, etc.
Fish	Cold-blooded animals with gills that live in water.
Flammable substances	Substances that burn easily.
Flowering	Plants that grow flowers and fruits are called flowering plants.

Fragile	Anything that breaks easily. For example, glassware.
Groundwater	Water below the ground is called groundwater.
Harmful chemicals	Some artificial substances are used to preserve food for a long time and to add flavour. These are usually harmful chemicals.
Herb	Plants whose stems are soft and small in size are called herbs.
Humus	Humus is organic matter present in the soil. It is formed in the soil by decaying plants and animal bodies.
Information	The knowledge we gain about something or someone through communication.
Innovation	To invent something.
Invertebrates	Animals without backbones are called invertebrates.
Light-signal	Signals that are given using light.
Living thing	One which has life is called a living thing.
Magnetic materials	Materials that are attracted to a magnet are magnetic materials.
Magnifying glass	By the glass, relatively small objects can be seen or magnified. Besides, with this glass, paper can be set on fire by sunlight.
Mammal	Animals that suck milk from their mother are called mammals.
Matter/Substance	Anything that has weight and volume is a matter.
Media	Television, radio, and newspapers which are used to provide information.
Metal	Iron or iron-like materials.

Metallic substance	Iron or iron-like materials. These materials create a ringing sound on impact.
Non-flowering	Plants that do not grow flowers and fruits are called non-flowering plants.
Non-Magnetic Materials	Materials that are not attracted to magnets are non-magnetic materials.
Nutrition	Food ingredients that are necessary for growth and good health.
Observation	Observation is to see accurately and record the visible phenomena in nature.
Packaged food	Foods that are sold after storing them in sealed packets for a long time.
Piston	The rod that moves in the cavity of a pump to fill a bicycle tire, ball, etc. with air is called a piston or pressure rod.
Plant	A type of organism whose body is divided into roots, stems, and leaves. Able to prepare own food.
Rubik's cube	A kind of toy. It has six different colours on its six sides. It has to be matched with intelligence and strategies.
Shrub	Plants that are small, and have stout stems and branches near the ground are called shrubs.
Shrunk	To become small.
Stethoscope	It is mainly used to listen to heart and breathing sounds.
Surface water	Water above the ground is called surface water.
Technology	Equipment, tools, machines, or techniques that make our work easier, better, and faster.
Temperature	Temperature expresses how hot or cold a substance is.

The Solar System	The Solar System consists of the sun and the planets, moons, dust, and gas that revolve around the sun.
Thermometer	Body temperature measuring device.
Tree	Plants whose stems are long, thick, and strong are called trees.
Utensils	Essential items for cooking in our daily life, such as plates, glasses, bowls, lids, cooking pots, etc.
Vertebrates	Animals with backbones are called vertebrates.
Volume	Volume is the amount of space a substance occupies.
Warm	Comfortable temperature for humans.
Weight	A measure of the heaviness of an object.

The end

Academic Year 2026, Class Three – Science

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