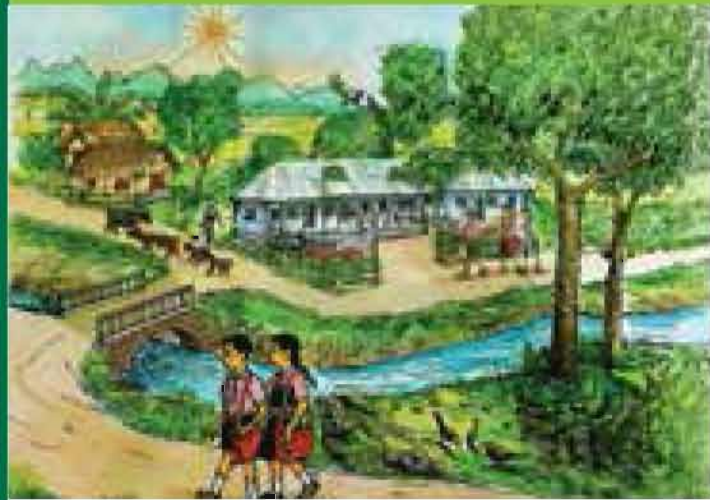


# ELEMENTARY SCIENCE

## CLASS THREE



National Curriculum and Textbook Board, Bangladesh

Prescribed by the National Curriculum and Textbook Board  
as a Textbook for Class Three from the academic year 2013

# Elementary Science

## Class Three

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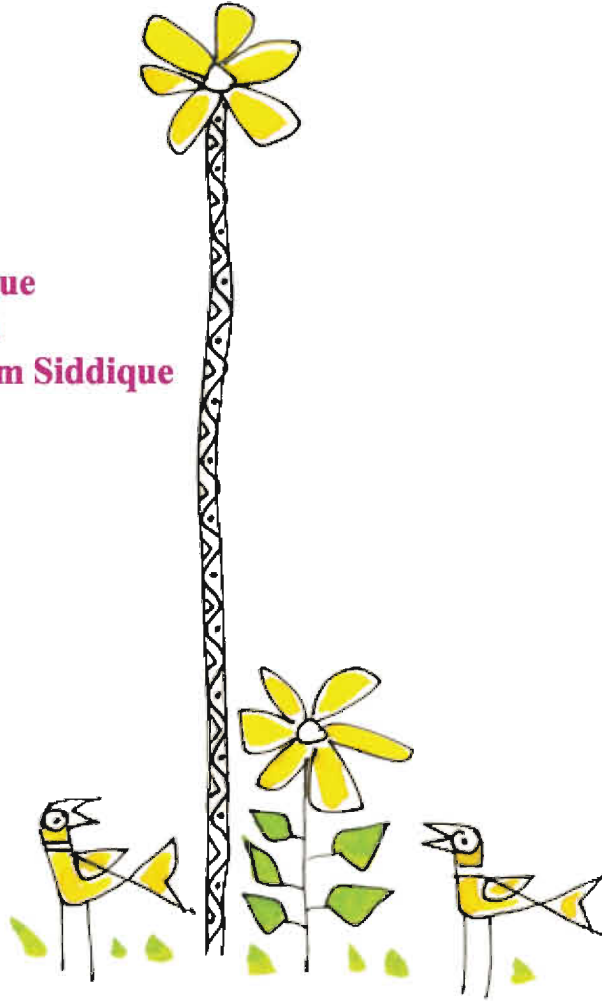
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## Preface

A child is a great wonder. There is no end to the thinking about his/her world of wonder. A child is a subject of contemplation for educationists, scientists, philosophers, child specialists and psychologists. The fundamental principles of children education outlined in the National Education Policy 2010 have been defined in the light of these contemplations. The curriculum for primary education has been revised to develop a child on the potentials of his/her innate amazement, unbounded curiosity, endless joy and enthusiasm keeping in view the all-round development of children's potentials. The aims and objectives of primary education were modified in the revised curriculum of 2011.

Children have different objects around them. Every moment various events are taking place in nature. Rainbow in the sky, trees, birds, flowers, the morning sun, the star studded night sky—all are of profound joy and endless amazement. This feeling of joy by a learner awakens in him/her the curiosity and inquisitiveness to ask questions on different objects and events he/she observes. The revised curriculum has due importance to the realization that the aim of science education is to develop the scientific attitude among the learners. In fact, there is no joy in memorizing some dull and unrelated information. Information changes with new discoveries and inventions. Two fundamental streams are very important in **science education**. One is the acquisition of knowledge and the other is raising questions, experimentation, observation and participation through testing of information and theories. These two streams are complementary to each other. Another objective of the revised curriculum is to maintain consistency among different branches of science as well as between science and technology.

To make the young learners interested, enthusiastic and dedicated, Bangladesh Awami League Government under the dynamic leadership of the Honorable Prime Minister Sheikh Hasina has taken initiatives to change the textbooks into four colors, and make them interesting, sustainable and distributed free of cost since 2009. The textbooks of Pre-primary, Primary, Secondary, Ibtedaie, Dakhil, Dakhil Vocational and SSC Vocational level are being distributed free of cost across the country which is a historical initiative of the present government.

My sincere acknowledgement and thanks to all who had helped in different stages of composition, edition, rational evaluation, printing and publication of the textbook. Though all cares have been taken by those concerned, the book may contain some errors/lapses. Therefore, any constructive and rational suggestions will be highly appreciated for further improvement and enrichment of the book. We will deem all our efforts successful if the young learners for whom it is intended find it useful to them.

**Professor Narayan Chandra Saha**

Chairman

National Curriculum and Textbook Board, Bangladesh

## Major Features of the Revised Primary Science Textbooks

### (1) User-friendly

- Learning contents, illustrations and text presentations are considered taking into account the developmental stage of pupils, 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 characters and symbols to make lesson easy-to-understand & attractive for the children.
- New scientific terminologies used in each chapter are highlighted with coloured and bold letters.
- Addition of glossary at the end of the textbook.

### (2) Emphasis on problem-solving based learning

- The key questions highlighted as the core points of teaching learning in each lesson.
- Experiment related alternative equipment/teaching aids are suggested.
- Basic layout of textbooks follows the sequence of problem solving approach.
- Learning activities aimed at the acquisition of scientific process skills necessary for children to solve the problem.

### (3) Enhancement of learning activities

- Introduction of a variety of experiments, demonstration, observation and investigation to promote the scientific attitude of the pupils.
- Introduction of the discussion activities to foster communication skills, expression ability and positive attitude of the pupils.
- Teaching aids are suggested in consideration with the relevance of the lesson outcomes and the availability.

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### Characters and symbols

#### 1) Characters



Hea



Reza

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

#### 2) Symbols



Activity: Let's observe, investigate and experiment!



Discussion: Let's discuss with classmates!



Caution: Let's pay careful attention to be safe!



## Our Environment

There are many things around us such as friends, trees, animals, soil, water, air, sunlight, and houses. All the things surrounding us make our **environment**.

### 1. Things in our environment

**QUESTION:** What surrounds us?



**Activity:** Components of our environment

**What to Do:**

1. Make a table like the one below in your exercise book.
2. Find things in your classroom and write them in the table.
3. Let us go out of the classroom with our exercise books.
4. Find things in the field and write them in the table.
5. Share your idea with the class.

Things in the classroom	Things in the field/garden

### Summary

We are surrounded by various types of things. In the classroom there are chairs, desks, books, classmates and teacher. There are trees, cattles, soils, water, air and sunlight in the field. All these things unitedly make our environment.



## 2. Different types of environment

**QUESTION:** How can we classify the environment?

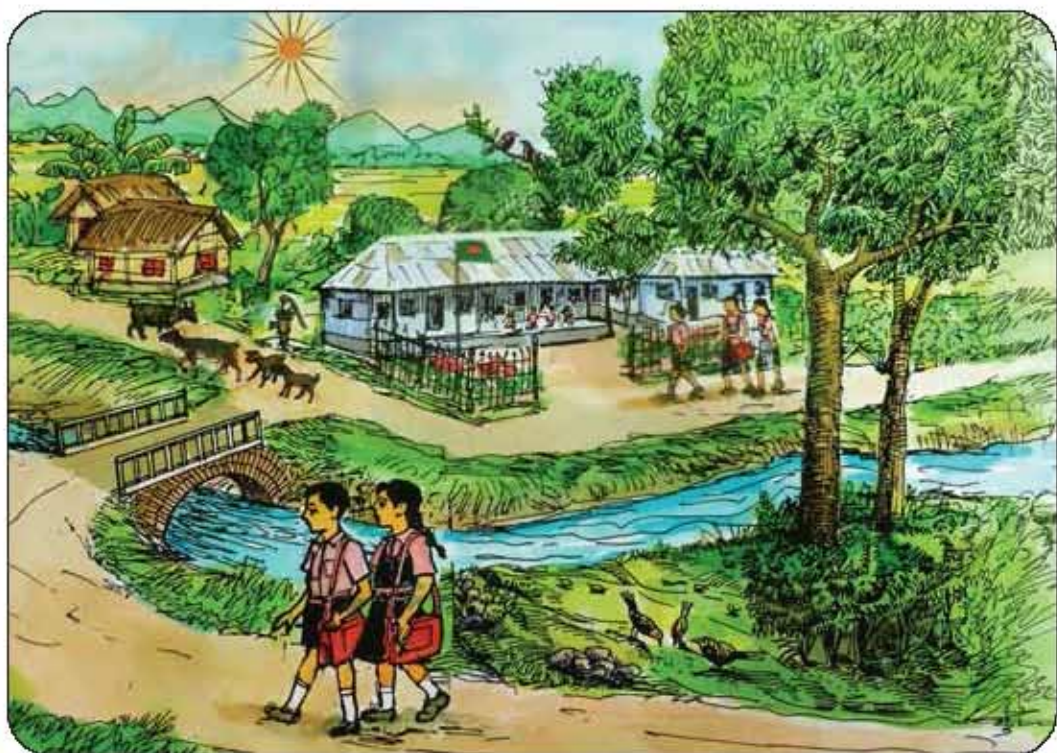


**Activity:** Classification of our environment

**What to Do:**

1. Make a table like the one shown below.
2. Make a list of two kinds of things in the table by looking at the picture below.
3. Share your ideas with the class.

Things made by people	Things not made by people





## Summary

We can sort things in the environment into two groups; **natural things** that are not made by people and **man-made things** that are made by people. The environment can be classified by its components; such as the **natural environment** and **man-made environment**. We live in both a natural and man-made environment.

### Natural environment

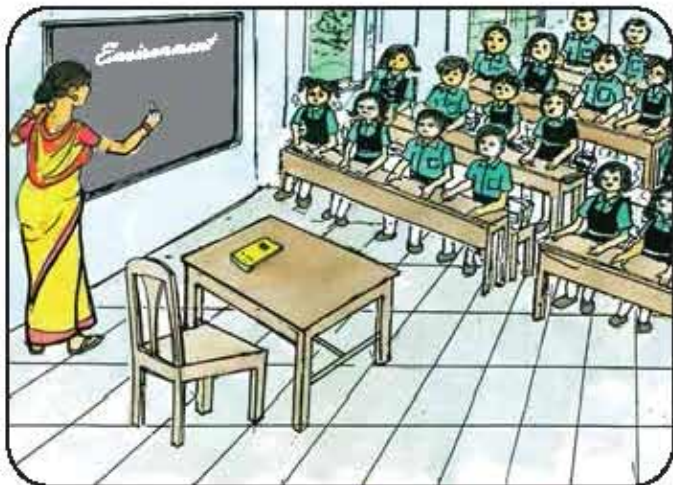
We are surrounded by many things such as trees, birds, sunlight, water and air. We cannot make these things. They are created by nature. An environment having these natural things is known as a natural environment.



natural environment

### Man-made environment

We make various kinds of things. Houses, buildings, table-chair and clothes are made by people. Roads, buses, trains and boats are also man-made things. An environment having these man-made things is known as man-made environment.



man-made environment



## EXERCISES

### 1. Fill in the blanks.

- 1) All the things surrounding us make our \_\_\_\_\_ .
- 2) The environment can be classified into \_\_\_\_\_ environment and \_\_\_\_\_ environment.
- 3) Trees, birds and air are components of \_\_\_\_\_ environment.
- 4) An environment having things made by people is known as \_\_\_\_\_ environment.

### 2. Put a tick (✓) mark on the correct answer.

- 1) Which one is a component of the natural environment?
 

a. tree	b. table
c. pen	d. chair
- 2) Which one is a component of the man-made environment?
 

a. birds	b. hills
c. fish	d. house

### 3. Answer the following questions.

- 1) Explain what an environment is.
- 2) Write five components of a natural environment.
- 3) Mention three differences between a natural and a man-made environment.

### 4. Sort out the following things in the table below.

chair, river, house, egg, soil, furniture,  
tree, boat, hill, shirt, school, flower

Things in the natural environment	Things made by people



## Chapter 2

# Living and Non-living Things

We learned we are surrounded by many things such as birds, trees, houses, and ponds that make our environment. We study in our classroom. There are chairs, tables, benches, doors and windows in it.

### 1. Living and non-living things

All things can be classified into two groups; **living things** and **non-living things**.

**QUESTION:** What are living and a non-living thing?



**Activity:** Make a list of living and non-living things

#### What to Do:

1. Make a table like the one shown below.
2. Find out living and non-living things inside or outside your classroom.
3. Sort the things you found into two groups in the table.
4. Share your ideas with the class.

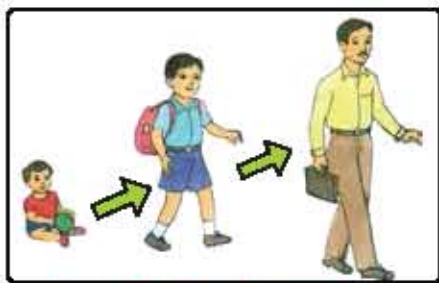
Living things	Non-living things
Man	Chair



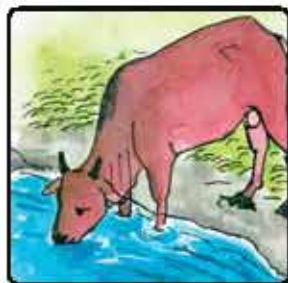
## Summary

### Living things

People, animals and plants are living things. Living things can grow and change. They can produce other living things. Living things need water, food and air to survive.



living things are growing.



living things need water.



living things need air to breathe

There are two kinds of living things; **plants** and **animals**. Trees and grasses are plants. People, cows, fishes, butterflies and birds are animals.

### Non-living things

Cars, chairs, tables and books are non-living things. Air, water, and soil are also non-living things. Non-living things do not eat, drink, and grow. They cannot produce things like themselves.



non living things



### Discussion

- ◆ **What are the differences between living and non-living things ?**
1. Make a table like the one shown below.
  2. Make a list of the characteristics of living things and non-living things.
  3. Share your ideas with the class.

Living things	Non-living things
grows	does not grow

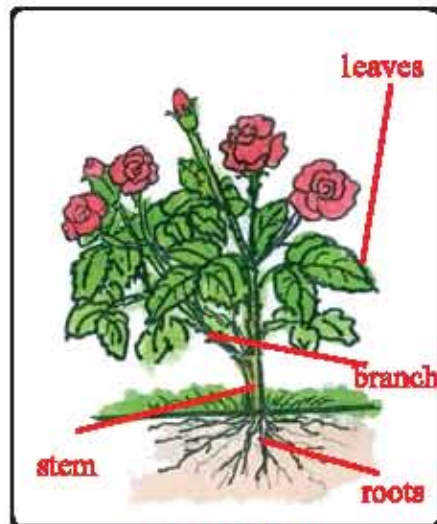


## 2. Living things: plants and animals

There are two kinds of living things; **plants** and **animals**.

### Plant

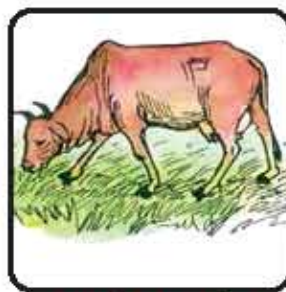
A plant has roots, stems, branches, leaves etc. Usually plants are rooted in one place. Plants cannot move from one place to another. Plants do not see, hear and smell. Plants do not eat food, but can make their own food.



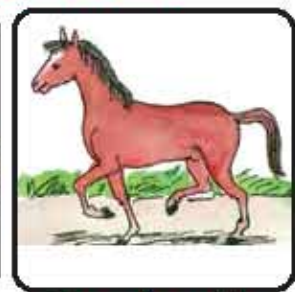
parts of plant

### Animal

An animal has body parts like legs, wings and fins that help it to move. Most animals have the ability to move freely. Animals cannot make their own food. Animals eat plants and other animals as food. Animals use their eyes, ears, nose, mouth and other body parts for their senses. These parts help them to see, hear, smell and taste things.



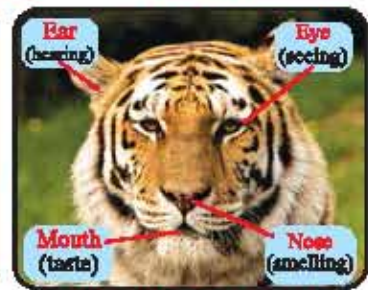
cow is grazing



horse is running



bird is flying



body parts & senses



### Discussion

◆ What are the characteristics of plants and animal ?

1. Make a table like the one shown on the right.
2. Make a list of what plants and animals can do.
3. Share your ideas with the classmates.

Plant	Animal



### 3. Plants

There are plenty of plants around us. Plants have root, stem and leaves. Some plants have flowers and bear fruits. Some plants have stems and branches. People can harvest foods from plants. There are so many kinds of plants in these earth.

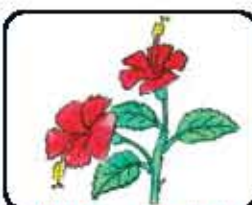
**QUESTION:** How can we classify plants ?



**Activity:** Different types of plants



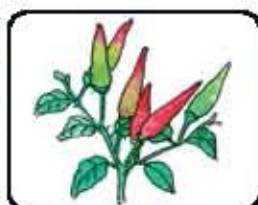
water lily



hibiscus (Joba)



mango



pepper plant



dheki shak



paddy



moss



mushroom

**What to Do:**

1. Make a table like the one shown below.
2. Make a list of the characteristics of each plant in the picture above.
3. Share your ideas with the classmates.

Name of plant	Size	Hardness of stem	Flowering or not
Water lily	small	soft	flowering
Hibiscus (Joba)			
Mango			
Pepper plant			
Dheki shak			
Paddy			
Moss			
Mushroom			



## Summary

Plants can be classified according to their flowers, size and stems.

### Non-flowering plants and Flowering plants

A plant that does not bear flowers is called a **non-flowering plant**. Moss and ferns (dheki shak) are non-flowering plants.

A plant that has flowers is called a **flowering plant**. Rose, Hibiscus, Mango and Water lily are flowering plants.



dheki shak



moss

non-flowering Plant



mango



water lily

flowering Plant

### Classifying the size and stem of plants

Plants such as paddy, mustard and chilli are called **herbs**. A herb is smaller than a shrub and have soft stems. Their roots remain at the surface of the soil. This group includes chilli, gourd, pumpkin, spinach etc.

Plants such as Rose, Rongon and Hibiscus are **shrubs**. A shrub is a woody plant, smaller than a tree. They have several branches rising from near the base of the stem. Their roots do not enter deep into the soil.

A plant which is large in size with a woody main stem, and with branches and leaves is called a **tree**. Their roots enter deep into the soil. Mango, jackfruit and wood apple are examples of trees.



herb (Chilli)



shrub (Rose)



tree (Mango)



## 4. Animals

### (1) Types of animals

Animals can be classified into two groups; invertebrates and vertebrates.

### Invertebrates

Many animals do not have a backbone. Animals without backbone is called **invertebrate**. Some invertebrates live on land and some live in water. An earthworm, shrimp, butterfly, and snails are invertebrates.



earthworm



shrimp



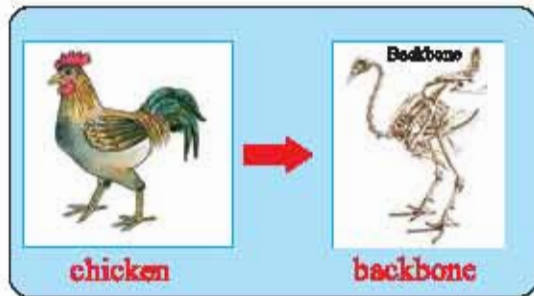
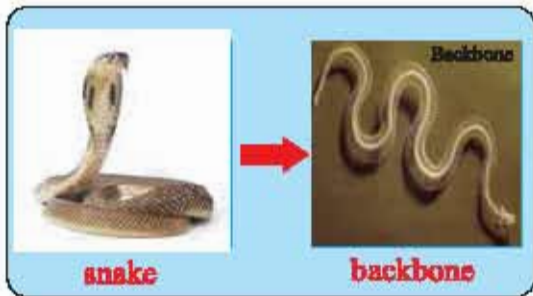
butterfly



snail

### Vertebrates

An animal that has a backbone is called a **vertebrate**. A backbone is a series of bones that help to support the animal's body. Dogs and birds are vertebrates. Snakes, frogs and fishes are also vertebrates.



### Discussion

#### ◆ Which animals have a backbone ?

1. Make a table like the one shown at the right.
2. Make a list of invertebrates and vertebrates in the table.
3. Share your ideas with the classmates.

Invertebrate	Vertebrate



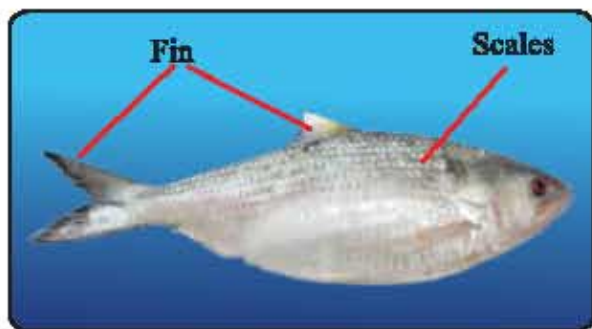


## (2) Classification of vertebrates

Vertebrates can be classified into five groups; **fish, amphibia, reptile, bird and mammal.**

### Fish

A **fish** is a vertebrate that lives in water and lays eggs. Most fish are covered with scales, and can move with their fins in water.

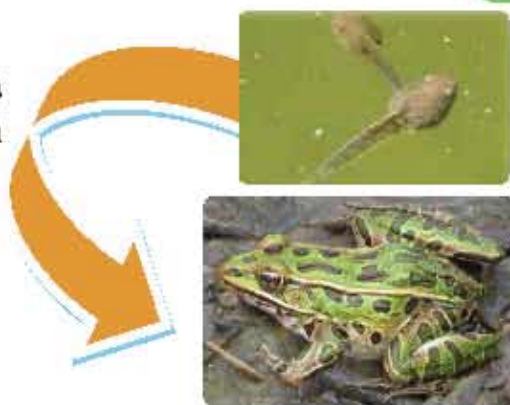


fish

tadpole

### Amphibian

An **amphibian** such as a frog is a vertebrate that lays eggs in water. Babyfrogs or tadpole start life in the water and then live on land as an adult.



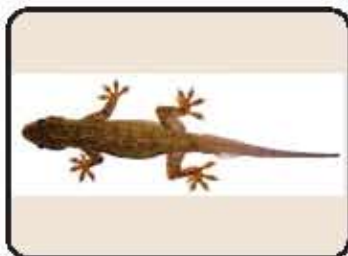
adult frog

### Reptile

A **reptile** is a vertebrate that has dry and scaly skin, and lays eggs on land. Reptiles live on land or in water. Some move with legs like lizards, and others such as snakes slither along the ground. Some reptiles, such as crocodiles spend a lot of time in water.



turtle



lizard



snake



## Bird

A **bird** such as a duck, chicken and eagle has two wings and two legs. Their bodies are covered with feathers. Birds lay eggs and can fly with their wings.



bird lays eggs



bird can fly

## Mammal

A **mammal** is an animal that has hair or fur, and produces milk for its young. Some mammals such as tigers and cows, live on land, and move with their legs. Mammals such as whales and dolphins live in water and move with their fins. A flying bat is also a mammal.



dolphin lives in water



cow to feed milk to their calf.



bat is a mammal



## Discussion

### ◆ What are the characteristics of a vertebrate?

1. Make a table like the one shown below in your exercise book.
2. Make a list of the characteristics of each group of vertebrates.
3. Share your ideas with the classmates.

	Where they live	What they are covered with	How they move
Fish			
Amphibian			
Reptile			
Bird			
Mammal			

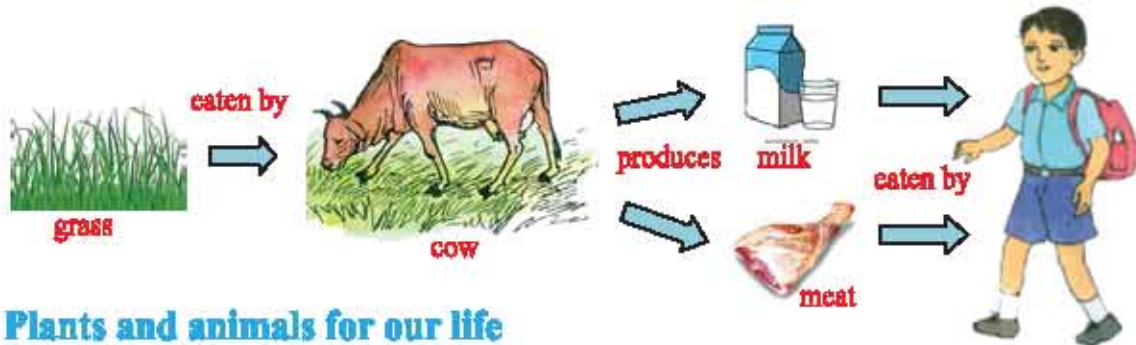


## 5. Our relationship with other living things

All animals need to eat food to survive. Some animals eat other animals as food. Some animals eat plants, fruits and grasses.

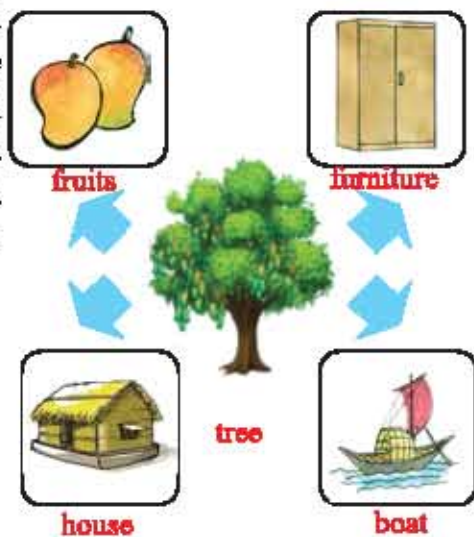
### Eat and eaten

Grass and fruits are eaten by deer, rabbit and small birds. Deer and rabbits are eaten by tigers. Rabbits and small birds are eaten by hawks. There exists a relationship of eating and being eaten in our living world.



### Plants and animals for our life

We need to eat food. Food comes from plants and animals. We also need clothes and shelter. Some clothes are made from plant parts, others from animal skin or fur. Wood is used to build houses and furniture. Like this, people depend on plants and animals in the natural environment to live. All living things depend on each other.



### Discussion

#### ◆ How do people depend on animals and plants?

1. Make a list of "Things" made from animals and plants and their uses.
2. Share your ideas with the classmates.



## EXERCISES

### 1. Fill in the blanks.

- 1) Our environment consists of living things and \_\_\_\_\_.
- 2) Living things need \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_ to survive.
- 3) Prawns and earthworms are \_\_\_\_\_ animals.
- 4) People depend on \_\_\_\_\_ and animals.

### 2. Put a tick (✓) mark on the correct answer.

- 1) Which one is a living thing?
 

a. chilli plant	b. house
c. rickshaw	d. aeroplane
- 2) Which one can grow?
 

a. car	b. pigeon
c. chair	d. stone
- 3) Which one is a non-flowering plant?
 

a. mango	b. fern
c. water lily	d. paddy

### 3. Answer the following questions.

- 1) Write five examples of living things and non-living things.
- 2) How many groups of vertebrates are there? What are they?
- 3) Classify the plant into three groups based on the size and stem.
- 4) How do people depend on plants?
- 5) Write three differences between plants and animals.

### 4. Make a list of the characteristics of each animal below.

Animal	Where they live	What they are covered with	How they move
Cow			
Doel			
Rui			
Lizard			
Turtle			



# Different Types of Matter

### 1. Matter

There are many different things around us. Among these there are tables, chairs, books, marble, bricks, buildings, hills and many other things. Beside these there are soil, water, air etc.

**QUESTION:** What are things made of?



#### Activity: Materials of things

##### What to Do:

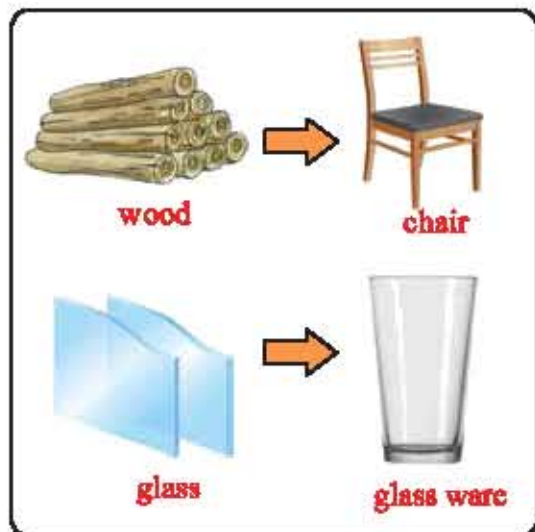
1. Make a table like the one shown below.
2. Make a list of things in or outside the classroom and its materials in the table.
3. Share your ideas with your classmates.

Name of things	Materials
Desk	Wood, nails



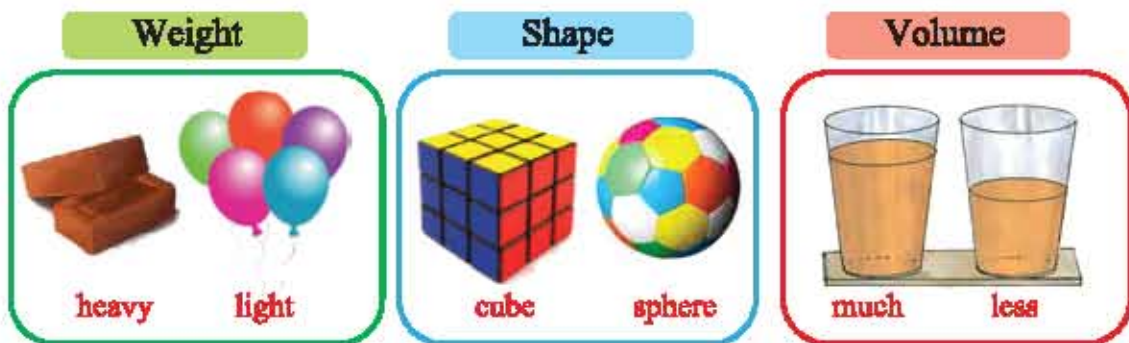
## What is matter?

All things of the earth are made of matter. Things such as pencil, chair, table, water glass and blackboard are made of matter. A chair is made of wood and a water glass is made of glass. Matter has weight and takes up space.



## Properties of matter

All matters have some common properties. Weight, shape, size and volume are properties. All matters have weight and occupy space. Some are heavy but others are light. Some are round or square. Some are soft or hard.



## Discussion

### ◆ What are other properties of matter ?

1. Make a list of other properties of matter.
2. Share your ideas with the classmates.



### 2. Forms of water

#### (1) Change in forms of water

Water is also a matter. When an ice cube is left in a warm room, it becomes water. When water is heated, we can find steam and bubbles.

**QUESTION:** How does water change its form?



#### Activity: Change of state in water.

##### What to Do:

1. Make a table like the one shown below.
2. Boil water with a kettle.
3. After boiling the water, observe the spout of kettle, and sketch your findings in the table.
4. Place a dry spoon in steam for a while.
5. Then take it out of the steam and let it cool down.
6. Check the surface of the spoon and record your observation in the table.

	Your finding
Around the spout of kettle	
Surface of spoon	



**Don't touch the kettle! It is very hot.**  
**Don't put your face close to the kettle! Steam is very hot!**



#### Discussion

1. Think about the following questions from your observation.
  - What is steam made of?
  - Why do you think so?
2. Share your ideas with the classmates.



## Result

When a spoon cools down, there are some drops of water on it. We find that steam is made of water.



after placing  
a spoon in steam

## Summary

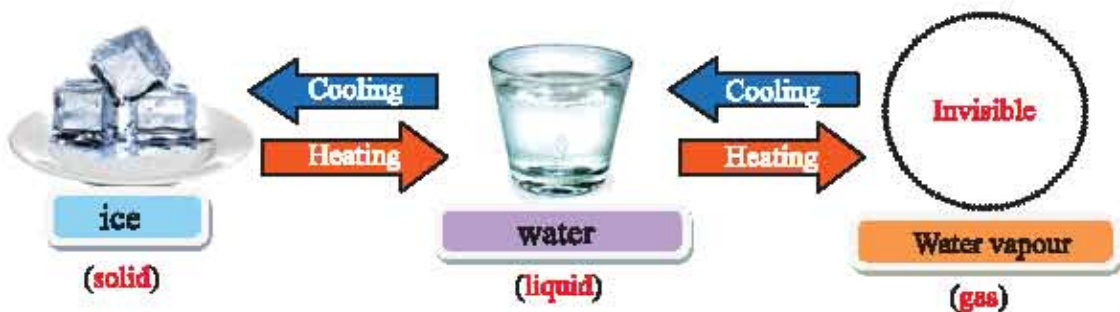
When water is heated, bubbles rise through the water. This is called boiling. Bubbles are water which change into an invisible form. This is called water vapour. When water vapour cools down in the air, it changes into visible particles of water. That is called steam. Steam becomes water vapour in the air again, and then disappears.



## (2) Three forms of water

Water can change its form into water vapour, liquid water and ice by heating and cooling.

**Water vapour** is an invisible form of water. It is the **gaseous** state of water. When heat is added to liquid water, it changes into water vapour. As water vapour cools, it changes to liquid water. **Liquid water** is the form of water we know best. We use liquid water for drinking, washing, swimming, etc. **Ice** is a frozen form of water. This state of water is called **solid**. When liquid water cools, it changes into ice. Ice changes into liquid water when heat is added.





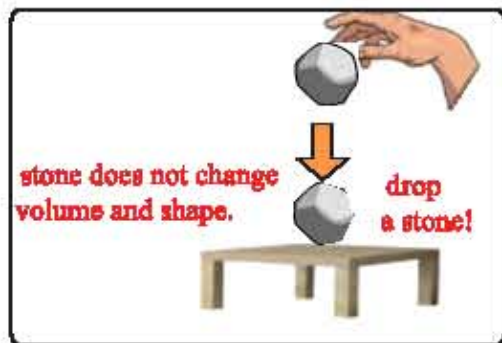
### 3. Three states of matter

Matter is found in different states in our environment. Matter can be classified into three states - solid, liquid and gas.

**Solid** is a state of matter that has its own definite volume and shape. A stone is a solid. The stone does not change its volume and shape by itself. When we drop a stone, it still has the same volume and shape. Ice, tables and pencils are solid.

**Liquid** is a state of matter that has its own volume but does not have its own shape. Liquids flow and take the shape of any container. For example, juice will take the shape of the glass when we pour juice into a glass. Juice flows and spreads on the desk or floor when we spill it. Water, milk, oil and juice are liquids.

**Gas** is a state of matter that flows and has no definite shape or volume of its own. A gas always takes the whole space of a closed container. Air and water vapour are gas.



#### Discussion

1. Write two names of solid, liquid and gaseous matters in the table.
2. Share your ideas with the classmates.

Solid	Liquid	Gas



## EXERCISES

### 1. Fill in the blanks:

- 1) Ice is the \_\_\_\_\_ state of water.
- 2) Water changes into ice by \_\_\_\_\_.
- 3) Water changes into vapour by \_\_\_\_\_.
- 4) All things are made of \_\_\_\_\_.

### 2. Put a tick (✓) mark on the correct answer.

#### 1) Which one is a solid?

- |          |              |
|----------|--------------|
| a. water | b. vapour    |
| c. juice | d. ice cream |

#### 2) Which one is a liquid?

- |                    |                 |
|--------------------|-----------------|
| a. oil             | b. water vapour |
| c. bubble of water | d. ice          |

### 3. Answer the following questions.

- 1) What are the three forms of water?
- 2) Explain what matter is.
- 3) Mention two differences between a solid and a liquid.
- 4) Write two properties of gas.
- 5) Name five liquids.

### 4. Match the sentences on the left with the related words on the right.

The matter that has definite volume and shape	liquid
The matter that takes the whole space of a closed container.	solid
The matter that has definite volume but does not have definite shape.	gas
Water vapour is	



# Water for Life

Our Earth is covered with land and water. Almost three quarters of Earth's surface is water.



### 1. Sources of water

We drink water. Plants and animals need water to survive. Water is very important for people.

**QUESTION:** Where do we get water from?



#### Activity: Sources of Water

##### What to Do:

1. Make a table like the one on shown the right in your exercise book.
2. Make a list of sources of water in the table.
3. Share your ideas with your classmates.

Sources of water



where do we get water for drinking?

Where do we swim?



## Summary

Water is found from many sources around us. We can get water from rain, canals, rivers, lakes and the sea. We can get water from the tap and tube-well as well. These are called **sources of water**.

Sources of water can be classified into two groups; **natural source** and **man-made source**.

### Natural sources of water

Sea, river, lake and rain are called **natural sources of water**.



sea



rain



river

### Man-made sources of water

Well, tube-well, tap and pond are man-made sources of water.



pond



well



tube well



tap



## Discussion

### ◆ Where does water come from?

1. Make a table like the one shown on the right.
2. Make a list of natural and man-made sources of water based on your table.
3. Share your ideas with your classmates.

Natural sources	Man made sources



## 2. Uses of water

Water is very important and essential for life. When we feel thirsty, we drink water. When we cook food, we also use water.

People use water not only for drinking and cooking but also for other purposes.



drinking water



cooking foods

**QUESTION:** How is water used in our life?



### Activity: Uses of water

#### What to Do:

1. Make a table like the one on shown the right.
2. Make a list of uses of water in the table.
3. Share your ideas with your classmates.

	Uses of Water
1	
2	
3	



When do we use water?

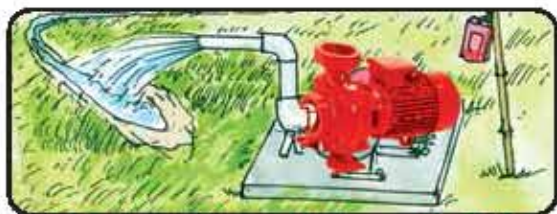
I wash my hands and face, and brush my teeth in the morning.



## Summary

People use water in many ways. People drink water and use it for cooking. They wash and clean with it.

Water is also used for agriculture such as growing crops and fish farming and in industries.



irrigation of water in the paddy field



fish farming

## Saving of water

People use air, water, rock, soil etc. There are natural resources. Water is a natural resources. There is a limit to natural resources on Earth. We have to save water because fresh water is very limited. We can save water while we brush our teeth and wash our hands.



wasting water during washing clothes



saving water during brushing teeth



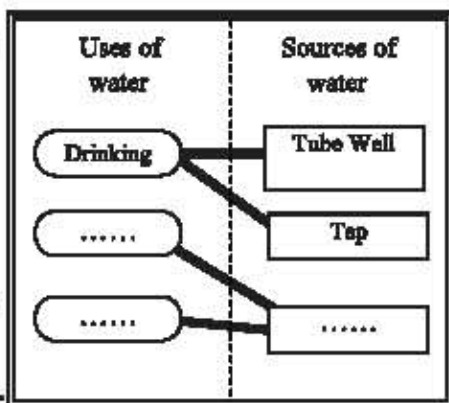
turn off the tap while you brush your teeth.



## Discussion

◆ What is the relation between the uses and source of water?

1. Make a chart like the one shown on the right.
2. Make a list of uses of water and sources of water in the chart.
3. Draw lines from the word in the left to the appropriate words in the right.
4. Share your ideas with your classmates.



### 3. Safe water and unsafe water

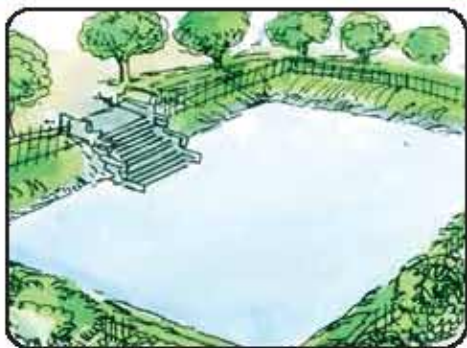
Some water is safe to drink, but some water is not safe. We need safe water to drink for our daily life.

#### Fresh water and salty water

We need fresh water for drinking, cooking and taking a bath. We get fresh water from ponds, rain, wells, and tap. Sea water is salty.

Some fresh water is safe for people. Safe water is water such as boiled water, well-filtered water and tube-well water. Some fresh water is not safe for people such as water from ponds and rivers which are polluted.

#### Unsafe water



pond



river

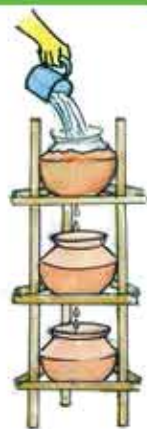
#### Safe water



boiled water



tube-well water



filtered water



### Arsenic-contaminated water

Some tube-wells in Bangladesh contain harmful substances like arsenic. Arsenic-contaminated water does not have a specific taste, odour or colour.

Arsenic-contaminated water is not safe for people to drink or use. It may cause skin diseases and cancer. How can we identify a safe tube-well from an unsafe tube-well ?

The water from tube-wells marked in **green** is arsenic-free. It is safe water. This water can be used for drinking or cooking. The water from tube-wells marked in **red** is arsenic-contaminated. It is not safe water. We should not use it for drinking or cooking.



arsenic-contaminated  
water



arsenic-free water



### Discussion

#### ◆ Which water is drinkable or undrinkable ?

1. Make a table like the one below.
2. Make a list of "drinkable water" and "undrinkable water" in the table.
3. Share your ideas with your classmates.

Drinkable water	Undrinkable water





## 4. Water pollution

**QUESTION:** What causes water pollution?



### Activity: Causes of water pollution

#### What to Do:

1. Make a table like the one on shown the right.
2. Go out of the classroom with your exercise book and find a place where water is polluted, e.g. a pond or ditch.
3. List the harmful things you found in polluted water.
- 4 Share your ideas with your classmates.

The things you found in polluted water

## Summary

Water pollution happens when harmful things get mixed into the water. Throwing trash, oil, and harmful waste into water cause water pollution. Polluted water contains waste and harmful matters. Taking bath in polluted water causes skin disease along with other disease. Polluted water causes disease such as diarrhoea, cholera, dysentery and typhoid if people drink it or bathe in it. Polluted water is unsafe for people.



polluted water from factory



washing clothes and bathing cows in water

People can help to prevent water pollution. They can pick up and clean up trash. They can stop putting harmful things into water.



## Discussion

◆ **How can we prevent water pollution?**

- Share your ideas on prevention of water pollution with your classmates.



## EXERCISES

### 1. Fill in the blanks.

- 1) Water is one of the \_\_\_\_\_ resources.
- 2) Water \_\_\_\_\_ happens when harmful waste gets into water.
- 3) Rain, rivers, lakes, seas and taps are called \_\_\_\_\_ of water.
- 4) Sea water tastes \_\_\_\_\_ .

### 2. Put a tick (✓) mark on the correct answer.

- 1) What causes water pollution?
 

a. putting trash in water	b. riding a boat on it
c. fishing in water	d. cooking food with it
- 2) Which colour of tube-well provides safe water?
 

a. blue	b. yellow
c. green	d. red
- 3) Which one is safe water for drinking?
 

a. pond water	b. boiled water
c. river water	d. sea water

### 3. Answer the following questions.

- 1) For which purposes do we use water?
- 2) Write three causes of water pollution.
- 3) How can we prevent water pollution?
- 4) How can we prevent misuse of water?

### 4. Classify the following words into two groups in the table.

filtered water, sea water, water from red tube well,  
water from green tube well, boiled water, pond water

Drinkable water	Undrinkable water



## Chapter 5

# Soil

We live on land. Trees grow on land. Cows, goats, hen and ducks are also live on land. The loose material covering the Earth's surface is called **soil**.

### 1. Components of soil

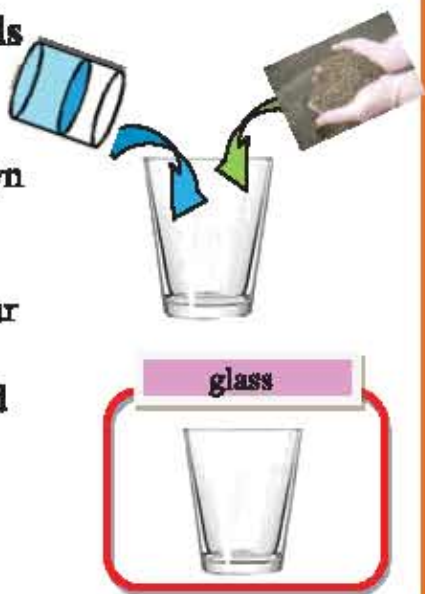
**QUESTION:** What is soil made of ?



#### Activity: Components of soils

##### What to Do:

1. Draw a picture of a glass like the one shown below in your exercise book.
2. Go out of the classroom, and collect soil.
3. Put some soil into a glass cup and then pour water into it.
4. Observe what is happening in the glass and record your findings.
5. Stir it well and wait a few minutes.
6. Observe inside the glass and sketch your findings in the picture of a glass.



### Summary

When we pour water into the soil, bubbles come out. We also find various components of soil in the glass. Soil consists of rocks, particles of sand, silt and clay, remains of dead plants and animals, water, air etc.



## 2. Types of soil

Soil is classified into three groups: **clay soil**, **sandy soil** and **loamy soil**.

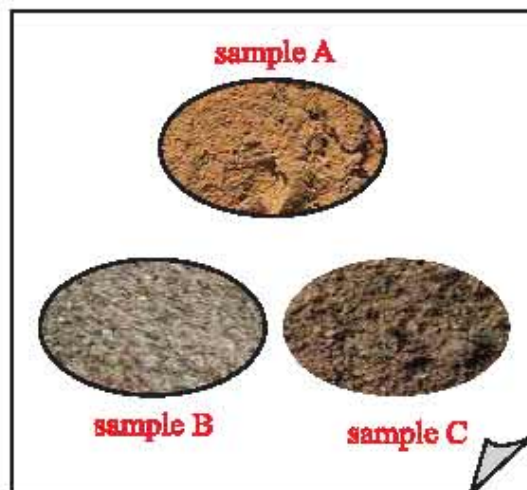
**QUESTION:** What are the differences between the three types of soil?



### Activity: Comparing properties of soils

#### What to Do:

1. Make a table like the one shown below in your exercise book.
2. Place three types of soil samples on a sheet of paper.
3. Observe the soils and record the properties of the soils.
4. Share your ideas with your classmates.



Property	Sample A	Sample B	Sample C
its colour			
how it feels			
size of the particles			
any other property			



## Summary

Soil can be classified by its colour, size of particles, and the substances it contains. The three main types of soil are clay soil, sandy soil and loamy soil.

### Clay soil

Clay soil is often reddish in colour. It is sticky when wet, but smooth when dry. Clay soil has the smallest particles among the three soils.



clay soil

### Sandy soil

The colour of sandy soil is often pale brown or light grey. The size of the particles of sandy soil is larger than clay soil as well loamy soil. It is dry and feels gritty.



sandy soil

### Loamy soil

Loamy soil is dark in colour. It feels coarse, soft and dry. Loamy soil contains various sizes of particles. Loamy soil is composed of a mixture of sand, clay and **humus**. Decayed remains of plants and animals form **humus**.



loamy soil



## Discussion

1. Make a table like the one shown below.
2. Make a list of different characteristics of soil in the table.
3. Share your ideas with your classmates.

	Clay soil	Sandy soil	Loamy soil
Colour			
Amount of water			
Size of particles			



### 3. Soil and crops

Are there any differences between sandy, loamy and clay soil for growing crops ?

#### QUESTION: Which soil is suitable for which crop ?

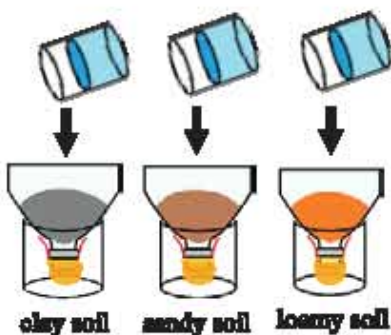
Water is very important for growing crops. Plants grow in soil and get water from soil. In which soil crops grow well?



#### Activity: Water-holding capacity

##### What to Do:

1. Collect sandy soil, loamy soil and clay soil.
2. Make a table like the one shown below.
3. Make three funnels by cutting pet bottle with the help of a teacher.
4. Put the same amount of each soil into each funnel and pour the same amount of water slowly into the funnels.
5. Observe how fast and how much water runs down each funnel.
6. Record your observations in the table.
7. Share your ideas with your classmates.



	Clay soil	Sandy soil	Loamy soil
How fast the water drains			
How much water drains			

**⚠ Be careful not to cut your hands on the edge of the bottle funnels.**

#### Think and Share

- ◆ Which soil can retain the water most ?
- ◆ Why do you think so?



## Summary

### Clay soil

The particles of clay soil are the smallest and more compact among the three types of soil. Due to the tiny size of the particles, water drains slowly through clay soil. Thus, clay soil can retain water and is suitable for better plant growth. This soil contains the necessary elements for plants growth. Legumes and jackfruit grow well in this soil.



legumes



jackfruit

### Sandy soil

Sandy soil has the largest size particles among the three types of soil. Water can pass through sandy soil quickly as well as necessary elements of soil. Because this, crops do not grow well in this soil. This soil is suitable for growing watermelon, groundnut, small size melon or cucumber.



watermelon



groundnut



cucumber

### Loamy soil

Loamy soil is a mixture of sand, clay and humus. Due to the properties of sand and clay, it has a tight hold on water and soil elements but it drains well. Paddy, wheat, maize, barley, jute, or sugarcane, etc. grow well in this soil. Most of the areas in Bangladesh are made up of loamy soil.



paddy



wheat



jute



## EXERCISES

### 1. Fill in the blanks.

- 1) Soil is classified into three types; clay soil, sandy soil and \_\_\_\_\_ soil.
- 2) The soil which has the largest particles is called \_\_\_\_\_ soil.
- 3) The soil which consists of sand, clay and humus is called \_\_\_\_\_ soil.

### 2. Put a tick (✓) mark on the correct answer.

- 1) In which type of soil can jack fruit and legumes grow well?
  - a. sandy soil
  - b. loamy soil
  - c. clay soil
  - d. salty soil
- 2) In which type of soil can water melon and groundnut grow well?
  - a. salty soil
  - b. sandy soil
  - c. clay soil
  - d. loamy soil

### 3. Answer the following questions.

- 1) Why do crops grow well in loamy soil ?
- 2) What are the characteristics of sandy soil ?
- 3) Mention two differences between loamy soil and clay soil.

### 4. Match the words on the left with the related words on the right.

clay soil	humus
sandy soil	water melon
loamy soil	jackfruit
decayed remains of plants and animals	paddy





## Chapter 6

### Air

Air is a component of the natural environment. Plants and animals need air to survive. What is air? Why do we need air?

#### 1. Air around us

We are surrounded by air but we cannot see air.

**QUESTION:** How do we know that air is around us?



#### Activity: Feeling and finding air

##### What to Do:

##### Part 1:

1. Fill a plastic bag, and tightly tie the top of the bag with a string.
2. Toss, push, hit and move the bag with air.
3. Describe what you feel in your hand or body as you do this.



##### Part 2:

1. Put the plastic bag with air in a bucket of water as shown on the right.
2. Loosen the top of the bag to release the air.
3. Describe what you observe.



## Summary

We cannot see air. But we can feel it when tossing, pushing, and moving a bag with air. We can see bubbles when we release the air in the water. We can also feel and find air when we use a hand fan. We know there is air because branches and leaves of trees move. What other situations tell us that air is around us?



we can find air as bubbles



riding a bicycle



air can move pieces of papers



## Discussion

1. List five situations when you can feel air in your daily life.
2. Share your ideas with your classmates.

### Importance of air

Air is everywhere. Plants use air to make food. People, animals and plants breathe air. So, air is very essential for living things to survive.



people need air to survive.

### Use of air

People use air in many ways. Air is used to fill up tyres of bicycle and cars. Air makes the sailboat move across the water. We also use air to cool ourselves on a hot day. Moving air helps wind turbines to make electricity.



tyre



sailboat



wind mill



## 2. Components of air

**QUESTION:** What are the components of air?



### Activity: Burning in air

#### Preparation:

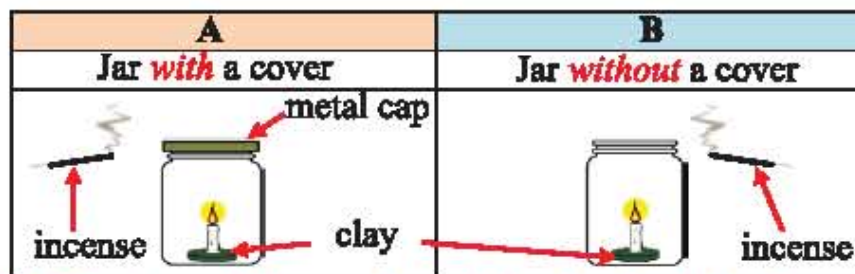
Two jars with caps, two small sized candles placed on a piece of clay, incense and matches.

#### What to Do:

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

Jar	What happened to the candle?	How did the smoke move?
A		
B		

2. Put the candle at the bottom of each jar.
3. Light the candles, and let the candles burn for a while.
4. Cover jar A, but do not cover jar B.
5. Let one student hold a lighted incense close to the top of jar A. Let another student hold another incense near jar B as shown below.



**⚠ Do not touch the candle and glass bottle while the candle is burning.**

6. Observe the candle in each jar and find the direction of the smoke from the incense.
7. Record your observations in the table.





## Discussion

◆ Based on the table you made, think about the following questions by yourself and share your ideas with your classmates.

- 1) What happened to the candle in jar A ?
- 2) What happened to the candle in jar B ?
- 3) In which direction incense smoke of jar A went away?
- 4) In which direction incense smoke of jar B went away?

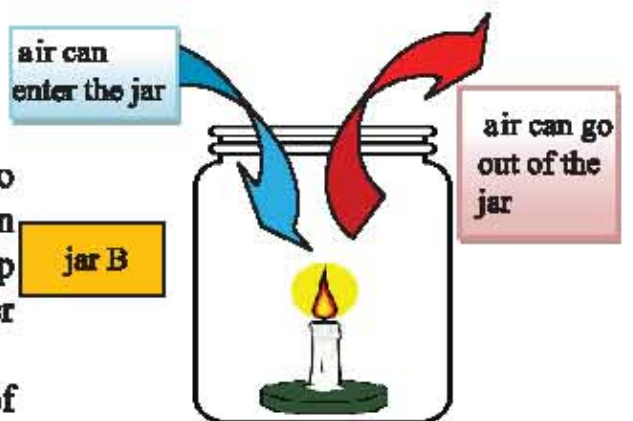
## Summary

Air is necessary for a candle to keep burning. The candle in an open container can keep burning because air can enter the jar.

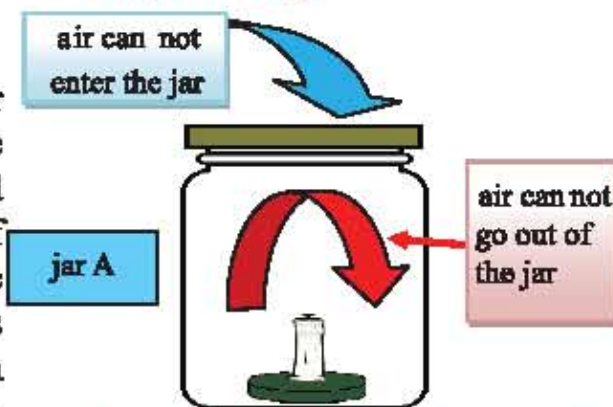
Air contains many kinds of gases. A gas in the air that can help something to burn is called **Oxygen**.

The candle in a closed container cannot keep burning because oxygen in the container is used up. Instead, the amount of another gas in the air in the container increases. The gas is called **Carbon dioxide**. Carbon dioxide cannot help something to burn.

Air is made up of various kinds of gases. There are Nitrogen, Oxygen, Carbon dioxide and water vapour.



the candle in an open container keeps burning.



the candle in a closed container cannot keep burning.



### 3. Uses of gas in air

Various components of air are used in our life.

#### Oxygen

Most living things need oxygen. When plants make food they give off oxygen into the air. Animals breathe it in to survive. Additional Oxygen is needed for those who have difficulty of breathing in a hospital.

#### Carbon dioxide

Plants need carbon dioxide to make their own food. Carbon dioxide is also used in fire extinguishers as it does not help burning. Carbon dioxide is added to soft drinks such as sodas to give it a fizz.

#### Nitrogen

The fertilizer that is added to plants to make them grow well contains nitrogen. Nitrogen is used in preserving foods such as a bag of potato chips. It is also used in making light bulbs.

oxygen carbon dioxide



giving off oxygen



patient receiving oxygen through a mask



soft drink



extinguish the fire



bag of Potato chips



fertilizer



#### Discussion

#### ◆ How do we use air in our daily life?

1. Make a list of the uses of each gas in the air in the table on the right.
2. Share your ideas with your classmates.

	Use of air in our daily life
Oxygen	
Carbon dioxide	
Nitrogen	

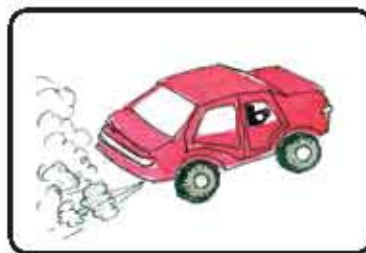


#### 4. Air pollution

Air pollution occurs when gases, dust, smoke or odour are introduced into the air. Air pollution is harmful to living things. It makes people sick, such as respiratory illness and heart disease. Living beings need fresh air.

#### Causes of air pollution

Harmful things in the air come from a variety of sources. Gas emitted by cars, dust and smoke from fires and factories cause air pollution. Smoking cigarettes is not only bad for the health but contributes to air pollution. Throwing garbage or urinating anywhere spread bad odour in the air cause air pollution.



smoke from cars



smoke from burning



smoke from factory

#### Preventing air pollution

Plants, animals and man need clean air. We can keep the air clean by preventing pollution. Walking or riding a bicycle instead of using a car can help prevent air pollution. Reducing waste or garbage can cut down air pollution. Air pollution also can be reduced by stopping the emission of black smoke from cars.



walking and riding a bicycle help to prevent air pollution



#### Discussion

#### ◆ How can we help prevent air pollution?

1. Make a table like the one shown on the right.
2. Make a list of how you can help prevent air pollution in the table.
3. Share your ideas with your classmates.

What can we do?



## EXERCISES

### 1. Fill in the blanks.

- 1) Black \_\_\_\_\_ from cars causes air pollution.
- 2) In an electric bulb \_\_\_\_\_ gas is used.
- 3) To stop fire \_\_\_\_\_ gas is used.
- 4) \_\_\_\_\_ is used to fill out tyres of cars.
- 5) Walking or riding a bike can help prevent \_\_\_\_\_ .

### 2. Put a tick (✓) mark on the correct answer.

- 1) How do plants use carbon dioxide ?
  - a. to make food
  - b. to grow
  - c. to have more flowers
  - d. to produce fruit
- 2) Which gas in the air is necessary for animals to breathe ?
  - a. carbon dioxide
  - b. oxygen
  - c. nitrogen
  - d. water vapour
- 3) What is the component of fertilizer that makes plants grow healthy ?
  - a. carbon dioxide
  - b. oxygen
  - c. nitrogen
  - d. water

### 3. Answer the following questions.

- 1) Give at least three examples to prove that air is around us.
- 2) Name four components of air.
- 3) Describe three ways to prevent air pollution.

### 4. Match the words on the left with the related words on the right.

fertilizer	
extinguisher	oxygen
animals for breathing	carbon dioxide
bag of potato chips	nitrogen
soda (soft drink)	



# Food

We eat plants and animals as food. What sort of food do we need? Why do we need food to survive?

### 1. Food and nutrition

**QUESTION:** What kind of food do we eat?



#### Activity: Classification of food

##### What to Do:

1. Make a table like the one shown on the right in your exercise book.

Food from animals	Food from plants

2. Sort out the foods in the pictures below into two groups in the table.



ghee



eggs



potatoes



milk



rice



cauliflower



roast chicken



bread





## Summary

We eat different foods. These come from different sources. Beef, chicken, fish and egg are foods from animals. Ghee, butter and milk also come from animals. We eat rice, potato, bread and vegetables as food. Bread is made from flour. Flour is made from wheat. These foods come from plants. We also get fruits such as jackfruit, mango, berry, banana and orange from plants.

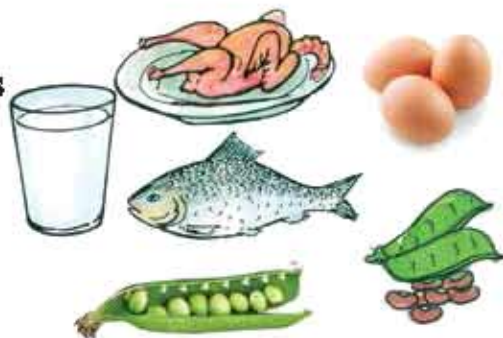
We get the necessary energy from food. Food helps in our growth and provide energy for work. Man and animal need food for nutrient. Substance that living things need in order to survive and grow is called Nutrient. We get it from food.

## Nutrition

Our food contains various kinds of nutrients. **Proteins**, **carbohydrates** and **fat** are the major food nutrients. **Vitamins** and **minerals** are minor nutrients. These elements are absorbed in the body from food.

### (1) Proteins

Protein builds up our body. Protein is needed to build, repair and maintain muscle and blood. Meat, fish, eggs, pulses and beans contain plenty of protein.



protein contained foods

### (2) Carbohydrates

Carbohydrates are richly contained in the grain groups; rice, wheat and maize. Carbohydrates provide energy for doing work.

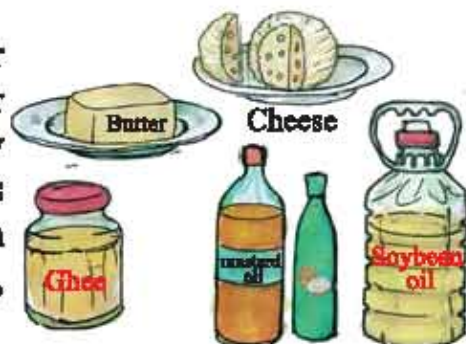


carbohydrate contained foods



**(3) Fat**

Fat provides energy and keeps our bodies warm. Fat also makes our body. Fat is mainly contained in dairy products such as ghee, butter, curds etc. Fat is also contained in oil which comes from plants such as soya bean, mustard and coconut.



fat contained foods

**(4) Vitamins and Minerals**

Vitamins and minerals help our body to work properly and stay healthy. Vitamins and minerals protect us from diseases. They are richly contained in fruits and vegetables.



vitamin &amp; mineral rich foods

**Water**

Water is not a nutrient but adequate safe water is needed for digestion and absorption of foods in our body.

**Discussion**

1. Make a list of the function of the nutrition in the table below.
2. Share your ideas with the classmates.

Nutrition	Function
Protein	
Carbohydrate	
Fat	
Vitamin & Mineral	



## 2. Balanced diet

We may become sick if we do not eat different kinds of food in proper amount. What kind of food should we eat to keep our body healthy?

The food containing all the essentials for our body in the required quantity is called a **balanced diet**. The balanced diet is prepared by mixing various types of food. Protein, carbohydrate, fat, vitamin and mineral should be present as per requirement.

**QUESTION:** What is the balanced diet for good health?



### Activity: Menu of a balanced diet for a dinner

#### What to Do:

1. Make a table like the one shown below.
2. Choose one or two foods from each group in the table below.
3. Make a list of a well-balanced diet menu for dinner.

Group	Food
Protein	
Carbohydrate	
Dairy Product	
Vegetables	
Fruits	

Source of Diet				
Protein group	Carbohydrate group	Dairy product group	Vegetable group	Fruit group
fish	rice	milk	lalshak	mango
beef	atta	yogurt	puishak	jackfruit
poultry	potato	cheese	arum leafs	orange
mutton	maize	doi	carrot	guava
eggs		ghee	pumpkin	hog plum
beans		butter	radish	apple
seeds			cauliflower	watermelon
			cabbage	





## Discussion

### ◆ How can we prepare a balanced diet?

1. Share your ideas about the menu for dinner you made in your group.
2. Choose the best menu for dinner among the class.
3. Discuss why the menu is the best in the class.

## Summary

A well-balanced diet is very important for us. It keeps us healthy and strong. The body grows well and the risk of diseases become less.

We get proper nutrition by eating a variety of foods. There is no single food which contains all kinds of nutrition. We can still be unhealthy if we do not eat the right kind of different foods we need.



balanced diet

### A reasonable balanced diet

Many people believe that costly foods have greater nutritional value. But it is not true. All foods contain nutrition regardless of the price. Though the source and price of food are different, the nutritional value may remain almost the same. There is no difference in nutritional value between local and foreign food. The characteristics of nutritional elements are also the same. The important thing is to select the right kind of food considering our age, the work that we do, and how fast we are growing.



Ms and mother will buy local vegetables from the market and cook vegetable for dinner.

Ms and father will eat vegetable for dinner at a restaurant.



Which dinner has more nutritional value?



### 3. Fruit

Eating fruits is good for health. We have plenty of fruits around us.

**QUESTION:** What kind of fruits are there in different season?



#### Activity: Classification of seasonal fruits

**What to Do:**

1. Make a table like the one shown below.

Summer Fruits	Winter Fruits	Fruits throughout the year

2. Sort fruits in the figure below into three groups; **summer fruits**, **winter fruits**, and **fruits throughout the year**.



**papaya**



**banana**



**coconut**



**wood apple**



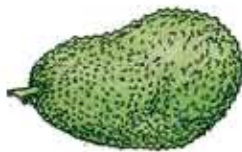
**boroi**



**orange**



**guava**



**jack fruit**

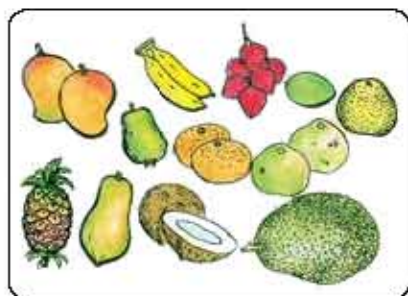


**mango**



## Summary

Fruits are rich in vitamins and minerals. Fruits provide nutrition which is vital for our health and protects us from diseases. We eat many kinds of fruits such as apple, grapes, mango, jackfruit, banana, watermelons and orange. We get some fruits in the summer, others in the winter or throughout the year.



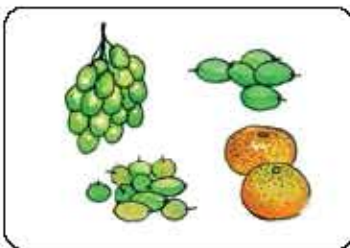
various types of fruits

### Seasonal fruits

Fruits can be classified based on the seasons of the year in which they grow such as **summer fruits**, **winter fruits** and **fruits throughout the year**.



summer fruits



winter fruits



fruits throughout the year

#### (1) Summer fruits

The notable summer fruits are – mango, black berry, lichi, jackfruit, guava, hog-plum, pineapple, lemon, wood apple, etc.

#### (2) Winter fruits

Fruits do not grow much in the winter. Among them, orange, jujube (boroi) and olive are the main winter fruits.

#### (3) Fruits throughout the year

In our country some fruits grow throughout the year such as papaya, banana and coconut.

A list of seasonal fruits is given in the table below.

Seasonal Fruits		
Summer fruits	Winter fruits	Fruits throughout the year
mango, lichi, lemon, hog plum, guava	olive, jujube, orange	papaya, banana, coconut



#### 4. Vegetables

We learn, vegetables are rich in vitamins and minerals. Eating vegetables is good for health. People who eat more vegetables regularly can reduce the risk of some diseases.

There are many kinds of vegetables such as tomato, cauliflower, cabbage and carrot.

We get some vegetables in the summer, others in the winter or throughout the year.



different types of vegetables

#### Seasonal vegetables

Vegetables in Bangladesh can be classified into **summer vegetables**, **winter vegetables** and **vegetables throughout the year**.



summer vegetables



winter vegetables



vegetables throughout the year

##### (1) Summer vegetables

Various vegetables grow in summer. Such as potol, karolla, ladies finger, kakrol, jhinga, dhundul, chicinga, cucumber, chal kumra, sweet gourd, pani kachu etc. Leafy vegetables are data shak, pui shak etc.

##### (2) Winter vegetables

In the winter, various types of vegetables grow in Bangladesh. Those include bean, radish, gourd, tomato, carrot, lettuce, cauliflower and cabbage. Leafy vegetables are palong shak and bottle gourd leaves.

##### (3) Vegetables throughout the year

Among this type of vegetables are brinjal, green banana and papaya. Leafy vegetables are lal shak, kolmi shak and kachu shak.



## 5. Preserving food

### By which ways we preserve food?

We eat various kinds of food to survive and grow. Fresh foods make us healthy and provide us energy. But spoiled foods would make us sick and weak. Food spoils because of pests and microorganisms getting into food. We need to preserve food to stop spoiling.



### Discussion

#### ◆ How do we preserve food?

1. Make a list of how to preserve different kinds of food, vegetables, fish, meat and fruits in our house.
2. Share your ideas with your classmates.

### Ways of preserving food

Spoilage of food can be stopped through preservation.

There are many ways to preserve food are as follows:

#### (1) Drying

Drying is the process of taking away the moisture by heating in the sun or an oven. This method works well for many types of food, including fruit, vegetables, fish, meat, grain and pulses.

#### (2) Canning or Bottling

Canning is the process of heating food at a specific temperature for a specific period. The food is sealed in a closed container. Fruits, vegetables, fish, meat and some prepared foods are preserved in this way.

#### (3) Refrigeration

Refrigeration is the process of keeping food in a cold place. Refrigerator can be used for preserving many foods, especially vegetables, fruits, fish and meat.

Pickling, salting and iceing are also other ways of preserving food.



dried fish



jelly



pickles



refrigerator





## EXERCISES

### 1. Fill in the blanks.

- 1) We need \_\_\_\_\_ for surviving and growing.
- 2) Vegetables are rich in \_\_\_\_\_ and \_\_\_\_\_.
- 3) The major nutrients in our food are \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.
- 4) \_\_\_\_\_ diet provides all sort of nutrients.

### 2. Put a tick (✓) mark on the correct answer.

- 1) What is the main function of protein?
 

a. to provide energy	b. to remove weakness
c. to prevent disease	d. to help the body formation and growth
- 2) Which one is the summer fruit?
 

a. banana	b. boroi
c. lichi	d. olive
- 3) Which one is rich in protein?
 

a. gourd	b. pumpkin
c. pulse	d. potato

### 3. Answer the following questions.

- 1) Why do we need to eat fruits and vegetables?
- 2) What are the functions of vitamin?
- 3) Why should we eat a balanced diet?
- 4) Explain two ways of preserving food.
- 5) Explain what nutrition is.
- 6) Write the names of three fruits that grow throughout the year.

### 4. Match the words on the left with the related words on the right.

protein vitamin fat carbohydrate	cheese rice disease prevention fish water
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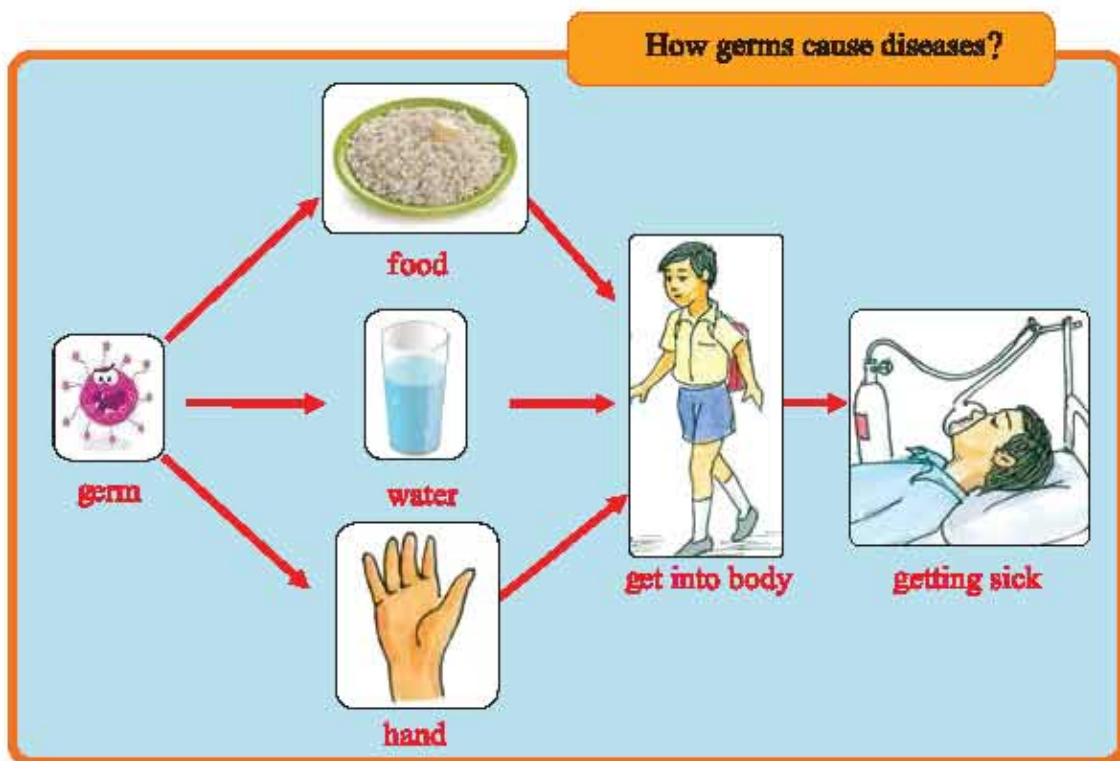
# Hygiene

## 1. Health and Disease

We sometimes suffer from diseases such as the common cold, diarrhoea, dysentery, typhoid, pox, cholera and tuberculosis. How do we get diseases? How can we keep ourselves healthy?

### (1) Disease

There are invisible germs all around us. Some germs cause diseases in people. These germs can get into our bodies when we drink or eat contaminated water or food. If we rub our eyes with dirty hands or put dirty hands in our mouth, germs can also get into our body. When germs multiply in our bodies we become ill.



## Hygiene

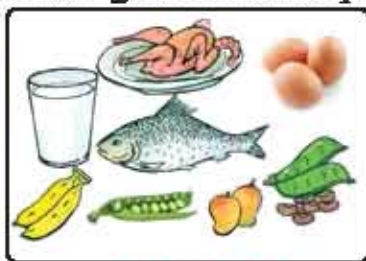
### (2) Keeping our body healthy

Our body has a natural ability to fight against diseases and destroy germs. Maintaining a healthy life is a good way to improve such ability.

A well-balanced diet can keep our body healthy. It is also useful to do moderate exercises and get enough rest and sleep.



moderate exercises and sports



balanced diet



enough sleep

If we get a disease, we need to see a doctor and take medicine.

We also need to take rest, eat nutritious food and drink safe water to recover from diseases.



visit a doctor



take medicine



### Discussion

#### ◆ How can we stay healthy?

1. Make a list of your habits to keep yourself healthy.
2. Share your ideas with your classmates.
3. Make a list of rules for keeping body healthy.



## 2. Prevention of diseases

**QUESTION:** How can we prevent diseases?



### Activity: Good habits to prevent diseases

#### What to Do:

1. Make a table like the one shown on the right.
2. Make a list of good habits for preventing diseases in the table.
3. Share your ideas with the classmates.

Habits to prevent disease	
Example: brushing teeth after meals	
1.	
2.	

### Summary

Germs are everywhere. Each time we touch something such as a door handle, table, chair or toilet we can pick up germs or spread germs. But, we cannot avoid touching everything. Germs can also spread through the air from person to person when an infected person sneezes or coughs. Germs can spread through insects such as mosquitoes and house flies. The most important way of preventing diseases is to stop the spread of germs. Here are the good habits to stop germs spreading and prevent diseases.

#### Keeping the body clean

We need to take care of our body by keeping it neat and clean. We have to brush our teeth after meals and bathe with clean water and soap every day. We also need to clean clothes regularly. We need to care for our skin, hair, nails, eyes and ears to keep our body healthy.



taking a shower



brushing teeth

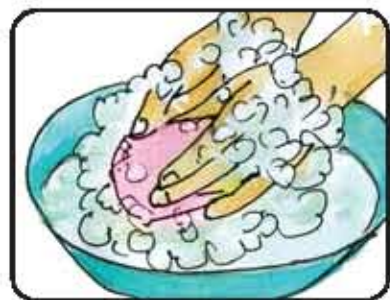


clipping nails



### Washing hands

Germs can get into our bodies when we touch our mouth, eyes or nose with dirty hands. Dirty hands can spread germs when we touch something. Washing our hands with soap and clean water is the best and simplest way to prevent diseases. We have to wash our hands before eating and preparing foods, and after using the toilet.



washing hands with soap



drinking safe water

### Using safe water

Polluted water causes disease. We need safe water to prevent diseases. We have to use safe water to drink, to prepare foods and to wash our body. Safe water helps our body work properly and washes germs off, and keeps us healthy.

### Cleaning the environment

We need to clean our surroundings to reduce the spread of germs. Regular cleaning with soap and water is one of the useful ways for removing germs. In our houses or schools, we have to wipe the benches, tables, chairs etc and sweep the floor to keep it clean. We should put garbage such as kitchen wastes, paper and banana skin in dustbins or a specific place. We should also keep toilets neat and clean, because germs can spread through urine and stools. We have to use toilets properly and wash our hands with clean water and soap.



cleaning a classroom



using a sanitary latrine



## EXERCISES

### 1. Fill in the blanks.

- 1) We may get sick when \_\_\_\_ enter into our body.
- 2) To keep good health we need to eat \_\_\_\_ .
- 3) We should put garbage or waste in \_\_\_\_ or specific places.
- 4) If we do not keep our body neat and clean, we will get \_\_\_\_ .

### 2. Put a tick (✓) mark on the correct answer.

- 1) What is a good habit to avoid getting sick ?
 

a. eating lots of food	b. washing hands
c. sleeping late	d. eating uncovered food
- 2) What is an important way to maintain good health?
 

a. taking enough sleep and rest	b. working hard
c. taking a lot of medicine	d. eating too much

### 3. Answer the following questions.

- 1) What should you do after using toilets ?
- 2) Mention two ways to keep the environment clean.
- 3) Explain how to wash your hands properly.
- 4) Give four good habits to prevent diseases.
- 5) Where are the germs found ?
- 6) Why do we need a clean environment to stay healthy ?

### 4. Use arrows in the figure below to show the ways of spreading germs.



## Chapter 9

# Energy

Energy comes in different forms such as light, electricity, and heat. We use energy in everything we do. Can you find the uses of energy in the picture below?



### 1. Energy in our life

**QUESTION:** How do we use energy?



#### Activity: Uses of energy

**What to Do:**

1. Make a table like the one shown on the right.
2. List the uses of energy in the table.
3. Share your ideas with the classmates.

When do we use energy?



I use energy when I study at night.

I use energy when I watch TV.



## Summary

We use light, electricity and heat as energy in different situations.

### Light

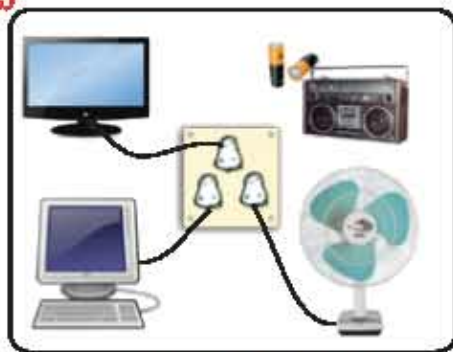
Light is energy that helps us to see. Without light, we could not see the things around us. We use light to make a room bright. We get light from fires, candles and many other sources. The main source of light energy is the Sun. Plants make food and oxygen by using sunlight. Without sunlight, crops and other plants cannot grow.



uses of light energy

### Electricity

Electricity is a form of energy that we can use to run appliances. Electricity comes from batteries or outlets in our houses. We use electricity to turn on the light bulb and fan, to watch TV, to listen to the radio, and to play with toy cars. Like this, we also use electricity to run refrigerators or computers.



uses of electricity

### Heat

Heat is energy that makes things warm. We use heat energy in cooking food, drying clothes and keeping warm. We can get heat energy from burning wood, coal, oil and gas. We can produce heat by rubbing two things such as our hands. The Sun is a powerful source of heat. The Sun warms air, water, and land on the Earth.



use of heat energy





## 2. What is Energy?

Energy is the ability to do work. We can do many things using energy. When we turn on a radio, we can listen to news or music. We can boil water and cook food by using fires.

### QUESTION: What can energy do?



#### Activity: What energy do

##### What to Do:

1. Make a table like the one shown on the right.

	What happens
Activity 1	
Activity 2	

##### Activity 1:

1. Prepare a candle on a desk.
2. Make the room dark, and then light the candle.
3. Observe what happens to the room and the candle.



##### Activity 2:

1. Bring your hand close to the lighted candle.
2. Describe what you feel on your hand, in the table.



**Do this activity with your teacher.  
Do not touch the flame.  
Be careful while using fire.**



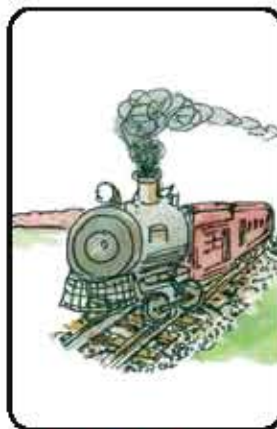
## Summary

Electricity can light a lamp and make the room bright. When we bring our hands close to the light, we feel warm. This means that light can produce heat.

Energy can mainly do four things, **move something, make a sound, produce light and heat.**

### Moving something

Energy can move something. Fans spin around by using electricity. A toy car can also move by using the electricity of a battery. Heat energy can move something as well. When we heat the water, steam comes out. Steam trains and ships can move by using the power of steam.



steam train



playing with a toy car

### Producing light

Energy can produce light. A lamp and torch give off light by using electricity. When we turn on the TV, we can see images because the TV emits light. Heat-energy can also produce light. When we burn a matchstick, we get both light and heat.

### Producing heat

Energy can make heat. Electric lamps give off light as well as heat by using electricity. Burning candles give off light and heat as well. Electrical energy can also produce heat. When we iron clothes, we use the heat produced by electricity.



## EXERCISES

### 1. Fill in the blanks.

- 1) Heat, electricity and light are \_\_\_\_\_.
- 2) Television runs using \_\_\_\_\_ energy.
- 3) Plants prepare their food by using \_\_\_\_\_.
- 4) We get \_\_\_\_\_ and \_\_\_\_\_ by burning a match stick.

### 2. Put a tick (✓) mark on the correct answer.

#### 1. Which one is energy?

- |               |        |
|---------------|--------|
| a. television | b. fan |
| c. light      | d. pen |

#### 2. Which one runs by using electricity?

- |              |                 |
|--------------|-----------------|
| a. push cart | b. radio        |
| c. the Sun   | d. steam engine |

### 3. Answer the following questions.

- 1) Make a list of what energy can do.
  - 2) Name the different forms of energy.
  - 3) Explain how light energy is used in our life.
  - 4) Explain how electricity is used in our life.
  - 5) Why do we rub our palms when we feel cold ?
4. Match the words on the left with the related words on the right.

<p><b>heat</b></p> <p><b>candle</b></p> <p><b>energy</b></p> <p><b>source of energy</b></p>	<p><b>light, heat and electricity</b></p> <p><b>boiling water</b></p> <p><b>Sun</b></p> <p><b>producing light and heat</b></p>
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## Chapter 10

# Introduction to Technology

Look at the pictures below. What are they doing? What are they using?



When we write, we use a pen or a pencil. When we plough a field, we use a tractor. The tools in the pictures above are known as **technology**. **Technology** can be a piece of equipment, tool, device, machine, or method. It makes our work easier, better or quicker.

## 1. Technology in our life

**QUESTION:** How do we use technology?



**Activity:** Use of technology in our life

**What to Do:**

1. Make a table like the one shown below.
2. Make a list of the "Name of technology" in the left column and "How do we use the technology" in the right column of the table.
3. Share your ideas with the classmates.

Name of technology	How do we use the technology?
Pen	We can write with it.



## Summary

We use various kinds of technologies for different purposes in our life. When studying, we use technologies such as pencils, textbooks or exercise books. Teachers use blackboards, chalk or other instruments to teach.



writing with a pencil



reading a book

When we travel or carry goods from place to place, we use transport technologies such as a bicycle, car, bus, ship, or an aeroplane.

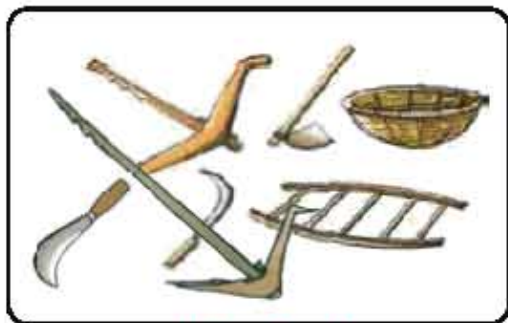


bus

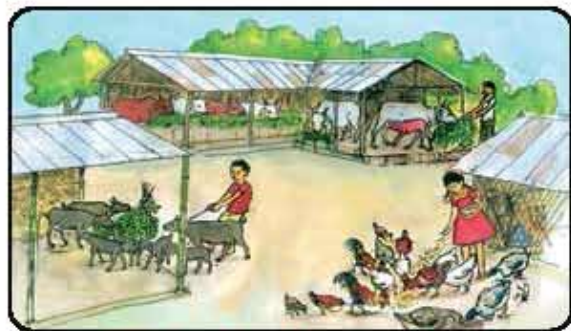


ship

In agriculture, we use various kinds of tools such as a plough, spade, sickle or tractor for cultivation. We also raise livestock or farm fish by using different technologies.



agricultural tools



livestock and poultry farming

Technology is tied closely to our life. Technology makes our life more convenient and safe.



## 2. Development of technology

Technology is always developing and improving. Improvements in technology make our life better and quicker.

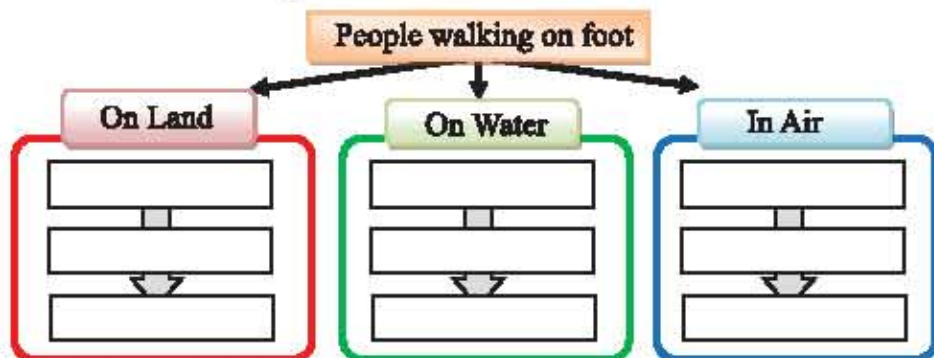
**QUESTION:** How has technology changed?



### Activity: Changes of transport technology

#### What to Do

1. Make a diagram like the one shown below.



2. Classify the pictures below into 3 groups; transport technologies on land, on water and in air, and put them in order from oldest to newest.



helicopter



sail boat



space shuttle



steam train



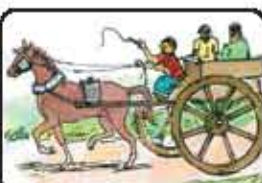
bus



aeroplane



raft



horse



ship



## Summary

Technology is used in various ways in our life such as transport, study or agriculture.

### Transport

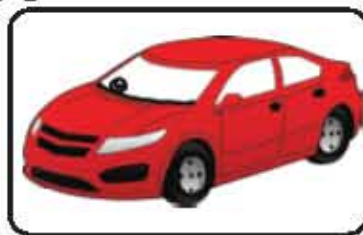
People invented transport technologies in order to move from place to place and carry goods farther and faster. Transport technologies can be classified into three modes; land, water and air. In ancient time, people used to travel on foot. Later on, people began to use animals such as horses or cows. After the invention of the wheel, transport technology changed drastically. At first, the horse cart and cow carriage was invented. After the invention of the engine, trains and cars were invented. The invention of the wheel and engine made it easier for people to travel and carry goods farther and faster.



horse cart



train

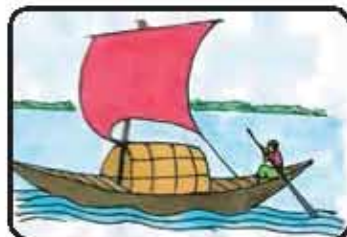


car

As for water transport, people used to use rafts or boats to travel and carry goods across rivers, lakes or oceans. Then, people travelled on water with sail boats by using wind power. After the invention of the engine, cargo ships, speed boats and ferries were developed. These carry people and goods throughout the world.



raft



sail



cargo ship



Aeroplanes and helicopters also travel in air. We can travel long distances in a short time through the air. Now, people can travel to the moon through space shuttle.



aeroplane



helicopter



space shuttle

## Education

Educational technology can be traced back to the paintings on cave walls. People invented paper and began to write down messages or knowledge on paper. After that, people invented the printing press. Now we use educational technologies such as computers, projectors, internet, videos and cameras for teaching and learning.



education materials



computer



printing press

## Agriculture

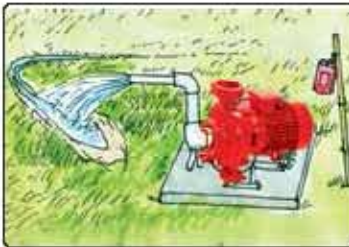
The first agricultural revolution began many years ago. At that time, people invented various agricultural tools such as the shovel, spade, sickle, plough etc. People used animals such as cows or horses to plough fields. Now we use a tractor to plough fields and irrigation pumps for watering land. We also raise livestock such as cows, sheeps, goats and chickens, and farm fish for getting food.



ploughing with animal



tractor



irrigation pump





## EXERCISES

### 1. Fill in the blanks.

- 1) The plough is a technology used for \_\_\_\_\_.
- 2) The textbook is a technology used for \_\_\_\_\_.
- 3) Modes of transport can be classified into land, water and \_\_\_\_\_.

### 2. Put a tick (✓) mark on the correct answer.

- 1) Which one is modern technology?  
a. spade                      b. plough  
c. sickle                      d. tractor
- 2) Which technology came first?  
a. pen                          b. paper  
c. book                         d. printing press
- 3) Which one is a type of transport technology?  
a. computer                 b. telephone  
c. aeroplane                 d. tractor

### 3. Answer the following questions.

- 1) Explain, what technology is.
- 2) How does technology help us in transport ?
- 3) Why have people invented technologies ?
- 4) Write names of four technologies of education?
- 5) Write names of two ancient and two modern technologies of agriculture.

### 4. Match the words on the left with related words on the right.

reading	train
cultivation	plough
transport	pencil
writing	book



# Information and Communication

## 1. Ways of collecting information

**Information** is knowledge that we get about someone or something. We are always getting various kinds of information such as events, weather and news. How do you know when an examination begins? Where do you get information on today's weather from? When will Bangladesh attend their match in World Cup Cricket? Where can we travel in the summer vacation?

**QUESTION:** Where can we get information?



### Activity: Sources of information

#### What to Do:

1. Make a table like the one shown below.
2. Make a list of the "types of information" and "sources of information" in the table.

Name of information	Where information comes from
Date of examination	school notice, teachers

3. Share your ideas with the classmates.



I usually watch TV to see the weather forecast. How about you?

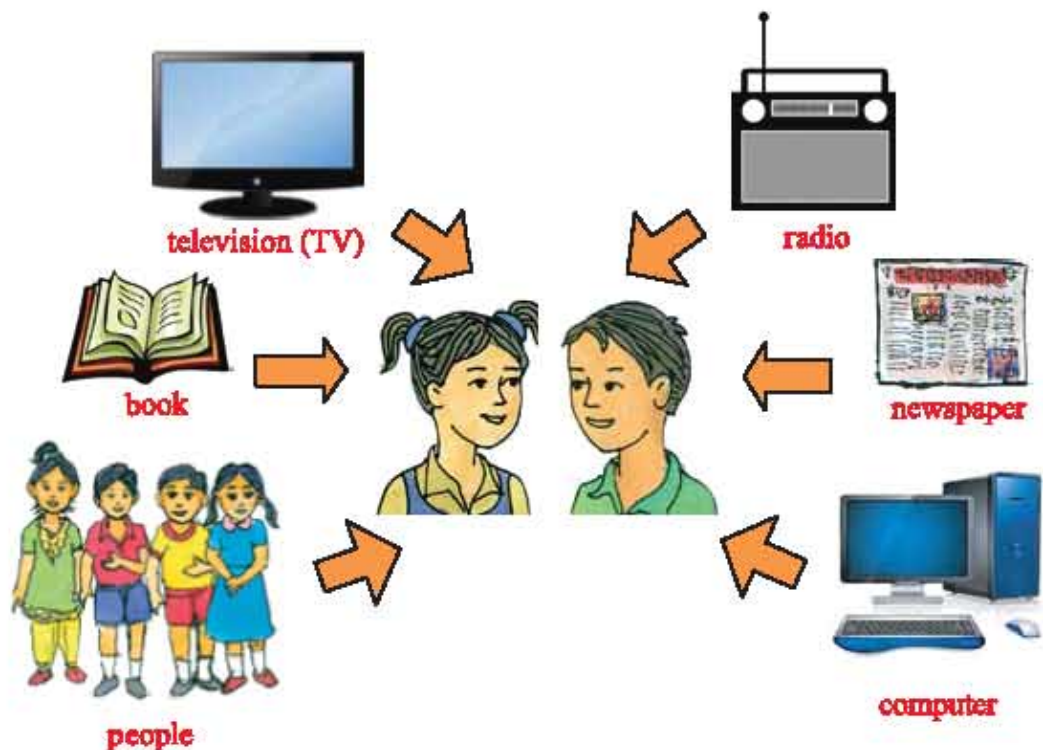
I sometimes listen to the radio to collect information on the weather.



## Summary

Information comes from different sources such as the television, radio, newspaper and books. We get information on the weather from the television or radio. We learn a lot of things from textbooks. Nowadays, we can get information through the internet. Tools such as the television, radio and newspaper that are used to deliver information are called **media**. We also gather information from people through communication. We hear messages or experiences from parents or classmates.

Information can tell people something new or help them make a decision. Sharing information is also very important for our life. If you hear of a cyclone alert you should tell other people. If you do not share the information, people may suffer heavy damage from the cyclone. We should gather and share correct information for a better life.



## 2. Exchanging information

People have developed various types of technology such as the newspaper, books, radio, TV and computer. We can get information and communicate with people by using technologies.

**QUESTION:** How can we communicate by using technology ?



### Activity: Communication tools

#### What to Do:

1. Make a table like the one shown below.
2. Make a list of "How to communicate with people" in the left column and "What technology you use" in the right column of the table.
3. Share your ideas with the classmates.

How do you communicate with people?	What technology do you use?



How can you keep in contact with your relatives living at a distant places?

I sometimes get letters from my uncle.



#### Think and Share

- ◆ How did early people used to communicate with each other?



## Summary

**Communication** means exchanging information.

A long time ago, people communicated with each other by drawing or speaking. To communicate with people who lived far away, people went to see them or sent a messenger. People sent messages by using carrier pigeons, smoke signals or beating drum.



sending message through carrier pigeon



beating a drum for communication

Now we use technology when we exchange information. We can talk with people by using land telephone or mobile phone even though we live very far from each other. We can exchange messages through e-mail. We can communicate with people by sending letters also. Our lifestyle will be more easier along with the advancement of technology.



talking on the phone



announcing through loudhailer



posting a letter

**Communication is important for exchanging information.**

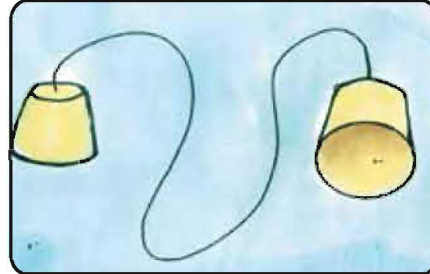


## Try it!

### Let's make a "Simple Telephone"

#### 1. What you'll need:

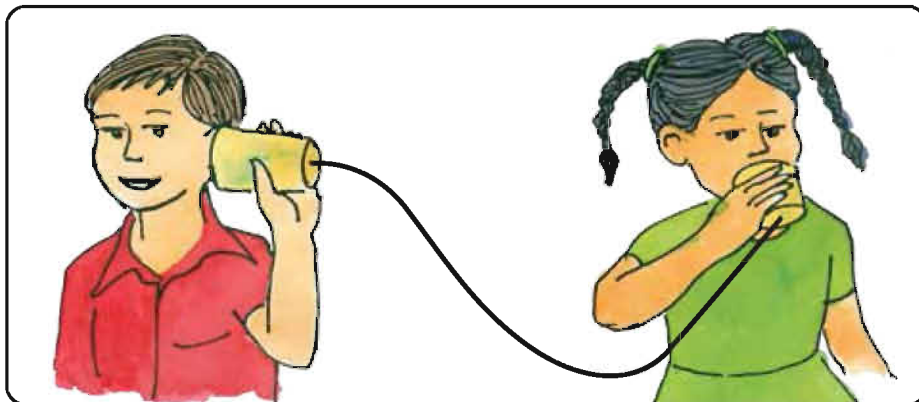
- ◆ Two paper or plastic cups, a sewing needle, string or wire (5m)



#### 2. How to make:

- ◆ Make a small hole at the bottom of each cup and thread the string through each cup.
- ◆ Tie knots at each end to stop it pulling through the cup.
- ◆ Move into position with you and a friend holding the cups at a distance that makes the string tight.
- ◆ One person talks into the cup while the other puts the cup to their ear and listens.

✧ Can you communicate with each other?



# EXERCISES

## 1. Fill in the blanks.

- 1) Tools such as TV to deliver information are called \_\_\_\_\_ .
- 2) Exchanging information is known as \_\_\_\_\_ .
- 3) \_\_\_\_\_ is knowledge that we receive by communication.

## 2. Put a tick (✓) mark on the correct answer.

- 1) Through which media can we exchange information at the same time?  
a. radio                      b. television  
c. mobile phone      d. newspapers
- 2) What is the ancient way of sending information?  
a. e-mail                      b. pigeon  
c. telephone              d. radio

## 3. Answer the following questions.

- 1) How can we exchange information with people who live far away?
- 2) Write five sources of information.
- 3) Why is it so important to know and share the information?

## 4. Match the words on the left with the related words on the right.

to watch and to listen	radio
to listen to news	newspaper
to read the news	telephone
to speak	television



## Chapter 12

# Population and Natural Environment

The number of people who live in the same area is called its **population**. Bangladesh has a very large population. According to the population census 2011 it is about 15 crore. It is increasing day by day.

### 1. The impact of population growth on our life

**QUESTION:** What happens to our life if population increases?



#### Activity: Impact of population growth on food & space

##### What to Do

1. Prepare a 5 metre rope and 5 cards with "Food" written on them.
2. Form a group of ten, and make a loop with the rope on the floor.
3. One student gets into the loop with 5 cards.
4. 2nd student gets into the loop and takes one card from the 1st student.
5. Continue the same process until 10th student gets into the loop.



5m rope



5 cards with "Food"



##### Think and Share

- ◆ What happened to the cards for each student and space in the loop as the number of students increased?





## Summary

The more the population increases, the more food and space are needed. But food and space are limited. If the population continues growing, we will face different types of problems such as shortage of food to eat and space to live etc. In fact, there is a shortage of food in some parts of the world due to the growing population. People in a family need food and space to live. If the number of people in a family increases, they need more food to eat and space to study and sleep. Also, it would be easy to get disease in a crowded house.



enough space to sleep



not enough space to sleep



## Discussion

### ◆ “How can we make our family happy?”

1. Make a table like the one shown below.
2. Think about the following question.
  - ◆ What sort of problems do you face if the number of family members increase ?
3. Share your ideas with your classmates.

What sort of problems do you face, if the member of a family increases?



## 2. The impact of population growth on the natural environment

People need food, water, shelter and clothes to live.

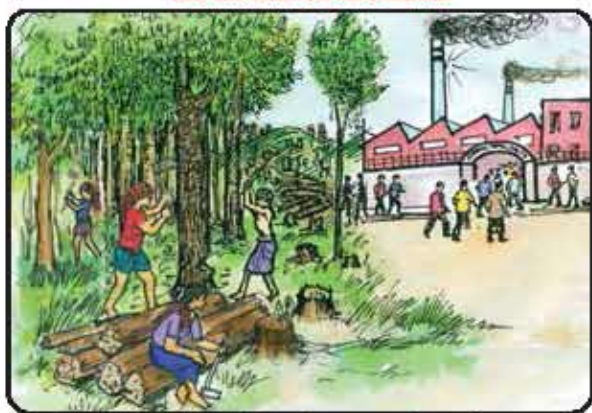
Food comes from plants and animals. Water comes from rain or rivers. Soil, rocks and woods are used to build houses and buildings. Some clothes are made of plant parts such as jute and cotton. Some shoes or bags are made of animal skins.

Those things such as plants, animals, water, and soil are called **natural resources**. We get natural resources from the natural environment.

When the population grows it needs more natural resources. People are destroying the natural environment to meet their additional needs.



people get natural resources from the natural environment



people are destroying the natural environment



### Discussion

◆ **What happens to the natural environment if the population increases ?**

1. Think about the following questions.
  - ◆ How does population growth affect the natural environment?
  - ◆ How can we protect the natural environment?
2. Share your ideas with your classmates.





# Glossary

Terms	Meaning of Teams	Page
Amphibian	Vertebrate that starts life in the water and then lives on land as an adult.	12
Animal	Living things that have the ability to move. They have sense organs that help them to see, hear, smell and taste things.	8
Backbone	A series of bones that helps to support the animal's body.	11
Bird	Vertebrate that has feathers, two wings, two legs, and lays eggs.	13
Carbon dioxide	A gas that cannot help something to burn.	39, 40
Communication	Sending information from one person to others.	71, 72
Components of environment	All things in our environment.	2
Electricity	A form of energy that we can use to run appliances.	59
Energy	The ability to do things.	60
Environment	All the living and nonliving things that surround us.	2
Fish	Vertebrate that lives in water, is covered with scales, and move with its fins in water.	12
Flowering plant	Plant that bears flowers.	10
Gas	A state of matter that flows and has no definite shape or volume of its own.	19, 20
Heat	A form of energy that makes things warm.	59
Herb	Plant that is smaller than shrubs, having soft stems which do not become woody	10
Humus	Decayed remains of plant and animal.	32
Ice	Frozen water.	19
Information	Knowledge that we receive about someone or something by communication.	69
Invertebrate	An animal that does not have a backbone.	11
Light	A form of energy that we can see.	59
Liquid	A state of matter that has its own volume but does not have definite shape. It flows and takes the shape of any container.	19, 20
Living thing	Thing that grows, changes and produces other living things by itself	6
Mammal	Vertebrate that has hair or fur, does not lay eggs, and produces milk for its young.	13
Man-made environment	Environment having man-made things.	4
Man-made thing	Thing that is made by people.	4
Matter	Matetial that has weight and takes up space	17



## Glossary

Media	Tools such as television, radio and newspaper that are used to deliver information.	70
Natural environment	Environment having natural things.	4
Natural resource	Something from Earth that people use.	25, 77
Natural thing	Thing that is not made by people.	4
Non-flowering plant	Plant that does not bear flowers.	10
Non-Living thing	Thing that does not eat, drink, grow or make other things by itself.	7
Nutrient	A substance that living things need in order to survive and grow.	44
Oxygen	A gas that can help something to burn.	39,40
Plant	Living thing that has roots, stems, and leaves and make its own food.	8
Population	The number of people who lives in the same area.	75
Reptile	Vertebrate that has dry, scaly skins, and lays eggs on land.	12
Shrub	Plant that is woody, smaller than trees, having several branches arising from near the base of the main stem.	10
Soil	The loose material that covers the Earth's surface.	30
Solid	A state of matter that has its own volume and shape.	20
Technology	A piece of equipment, tool, device, machine, or method that makes our work easier, better or quicker.	63
Tree	Plant which is large in size, has a woody main stem, giving rise to branches and leaves.	10
Vertebrate	An animal that has a backbone.	11
Water Vapour	Gaseous state of water which is in the invisible form.	19

The end



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