

A reference book of Science & Technology, Health & Physical Education

Nirantar

Science & Technology

Health & Physical Education

Step-3



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Nirantar Prakashan

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PREFACE

Nirantar Science & Technology (Health & Physical Education) book aims at providing both theoretical and practical cognitivity to the students of far and wide having some flair to science, scientific facts and processes with ample activities considering their needs, level, aptitude, intelligence and age factor by creating interest through proper selection and gradation of the subject matter to be taught and learnt. The entire desk of authors and editors claims that the book has come to adopt a thematic and activity centred approach, abundant illustrations and so on in order to make an understanding of science more effective and comprehensive.

This book has been developed as reference material to develop the concept of science and technology from the youngest class and to support the learners of the upper classes. This book describes in detail the lessons related to the science, technology, health and physical studies.

The new version in your hand is solemnly dedicated to those scholars far and wide with a provision of richly sophisticated but only relevant pictures, diagrams, tables, charts, fact files, reasons and logics, etc. as the soul of science. Apart from these, several other efforts have been put forward collectively in order to make the book more concise and student friendly so as to address the requirement of a perfect book to many students and teachers who like to culminate real practice in science in the days to come. Besides this, our another attempt through this presentation is to eradicate some misconceptions to science appeared in the growing mind of students especially in the classroom context by illuminating them in terms of these salient features incorporated within each book of the series.

Home Assignments/Worksheets: The revision exercises at the end of every chapter can be given as home assignments after teaching particular concepts.

Varieties of Questions: Objective type questions like, true or false, fill in the blanks, choose the correct answer, etc. are given in the exercises at the end of every chapter in this book in order to fulfill the objectives of each lesson.

Activities: Numerous activities in the classroom can provide platform for active involvement of students in application of their theoretical knowledge and learning. Thus, interesting activities are given so as to arouse interest of the students in science.

Projects: Lots of activities in the book are dedicated to investigate research projects with information gathering and deducing. Some of these can be individual research projects and others assigned to group of students with an aim to make them more participatory.

Note to the Teacher: This helps the teachers to get some tips in teaching methodology of each lesson as this section attempts to provide teachers with some exposure to science.

Points to Remember: This section helps the students to understand the main points of each lesson.

Quick Reply: It helps the students to answer the quick understanding of the lesson.

Last, but not the least, our sincere thanks goes to **Nirantar Prakashan** for their keen interest in publishing this series of books. We are also thankful to Mr. Shambhu Pd. Pokhrel (School Chairperson), Mrs. Sujita Adhikari Pokhrel (Principal), Mr. Rudra Prashad Khanal (Vice Principal), Mr. Ram Shrestha (Science Teacher), Mr. Badri Neupane (Science Teacher), Mr. Bishnu Bhattarai (English Teacher) at different institutions for their constructive suggestions and support.

Any constructive suggestions and recommendations for the betterment of this series will be highly acknowledged.

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ENVIRONMENT & SCIENCE





THINGS AROUND US

There are many things around us. The things which are made by man are called man-made things. The things which are available in nature are called natural things. Some of the things that we see around us have life in them, others have no life in them. Things that have life are called living things. All plants, animals and humans are living things. Things that have no life are called non living things. A stone is a non living things. Here are some living things which are:



lion



neem



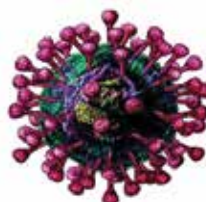
ant



monkey



grass



virus

Some major characteristics of living things are:

- ♦ Living things move;
- ♦ Living things grow;
- ♦ Living things need food to survive;
- ♦ Living things feel;
- ♦ Living things breathe;

Do you know?

- Cactus does not have leaf.



- ♦ Living things reproduce;
- ♦ Living things excrete;
- ♦ Living things die.

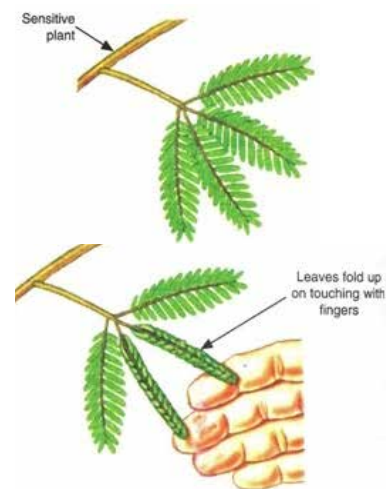


1. Living things Move

All living things move. Animals move from one place to another in search of food, shelter and to escape from enemies. Birds and insects fly with the help of wings. Many animals move with the help of legs. Snakes slide their bodies on the ground. Fishes move in water with their fins.

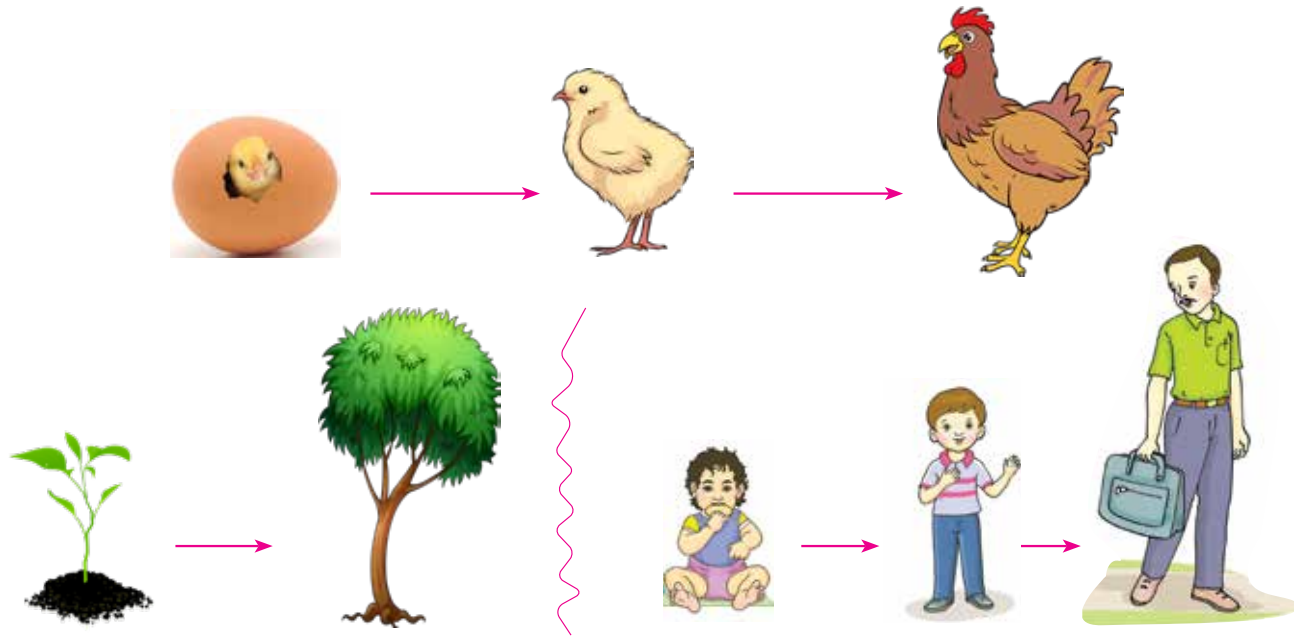


When touched, plants like 'touch-me-not' show slow movement. The sunflower turns its face towards the sun. But does a table move by itself? No, it does not. Only living things move on their own.



2. Living things Grow

All living things grow in shape and size. A baby grows into a child and a child grows into an adult. A chicken comes out of an egg and a plant grows into a big tree.



3. Living things need Food to survive

All living things need food to live and grow. Animals get their food from plants or other animals. Most plants make their own food with air, water and sunlight.



4. Living things Feel

All living things can feel. Most of the animals use their sense organs to feel pain, cold, heat, taste or smell.



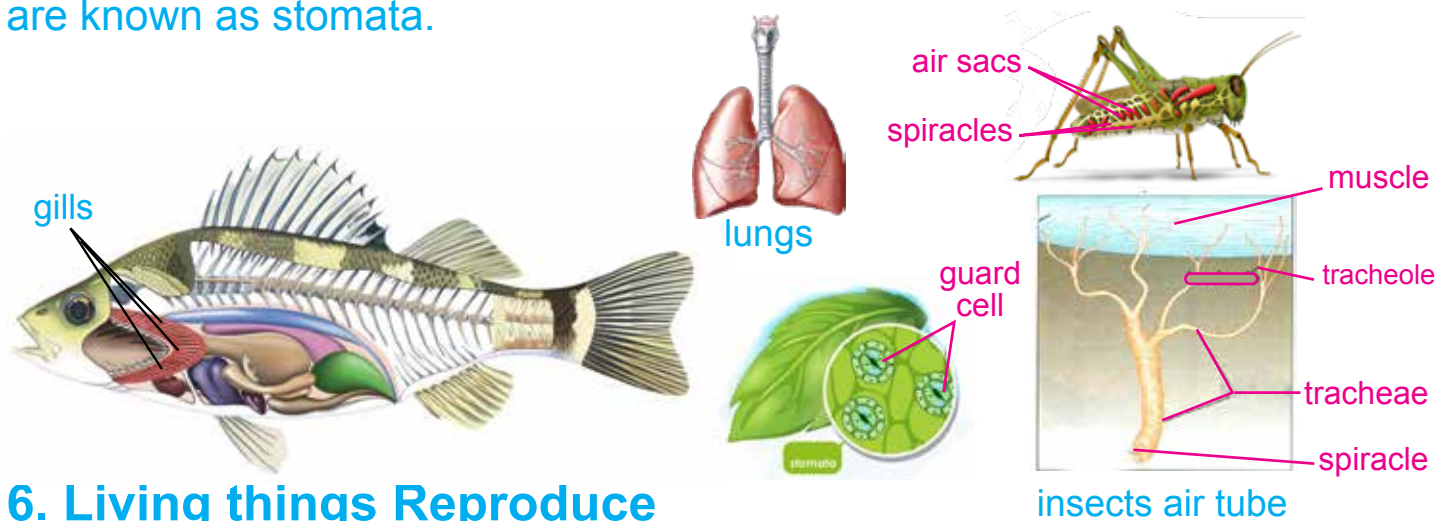


Plants too can feel sunlight and water. They grow towards light. Sunflower turns its face towards the sun. Touch me not plant closes its leaves when it is touched.



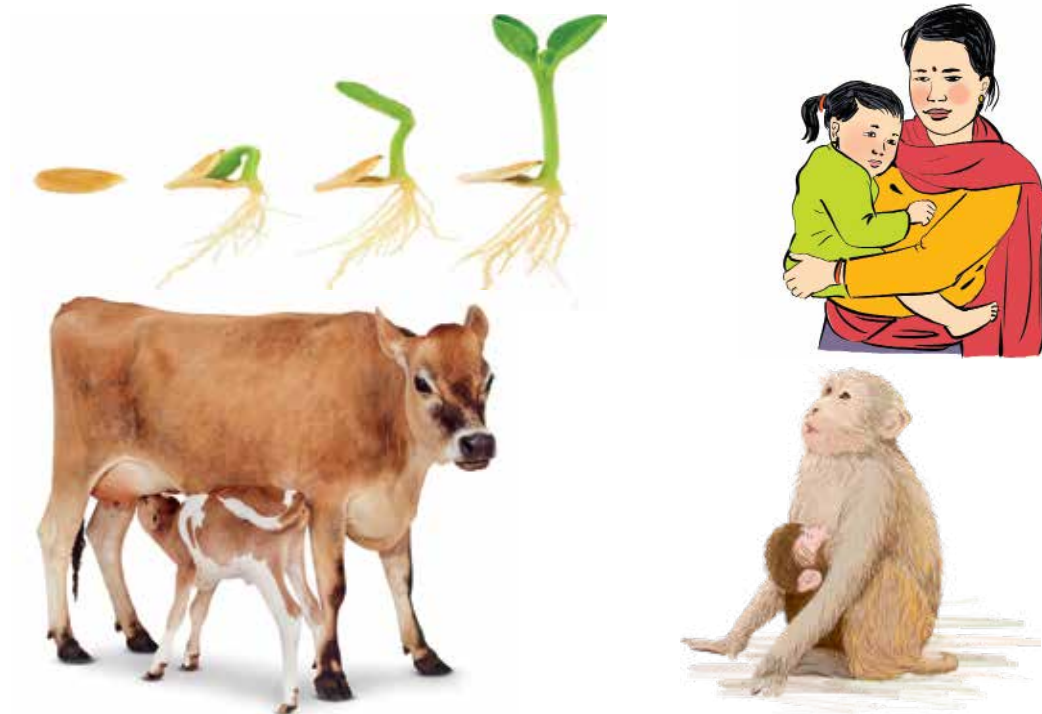
5. Living Things Breathe

All living things breathe in air. Most of the animals and human breathe using nose and lungs. A fish breathes through gills. Insects breathe through the holes in their bodies. **Plants breathe through minute pores in the leaves which are known as stomata.**



6. Living things Reproduce

All living things reproduce their own kind. Many animals give birth to their babies. Birds and insects lay eggs. Their babies come out of the eggs. Most of the plants bear seeds. Seeds develop into plants. Some plants reproduce **new plants from their stems and other parts.**



7. Living things Excrete

Many harmful waste products are produced inside the body of living things. They must be removed from the body. The process of removal of harmful and unwanted substances from the body of living things is called excretion. Many big animals excrete waste products in the form of faeces, urine, sweat, foul air, etc. as a waste from their body. Plants remove waste in the form of gums, water, etc. Excretion removes harmful substances from the body and makes their body fresh.

8. Living things Die

All living things become old and finally die. It is a natural process.

Now, we know the difference between man-made things and natural things. We also know that living and non-living things are different from each other. Among living things, there are a lot of differences between plants and animals.

Non-Living Things

Non-living things do not grow, move, reproduce, feel, need food and die. Therefore, non-living things do not show the characteristics of living things.





Plants and Animals

Now you know that both plants and animals are living things. But when you see them you will find that they are different from one another.

Animals can move from one place to another but plants do not move. Animals can take both solid and liquid foods while plants take only liquid food. All animals depend upon plants for their food. Animals are not green in colour, so they cannot prepare their own food.

Differences between living and non-living things

Living things

- They grow.
- They move.
- They breathe.
- They reproduce.
- They feel.
- They need food.
- They excrete harmful waste substances.
- They die.

Non-living things

- They do not grow.
- They do not move.
- They do not breathe.
- They do not reproduce.
- They do not feel.
- They do not need food.
- They do not excrete.
- They do not die.

Do you know?

- Stomata also helps plant to throw excess water.

Do you know?

- A very small child can feel sweet taste only.



Quick Reply

- Name some living things.
- Name some man-made things.
- Name some natural things.



Note to the Teacher

Explain the characteristics of living things with suitable examples. Discuss clearly about the movement, need of foods, sensitivity are also some major characteristics of plants. Make your students understand about the limited growth in animals and unlimited growth in plants with examples.



Points to Remember

- The things which are created by nature are called natural things.
- The things which are made by man are called man-made things.
- Living things move from one place to another place in search of food and to reproduce.
- Living things remove unwanted harmful substances from their body.
- Living organisms maybe plants, animals or unicellular beings.
- Man-made things are non-living things.
- Our earth is made up of two kind of things: a. natural
b. man-made.
- Natural things are of two kinds: a. living b. non-living.
- Some things which have life are called as living things.
- Some things which do not have life are called as non-living things.
- Living things include man, animals, birds, insects and plants.
- Living things move, grow, eat, feel, breathe, reproduce and die.

Glossary

nature	: the physical world and everything in it (e.g.: planets and animals, river, mountains, rocks, etc.)
excretion	: the process of removal waste from body
harmful	: capable of causing damage
survive	: live to remain alive
unicellular	: living things consisting of a single cell
gills	: organs (as of fish) for obtaining oxygen from water
stimulus(pl. stimuli)	: something that causes something else to happen, develop or become more active
stomata	: one of the minute openings in the epidermis of plant body part (e.g.: leaf) through which gaseous exchange occurs



Exercise

A. Choose a word to fill the blanks in each of the following sentences.

stomata	towards	feel	fins	excreate	non-living
---------	---------	------	------	----------	------------

1. Our sense organs help us to
2. All man-made things are.....things.
3. A fish swim with the help of.....
4. Plants breathe through.....
5. Sunflower turns the sun.
6. Living things waste products.

B. Write 'T' for true and 'F' for false statements.

1. Birds give birth to babies.
2. Tigers, cows move with legs.

☐☐

- 3. Only animals die; not plants. ☐
- 4. Plants do not need food. ☐
- 5. Aeroplane is a living thing because it moves. ☐
- 6. Non-living things cannot reproduce. ☐

C. Match the followings:

Fish	die
Leaves	animal movement
Legs	natural thing
Mountain	plants reproduction
Seeds	gills
Living things	stomata

D. Answer these questions.

- 1. Are all natural things living things?
- 2. What are man-made things?
- 3. A rock cannot reproduce. Why?
- 4. What are natural things?
- 5. What are living things?
- 6. What are non-living things?
- 7. Write three differences between living things and non-living things.
- 8. How do plants breathe?
- 9. Write three characteristics of living things.
- 10. Why do animals move around?
- 11. Write two differences between plants and animals.



E. Choose words from the box and write them in the correct column.

elephant, tree, cup, bottle, pencil, rose,
copy, wood, tiger, rocket, deer, paper

Living things	Non-living things

F. Choose words from the box and write them in the correct column.

elephant, tree, cup, bottle, pencil, rose,
sun, river, tiger, rocket, deer, paper

Natural things	Man-made things

G. I am a non-living thing. Yet, one of my parts is a body part of living thing. Choose from the box and write the name of the correct part.

neck	eye	arms	hand	teeth	legs
------	-----	------	------	-------	------

H. Choose the best answer from the given alternatives.

i. It gives birth to puppy.

a. dog

b. cat

c. Bat

d. rat

ii. It has life in it.

a. natural thing

b. artificial thing

c. living thing

d. non-living things

iii. It is a non-living thing.

a. cow

b. rock

c. goat

d. monkey

iv. It is a living thing.

a. duck

b. brick

c. bench

d. book

v. It has gills.

a. frog

b. butterfly

c. fish

d. ant

I. Make meaningful words from the jumble letters.

KESNA



TASTOMA



IOLN



SHFI



GDO



NAT



ROFG



Warm up activity

a.



b.



c.



d.



1. Can you identify the given diagrams? Express your response with a tick (✓) or a cross (×).

a	b	c	d

2. Have you really seen these animals? Respond with a (✓) or a cross (×).

a	b	c	d

3. Can you write their names?

a	b	c	d



Project Idea

1. Cut out pictures from old newspapers and magazines. Make a chart on living and non-living things.
2. According to the characteristics of living things. Discuss the differences between a table and a cat.
3. Observe a plant and discuss the characteristics of it.
4. Collect pictures of the following and paste them in you exercise book.

a. needle

b. clock

c. table

d. comb

e. chair

f. bottle



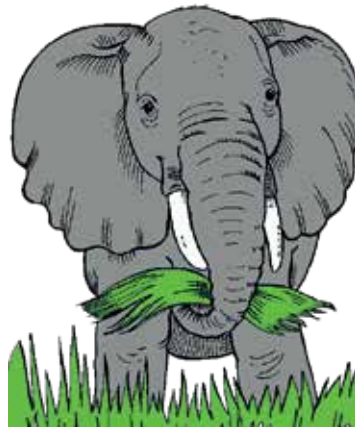
FOOD OF ANIMALS

All animals need foods to live and grow. Food gives them energy to move and work. Animals cannot prepare food unlike plants. Animals obtain food from their surroundings.

Animals can be divided in to three groups according to their feeding habits.

Plant-eating Animals (Herbivores)

Animals that eat only plants are called **herbivores**. These animals have sharp and strong front teeth for biting grass and leaves. They have broad and strong grinding teeth on the side of the jaw to chew food. Some animals such as butterflies and bees suck nectar from flowers with the help of their long tube-like tongue. Grain and fruit-eating birds and animals also come under this group; example: Cow, goat, deer, buffalo, rabbit, grasshopper, elephant, etc.



Do you know?

- Hippopotamus eats flesh as well as grass.

Flesh-eating Animals (Carnivores)

Animals that eat only the flesh of other animals are called **carnivores**. They have long and pointed teeth to tear the flesh and strong grinding teeth to chew flesh and bones.

These animals tear, chew and then swallow their food. Frogs have a long, sticky tongue that is used to catch insects. Snakes swallow their food; e.g. tiger, lion, eagle. Some animals such as leeches, bedbugs and mosquitoes suck the blood of other animals.



Do you know?

- Shark is the most dangerous carnivore in the sea.



Plants and Flesh eating Animals (Omnivores)

Animals that eat plants and the flesh of other animals are called **omnivores**. They have front teeth for biting plants and large other teeth for tearing, cut and chew flesh. They have sharp claws.



Do you know?

- Only female mosquitoes suck blood.



Some animals such as hyenas and vultures feed on the left over flesh of creatures killed by other animals are called as **scavengers**. They are called scavengers; e.g. cat, dog, crow, bear, human, rat, etc.

Do you know?

- Appendix helps to digest plants.



Quick Reply

- What does a herbivore eat?
- What does a carnivore eat?
- What does an omnivore eat?
- What do scavengers eat?



Note to the Teacher

Observe different type of animals and discuss food items they eat.





Points to Remember

- Animals need food for growth, energy and health.
- Food is the most important basic requirement of all living things.
- Animals that eat only plants are called herbivores.
- Animals that eat only the flesh of other animals are called carnivores.
- Animals have different eating habits.
- Animals that eat both plants and flesh of other animals are called omnivores.
- Animals directly or indirectly depend on plants for their foods.
- Foods help animals to grow.
- Vulture is called a scavenger because it feeds on dead bodies of animals which are decayed.
- Lion, tiger, snake, jackal, etc. are some examples of carnivores.
- Goat, Grasshopper, deer, cow, etc. are some examples of herbivores.
- Human, dog, cat, bear, crow, etc. are some examples of omnivores.

Glossary

nectar	:	a sweet liquid produced by plants and used by bees in making honey
flesh	:	soft parts of animals specially as food (meat)
tear	:	to separate parts from a main structure
jaw	:	lower parts of animal's face
claw	:	a sharp curved part on the toe of an animal (e.g., cat)
scavenger	:	an organism which typically feeds on dead bodies of animals(e.g., hyenas, vulture)
bed bug	:	a wingless blood sucking organisms



Exercise

A. Choose a word to fill the blanks in each of the following sentences.

Scavenger	surrounding	sharp	swallow	vulture	tear
-----------	-------------	-------	---------	---------	------

1. Crocodiles and snakes..... their food whole.
2. Carnivores have front teeth.
3. Hyena and are scavengers.
4. Animals obtain foods from their.....
5. Some animals chew and their food.
6. Dog is an example of an opportunistic

B. Write 'T' for true and 'F' for false statements.

1. Animals like elephants eat both plant and flesh. ☐
2. Vultures feed on remains of dead animals. ☐
3. Butterflies suck nectar from flowers. ☐
4. Snakes chew their food. ☐
5. Goat eat flesh sometimes. ☐
6. All animals need food to live and grow. ☐

C. Match the followings:

Tigers	suck blood
Mosquitos	gnaw food
Squirrels	eat flesh
Bears	eat insects
Frogs	are omnivores



D. Answer these questions.

1. What are herbivores?
2. What are carnivores?
3. What are omnivores?
4. What are scavengers?
5. Name three herbivores.
6. Name three carnivores.
7. Name three omnivores.
8. Why do different animals have different ways of eating?
9. How do leeches and butterflies eat their food?
10. What are the differences between herbivores and carnivores eating habits?

E. Read the clues and unscramble the letters to get the names of these animals. Write on the blanks.

1. It sucks up water with its trunk. PTELHEAN
2. It swallows soil. AEWRTMORH.....
3. It has a long sticky tongue. OGRF.....
4. It sucks nectar from flower. ELUTRBTYF
5. It sucks blood. USOMOTIQ.....

F. What do these animals eat? Put in the correct group.

cow	crow	lion	squirrel	horse	leopard
bear	rabbit	sparrow	lizard	bat	snake

1. Eat only plants
2. Eat only flesh
3. Eat both plants and flesh

G. Give reason:

1. Cow is a herbivore.
2. Vulture is a scavenger.
3. Tiger is a carnivore.

H. Choose the best answer from the given alternatives.

- i. It is herbivore.
a. deer b. wolf c. jackal d. fox
- ii. It is carnivore.
a. cat b. lion c. deer d. bear
- iii. It is omnivore.
a. human b. lion c. tiger d. goat
- iv. It is blood sucking insect.
a. mosquito b. louse c. both "a" and "b" d. none of these
- v. It sucks nectar from flower.
a. butterfly b. housefly c. mosquito d. louse

I. Make meaningful words from the jumble letters.

TURVULE



EOPALRD



MHUAN



TBUTERFLY



NLIO

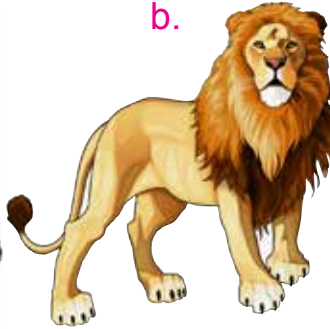


Warm up activity

a.



b.



c.



d.



1. Can you identify the given diagrams? Express your response with a tick (✓) or a cross (×).

a	b	c	d

2. Have you really seen these animals? Respond with a (✓) or a cross (×).

a	b	c	d

3. Can you write their names?

a	b	c	d



Project Idea

1. Collect pictures of plant -eating animals, flesh eating animals and animals which eat both. Paste them in your science exercise book.
2. Observe the animals of your surrounding and separate them according to their eating habits.



HOMES AND ANIMALS OF DIFFERENT SEASONS

Homes of Animals

Animals need homes to protect themselves from sun, rain, wind and enemies. Some animals make their homes by themselves while others find homes in the surroundings. Animals make their homes or use natural homes.

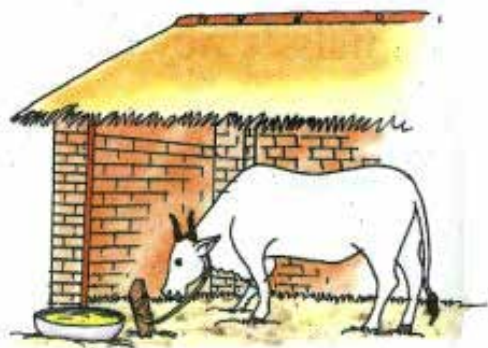
Birds live in nests. They make nests in trees and houses. Owls live in the hollows of trees.



birds live in nest



Some domestic animals live in shed. This type of home is made by man.



cow in shed



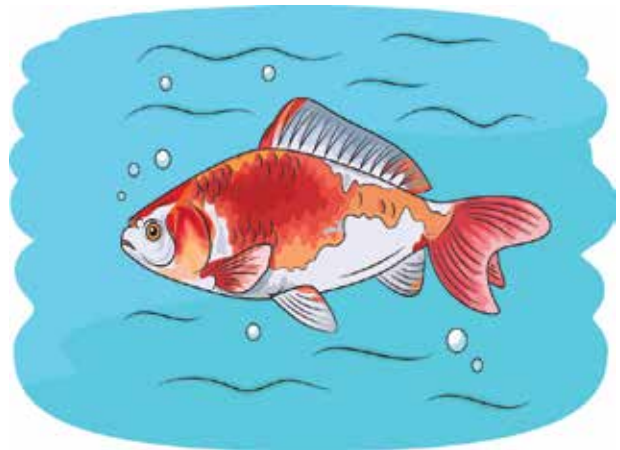
buffalo in shed



Rats, rabbits live in burrows under the ground whereas snake live in the natural holes.



Some animals such as tiger, bear, leopard live in dens. A den is a natural home for these animals.



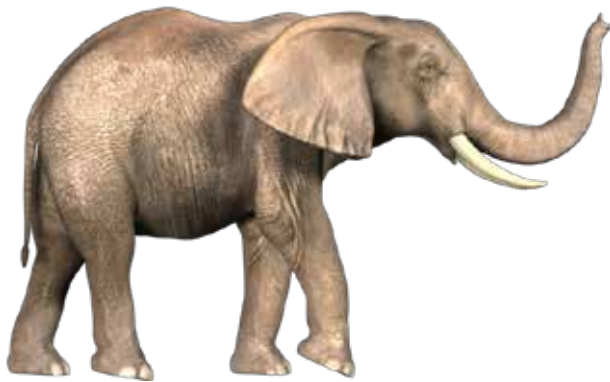
Horse lives in a stable. Stable is also made by man.
Fish live in water. They swim with the help of fins.

Do you know?

- Cats can't taste sugar. They don't have sweet taste buds.



Crocodiles, crabs, frogs, tortoise are some animals which live both on land and water.



Some animals such as elephant, giraffe and zebra live under the shade of trees.



Camels live in desert and their bodies are covered with very thin hair. Polar bears live in very cold places. Their bodies are covered with thick hair to protect them from the cold.

Do you know?

- Owl is the nocturnal animal with very big eyes.

Animals of Different Seasons

Animals which are seen in our surroundings cannot be seen throughout the year. They appear during the different seasons in a year.

Animals Seen during Summer and Rainy Seasons

Animals such as frogs, earthworms and snakes are usually seen during summer and rainy seasons. These animals hide themselves during winter. They live underground and protect themselves from cold.



frog



earthworm



snake

Houseflies and cockroaches are seen in the summer seasons.



housefly



cockroach

Bats, crabs, snails, worms, frogs, mosquitoes, green anacondas are also seen during summer and rainy season.



bat



snail

Animals Seen during Spring Season

Some animals such as butterflies, humming birds, honeybees are also seen during the spring seasons.



butterfly



humming bird



honeybee

Animals Seen in Winter Season

In winter season, only few animals are seen. Most of the animals in winter season under goes hibernation to escape from cold climate. Many birds from Siberia migrate to the wetlands of Nepal are seen in winter season (eg., cranes). Other animals also migrate. There are few mammals such as bats and whales that travel in search of food in each winter.

Some animals remain active in winter season. They must adapt to the changing weather.



spider



crane



sheep



yak

Many make changes in their behaviours or bodies. To keep warm, animals grow new thicker fur in winter on weasels and snowshoe rabbits. The new fur is white that helps them hide in the snow.

Sheep, yak, penguins, etc. typically prefer cold places.

Certain spiders and insects may stay active if they live in frost free areas and can find food to eat. There are a few insects, such as winter stonefly, crane fly, snow fleas etc. that are normally active in winter. Also, some fishes stay active in cold water during winter season.

Animals Seen at Different Times

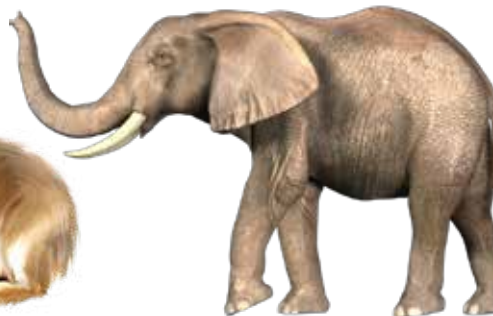
We know that all animals are not seen every time. Some animals are active during days and can be seen in day time. Others are typically seen during the night. On the basis of their activeness, during day and night, animals are categorized into two major groups namely: (i) diurnal animals and (ii) nocturnal animals.

a. Diurnal Animals

Those animals which are active during day time and take rest during night time are called **diurnal animals**. Such animals are easily seen during day time. Diurnal animals sleep during night time and are active during day e.g., Humans, songbirds, gorillas, cow, deer, hawks, elephants, squirrels, crow, chimpanzees etc.



rabbit



elephant



fox



cow



frog



duck



deer



bat

b. Nocturnal Animals

Those animals which are active during night time and take rest during day time are called nocturnal animals. Such animals are observed during night time. Nocturnal animals sleep during day time and are active during day; e.g.: owls, bats, fire-flies, beaver, hamster, scorpion, etc.



owl



bat



hyena



opossum



lynx

[Note: Some animals have both nocturnal and diurnal species. In tropics. Mosquitoes transmit two serious human illness, malaria and dengue fever. The aedes aegypti mosquito, which carries dengue fever is diurnal. The anopheles mosquito which carries malaria is nocturnal.]



Quick Reply

- Name animals which you have seen in last days.
- Name some animals' homes of our surrounding.
- Name animals which are seen in summer seasons.
- Name animals which are seen in rainy seasons.
- Name animals which are seen in spring seasons.
- Name the seasons when you can observe earthworms.



Note to the Teacher

Ask your students the homes of different animals. Describe the body structure of animals according to their habitats. Ask students to make a list of animals of their surrounding.





Points to Remember

- Animals live in different type of homes.
- Some animals live in homes made by themselves. Some live in natural homes, others in homes made by humans.
- The body structure of animals are different according to the different environment and habitats.
- Animals need shelter to be safe from heat, cold and rain.
- Different animals are seen during different seasons of a year.
- All animals are not observed during all seasons.
- Frogs, toads, snakes, some insects are seen in rainy season.
- Animals such as yak, polar bear, snow leopard prefer cold places.

Glossary

migrate : to move from one place to another

tropic : the part of the world that is near the equator where the weather is very warm

beaver : a large primarily nocturnal semi aquatic rodent

polar bear : a large white bear that lives near the north pole

enemy : someone who attacks or tries to harm other

anaconda : a larges remiaquatic constricting snake
(a large south American snake that squeezes its victims to death)

hamster : a small animal



Exercise

A. Choose a word to fill the blanks in each of the following sentences.

homes	enemies	bats	land	water
butterflies	heat	rainy	cold	

1. Frogs are seen during the.....seasons.
2. We see lots of.....in the spring season.
3. Animals need.....to protect themselves from,, or
4. In summer and rainy season, we can seein the evening.
5. Crocodiles and frogs live both on.....and

B. Write 'T' for true and 'F' for false statements.

1. Earthworms are seen during rainy season. ☐
2. Some animals live in natural homes. ☐
3. Monkeys live in the branches of trees. ☐
4. Honeybees are seen in the summer season. ☐
5. Some domestic animals live in forest. ☐
6. Mosquito transmits malaria parasite. ☐

C. Match the followings:

Rabbit	nest
Cow	water
Bird	burrow
Fish	stable
Horse	shed
Snake	den
Bear	hole



D. Answer these questions.

1. Why do animals need homes ?
2. Name three land animals.
3. Name three water animals.
4. Why do animals have a particular body structure ?
5. What type of animals are seen during summer and rainy seasons?
6. Where do frogs and snakes live in winter and why ?
7. Why are cockroaches mostly seen during summer season ?
8. Describe briefly about diurnal and nocturnal animals.

E. Write the names of any three:

- a. Animals seen in winter season.

.....

- b. Animals seen in summer season.

.....

- c. Nocturnal animals.

.....

- d. Diurnal animals.

.....

- e. Animals found in cold regions.

.....

F. Choose the best answer from the given alternatives.

- i. It is diurnal animal.

a. dog b. bat c. owl d. mosquito

- ii. It is nocturnal animal.

a. owl b. lion c. donkey d. human

- iii. It is summer animal.

a. snake b. panda c. bear d. snow leopard

iv. It is winter animal.

a. snake

b. yak

c. sheep

d. both b and c

v. It is found in moist environment.

a. snail

b. deer

c. lion

d. tiger

G. Name the following figures.



H. Make meaningful words from the jumble letters.

CKROACOH



NAILS



OGFR



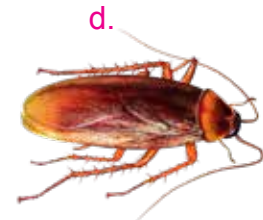
SMOQUITO



EELPHNAT



Warm up activity



1. Can you identify the given diagrams? Express your response with a tick (✓) or a cross (×).

a	b	c	d

2. Have you really seen these animals? Respond with a (✓) or a cross (×).

a	b	c	d

3. Can you write their names?

a	b	c	d



Project Idea

- Write the name of any three animals which you like the most and also write their homes.
- Draw diagrams of homes of animals you like the most.
- Visit a garden of your surrounding and make a list of insects and other animals that you find.
- Separate the following living things which are only seen in summer season.

owl, snake, firefly, bat, mosquito, snail, lizard

There are various types of plants around us. Some plants bear flowers and others do not bear flowers. Thus, on the basis of flower bearing capacity, plants can be divided into two groups: (i) Non-flowering plants (ii) Flowering plants

Non-flowering Plants (Cryptogams)

Plants which do not bear flowers are called **non-flowering** plants. Some of them are green and others are non-green. Green coloured plants can prepare food themselves but non-green plants cannot prepare food themselves. They do not develop fruits or seeds.



algae



fern



mushroom

Flowering Plants (Phanerogams)

Plants which bear flowers are called **flowering plants**. They are highly developed plants. They have green leaves which help them to prepare food. They produce fruits and seeds. Flowering plants are maybe herbs, shrubs or trees. Flowers are colourful. Seeds germinate to develop plants.

Herbs, Shrubs and Trees

We know that there are different types of plants some very tall and huge, some are medium sized.

A perennial plant with an elongated stem or trunk, having branches and many leaves is called a **tree**. Trees are generally strong, woody and huge.

Most plants classified as trees have a single self- supporting trunk containing woody tissues, and in most species the trunk gives branches; e.g., Sal, pine, mango, banyan, peepal etc.

Which plants are small to medium sized having woody structures are called **shrubs**. They can be differentiated from trees by their multiple stems and shorter height. Examples : rose, jasmine, oleander, bougainville, cotton etc.

Any seed-bearing plant which does not have a woody stem is called **herb**. These are used extensively for medicine.



mustard



lemon



mango



coconut

Annual, Biennial and Perennial Plants

Some plants in our surrounding live for few months and others for many years. Those plants grow only for one season of a year are called **annual plants**. Most of the vegetables, wheat, rice, maize are some annual plants. A biennial plant is a flowering plant that takes two years to complete its biological lifecycle. They are: Cabbage, carrot, spinach, turnips etc.



tomato



cucumber



paddy



maize

The plants which can live for more than two years are called **perennial plants**. e.g. Mango, peepal, banyan etc.



coconut



peepal



pinus



guava

Do you know?

- Submerged plants have very small plants.

Plants Habitat

An environment in which plants live and grow is known as **habitat**. Different kind of plants grow in different habitats.

Aquatic Plants

Plants which grow in water are called **aquatic plants**. Some of them have big and broad leaves. Some aquatic plants float freely on top of the water or grow completely under water and roots are fixed in the mud at the bottom of a pond. They are: Lotus, water lily, water hyacinth, water lettuce.



lotus



water lily



water hyacinth



water lettuce

Terrestrial Plants

Plants which grow on land are called **terrestrial plants**. These plants grow on different types of land. They maybe herbs, shrubs or trees.

Plants that Grow in Desert

Some plants grow in sandy land (desert). These plants need less water to live. They have small leaves or spines.



Plants that Grow in Cold Places

Some plants grow in cold places. They are tall, with a woody stem and thick leaves. They are evergreen plants. Stem is covered by scales. Scales protect plant from cold climate.



pinus



oak



deodar



cactus

Plants that Grow in Plains (Terai)

Some plants grow in the warmer climate of the plain. These are tall plants. Their leaves fall in some seasons. Trees have wide stem with branches.



mango



lichi



coconut

Some plants grow in hot and damp places. Land which is always soft with water. Plants grow well in high temperature and moist land.



papaya



sugarcane



coffee

Plants that Grow in Cold and Damp Places

Mushrooms and ferns are some plants found in cold and damp places. Mushrooms are non green plants.

Ferns are green and non-flowering plant. They do not need much water and sunlight. They normally grow in shady places.



moss



fern



mushroom

Vegetables that Grow in Summer and Winter

Different vegetables are grown in different seasons. Some plants grow in summer and others grow in winter.

Some vegetables such as beans, pumpkins, bottle gourd, bitter, lady finger are grown in summer. Spinach, cauliflowers cabbages, carrots, radishes etc. are grown in winter.



Summer vegetables



Do you know?

- Broccoli is the only green flower.

Do you know?

- Gold grows in the leaf of eucalyptus plant.

Now-a-days, non-seasonal vegetables are also grown. Agricultural farms and centres are also producing seeds and distributing them to farmers. We should eat seasonable vegetables to become fit and healthy.



Winter vegetables



Quick Reply

- Name vegetables you like the most.
- Tell the name of plants which grow in your surrounding.
- Where do mango plants grow?
- In which seasons are mango fruits available?



Note to the Teacher

Make your students identify different flowering and non-flowering plants. Describe different habitat of plants. Enable students to know about different vegetables.



Points to Remember

- Plants which do not bear flowers are called non-flowering plants.
- Plants which bear flowers are called flowering plants.
- Those plants grow only for one season of year are called annual plants.
- Those plants which can grow for more than two years are called perennial plants.
- Those plants which live for two years are called biennial plants.
- An environment in which plants live and grow is known as habitat.
- Plants which grow in water are called aquatic plants.
- Plants which grow on land are called terrestrial plants.
- Different vegetables are grown in summer and winter seasons.
- Plants are very useful to us.



Glossary

germinate	: growing of seed
woody	: having stems and branches that are made of wood
inhibit	: to prevent
tumour	: a mass of tissue found in or on the body that is made up of abnormal cells
mushroom	: a fungus which is umbrella shaped
cryptogams	: non-flowering plants
phanerogam	: flowering plant
species	: a group of animals or plants, that are similar and can produce young animals or plants



Exercise

A. Choose a word to fill the blanks in each of the following sentences.

biennial	sandy	summer	non-flowering	annual	seeds
----------	-------	--------	---------------	--------	-------

1. Plants which live only for one month are calledplants.
2. Cactus are found in land.
3. Fruits consist of.....
4. Cucumber and pumpkin are grown inseasons.
5. Mushroom is an plant.
6. Carrot is a plant.

B. Write 'T' for true and 'F' for false statements.

- | | |
|--|--------------------------|
| 1. Mustard is a flowering plant. | ☐ |
| 2. Marigold is a perennial plant. | ☐ |
| 3. Pumpkin is a climber annual plant. | ☐ |
| 4. Papaya is grown in damp and warm places. | ☐ |
| 5. Seeds of vegetables are available in the agricultural farm. | ☐ |
| 6. Plants that live for one year is called perennial plants. | ☐ |



C. Match the followings:

Maize	perennial plant
Moss	aquatic plant
Water lily	grow in hot places
Mango	non-flowering plant
Cauliflower	annual plant
Lichi	winter vegetable

D. Answer these questions.

1. What are non-flowering plants?
2. What are flowering plants?
3. What are aquatic plants?
4. What are terrestrial plants?
5. What are annual plants?
6. What are perennial plants?
7. Name any three flowering plants.
8. Name any three non-flowering plants.
9. Name three vegetables of summer season.
10. Name three vegetables of winter season.
11. Write two differences between annual and perennial plants.
12. Name any three plants that grow in hilly and cold regions.

E. Choose the best answer from the given alternatives.

i. It is a non-flowering plant.

a. moss

b. rose

c. sunflower

d. paddy

ii. It is an aquatic plant.

a. rose

b. maize

c. lotus

d. paddy

iii. It grows in hot and dry desert.

a. cactus

b. potato

c. banana

d. apple

iv. It is winter plant.

a. cauliflower

b. paddy

c. mango

d. tomato

v. It is annual plant.

a. banana

b. banyan

c. peepal

d. pine

F. Make meaningful words from the jumble letters.

ILLHYDRA



USCACT



GOMAN



NEPI



LYIL



G. Give four examples of the following:

- | | | | |
|------------------------|-------|-------|-------|
| a. Flowering plant | _____ | _____ | _____ |
| b. Non-flowering plant | _____ | _____ | _____ |
| c. Terrestrial plant | _____ | _____ | _____ |
| d. Aquatic plant | _____ | _____ | _____ |
| e. Annual plant | _____ | _____ | _____ |
| f. Perennial plant | _____ | _____ | _____ |
| g. Floating plant | _____ | _____ | _____ |
| h. Fixed plant | _____ | _____ | _____ |
| i. Submerged plant | _____ | _____ | _____ |
| j. Winter plants | _____ | _____ | _____ |
| k. Summer plants | _____ | _____ | _____ |



Project Idea

1. Walk around, observe many plants and fill in the table below.

Flowering plants	Non-flowering plants
1. _____	1. _____
2. _____	2. _____

2. Make a list of land and water plants found in your locality and write their names in the given table.

Land plants	Water plants

3. Fill in the table by supplying the names of vegetables grown in the seasons given below.

Summer seasons	Winter seasons

4. Make a list of plants of summer and winter.
5. Separate the following plants into annual and perennial:
wheat, grape, gram, lichi, spinach, orange, rice, pea, coconut, neem, mango, pumpkin

6. Make a list of 20 plants around you and classify them as in the table.

Terrestrial plants

Aquatic plants

Annual plants

Perennial plants

Flowering plants

Non-flowering plants

Warm up activity

a.



b.



c.



d.



1. Can you identify the given diagrams? Express your response with a tick (✓) or a cross (×).

a	b	c	d

2. Have you really seen these animals? Respond with a (✓) or a cross (×).

a	b	c	d

3. Can you write their names?

a	b	c	d



USEFUL PLANTS AND ANIMALS

Plants and animals are very useful to us in many ways. Most of our food comes from plants and animals. Plants give us vegetables, fruits, cooking oil etc. Animals give us meat, egg, milk etc.

Food from Plants

Our many foods are obtained from plants.

Fruits and Nuts

Plants give us fruits and nuts. We eat fruits of some plants. Jam, juice are also prepared from the fruits. Fruits are fleshy and juicy to eat and make us fresh. Fruits are of different colours. Seeds are present inside the fruit.



orange



apple



guava



papaya



banana



grapes



juice



fruits



jam

Nuts are dried fruits. Coconuts, almonds, cashew nuts and peanuts are some nuts. They are used in cakes, ice-cream and biscuits. Nuts consist of oils, minerals and vitamins which help us to become healthy.



almonds



cashew nuts



ground nuts



coconuts

Vegetables

We get vegetables from plants. The fruits, flowers, leaves stems and roots of some plants are eaten as vegetables.

Some vegetables are eaten raw and others are cooked before we eat them. We should not over cook vegetables because minerals, vitamins maybe destroyed.

Roots as Vegetables

Roots of some plants are eaten as vegetables. These roots can be eaten raw or cooked as curry.



turnip



carrot



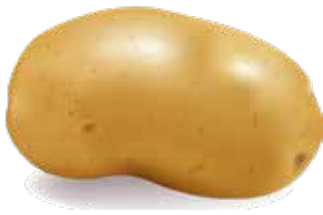
radish

Do you know?

- Broccoli is a flower.

Stems as Vegetables

Stems of some plants are eaten as vegetables. Some plants such as potato, ginger and garlic that have underground stems. Radish and potato are used as curry where as the materials such as onion, garlic, ginger etc. add flavour.



potato



garlic



ginger



onion

Leaves as Vegetables

Leaves of some plants are eaten as vegetables. These leaves can be eaten raw or cooked as curry. While eating raw, leaves should be washed properly.



cabbage



spinach



lettuce

Leaves of some plants are used for making drinks. Tea can be made by mixing with milk, water and sugar.



tea leaf



tea dust



a cup of tea

Flowers as Vegetables

Flowers of some plants are eaten as vegetables. These flowers are of different colours and attractive.



banana flower



broccoli



cauliflower

Fruits as Vegetables

Fruits of some plants are eaten as vegetables. Some of them can be eaten raw or cooked. Cucumber is eaten raw and tomato, pumpkin, capsicum etc. can be eaten cooked.



pumpkin



capsicum



cucumber



tomato

Seeds

We eat seeds of some plants as food. Seeds of rice, wheat, maize are the major food of the Nepalese.



paddy plant



paddy



rice



wheat plant



wheat grain



chapati (roti)



maize plant



maize



Popcorn

Seeds of coffee are used as drinks. The seeds of coffee are grinded. Then, dust is used to make hot drink.



coffee plant



coffee seeds



a cup of coffee

Seeds of some plants give us vegetable oil for cooking food.



mustard seeds → mustard oil



soya bean seeds → soya bean oil

Mustard, soya bean, sunflower seeds are used for the extraction of cooking oil, which is commonly used in Nepal and other parts of the world.

Medicine from Plants

Some plants are used for making several medicines. Medicines which are prepared from the plants are called **ayurvedic medicines**. We can make these medicines at home. Now-a-days, medicines from plants are being famous.



tulsi



mint



neem



garlic



ginger

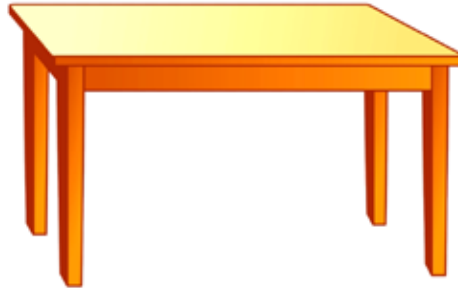


Do you know?

- Lentils are good for patient of kidney stone.

Wood and Fodder from Plants

Wood of trees provide fuel for making fire and cooking. The trunks of trees are used for making furniture.



Rubber, Paper, Fibers and Gum from Plants

We get rubber from the rubber plants. Rubber is used for making tires, tubes of many vehicles, pipes and eraser. Gum is obtained from acacia plant.



acacia plant

gum bottle

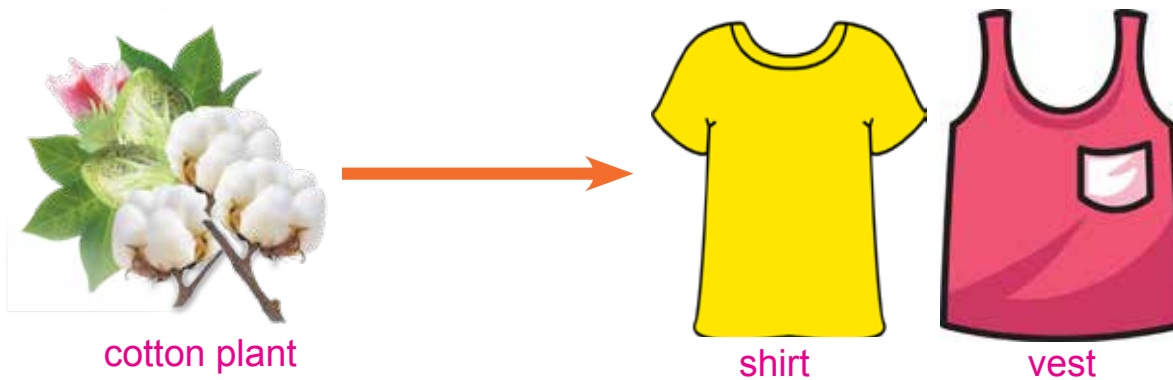
Do you know?

- Neem plant is widely used to make medicine.

Papers are also obtained from plants.



Fibers which are obtained from plants are used in making rope, sack, bag, clothes, etc. We get fiber from the stem of jute plants and the fruits of coconut and cotton.



Perfume from Plants

The flowers of some plants are used in making perfumes. Different types of flowers give various pleasant smells.



Decoration from Plants

Many plants are used as decoration in our houses, gardens and parks. Plants make our surroundings beautiful and pleasant. Different flowering plants such as: rose, marigold, jasmine, bougainvillea, lotus, etc. are used to decorate our home environment and makes environment charming.



Useful Animals

Animals are useful for human beings. They provide us with various benefits. We can obtain many things especially from domestic ones.

Milk from Animals

Many domestic animals give us milk. Milk giving animals are called **milch animals**. Milk is very nutritious food which is essential for the growth of the children. We make curd, butter, ghee, cheese, sweets, and creams from milk.



cow



buffalo



goat



milk



ice-cream



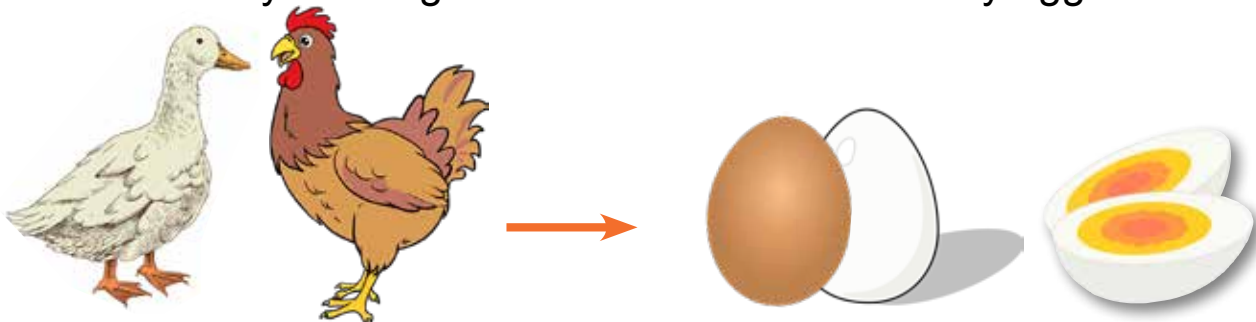
sweets



curd

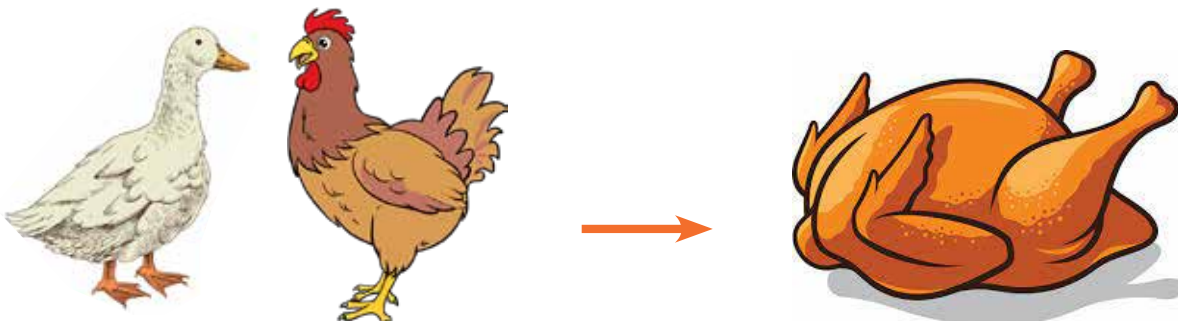
Eggs from birds

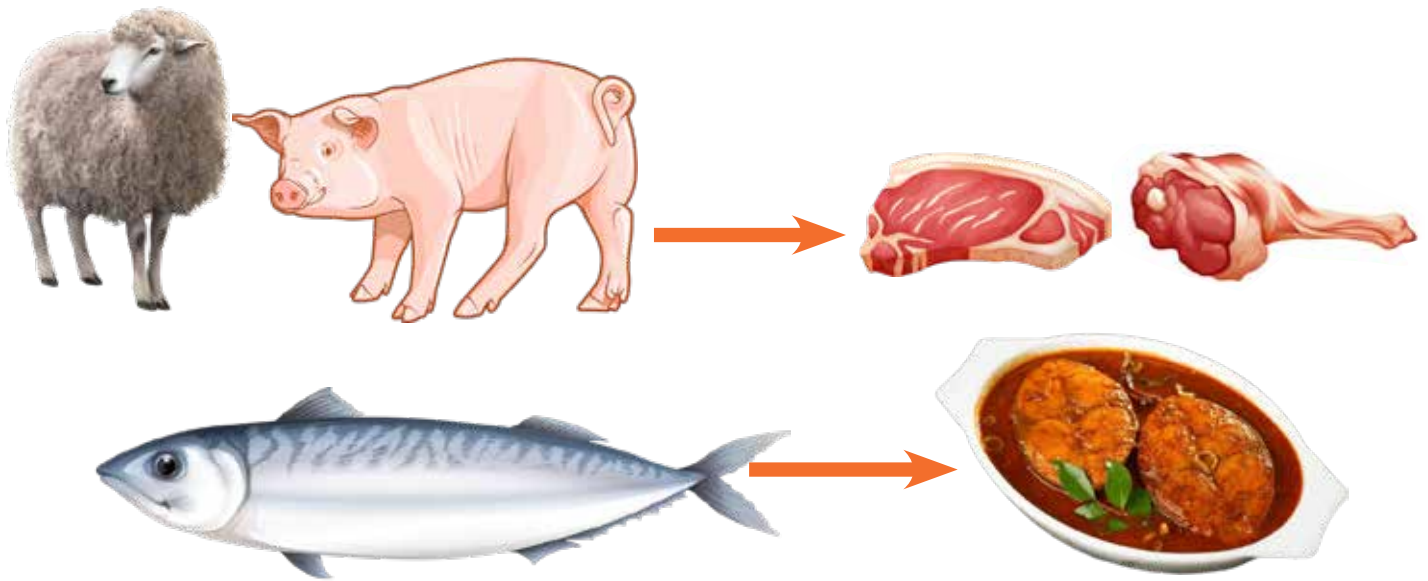
We eat eggs of hens and ducks as food. Egg is the main source of calcium, vitamin-D and body-building nutrition. Hens and ducks lay eggs.



Meat from Animals

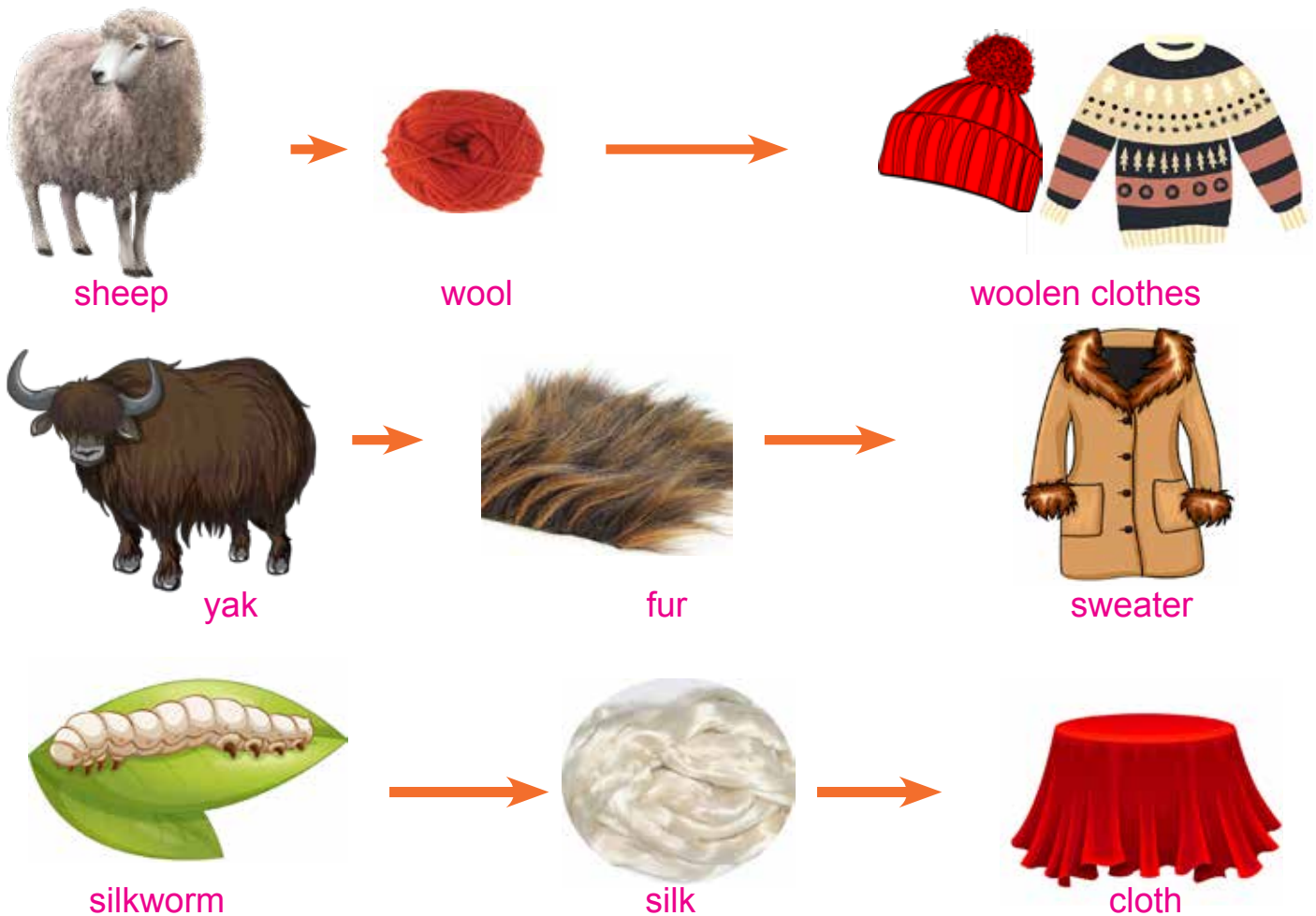
We eat the flesh of fish, chicken, goat, sheep and pig. We need to cook their meat before eating. Meat is taken body-building food. We should eat well-cooked meat.





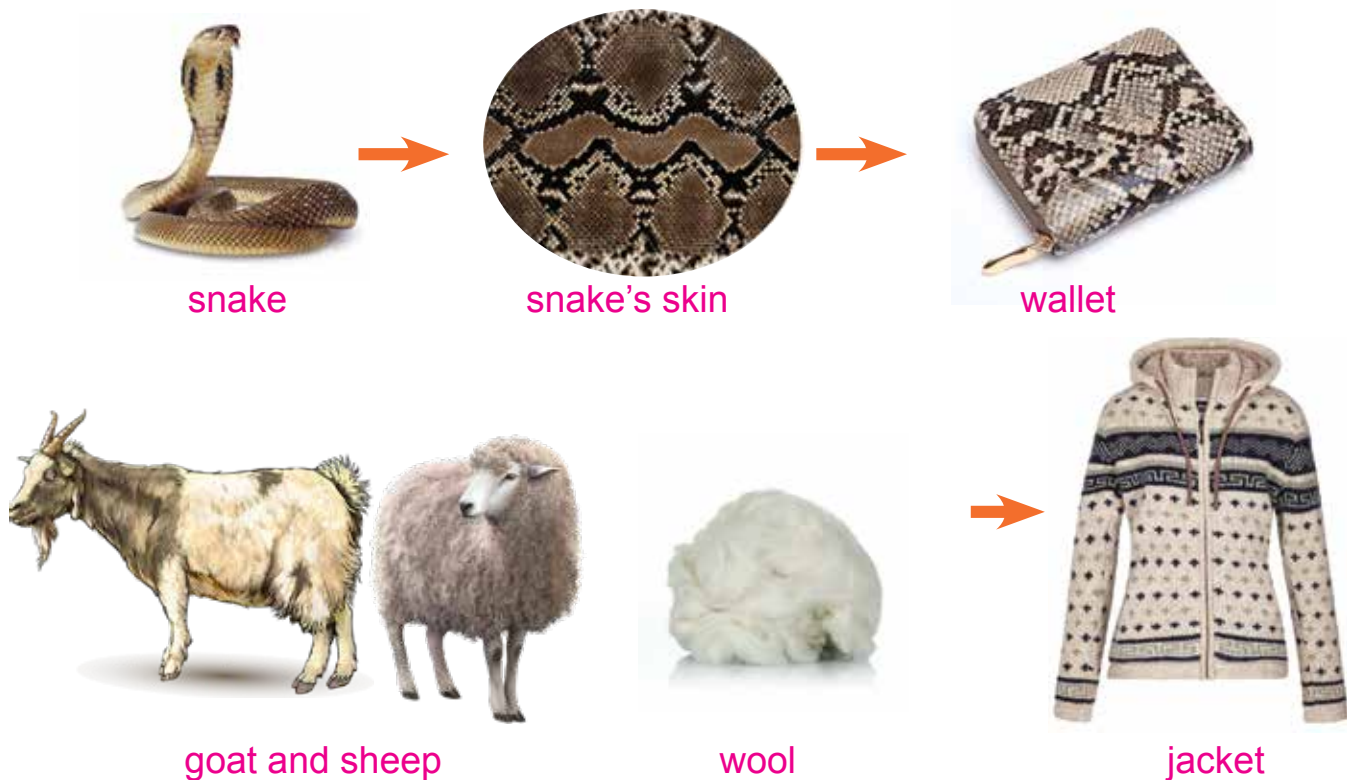
Wool and Silk from Animal

We get wool from sheep and yak. Silkworms give us silk. Wool and silk are used for making different types of garment.



Leather from Animals

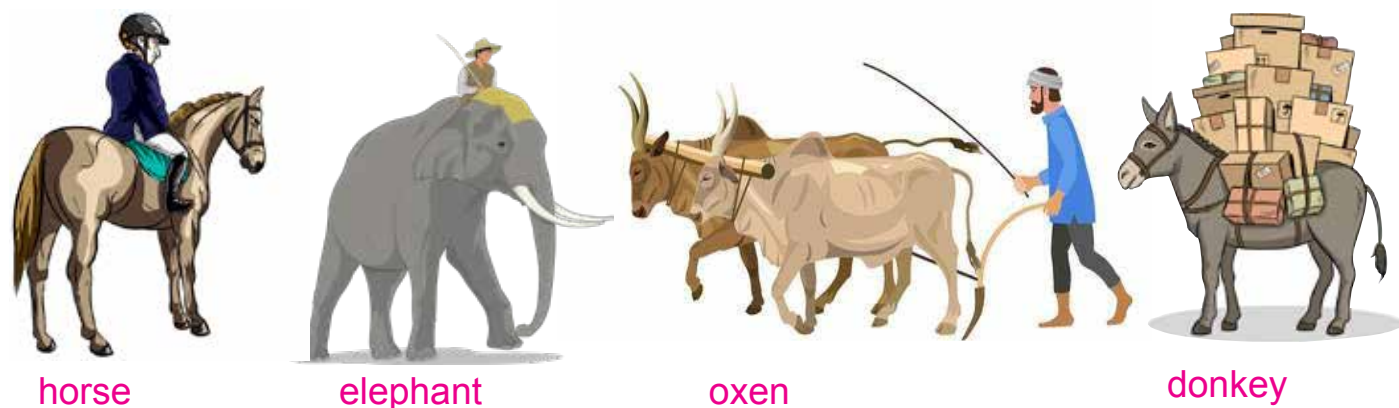
We get leather from the skin of some animals. Leather is used in making shoes, jackets, bags, belts and purse.



The skin of goats, sheep, snakes, buffalo is used to make different things.

Transport and Agriculture from Animals

Some animals are used to carry our loads. These animals are called beasts of burden. Some animals are also used for riding and to work in agricultural fields.



Dungs of these animals is used as fertilizer in the field.



Honey from Honey bees

Honey is obtained from honey- bees. Honey is a nutritious food. Honey can be taken while suffering from cough and cold too. Kids and elderly people get lots of nutrition from honey.



Quick Reply

- Which part of a carrot is eaten raw?
- What are four things we make from wood?
- Tell from where we get cooking oil.
- Name the animal that makes silk.
- What do we get from the leather of snake?



Note to the Teacher

Explain about different things which are obtained from plants and animals.



Points to Remember

- We get many things from plants and animals.
- Plants give us food, medicine, wood, fodder for animals, rubber, papers, fibers and gum.
- Leaves, stems, roots, flowers and fruits of some plants are eaten as vegetables.
- We get milk from cows, buffaloes and goats.
- Eggs and meat can be obtained from ducks and hens, meat is also obtained from goat and sheep.
- Some animals give us wool, silk and honey.
- Plants help to balance our environment.
- We use some animals as means of transportation.
- Animals excreta is used as fuel and manure.
- Both plants and animals are useful to us.

Glossary

fibre	: a thin thread of natural (or artificial) materials that can be used to make clothes, paper, ropes, etc.
jute	: a natural fibre that is used for making rope and clothes
beasts	: animals
leather	: animal skin that is chemically treated to pressure it and is used to make clothes shoes, purse, etc.
garment	: clothes
perfume	: a substance that release pleasant dour





Exercise

A. Choose a word to fill the blanks in each of the following sentences.

nutrition	pure	rice	maize	honey	wheat	load	drinks
-----------	------	------	-------	-------	-------	------	--------

1. Donkey carries.....for us.
2. Honeybees give us.....
3. Plants make air.....
4. Milk is a food.
5. We eat seeds of.....andas major foods.
6. Leave of some plants are used for making

B. Write 'T' for true and 'F' for false statements.

1. Milk is an unhealthy food. ☐
2. Elephant gives us milk. ☐
3. Cooking oil is obtained from the seeds of mango. ☐
4. Roots of carrot and radish are eaten raw. ☐
5. Coffee seeds are used for making gum. ☐
6. Neem leaves are used as medicine. ☐

C. Match the followings:

Radish	cryptogams
Spinach	fruit
Ginger	stem
Tomato	flower
Cauliflower	leaf
Non-flowering plant	root

D. Answer these questions.

1. Name three benefits from plants.
2. Name three benefits from animals.
3. Name three plants whose leaves are eaten.
4. Name three plants whose stems are eaten.
5. Name three plants whose roots are eaten.
6. What are the things that can be made from the skin of animals?
7. Name two plants that give us fibres.
8. What are the things made from rubber?
9. Name three animals that carry loads.
10. Name three things which can be made from jute fibre.

E. Choose the best answer from the given alternatives.

- i. Its leaves are used as vegetable.

a. lettuce

b. cauliflower

c. potato

d. tomato



ii. Its roots are used as vegetable.

a. cassava

b. tomato

c. potato

d. lady finger

iii. Its flowers are used as vegetable.

a. cauliflower

b. tomato

c. potato

d. garlic

iv. It gives us milk.

a. cat

b. dog

c. goat

d. snake

F. Name the following figures.



G. Make meaningful words from the jumble letters.

FABUFLO



THLEAER



OWEFLR



TAPOTO



H. Give two examples of the following.

- i. Roots can be eaten
- ii. Stem can be eaten
- iii. Leaves can be eaten
- iv. Grains can be eaten
- v. Medicinal plants
- vi. Fibre giving plants
- vii. Pet animals
- viii. Animals that carry our load
- ix. Plants used to make paper

Warm up activity

a.



b.



c.



d.



1. Can you identify the given diagrams? Express your response with a tick (✓) or a cross (×).

a	b	c	d

2. Have you really seen these animals? Respond with a (✓) or a cross (×).

a	b	c	d

3. Can you write their names?

a	b	c	d



Project Idea

1. Draw pictures of some animals with their products in your science exercise copy.
2. Collect some pictures of domestic animals and find out how they are useful to us.
3. Collect some pictures of some plants and find out how they are useful to us.
4. Observe some animals and write their names with the things available from those animals.
5. Draw the pictures of some products which are obtained from plants.

OUR ENVIRONMENT

Many things are around us. All living things and non-living things of our surrounding is known as environment.

We should keep our environment clean.

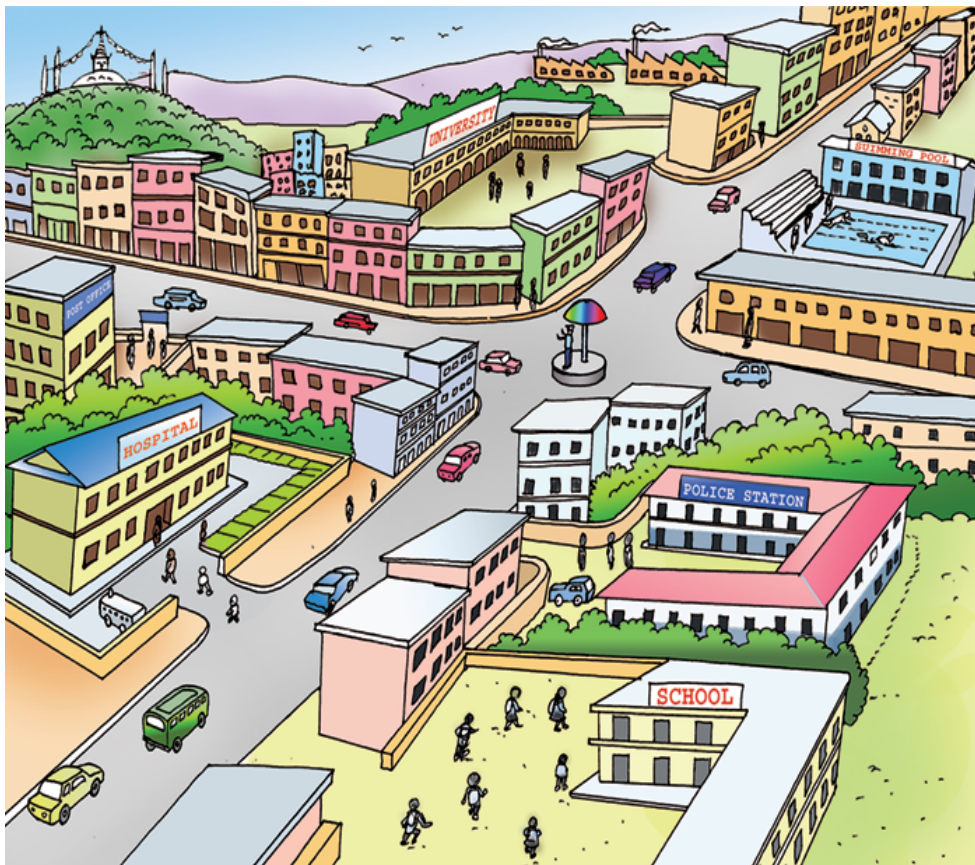
Dirty environment makes us sick. Clean environment makes us fit and healthy. Different activities of man is responsible for making environment dirty.

Along with cleanliness of environment we should also keep our body clean and tidy.

This is called personal hygiene.

All the man-made things such as houses, roads, bridges, transportation, industries etc. are the parts of man-made environment.

The addition of unwanted and harmful substances in the environment is called as environment pollution. Air, water, land become polluted due to our many activities. The substances such as dust, smoke, gases and waste materials that harm the environment are called as pollutants. Pollutants cause environmental pollution.



Environment Pollution

The mixing of unwanted, harmful and undesirable elements into the components of environment such as air, water and soil and thereby making environment imbalance is called environmental pollution.

Polluted environment makes the life of living organisms difficult and may cause different types of natural disasters. (e.g., floods, drought, landslide, soil erosion etc.)

Causes of environmental pollution

The major causes of environmental pollution are:

- A. Improper management of domestic wastes
- B. Smokes and harmful gases released from the vehicles and industries.
- C. Improper management of domestic animals
- D. Deforestation
- E. Over population and urbanization



A. Improper Management of Domestic Wastes

On daily basis we release different types of wastes. The wastes maybe bio-degradable and non-biodegradable and they must be sorted out accordingly. They should be collected separately and managed properly. Otherwise their improper management contaminate the components of environment leading to environmental pollution. If these wastes are disposed haphazardly, they provide shelter for harmful organisms causing many harmful diseases.

Therefore, wastes created by our houses should be managed properly. For this, 3Rs formula is very useful. It includes: Reduce, reuse and recycle. The wastes can be reduced, reused and recycled.

B. Smokes and Harmful Gases from the Vehicles and Industries

Old vehicles which are run by petroleum products release smoke and harmful gases (e.g., carbon dioxide, Sulphur dioxide etc.) which lead to air pollution and polluted air causes respiratory diseases (e.g., asthma, bronchitis etc). Industries release different pollutants and harmful gases which get mixed with air causing air pollution.

For this, old vehicles should be harmed and proper facility for release of smoke and harmful chemicals should be managed. Plantation helps to reduce environmental pollution.

C. Improper Management of Domestic Animals

We rear different domestic animals (livestocks) for our benefits. Some of them are reared for milk, meat and to carry loads. If they are not managed properly, they graze openly and thereafter they contaminate water resources by defecation and urination in the water resources. Thus, they cause environment pollution. After their death, if they are thrown into the river cause nuisance and water pollution.

Therefore, animals should be managed properly for our benefits and managed accordingly.

D. Deforestation

Random cutting down of trees is called deforestation. It creates environmental imbalance. It changes the level of carbon dioxide and oxygen. The air of deforested area gets polluted easily.

Therefore afforestation should be done on barren places and remaining forest areas should be conserved to balance our environment and reduce air pollution.

E. Over Population and Urbanization:

Increasing population needs more amount of space and foods. In order to fulfill their demand, they cut trees for cultivation of crops and shelter. As a result deforestation occurs which leads to environment imbalance. Similarly,

un-planned urbanization and improper management of wastes released by urban areas pollute air, water and soil causing environmental pollution. Therefore, over-population should be controlled and scientific and systematic planning (or eco-friendly development) of urbanization must be done.

Air Pollution

The addition of unwanted and harmful substances in the air is called air pollution.



Causes of Air Pollution

- Smokes from vehicles, houses and industries.
- Burning of plastics and dust particles of the surrounding.

Effects of Air Pollution

- Breathing dirty air causes many diseases and it can even cause death of persons.
- Lungs and heart diseases are common due to air pollution.

Control of Air Pollution

- Industries should be established far away from towns or cities.
- Trees plantation should be done in our surrounding. Trees make air fresh.
- Factories should be established far away from towns or cities.
- Electric vehicles help to reduce air pollution.

Water Pollution

The addition of unwanted and harmful substances in water is called as water pollution.

Do you know?

- Pollution may cause muddy landscapes, poisonous soils and water and kill plants and animals.



Causes of water pollution

- Mixing waste materials of factories, hospitals and houses directly into river, ponds etc.
- By discharging dirty water in the sources of water.
- By cleaning utensils, clothes, stools and urination near by the sources of water.

Effects of Water Pollution

- Water becomes unfit for drinking purpose.
- Bad smells develop from the water resources.
- Dirty water causes water borne diseases.

Control of Water Pollution

We should not urinate near the source of water like rivers, ponds, well etc. We should not throw the waste materials of the houses and industries into the sources of water.

Land Pollution (Soil Pollution)

The addition of unwanted and harmful substances on land is known as land pollution.

Causes of Land Pollution

- Throwing waste products into the land in streets which produces bad odours and soil gets polluted.



- Excessive use of chemical fertilizers and pesticides also cause land pollution.

Effects of Land Pollution

- Dirty land spread many diseases.
- Soil becomes less fertile for crops.

Control of Land Pollution

- Waste materials should be disposed in appropriate and designated areas. The dustbin should be used to collect household wastes. Dustbin must be covered with a lid to prevent the entry of flies.
- Organic fertilizers should be used in agriculture.

Do you know?

- Living things are called biotic components and non-living things are called abiotic components.

Ways to Keep the Environment Clean



- Never throw wastes in our surroundings. Decaying wastes should be put in the suitable place to make compost.
- Non- decaying wastes should be kept separately.
- Domestic animals should be kept in appropriate places to stop making surrounding dirty by those animals.
- Good drainage system should be made to prevent from many diseases.
- Garden, house and surrounding should always be made clean.
- Planting trees should be done in our locality to make air fresh.
- From compost manure should be made decaying wastes.



Quick Reply

- Name some air pollutants.
- Name some land pollutants.
- Do you live in a clean environment?
- What is the environment of your town or city?
- Do you use dustbins to dispose wastes?



Note to the Teacher

Make your students visit different types of environment. Then, tell them to dispose waste of your classroom in a proper place.



Points to Remember

- The major types of pollution are: Air pollution, water pollution and soil pollution.
- Environmental pollution causes imbalance in the environment.
- Afforestation helps in the balance of environment.
- The major causes of environmental pollution are:
 - Improper management of domestic wastes,
 - Smokes and harmful gases released from the vehicles and industries
 - Improper management of domestic animals,
 - Deforestation
 - Over population and urbanization.
- All the living and non-living things of our surroundings is known as environment.
- The mixing of harmful substances in the air, water and land is known as pollution.
- The substances such as gases, dusts, smokes and wastes materials that harm the environment are called pollutants.
- Polluted environment causes several diseases.



Glossary

appropriate	: correct way to doing something
drainage	: the act or process of removing water or liquid from a place
forestation	: trees plantation
defecate	: to pass solid waste from the body
nuisance	: bad smell
contaminate	: mixing of unwanted substances
urination	: the process of removing urine from the body



Exercise

A. Choose a word to fill the blanks in each of the following sentences.

purification	freely	decaying	air	chulo	environment
--------------	--------	----------	-----	-------	-------------

1. Domestic animals should not move in our surroundings.
2. While cooking food improvedshould be used to reduce air pollution.
3. Compost should be made from wastes.
4. Plants reducespollution.
5. Man is responsible for making..... dirty.
6. Afforestation helps in the of environment.

B. Write 'T' for true and 'F' for false statements.

1. Firewood causes air pollution. ☐
2. Clean environment may cause spread of diseases. ☐
3. We should urinate in open places. ☐
4. Air pollution is seen in several cities. ☐



5. We should use dustbins to collect wastes.

☐

6. We should keep our environment clean.

☐

C. Match the followings:

Smokes

plants, animals parts

Plants

plastics, iron pieces

Decaying

land pollution

Non-decaying

air pollution

Garbage in land

prevent air pollution

D. Answer these questions.

1. Give four reasons of environment pollution.
2. What benefits can we get from decaying wastes?
3. What will happen if we make our environment dirty?
4. Write three ways to keep our surrounding clean.
5. What are the effects of dirty environment?
6. What is environment pollution?
7. What are pollutants?
8. What is air pollution?
9. What is water pollution?
10. What is land pollution?
11. Write three ways to keep our environment clean.
12. Name three types of pollution.
13. Enlist the major causes of environmental pollution. Describe any one of them.

E. Choose the best answer from the given alternatives.

- i. It is a living component of the environment.
a. rock b. bus c. mountain d. plant
- ii. It is a non-living component of the environment.
a. rock b. bird c. monkey d. plant
- iii. It is a man-made non-living component.
a. rock b. bus c. mountain d. animal
- iv. It is a natural non-living component.
a. rock b. truck c. bus d. pencil
- v. It makes water dirty.
a. sewage b. bus c. plant d. rock

F. Make meaningful words from the jumble letters.

NENVIROEMTN



AGEGARB



EEDR



UBS



OCKPEAC



Warm up activity

a.



b.



c.



d.



1. Can you identify the given diagrams? Express your response with a tick (✓) or a cross (×).

a	b	c	d

2. Have you really seen these animals? Respond with a (✓) or a cross (×).

a	b	c	d

3. Can you write their names?

a	b	c	d



Project Idea

1. Visit a place near to locality and fill in the following table.

types of pollution	causes	control measures

- Make a list of decaying and non-decaying wastes from your surroundings.
- What should be done to stop our school being dirty? Make a list of several activities.
- Collect some pictures of clean and dirty environment and paste them in your science exercise copy.



DIFFERENT SUBSTANCES

There are different types of substances around us. Some of them are heavy and others are light. Some of them float in and others sink. Some of them are soluble and others are non soluble. Some objects allow light to pass through them and others do not.

Matter

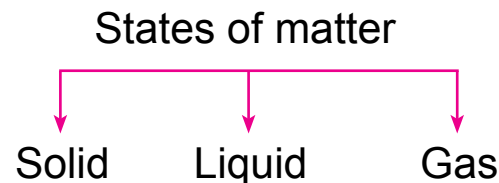
Anything that occupies space and has certain mass is called **matter**. Actually, the whole universe is composed of matter and energy.

States of Matter

Generally, matters are found in three states namely: Solids (hard and rigid substance) e.g., stone, metals, wood, rocks and plastics etc.

Liquids (Substances having fixed volume but not fixed shape) e.g., water, milk, juices, oil etc.

Gases (Do not have fixed shape and size) e.g.: hydrogen, oxygen, water vapour, etc.



Properties of Matter

Properties of matter help up to distinguish one substance (matter) from another. Some common properties of matter are:

- | | |
|--------------------------------------|-----------------|
| 1. Colour | 2. Smell |
| 3. Taste | 4. Hardness |
| 5. Burning Property (Combustibility) | 6. Transparency |



1. Colour

Some substances are colourful while others are colourless. We can differentiate matter roughly on the basis of colour. For example, water is generally colourless while milk is white. Different flowers have different colours.

2. Smell

Different substances have different smells. Some substances have pleasant smell. For example, many flowers and perfumes, delicious foods have pleasant smell. But other substances such as waste materials, rotten eggs, rotten vegetables, decayed bodies of animals have unpleasant smell.

3. Taste

Some substances like water are tasteless. Whereas others have different tastes. Some are sweet (e.g., ripened fruits, chocolates), others are salty (for example, common salt), many citrus fruits (e.g., lemon) have sour taste. However, we should not taste unknown and harmful substances.

4. Hardness

By touching the given substance we can differentiate them as hard, soft, coarse or smooth. For example, wood is hard whereas foam is soft.

5. Burning Property (Combustibility)

Many substances such as paper, kerosene, ghee, wood etc. can burn in the presence of oxygen releasing heat and light energy. Such substances are combustible substances. The process of burning is called **combustibility**. On the other hand, substances such as many metals, stones do not burn and these substances are called non-combustible substances.

6. Transparency

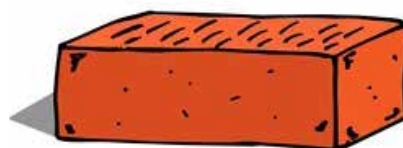
Many substances such as glass, water, air etc. allow light to pass through them easily such substances are called **transparent substances** and property is called **transparency**.

Sinking and Floating

Some solid substances are light and others are heavy. Substances lighter than water float on water and remain on the surface of water. Paper, plastic, wood are some lighter substances.



Substances which are heavier than water sink. These substances cannot remain on the water surface.



Rocks, iron nails, bricks are some substances which sink in water.

Activity

Put iron piece, wood and paper one after another in a container containing water. What happens? Observe. Make a list of objects which floats and sinks in water.

Soluble and Insoluble Substances

The things which dissolve in water are called **soluble substances**. Sugar and salt are easily soluble in water.



The things which does not dissolve in water are called **insoluble substances**. Sand, wood, dust, chalk powder etc. are some insoluble substances. When these substances are put in water, they do not dissolve in water.

Transparent and Opaque Substances

Substances which allow light to pass through them are called **transparent substances**. Clear water, glass, plastic are some transparent substances.

Substances which do not allow light to pass through them are called **opaque substances**. Stone, wood, brick, book etc. are some opaque substances.



Activity

Keep glass, thin plastic, wood, steel plate, or similar other substances in front of torch or a burning candle. Now, find out transparent and opaque substances.

Do you know?

- Water is transparent but light can never reach the bottom of ocean.

Do you know?

- A transparent object does not make a shadow, as light passes straight through it.



Quick Reply

- Name hard and soft substances.
- Name soluble and insoluble substances.
- Name transparent and opaque substances.



Note to the Teacher

Bring different types of substances in classroom and ask them to identify those substances as hard, soft, soluble, insoluble, sinking, floating or transparent and opaque substances through several activities.



Points to Remember

- Many types of substances are around us.
- Anything that occupies space and has certain weight is called matter.
- Some substances are hard and others are soft.
- The three states of matter are solids, liquids and gases.
- Some substances sink and others float on water.
- Substances that dissolve in water are called soluble substances.
- Substance that do not dissolve in water are called insoluble substances.
- Substances which allow light to pass through them are called transparent substances.
- Substances which do not allow light to pass through them are called opaque substances.

Glossary

rigid	: hard and story
pleasant	: causing a feeling of happiness or pleasure
foam	: a soft material
citrus	: a juicy fruit (e.g. lemon)





Exercise

A. Choose a word to fill the blanks in each the following sentences.

Sinks	transparent	floats	soluble	opaque	combustoon
-------	-------------	--------	---------	--------	------------

1. Salt is.....in water.
2. Glass is a.....substance.
3. Iron in water.
4. Light cannot pass through anobject.
5. Plastic.....in water.
6. The process of burning is called.....

B. Write 'T' for true and 'F' for false statements.

1. Glass is not a transparent substance. ☐
2. Soil is not soluble in water. ☐
3. Iron nail sinks in water. ☐
4. Sugar dissolves in water. ☐
5. Light does not pass through a wall. ☐
6. Light can pass easily through transparent substances. ☐

C. Answer these questions.

1. Name three substances that sink in water.
2. Name three substances that float in water.
3. Name three substances that are soluble in water.
4. Name three substances that are not soluble in water.
5. Name three transparent substances.
6. Name three opaque substances.
7. What do you understand by transparent substances?
8. What do you understand by opaque substances?
9. What type of substances float in water?



10. What types of substances sink in water?
11. What do you understand by soluble substances?
12. What do you understand by insoluble substances?
13. Enlist major properties of matter and describe any one of them.

D. Choose the best answer from the given alternatives.

- i. It floats in water.
a. wood b. rock c. brick d. stone
- ii. It sinks in water.
a. wood b. football c. oil d. rock
- iii. It is soluble in water.
a. sugar b. salt c. both 'a' and 'b' d. mud
- iv. It is insoluble in water.
a. sugar b. salt c. mud d. both 'a' and 'b'
- v. It is opaque object.
a. brick b. window pane c. water d. mineral water bottle

E. Make meaningful words from the jumble letters.

LTSA



RICBK



WDOO



LKCHA



ASTPLIC



Warm up activity

a.



b.



c.



d.



1. Can you identify the given diagrams? Express your response with a tick (✓) or a cross (×).

a	b	c	d

2. Have you really seen these animals? Respond with a (✓) or a cross (×).

a	b	c	d

3. Can you write their names?

a	b	c	d



Project Idea

1. Visit near by your locality and fill in the following table.

Types of pollution	Causes	Control measures

2. Make a list of decaying and non-decaying wastes from your surroundings.
3. What should be done to stop our school being dirty? Make a list of several activities.
4. Collect some pictures of clean and dirty environment and paste them in your science exercise copy.
5. Make a list of ten things and check if it floats in water or not.

Floating substances	Sinking substances
---------------------	--------------------

6. Make a list of ten things and check if it dissolves in water or not.

Soluble substances	Insoluble substances
--------------------	----------------------

7. Make a list of 10 objects and check if it is transparent or opaque.

Transparent objects	Opaque objects
---------------------	----------------



AIR AND WATER

Air

Air is all around us. We cannot see air, but we can feel it. All living things need air to remain alive. Our earth is surrounded by a thin layer of air which is known as **atmosphere**. Air becomes thinner as we go higher up into the atmosphere. The warm air rises up.

Wind

Moving air is called **wind**. The wind blows gently which is known as breeze. The very strong blowing of wind is known as a storm. Storms can do a lot of damages.

All living things need air to breathe. All living things need oxygen to survive. They intake oxygen from the atmosphere and release carbon dioxide. Green plants use carbon dioxide during preparation of food. It is called as photosynthesis which is again used by animals during breathing. In this way, the amount of oxygen and carbon dioxide is maintained in the atmosphere.

Energy

The ability or capacity of doing work is called energy. There are different forms of energy: Kinetic energy, heat energy, light energy, magnetic energy, chemical energy, electrical energy, sound energy etc.



Air as a Source of Energy

Wind is very useful to us. Kites and hot air balloons float in the direction of the wind.



A wind vane tells us the direction of the wind. It is mostly seen in the airports.



A windmill works due to the energy of wind. Windmills are used to grind grains and to pump water.



The wind also makes a sail boat move on the water.

Wind is essential for the dispersal of seeds from one place to another.

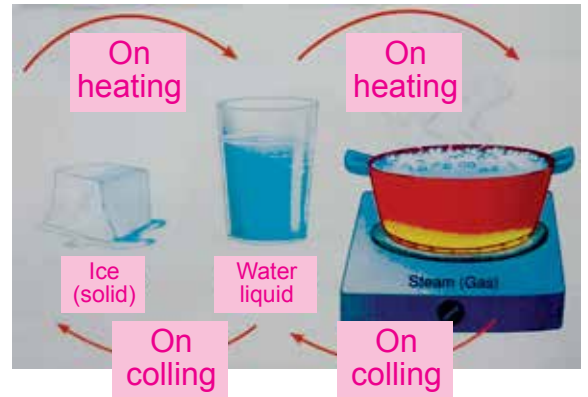


Water

Like air, water is also essential for all living things. We cannot survive without water. Most of the portion of the earth is covered by water.

Water Changes its Form

Water has three forms: Ice, water and water vapour. It can change from one form to another. For example, put some ice cubes on a table. They will soon melt into water. Now, heat this water on the stove. When steam forms, we say that water is boiling. Now, hold a cold steel plate against this steam. Small droplets of water will be seen on the plate. Steam has changed to water on cooling. What will happen if we cool the water further?



The process of changing water into water vapour is called evaporation of water.

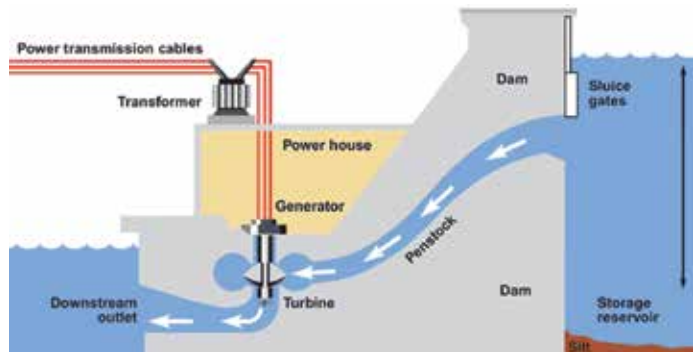
What will happen if we heat the water again? Ice, water and water vapour are the three forms of water. Water changes from one form to another either by heating or by cooling.

Uses of Water

All living things need water to survive. Without water, the earth will be a lifeless place. Water is used for drinking, cooking, washing and cleaning.



Water is used by plants during photosynthesis. Running water is used to run water mill, which is used to grind wheat and rice seeds into flour. Water is used for water crops and plants.



Hydroelectricity can be produced from the running water.

Water is made to fall from a great height. The flowing water turns the turbine to produce electricity. We use electricity for many purposes.

Running water is essential for the movement of boats in river.



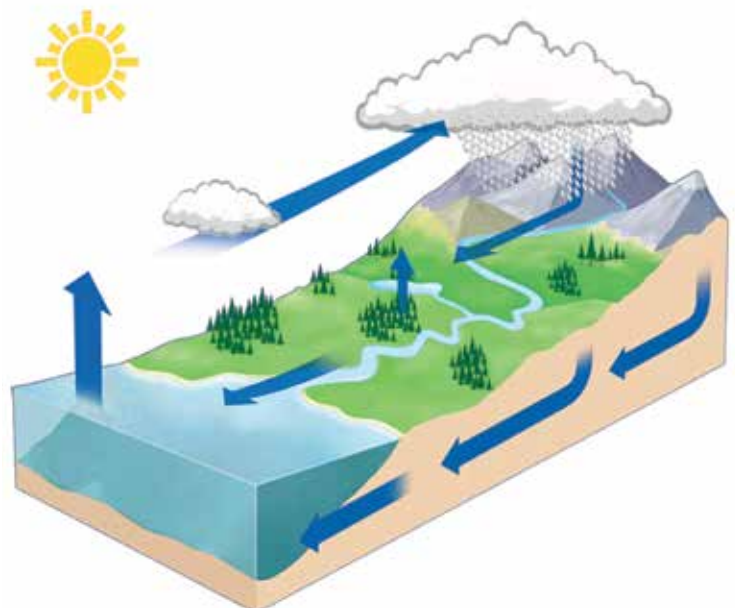
Do you know?

- Rotating wind is called cyclone.

Water Cycle

In nature, water keeps changing its form. It is this change that forms clouds and rain. When the sun shines, water from the rivers, ponds, lakes and oceans goes up in the form of water vapour.

High up in the sky, water vapour comes in contact with the cold air, and cools down to form tiny drops of water. These tiny drops combine together to form clouds. The process of changing water vapour into water is called condensation.



On cooling, the tiny drops become heavy. They fall down in the form of rain. Where does this rain water go? Well, it goes back to the river, ponds and lakes. This cycle of change in the form of water never stops.

Sometimes, when the air higher up is very cold, the water in the clouds freezes, then water in the clouds can form snow or ice. It falls to the ground as snow or hail. Then, it melts due to the sun-light and evaporates to form water vapour again. The amount of water on the earth remains more or less the same because of this cycle.



Quick Reply

- Name the wind which has the power to break tree branches.
- Is it possible for us to live without air or water?
- Tell importance of water cycle.
- Name some uses of air.
- Name some uses of water.



Note to the Teacher

If possible visit or make a model of watermill, windmill and hydroelectricity machine. Explain clearly different uses of air, water and the importance of water cycle. Demonstrate the activity that water changes its forms.



Points to Remember

- All living things need air and water to live.
- Moving air is called wind.
- The process of changing of water into water vapour is called evaporation.
- The process of changing water vapour into water is called condensation.
- There are many uses of air. Water cycle is important to maintain the amount of water on the earth.



- Water is very useful to all living organisms.
- Water is found in all three states: solid, liquid and gas.
- Electrical energy (electricity) is very useful as it can be converted in many forms of energy.
- Flowing water (eg. water having kinetic energy) is used to generate electricity.
- The ability of doing work is called energy.

Glossary

intake	:	the act of taking something (e.g. oxygen) into our body
sail	:	an extent of clothe by means of which wind is used to propel a ship through water
melt	:	to change or to cause (something) to change from a solid to liquid usually because of heat
hydroelectricity	:	the electricity produced from the power of the water
turbine	:	an engine that has part with blades that are caused to spin by speed (or kinetic energy) of air
hail	:	precipitation in the form of small ball or lumps usually consisting of ice and compact snow.
photosynthesis	:	the process by which a green plants make food using water and carbon dioxide in the presence of sunlight and chlorophyll (green pigment found in plants)





Exercise

A. Choose a word to fill the blanks in each of the following sentences.

Grind	vapour	ground	heavier	running	kinetic energy
-------	--------	--------	---------	---------	----------------

1. Hydroelectricity is produced due to the.....water.
2. Rain water that seeps through the soil is calledwater.
3. Run water mill helps to grains.
4. Heat changes water into.....
5. Rain is formed when water droplets in the cloud become.....
6. Moving air has.....

B. Write 'T' for true and 'F' for false statements.

1. Running water cannot produce electricity. ☐
2. Water mills are essential for grinding grains. ☐
3. When the wind blows softly, it is called a storm. ☐
4. Some plants only need air and water to survive. ☐
5. Air helps an aeroplane to fly in the sky. ☐
6. The process of preparing food by green plants is called photosynthesis. ☐

C. Match the followings:

Storm	solid form of water
Breeze	water vapour changes into water
Ice	strong winds
Condensation	water changes into vapour
Evaporation	soft winds



D. Answer these questions.

1. How are clouds formed?
2. Why do we feel cold during cloudy day?
3. How does rainfall occur?
4. Write the uses of running water.
5. Write the uses of moving air.
6. What is breeze?
7. What is a storm?
8. Why are storms harmful?
9. What is water cycle?
10. What is evaporation?
11. What is condensation?
12. What are the main advantages of water cycle?
13. How is hydroelectricity produced from water?
14. Tick (✓) the correct answer.
 - a. It is colder during cloudy day than sunny day. Why?
 - i. Lack of light ii. Lack of heat iii. Lack of the sun in sky
 - b. Amount of water decreases when water is boiled. It refers to.....
 - i. Disappearance of water.
 - ii. Water move out in the form of vapour.
 - iii. Utensil.
 - c. When does rainfall take place?
 - i. During excessive hot day
 - ii. During windy day
 - iii. Sky being cloudy
15. Draw the water cycle in your exercise book. Colour it and label it clearly.
16. What is formed when.....
 - a. ice is heated? b. water is cooled?
 - c. water is heated? d. steam is cooled?

E. Choose the best answer from the given alternatives.

i. It is strong wind.

- a. air b. breeze c. storm d. perfume

ii. It is gentle wind.

- a. air b. breeze c. storm d. gale

iii. It runs by the help of running water.

- a. wind-mill b. water-mill c. bus d. both a and b

iv. It produces electricity from running water.

- a. Turbine b. water-mill c. Wind-mill d. bus

v. It goes up.

- a. hot air b. cold air c. water d. none of these

F. Make meaningful words from the jumble letters.

NDWI



EBREZE



TOSRM



MIWINDLL



TERWAMILL



G. Define the following terms.

- i. Wind ii. windmill
iii. Strom iv. Breeze v. Water-mill

Warm up activity



1. Can you identify the given diagrams? Express your response with a tick (✓) or a cross (×).

a	b	c	d

2. Have you really seen these animals? Respond with a (✓) or a cross (×).

a	b	c	d

3. Can you write their names?

a	b	c	d



Project Idea

- Take a glass and put some ice cubes and keep it on a table. Observe the outer surface of the glass. What will you see? How does it happen? Discuss.
- Make a paper wheel and try to use it outside the classroom.



WEATHER

Weather

The condition of the sun, rain, wind, temperature and humidity at a particular place for a short duration of time is called **weather**. The weather at a place changes even over short periods of time. Therefore, it is difficult to predict weather of a place. The branch science which deals with the study of weather is called **meteorology**. Meteorologists are persons who study weather pattern. Meteorologists compare different atmosphere conditions (e.g. temperature, humidity, atmosphere pressure, precipitation, rain, snow, hailstone, etc.) to predict weather.

Weather changes from day to day and hour to hour. This change in weather is caused by the sun, wind, cloud and rain.

Factors affecting weather

The major factors affecting weather are:

- (i) The Sun (ii) The Wind (iii) The Clouds (iv) The Rain

The Sun

When there is the sunshine, it heats up the land and the air becomes warm. The warm air rises up. At noon, the sun is overhead and the rays fall straight. That is why, noon time is the hottest part of the day. It is cooler during mornings and evenings. In winter, we like the warmth of the sun.

Do you know?

- Heat energy from the sun is the main cause of change in weather.





morning



noon



evening

During summer, due to rise in temperature, the wind becomes warm or hot. Hot wind that blows sometimes during summer is called **loo**. It is a normal thing in deserts and terai.

The Wind

Breeze is very pleasant. Storms uproot trees and cause a lot of damage. Wind transports cloud from one place to another place.



The Cloud

On a cloudy day, the cloud in the sky blocks the rays of the sun. Since the sun's rays cannot reach us, it is not very hot. It is not very cold since the sun's rays cannot reach us. Cloudy nights are warmer. This is because the clouds do not allow the heat of the earth to escape into the atmosphere above. Some clouds bring rain.



The weather causes a change in our habits of food, clothing and activities. Foggy and stormy weather can cause trouble and sometimes, even accidents. Travel, sports and outings become difficult in such weather.

The Rain

Rain is the water that falls in the form of drops from cloud in the sky. Rain water is the main source of water on the Earth. It influences the weather. During rainy day, the temperature gets lowered and day becomes cold. Rain water is used for irrigation in many parts of our country usually during paddy plantation (*Ropain*).

Seasons

The periods in a year when the weather remains the same for many days are known as seasons. Spring, summer, rainy and winter are four seasons. Seasons affect all living things. Seasons affect our eating, sleeping and dressing habits.

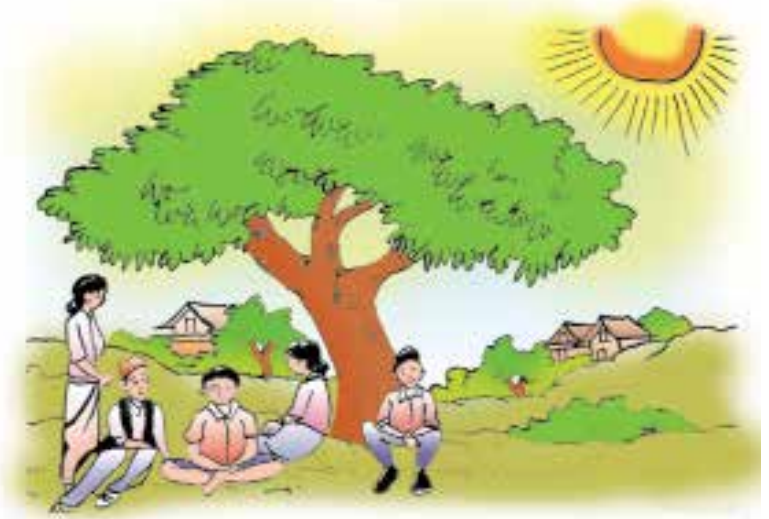
Spring

It is a very pleasant season. Temperature is very mild; sky remains blue and the sun shines. We can see many flowers in the garden with birds and insects flying.



Summer

Sun shines very brightly and it is hot in this season. We need to wear very light cotton clothes. We would like to take cold drinks and ice-creams. It is necessary to drink lots of water.



Rainy Season

It rains a lot during this season. Many plants grow a lot. We need umbrellas or raincoats, while going out. It is good for the different types of crops. However, too much rain can cause flood. Floods cause damage to property and harm living things.



Autumn Season

The season between summer and winter is called autumn season. It is hotter than winter season. During this season, temperature gradually decreases. Many deciduous trees drop their leaves during this season. This season has a moderate temperature.



Winter

It is cold during winter season. Cold wind blows in winter days. We need to wear warm woollen clothes and like to take hot drinks. We would like to sit in the sunshine or near by the fire.

Sometimes, water droplets in the cloud freeze to form snow flakes that eventually fall down very gently from the sky like little cotton balls.



Dew

The droplets of water that are seen early in the morning on the leaves of plants is known as dew. During winter nights, water vapour near the ground level cools down to form droplets of water on some parts of plants.



Frost

During cold winter nights, dew on cool objects freezes to form ice is called frost. Frost can be seen early in the morning like a white sheet covering the ground.



Do you know?

- Frost destroys crops, vegetables and flowers.



Quick Reply

- Name foods you eat in summer.
- Name foods you eat in winter.
- In which season would you like to sit under the sun?
- Which season do you like the most? Why?
- Which season do you like the most? Why?



Note to the Teacher

Explain about the differences between season and weather. Discuss about different seasons with pictures. Help your students to know about different fruits, vegetables and other foods available in different seasons.



Points to Remember

- Weather is a valuable element.
- Weather depends on the sun, the wind, the cloud and the rain.
- The continuous process of evaporation, condensation and rain is water cycle.
- The weather changes from day to day and hour to hour.
- The weather affects our life, food, clothing etc.
- Mornings and evenings are cooler because the sun rays are slanting.
- There are four seasons: spring, summer, autumn and winter.
- Changes in seasons affect the living patterns of human.
- Water is very useful to us. Rain water is very important source of water.

Glossary

stormy	: character used by storm
predict	: to say that (something) will or might happen in the future
hailstone	: a piece of hail
influence	: affect
irrigation	: act of watering plants / crops
deciduous	: (of a tree or bush) having leaves that fall off every year
escape	: to get away
foggy	: covered with fog
frost	: a thin layer of ice that forms on the ground, on grass etc. when the air becomes cold



Exercise

A. Choose a word to fill the blanks in each of the following sentences.

winter	floods	lighter	spring	damage	cold	useful
--------	--------	---------	--------	--------	------	--------

1. Surrounding looks beautiful during.....season.
2. Hot air is..... than..... air.
3. Frosts can be seen during..... season.
4. Storms can cause a lot of
5. Too much rain can cause.....
6. Water is very.....to us.

B. Write 'T' for true and 'F' for false statements.

1. Noon time is the hottest part of the day.
2. Very hot wind in summer causes loo.

☐☐

3. In winter, we do not like the heat of the sun.
4. Wet clothes dry quickly in sunny, summer day.
5. Dew drops are seen during winter nights.
6. Water is very useful for us.

☐
☐
☐
☐

C. Match the followings.

Spring	lots of water everywhere
Hot day	umbrella, raincoat
Rainy day	cotton clothes, cold drinks
Floods	warm woollen clothes.
Cold day	days are beautiful.

D. Answer these questions.

1. When does weather become cold?
2. How is snow formed?
3. What should we do to protect us from cold weather?
4. What is season?
5. What is weather?
6. Why is it not good to travel on a stormy day?
7. What do you understand by frost?
8. What do you understand by dew?
9. Why is noon the hottest time of the day?
10. Name four seasons. Describe any one of them.
11. What changes from time to time?
12. Which season do you like the most and why?
13. Draw a diagram of rainy season.

E. Choose the best answer from the given alternatives.

- i. It is very strong wind.
a. storm b. wind c. breeze d. air
- ii. Air becomeswhen the sun heats it.
a. lighter b. heavier c. brighter d. darker
- iii. Cold days occur when the rays of the sun falls.....to the place of the earth.
a. straight b. bent c. slanting d. none
- iv. It may bring rainfall.
a. wind b. breeze c. storm d. sunshine
- v. Frozen dew is called.....
a. snow b. frozen dew c. frost d. hailstone

F. Make meaningful words from the jumble letters.

OSNW



EDW



RMSTO



ZEBREE



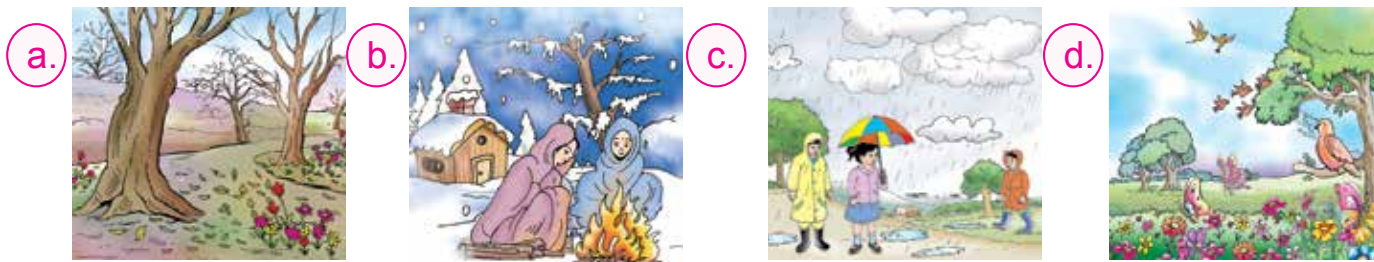
NRAI



UCLOD



Warm up activity



1. Can you identify the given diagrams? Express your response with a tick (✓) or a cross (×).

a	b	c	d

2. Have you really seen these animals? Respond with a (✓) or a cross (×).

a	b	c	d

3. Can you write their names?

a	b	c	d



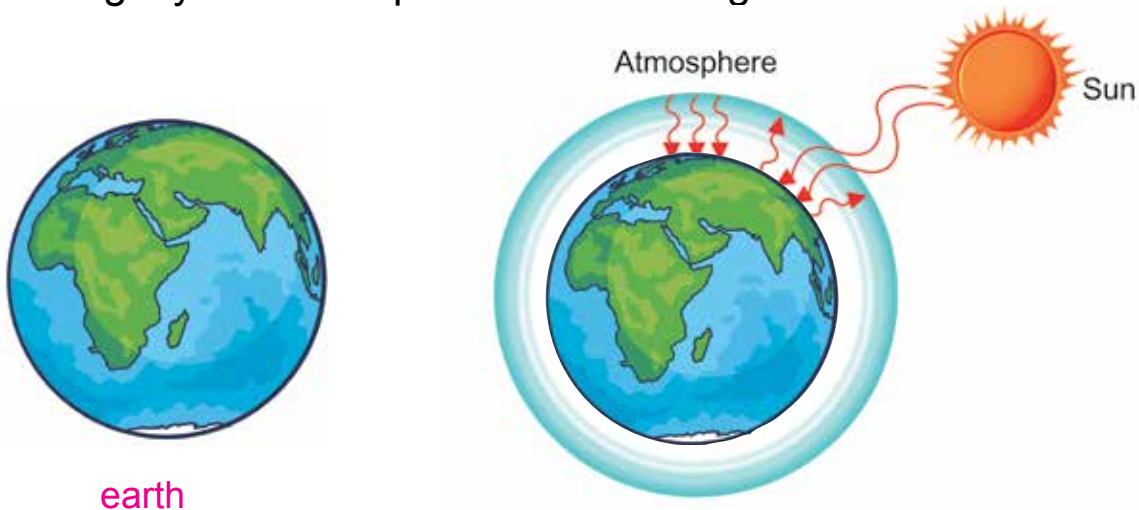
Project Idea

Write the name of foods and clothes available in different seasons in the given table.

Winter	Summer	Rainy	Spring
1.	1.	1.	1.

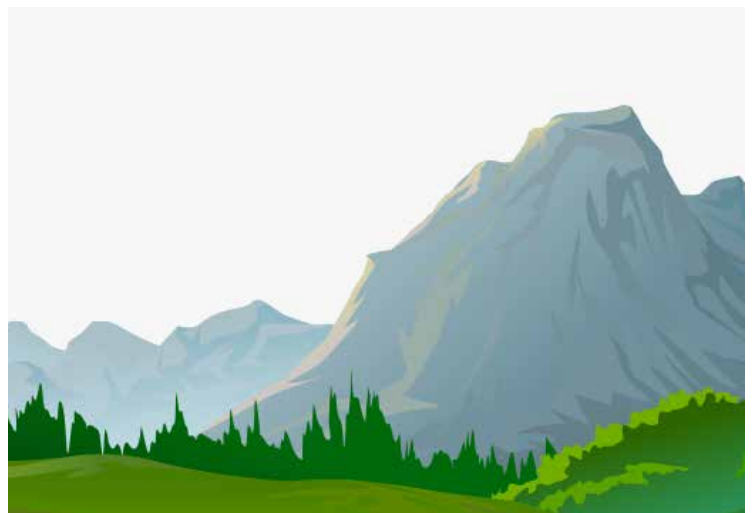
THE EARTH AND THE SOLAR SYSTEM

The earth is the planet on which we live. The earth is made up of air, water and land. We live on the outer surface of the earth. The shape of the earth is round but slightly flat at the poles like an orange.



The layer of air which surrounds the earth is known as atmosphere. The air is a mixture of many gases.

The surface of the earth is divided into two portions: land and water. The plains, mountains, hills, and deserts are parts of the land.





mountain



desert

The land portion of the earth is called **lithosphere**.
Lakes, rivers, seas etc. are some water bodies of the earth.



lake



pond



sea



river

The water portion of the earth is known as **hydrosphere**.

Soil

The upper layer of the earth's surface is mostly covered with soil. All plants grow in soil. Many animals also live in the soil. Soil is made up of humus, sand and clay.



Soil formation

Rocks are broken down into smaller pieces and then into sand. This is due to the effect of heat, cold, water and wind. This process is known as **weathering**. These substances combine with decayed plant's and animal's parts to form soil. The remains of decayed plants and animals are called humus. It is dark brown or black.

Do you know?

- Soil also can compress to make rock.



Rocks

Rocks are seen everywhere. There are many varieties of rocks. Rocks are of different shapes, sizes and colours. Some rocks are hard and others are soft.

Soft Rocks

Rocks which crack and break easily are known as soft rocks. Sandstone, graphite, chalk etc. are some soft rocks.



chalk



coal



limestone



graphite



sandstone

Do you know?

- Earth is the only planet that has living things.

Hard Rocks

Rocks which do not crack and break easily are known as hard rocks. Granite and marble are some hard rocks. Hard rocks are used in making buildings, statues, etc.



marble



granite



statue



Do you know?

- Diamond is the hardest rock.

The Sun

The sun is the medium-sized star. It is the center of solar system. It is also closest star from the sun and therefore appears bigger in size. The sun is the main source of energy for the earth. It has huge mass that mainly consists of gaseous elements such as hydrogen and helium.

Due to its extreme gravitational force, all other members of the solar revolve around it in their fixed orbit.

Solar System

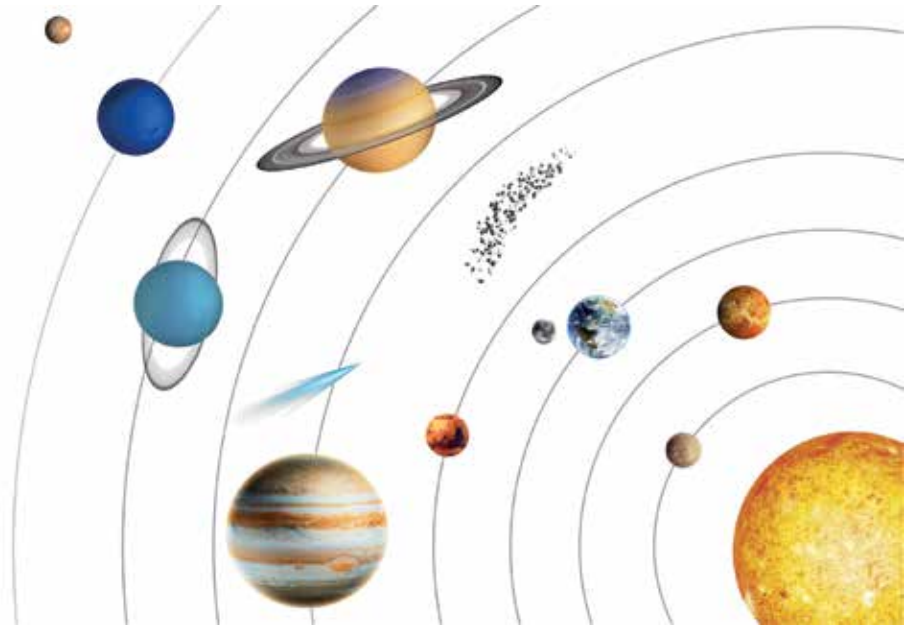
The system consisting of all planets, baby planets, satellites, asteroids, comets and other heavenly body along its main member the sun is called **solar system**.

Planets

Planets are heavenly bodies which revolve around the sun in their respective orbits.

There are 8 planets in our solar system, namely:

1. Mercury
2. Venus
3. Earth (Living planet)
4. Mars
5. Jupiter
6. Saturn
7. Uranus
8. Neptune



Satellites

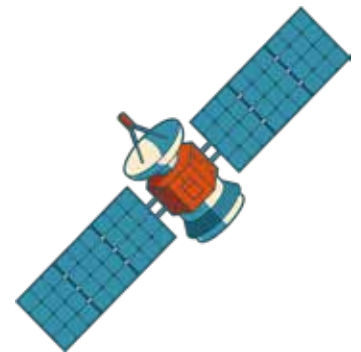
Those heavenly bodies which revolve around their respective planets are called **satellites**. There are more than 150 natural satellites in our solar system.

The moon is the natural satellite of the earth.

[Note: The earth is considered as the living planet

because it has suitable conditions for living organisms.

For example, the presence of atmosphere with oxygen and other useful gases and presence of water have suitable temperature.]



Quick Reply

- Name some soft rocks.
- Name some hard rocks.
- Name the parts of land.
- Name the water bodies of the earth.
- Define solar system.





Note to the Teacher

Explain the different parts of the earth. Discuss the formation of soil through activity. Bring different types of rocks and ask students to differentiate into hard and soft rocks.



Points to Remember

- The layers of air surrounding the earth is known as atmosphere.
- The earth's surface is made up of land and water.
- The shape of the earth is slightly flattened at the top and bottom.
- Rocks may be hard or soft.
- Soil is the mixture of small pieces of rocks and decaying remains of plants and animals.
- The remains of decaying plants and animals parts is known as humus.
- The sun is the main source of energy.
- Solar system consists of the sun and other heavenly bodies which revolve around it.
- The moon is the natural satellite of the earth.
- The earth is called living planet as it has suitable conditions for all living organisms.

Glossary

humus	: a brown or black material soil that is formed when plant and animal die and decay and increase the fertility of soil
portion	: part or fraction of something
soil	: the material found on the surface of the earth that is composed of organic and inorganic materials
rock	: a concretion mass of stony materials
marble	: a kind of stone that is often polished and used in buildings and statues
heavenly	: appearing or occurring in the sky



Exercise

A. Choose a word to fill the blanks in each of the following sentences.

land	soft	rocks	water	air	round	humus	natural
------	------	-------	-------	-----	-------	-------	---------

1. Soil which is rich in is fertile.
2. Soil is formed by the breaking up of.....
3. The earth is made up of and
4. Coal is a type ofrock.
5. The shape of the earth is not completely.....
6. The moon is.....satellite of the earth.

B. Write 'T' for true and 'F' for false statements.

1. Rock is the hardest part of earth's surface. ☐
2. Soil is not useful for growing crops. ☐
3. The land portion of the earth is called atmosphere. ☐
4. There is more water than land portion. ☐
5. Graphite is white in colour. ☐
6. The sun is a main source of energy ☐

C. Match the followings:

Atmosphere	natural Satellite
Lithosphere	good for plants
Hydrosphere	hard rock
Humus soil	land portion
Granite	layer of air
The moon	water portion



D) Answer these questions.

1. What is atmosphere?
2. What is lithosphere?
3. What is hydrosphere?
4. What is the shape of the earth?
5. What is humus?
6. Name three soft rocks.
7. Name three hard rocks.
8. How is humus formed?
9. What is weathering?
10. Write any three uses of rock.
11. Write the components of soil.
12. How do you find out the hardness of rocks?
13. Write short note on solar system.

E. Choose the best answer from the given alternatives.

i. It is land part of the earth.

- | | |
|----------------|----------------|
| a. hydrosphere | b. lithosphere |
| c. atmosphere | d. continent |

ii. It is water part of the earth.

- | | |
|----------------|----------------|
| a. hydrosphere | b. lithosphere |
| c. atmosphere | d. continent |

iii. It is air part of the earth.

- | | | | |
|----------------|----------------|---------------|--------------|
| a. hydrosphere | b. lithosphere | c. atmosphere | d. continent |
|----------------|----------------|---------------|--------------|

iv. It is the shape of the earth.

- a. flat b. oval c. round d. spherical

v. The large mass of land is called.....

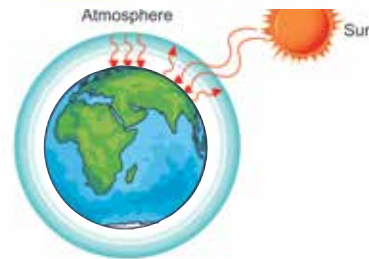
- a. lithosphere b. hydrosphere
c. continent d. atmosphere

F. Make meaningful words from the jumble letters.

SEHOU



OSPATMERE



REET



KELA



GPRRING



Warm up activity



1. Can you identify the given diagrams? Express your response with a tick (✓) or a cross (×).

a	b	c	d

2. Have you really seen these animals? Respond with a (✓) or a cross (×).

a	b	c	d

3. Can you write their names?

a	b	c	d



Project Idea

1. Observe a globe and find out the portion of land and water on the earth.
2. Collect different type of rocks from your surrounding. Identify them as soft and hard rocks by scratching.

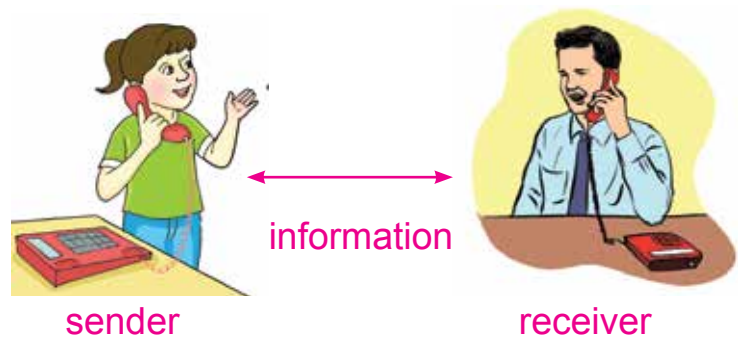
The collection of facts about event, place or situation is called as **information**. Informations can be sent or received through different devices. It is called as means of **communication**. The flow of information from one place to another place or from one person to another is known as communication. Different means of communication have produced several changes in our life style.

Types of Communication

The communication which flows in one direction only is known as **one-way communication**. Reading book, magazine, newspaper, listening radio or watching T.V. are some examples of one-way communication.



The communication which flows in both directions is known as **two-way communication**. Telephone and mobile are examples of two way communication.



Letter

We can write letters to our friends or relatives to give information. The letter is enclosed in an envelope.



Telephone

We can talk with others through telephone directly. Telephone is connected through wire. It's kept in one place only.



Mobile Phone

It is wireless movable telephone. It can be taken anywhere else. Now-a-days, mobile phone is very common among us.



It

Do you know?

- Internet is the fastest means of communication.

Newspaper

We can get current local, national and international affairs through several newspapers.



Radio

Radio gives us local, national and international news regularly. We can listen to the latest news through radio. It is one of oldest means of one-way communication.



Television

It is very popular means of communication now a days. We can watch and listen national and international news on television. We can also watch several programs. Television programmes give lots of useful information with entertainment.



Quick Reply

- Give names of two newspapers.
- Do you watch news in T.V.?
- Do you use mobile phone?
- Do you have radio at home?
- What types of television programmes do you like the most?



Note to the Teacher

Describe different means of communications. Make your students familiar about different devices of communication. Help students to understand about one-way and two-way communication through activities.



Points to Remember

- The collection of facts about event, place or situation is called as information.
- Informations can be sent or received through different devices is called as means of communication.
- The flow of information from one place to another place or from one person to another is known as communication.
- The communication which flows in one direction only is known as one-way communication.
- The communication which flows in both directions is known as two-way communication.
- Means of communication are: letter, telephonef mobile phone, newspaper, telephone, etc.

Glossary

radio	: a system / device of communication
affair	: a matter of concern (of something/someone)
magazine	: a type of the book with a paper cover that contains stories, essays, pictures, etc. and that is usually published every week or month
wireless	: not using wires to send and receive electronic signals
mobile phone	: a small telephone that people can carrty with them and use outside their homes



Exercise

A. Choose a word to fill the blanks in each of the following sentences.

letters	telephone	sender	wireless
newspaper	receiver	common	information

1. Televisions are the most means of communication.
2. The two most popular means of communication are and
3. Mobile phone is a.....device.
4. We can get printed news from.....
5. Communication between..... and..... is two-way communication.
6. The collection of facts about event, place and situation is called.....

B. Write 'T' for true and 'F' for false statements.

1. Mobile is connected through wires. ☐
2. Letter is an example of two-way communication. ☐
3. Television is used to watch and listen latest news. ☐
4. Sender and receiver are necessary for one-way communication. ☐
5. Means of communication has not changed our life style. ☐
6. Radio is one of the oldest means of communication. ☐

C. Match the followings:

Mobile	written information
Telephone	printed information
Letter	listen to news
Newspaper	wireless phone
Radio	phone with wire



D. Answer these questions.

1. What is information?
2. Name three means of one-way communication.
3. What does the ringing bell of your school indicate?
4. Why is mobile called as device of two way communication?
5. What is communication?
6. What is one-way communication?
7. What is two-way communication?
8. What is mobile?
9. What is radio?
10. Why is now a days television an important means of communication?

E. Choose the best answer from the given alternatives.

- i. It helps in one-way communication.

a. mobile b. messenger c. book d. video call

- ii. It helps in two-way communication.

a. newspaper b. radio c. television d. video call

- iii. It is means of communication.

a. computer b. bus c. lunch box d. tap

- iv. It is latest device for means of communication.

a. letter b. book c. radio d. messenger

- v. It needs internet for communication.

a. letter b. email c. mobile phone d. radio

F. Make meaningful words from the jumble letters.

DIRAO



TERCOMPU



OMBILE



ISITELEVON



WSPAPERNE



Warm up activity

a.



b.



c.



d.



1. Can you identify the given diagrams? Express your response with a tick (✓) or a cross (×).

a	b	c	d

2. Have you really seen these animals? Respond with a (✓) or a cross (×).

a	b	c	d

3. Can you write their names?

a	b	c	d



Project Idea

1. Observe different means of communication in your school and homes and make a list.
2. Make a list of means of communication used at your home.

LOCAL TECHNOLOGIES

Technologies and tools which are used in our local area to make our daily work easier and faster are known as local technologies. Local technologies are very common in remote areas and villages. Due to modern technologies, local technologies are being disappeared.

Compost Manure

The manure which is prepared from kitchen wastes and rotten parts of plants is known as compost.



The compost pit is dug in an open place. The kitchen wastes should be regularly collected in the compost pit. When the pit is about to be filled, the opening of the pit is covered with a layer of soil and cow dung.

After 2-4 weeks, the wastes are turned into compost manure or organic manure fertilizer. Compost manure can be used in our kitchen gardens or in agricultural field to produce good yield of crops.

Benefits of Compost Manure

- As we collect all the kitchen wastes in a compost pit it helps to make our environment clean.

- Compost manure is good for plants to grow properly.
- It makes soil fertile.
- It is prepared from the waste materials, it is cheaper than the chemical fertilizers.

Gobar Gas

The gas which can be produced from the dung of domestic cattle is known as **biogas**. Sometimes human excretas are also used to make biogas.



Dung of cows and buffaloes are collected in a pit and the water is mixed to the pit and stirred. The dung decomposes and the biogas is produced and is taken to the kitchen with the help of pipe. Biogas is used for heating water, cooking food, lighting, etc.

Benefits of Gobar Gas

- It is used for cooking and heating purposes.
- It reduces the use of fire wood and helps in protection of trees.
- It is used for lighting lamps and reduces use of hydroelectricity.
- Wastes after gas production can be used as compost in field.
- It is less expensive and it is produced from wastes.

Tools

We use different types of tools in our daily life. Most of these tools are made up of iron. These tools are very useful.



We use various tools for different purposes. These tools have thin and sharp in one side and thick and blunt in another side. We can cut things with the sharp portion of tools. Local method can be used to make our tools sharp again. *Khukuri* is the common knife among the Nepalese. All Nepalese army compulsorily carry *khukuri* for protection.



Benefits of Tools

- They chop things nicely and quickly. These tools make our work easier and comfortable.
- The blunt portion of the tools can be made sharp again. This saves our money.



Cold Storage

We eat different types of food to become fit and healthy. The type of cool, big room for keeping different food materials for preservation is known as cold storage.



Cold storage helps us to preserve the foods such as vegetables, fruits, grains for many months in a larger quantity. Cold storages are kept cool using ice or electricity.

At home, we use refrigerators to preserve vegetables, fruits meat, milk, etc. These foods can be preserved for many days in the refrigerator.





Note to the Teacher

Help students to understand different types of local technologies. Discuss with them about several tools which are used locally. Demonstrate through activity regarding the methods to prepare compost manure and bio gas.



Points to Remember

- Technologies and tools which are used in our local area to make our daily work easier and faster are known as local technologies.
- The manure that is prepared from kitchen waste and decaying plant parts is known as organic compost.
- The gas which can be prepared from animals dung is known as bio gas.
- Gobar gas is used for cooking, lighting lamps and for heating purposes.
- We use different types of tools like knife, axe, khukuri, spade, scissors, sickle, etc. in our daily life.
- Storing food materials like vegetables, fruits, grains etc. for a longer time preservation in a cold places is known as cold storage.

Glossary

- blunt** : having a thick edge or point: not sharp
- fertile** : producing many plants or crops: able to support the growth to many plants
- refrigerator** : a device or room that is used to keep things (e.g., foods, fruits, vegetables) cool



preservation : to keep (something) in its original state or in good condition

purpose : the aim or intention of something

excreta : waste matter (such as faeces) eliminated or separated from the body

decompose : to change complex organic matter into simpler forms

biogas : a mixture of methane and carbon dioxide produced by bacterial decomposition of organic waste and used as a fuel



Exercise

A. Choose a word to fill the blanks in each of the following sentences.

purpose	dungs	refrigerator	tools	manure	preserve
---------	-------	--------------	-------	--------	----------

1. Biogas is produced from animals
2. Cold storage is used to.....food.
3. We can keep our foods in a.....at home.
4. Local.....make our work easier.
5. Compost is good for the of crops.
6. We use various tools for different.....

B. Write 'T' for True and "F" for false statements.

1. Left over food, rotten fruits, and vegetables are used to prepare compost manure. ☐
2. Iron pieces, glass, plastics are also used to prepare compost manure. ☐
3. Animals dung is used to produce gobar gas. ☐
4. Cold storages keep things warm. ☐
5. A blunt weapon can be made sharp again by rubbing on a stone. ☐
6. Sometimes human excreta are also used to make biogas. ☐

C. Match the followings:

Cold storage	biogas
Gobar gas	rubbed on stone
Blunt tools	useful for crops
Compost manure	animals dung
Gobar gas	preserve large quantity of food

D. Answer these questions.

1. What is local technology?
2. What is compost manure?
3. Write two benefits of compost manure.
4. What is gobar (bio) gas?
5. How is biogas prepared?



6. How is compost manure prepared?
7. What is cold storage?
8. How is cold storage important?
9. What are local tools?
10. What should be done to sharpen the blunt tools?
11. Write two benefits of biogas.

E. Choose the best answer from the given alternatives.

- i. Composting is done for waste.
 - a. organic waste b. inorganic waste
 - c. plastic d. glass
- ii. Local technologies use
 - a. local material b. imported material
 - c. modern machines d. nothing
- iii. Cold-storage is needed for.....good.
 - a. perishable b. non-perishable
 - c. plastic d. none
- iv. It is good for plant.
 - a. plastic b. manure
 - c. chemical d. dirty water
- v. It stores food in kitchen.
 - a. refrigerator b. pressure cooker
 - c. rice cooker d. glass

F. Name the following figures.



G. Make meaningful words from the jumble letters.

CMPOOST



NIKFE



OGASBI



RIGEREFRATOR



IFLWCAULERO



Warm up activity



1. Can you identify the given diagrams? Express your response with a tick (✓) or a cross (×).

a	b	c	d

2. Have you really seen these animals? Respond with a (✓) or a cross (×).

a	b	c	d

3. Can you write their names?

a	b	c	d



Project Idea

1. Visit near by biogas producing plant and study the procedures of producing gobar gas. Write a short description.
2. Perform an activity to prepare compost manure in your school.

HEALTH EDUCATION





CLEANLINESS

The practice of keeping ourselves neat and clean is known as personal cleanliness or hygiene. Cleanliness is a very good habit. We should keep ourselves and our environment neat and clean.

We must follow the rules of personal cleanliness to protect against diseases and to be healthy and fit.

Advantages of Cleanliness

Personal hygiene or cleanliness is very important in our daily life. Some advantages of cleanliness are:

- i. Our clean face looks attractive and brighter.
- ii. We are liked and loved by many people.
- iii. Germs causing diseases cannot easily attack clean body.
- iv. Cleaning body regularly removes odour from our body.
- v. Cleanliness makes our skin glowing and radiating.
- vi. It improves our personality.

Materials Required for Cleaning

Different materials are required to clean our body and surroundings. Some of them are given below:

- | | | |
|------------------|----------------------------|------------|
| i. Soap | ii. Shampoo | iii. Water |
| iv. Detergent | v. Phenyl (toilet cleaner) | |
| vi. Toilet brush | | |

We must keep our body clean. We must take bath everyday. We should clean our hands with soap and water before and after a meal. We must also wash our hands with soap and clean water after using the toilet.



We should use a clean towel after taking a bath. It is very necessary to change our undergarments regularly. Take a habit of wearing toilet slipper when we go to the toilet. Clean water is used to clean toilet after using it. We must use soap or shampoo and clean water to wash our hair. Hair should be made free from dirt and germs. In dry hair, hair oil should be used and combed it properly.



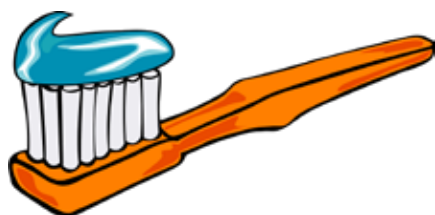
We should brush our teeth every morning and evening before going to bed. Soft tooth brush and tooth paste should be used while brushing teeth. Brushing teeth help us to make our mouth fresh, teeth healthy and strong.



Do you know?

- Nail and hair are non-living things.





tooth brush



tooth paste



Long nails are the homes for the collection of dirt. It is the home of many germs which may cause many diseases. Nails should be kept short by trimming them regularly with the help of nail clipper. We must not bite our nails.

Nail Clipper (Cutter)

We must keep our ears clean. Wax should be removed from our ears using soft cotton buds. We should not put any sharp and hard thing inside our ears which can damage the ears.



We should clean nose with the help of a clean handkerchief. We must not put finger or any other thing inside the nose. We should always breathe through nose and not through the mouth.

We must clean our eyes with cold water in the morning. It is not good to rub eyes.

We must eat only healthy, fresh clean and cooked food. Raw food such as fruits, carrot, radish, cucumber etc. must be washed well and made free of dust and germs.



Surrounding Cleanliness

The practice of keeping our surroundings clean is known as surrounding cleanliness. It is good to live in a clean environment.

We must keep our surrounding clean for good health. Clean surrounding prevents us from several diseases.



We should not throw garbage and waste materials anywhere else in our surrounding. Dirty environment makes us sick and the place becomes unfit to live. Decaying waste materials of plants and animals can be used to make compost. The decaying materials should be kept into the pit. The pit should

be completely covered with the layer of soil and dung. These waste materials decay and turn into compost. Compost can be used in the fields as organic fertilizer.

Non-decaying things such as plastics, iron pieces, glass pieces should be disposed in separate dustbins. Good drainage system should be made to remove dirty water of house. Dirty water causes spread of many diseases.



We should not piss in an open space or near the water sources. It makes our surrounding and water sources dirty. We should clean toilet with water after we use it. We should not use the roadside or riverside as toilet.

We should also clean our toilet with antiseptic liquid and clean water time to time.



We should clean the surroundings of water sources and water tap. The dirt wrappers of soap, shampoo also make the surrounding of water tap dirty. It is not good to throw such things around the water sources or tap.



Quick Reply

- What type of house or locality do you like to live?
- What should we do to make our toilet clean?
- Do you brush your teeth?
- Do you clean your room yourself?
- Which parts of our bodies should we wash regularly?



Note to the Teacher

Explain all in detail before performing activities. As far as possible, personal cleanliness activities should be done as activity. Use both oral and written while doing exercises. Health messages should be kept clearly on the wall of classroom.



Points to Remember

- The practice of keeping ourselves clean is known as personal cleanliness or hygiene.
- We should clean our hands with soap and clean water before and after taking meal.
- We should clean our hands with soap and clean water after using the toilet.
- We should always keep our body parts clean.
- The practice of keeping our surroundings clean is known as surrounding cleanliness.
- We should clean the toilet with sufficient water and cleaning liquid.
- We should clean our environment on daily basis.

Glossary

healthy	: a person having good health
fit	: physically healthy and strong
undergarment	: underwear
disease	: a condition that prevents the body or mind from working normally
germ	: a small living organisms that can cause disease
hygiene	: a science of the establishment and maintenance of good health
garbage	: waste materials
antiseptic	: a substance that stops or slows down the growth of microorganisms



Exercise

A. Choose a word to fill the blanks in each of the following sentences.

brush	rub	clean	body	paste	drainage	twice
-------	-----	-------	------	-------	----------	-------

1. We must keep our.....clean.
2. We should brush our teeth.....a day.
3. Tooth.....and tooth.....should be used while brushing teeth.
4. Ahome helps us to be healthy.
5. Good..... system should be made to remove dirty water of houses.
6. We must notour eyes.

B. Write 'T' for true and 'F' for false statements.

1. We should clean our ears with sharp objects. ☐
2. Long nails are the homes of dusts and germs. ☐
3. We should follow the rules of personal cleanliness. ☐
4. Decaying plants and animals parts can be used to make compost. ☐
5. Dirty surrounding helps us to become healthy. ☐
6. We should change our undergarments regularly. ☐

C. Match the followings:

Tooth brush and tooth paste	nails
Soap and clean water	hair
Nail clipper	brushing teeth
Handkerchief	cleaning body
Comb	cleaning nose
Shampoo	spread diseases
Decaying wastes	cleaning hair
Non-decaying things	compost manure
Dirty surrounding	spread diseases
Non-moving water	plastics, metals

D. Answer these questions.

1. What is personal cleanliness?
2. What is surrounding cleanliness?
3. Why is cleanliness important for us?
4. Write the ways of cleaning the following body parts.
 - a. nose
 - b. ears
 - c. eyes
 - d. teeth
 - e. nails
 - f. hair
 - g. body



5. How can we keep our surrounding clean?
6. What makes us healthy?
7. What should be done to keep the toilet clean?
8. Write two ways of keeping surrounding clean?
9. Why should near by water bodies and taps be made clean?
10. Name the things which are needed to clean our body?

E. Write 'A' for agree and 'D' for disagree.

1. I clean my room myself. ☐
2. I don't help to clean my house. ☐
3. I never throw wastes here and there. ☐
4. Dirty home makes locality dirty. ☐
5. Toilet should always be kept clean. ☐
6. We should clean our surrounding by helping with each other. ☐
7. House and locality should be kept clean. ☐

F. Choose the best answer from the given alternatives.

- i. We should clean our body with it.
a. wet towel b. dry towel c. dirty towel d. garbage
- ii. We should trim our nails with it.
a. nail cutter b. comb c. towel d. soap
- iii. We should comb our hair with it.
a. nail cutter b. comb c. towel d. soap
- iv. We should wash our hands with it.
a. nail cutter b. comb c. towel d. soap
- v. We should brush times a day.
a. 1 b. 2 c. 3 d. 4

G. Make meaningful words from the jumble letters.

APSO



REA



NDKHAERCHIEF



SENO



BUD



Warm up activity

a.



b.



c.



d.



1. Can you identify the given diagrams? Express your response with a tick (✓) or a cross (×).

a	b	c	d

2. Have you really performed these activities? Respond with a tick (✓) or a cross (×).

a	b	c	d

3. Are these good habits?

a	b	c	d



Project Idea

Perform several activities with the help of teacher to demonstrate personal and surrounding cleanliness.

Physical Exercise

Regular physical exercise is important for us to make our body healthy, strong and fit. It is done in the morning or in the evening. Simple activities such as walking, playing some games, running skipping, swimming, jogging or doing some work are some physical exercises.



Rest and Sleep

We become tired after studying playing, and working. We should take a rest, then only we are able to work, play and study again. Sleep is also very much important for us to make our bodies free from tiredness. We should sleep eight hours per day. Actually, the need of sleep depends on the age of people. Infants sleep longer hours than aged people.



Clothing

We need to wear clean clothes in order to protect us from heat, cold and diseases. We should wear different types of clothes according to the various seasons. Clothes should be changed and washed regularly. We should also use clean bed-sheets, blankets and pillow cover.

Gumboots and raincoats are necessary during rainy seasons.



We should wear warm and thick clothes in winter. Sweaters and jackets are also make our bodies warm.



We should wear light cotton clothes in summer. These clothes keep our bodies safe from hot weather. Cotton clothes keep our bodies cool.



Do you know?

- If you do not sleep properly, your life time will become shorter.

Observe the following pictures and discuss:



summer season clothes

winter season clothes

Do you know?

- Drying clothes in hot sunlight kills germs.



Quick Reply

- Name the fruits of summer, rainy and winter seasons.
- Which season do you like the most? Why?
- How many hours do you take a rest in a day?



Note to the Teacher

Encourage your students to perform several physical exercises. Make your students clear by telling them with pictures about different physical exercises, rest or sleep and clothes of different seasons.



Points to Remember

- The activities which are essential for our healthy body are known as physical exercises.
- Rest and sleep refresh our bodies and help to work, study and play again.
- Different types of clothes are necessary according to the different seasons.
- Regular physical exercise makes our body healthy, strong and fit.
- We should take rest when we get tired.
- Clothes should be changed and washed on regular basis.
- We must maintain proper posture during sitting, standing and walking.
- We should sleep at least 8 hours a day.

Glossary

tiredness : drained of strength and energy

winter : the coldest season of the year that comes after autumn and before spring

refresher : to restore strength and freshness in our body

essential : extremely important and necessary



Exercise

A. Choose a word to fill the blanks in each of the following sentences.

active	studying	eight	working	playing
summer	winter	fit	raining	seasons

1. Physical exercise helps our bodies to become and
2. We become tired after
3. Infant sleep hours in a day.
4. Cotton clothes are needed during season.



5. Woollen clothes are needed during.....season.
6. Gumboots and rain coats are necessary during

B. Write 'T' for true and 'F' for false statements.

1. Physical exercise is needed for healthy body. ☐
2. Infants sleep about 12 hours in a day. ☐
3. It is difficult to work after taking a long rest. ☐
4. During winter we should wear light cotton clothes. ☐
5. Physical exercise is very necessary for elder person. ☐
6. We should wear clothes according to seasons. ☐

C. Match the followings:

Rest	eight hours
Cotton clothes	kill germs
Sunlight	winter season
Rain coat	rainy season
Woollen clothes	refreshes us
Sleep	summer season

C. Answer these questions.

1. What is physical exercise?
2. Why is physical exercise necessary?
3. How do you take a rest after getting tired?
4. How many hours do you sleep at night?

5. Who sleep longer: Infants or aged people?
6. What type of clothes do you need to wear during winter season?
7. What should you do to make your body active?
8. Why is it necessary to keep our clothes clean?

D. Choose the best answer from the given alternatives.

- i. It makes our muscles strong.
 - a. sleep
 - b. rest
 - c. physical exercise
 - d. watching television
- ii. It is a physical exercise.
 - a. jogging
 - b. playing ludo
 - c. playing carom
 - d. sleeping
- iii. It is used in summer.
 - a. cotton shirt
 - b. woollen shirt
 - c. raincoat
 - d. book
- iv. It is used in winter.
 - a. woollen clothe
 - b. cotton clothe
 - c. slipper
 - d. lunch box
- v. It kills the germs.
 - a. drying in sun
 - b. ironing clothes
 - c. throwing into dirt
 - d. both a. and b.



E. Make meaningful words from the jumble letters.

RTSHI



WEATESR



ACT



OBOT



PTA



Warm up activity



1. Can you identify the given diagrams? Express your response with a tick (✓) or a cross (×).

a	b	c	d

2. Have you really performed these activities? Respond with a tick (✓) or a cross (×).

a	b	c	d

3. Are these good for our health?

a	b	c	d



Project Idea

1. Read and complete the table below:

What should be done after we play and run

if our body is dirty

if it is hot outside

if it is cold outside

2. Make a list of any five clothes which we need to wear in winter and summer seasons.

Summer season	Winter season
1. _____	1. _____
2. _____	2. _____
3. _____	3. _____
4. _____	4. _____
5. _____	5. _____

3. Make a list of clothes that you wear in different seasons.

Summer seasons	Winter seasons
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

FOOD AND HEALTH

We need food to live and grow. All living things need food. Good food always keeps us healthy and fit. Food gives us energy to survive. Food also protects us from disease. **Food consists of different components which are called as nutrients.**

Sources of Food

We get many foods from plants and animals. Vegetables fruits, beans, pulses, cereals are obtained from plants.

Milk, cheese, butter, curd, ghee, eggs, fish, meat are obtained from animals.

Foods are separated into three types, they are: Energy-giving food, body-building food and protective food.

Energy-giving Food

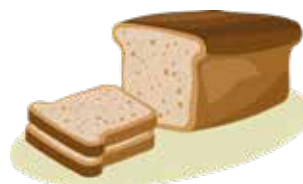
Foods that provide us energy and warmth to the body are known as energy-giving food. We need energy to play work and study. Our body need warmth during winter. Energy-giving foods include potato, chapati, bread, rice, ghee, cooking oil, etc. consist of energy-giving food.



potato



roti



bread

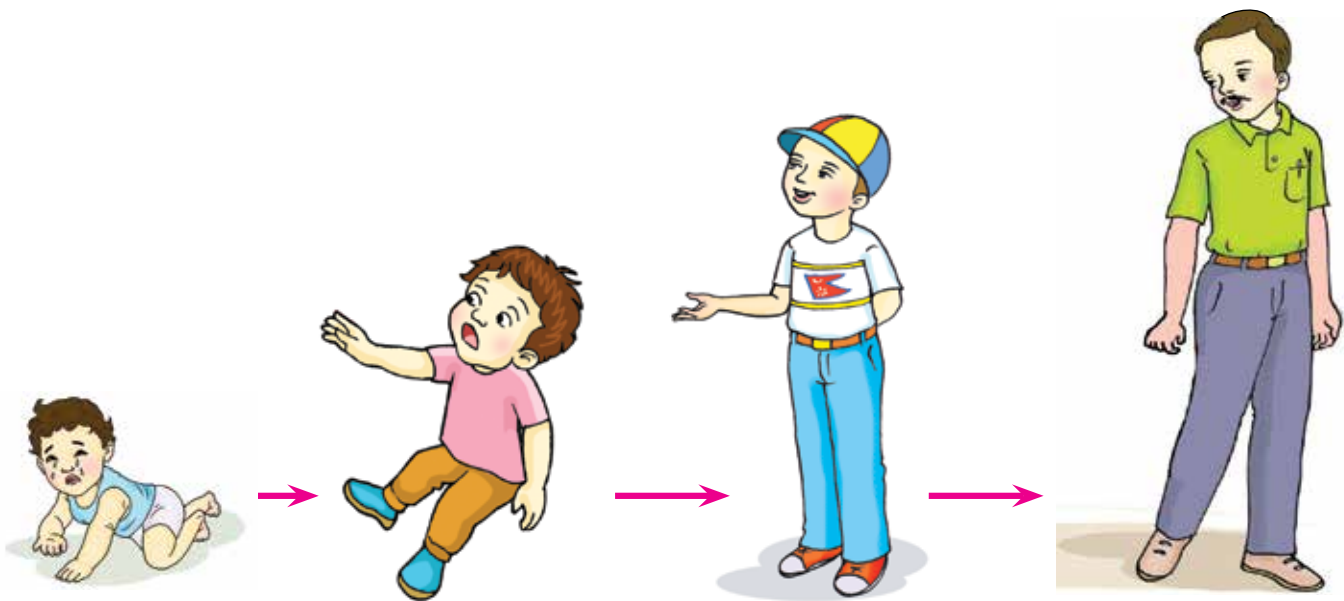
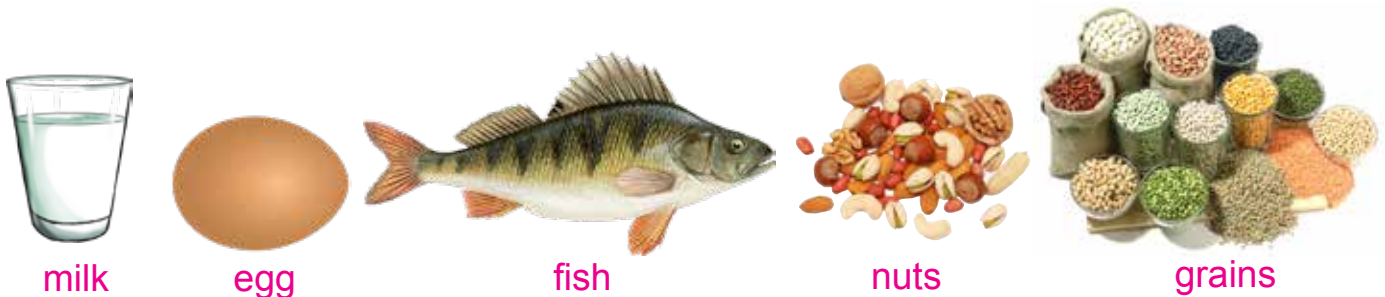


banana



Body-building Food

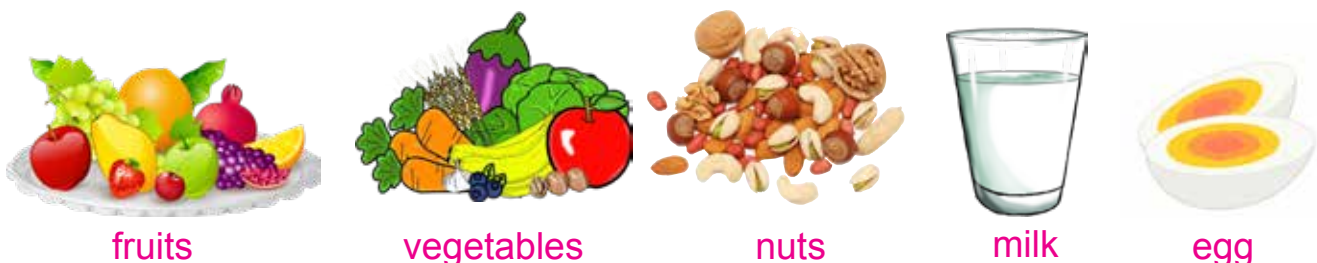
Foods that help our body to grow and repair the damaged parts of the body are known as body -building food.



Milk is a complete food because it consists of all the essential nutrients which are needed for the growth of the body. Milk, egg, fish, meat, nuts grains, etc. consist of body-building foods.

Protective Food

Foods that help our body to stay healthy and fight against diseases are known as protective foods. Fruits and vegetables contain different types of vitamins and minerals which are essential to us.



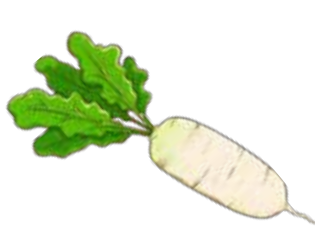
Some vegetables such as tomatoes, cucumbers, carrots and radishes can be eaten raw.



tomato



cucumber



radish



carrot

We should eat different type of vegetables and fruits according to the seasons. Fruits and vegetables help us to stay healthy and fight against diseases.

Water

Water is our life. We cannot live without water. We should drink at least 5 to 6 glasses of water everyday. Water helps our body organs to function properly. Elderly people should drink more water.



Balanced Diet

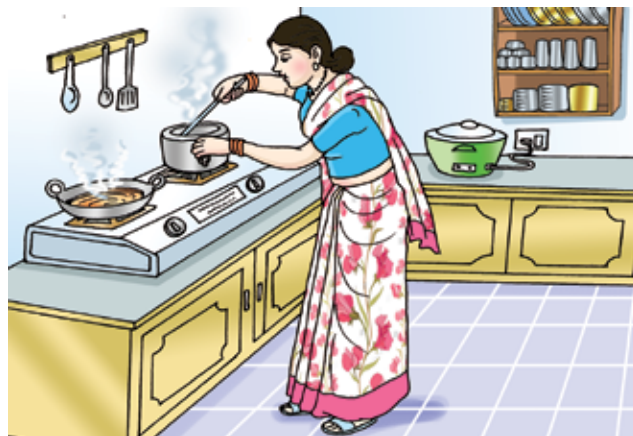
The food that we eat everyday is known as diet. Our diet should consist of different types of food to get energy, grow and protect from diseases.

The diet which consists all essential nutrients required to our body in right amount is called a balance diet.



Care of Food

We should always eat fresh and clean food. Fruits, cucumber, carrot, etc. should be washed properly before eating them raw.



Foods should be covered properly and cooked properly to kill the germs. We should not eat uncooked and rotten foods which can cause diseases. Foods can be stored in a refrigerator to keep them fresh.

Safe Food

We should always eat clean and fresh food. Uncooked food, eating dirty, stale food make us sick. Eating contaminated food also causes diseases. We should cook food properly after washing with clean water. Fruits should be eaten after washing them properly. We should clean hands with soap and water before and after eating. Cooking utensils should be cleaned always. We should boil milk properly before we drink it. Foods should be covered properly.



We should eat only fresh and covered food. We should not eat uncovered food. We are not supposed to eat stale food. Uncovered, stale foods are exposed to flies and dust. It is harmful to eat such foods.

Do you know?

Dog is used for meat in China.



Quick Reply

- Name some fruits grow in your locality.
- Name the fruits, vegetables which are available in different seasons.
- Name the food items you eat everyday.
- Name three energy-giving foods.
- Name three body-building foods.
- Name three protective foods.



Note to the Teacher

Explain students different type of foods. Define balanced diet, tell the importance of water and safe foods. Ask students different foods which are obtained from plants and animals. Encourage students to eat green vegetables and fruits to know the importance of body-building, energy-giving and protective foods.



Points to Remember

- We eat different types of food.
- Energy-giving food gives us energy to work, play and study.
- The diet which consists all essential nutrients required to our body in right amount is called balanced diet.
- Body-building foods help us to grow.
- Protective foods protect us from diseases.
- The food that we eat everyday is known as diet.
- We should wash vegetables and fruits with clean water before cooking and eating them.
- We should eat only fresh and clean food.
- The major essential nutrients are: carbohydrates, proteins, vitamins, minerals fats, etc.

Glossary

carbohydrates	: food which provides us energy (e.g. starch, glucose, etc.) found in rice, potatoes, sugar, etc.
nutrient	: a substance that plants and animals need to give and grow
ghee	: a fat made from cow and buffalo's milk
components	: parts of something (e.g.: foods)
minerals	: chemicals (e.g. iron or zinc) that occur naturally in certain foods and that is important for good health
stale	: a food which is no longer good and not appealing



Exercise

A. Choose a word to fill the blanks in each of the following sentences.

growth	fresh	uncovered	vegetables	food	covered
--------	-------	-----------	------------	------	---------

1. All living things need.....
2. Pulses, meat, egg, milk help in the.....of our body.
3. We should eat..... and.....food.
4. Fruits and protect us from several diseases.
5. It is not safe to eat..... food.

B. Write 'T' for true and 'F' for false statements.

1. We should eat fruits and green vegetables.
2. Fish and meat makes our eyes healthy.
3. Milk is obtained from animals.
4. Eggs are obtained from plants.
5. We should wash our hands before eating.
6. We should not eat street foods.

☐☐☐☐☐☐

C. Match the followings:

Protective food	chicken, meat, beans
Energy-giving food	spoils foods
Germ	vegetables, fruits
Body-building food	eggs
Hens, ducks	wheat rice maize

D. Answer these questions.

1. Why do we need food?
2. From where do we obtain different types of food?
3. Name the food items which are obtained from milk.
4. What type of food should we eat in order to make our eyes healthy?
5. Why are some of the outside foods harmful for health? Give two reasons.
6. Why does our body become thin?
7. What types of foods should we eat to become fit and healthy?
8. Why is milk said to be a complete food?
9. Why is water important for our body?
10. How can you take care of food?
11. Write the benefits of eating fruits and raw vegetables.
12. What are nutrients?
13. What are energy-giving food items?
14. What are body-building food items?
15. What are protective foods?
16. What is a balanced diet?

E. Choose the best answer from the given alternatives.

- i. It is a cereal.
 - a. rice
 - b. gram
 - c. fish
 - d. orange
- ii. It is a pulse.
 - a. rice
 - b. wheat
 - c. maize
 - d. soya bean
- iii. It is a dry food.
 - a. orange
 - b. water melon
 - c. almond
 - d. potato
- iv. We get meat and eggs from it.
 - a. goat
 - b. cow
 - c. hen
 - d. buffalo
- v. Most of the food comes from.....
 - a. animals
 - b. plants
 - c. fish
 - d. river

F. Make meaningful words from the jumble letters.

EATM



GPI



WCO



RGMA



RWATEMELON



Warm up activity

a.



b.



c.



d.



1. Can you identify the given diagrams? Express your response with a tick (✓) or a cross (×).

a	b	c	d

2. Have you really seen or eaten these food items? Respond with a tick (✓) or a cross (×).

a	b	c	d

3. Can you write their names?

a	b	c	d



Project Idea

1. Make a list of food items with their sources from your locality.

Name of food	Source of food

2. Make a list of foods which are available in your home.

Name of food	Plant source	Animal source

3. Make a list of food items you eat and write their sources.

Food item	Source

DISEASES AND HEALTH CENTRES

A condition in which certain important functions of the body get disturbed and make the person ill is known as disease. Diseases are caused by germs or a deficiency of certain nutrients in their food. **Very tiny living organisms which may cause diseases are known as germs.** Sometimes, insect bites, snake bites, etc. also cause disease.

Kinds of Diseases

There are two kinds of disease. They are:

- Communicable diseases
- Non-communicable disease

Communicable Diseases

Diseases which can be transmitted from one person to another are known as communicable diseases. Various types of germs are responsible for causing communicable diseases.



Common cold, small pox, typhoid, cholera, dyptheria, dysentery and tuberculosis are some common communicable diseases.

They spread from one person to another through direct contact from towels, handkerchiefs, utensils or toys which are used by the sick persons. Polluted environment, dirty water and contaminated foods are also responsible in transfer of diseases to a healthy person.

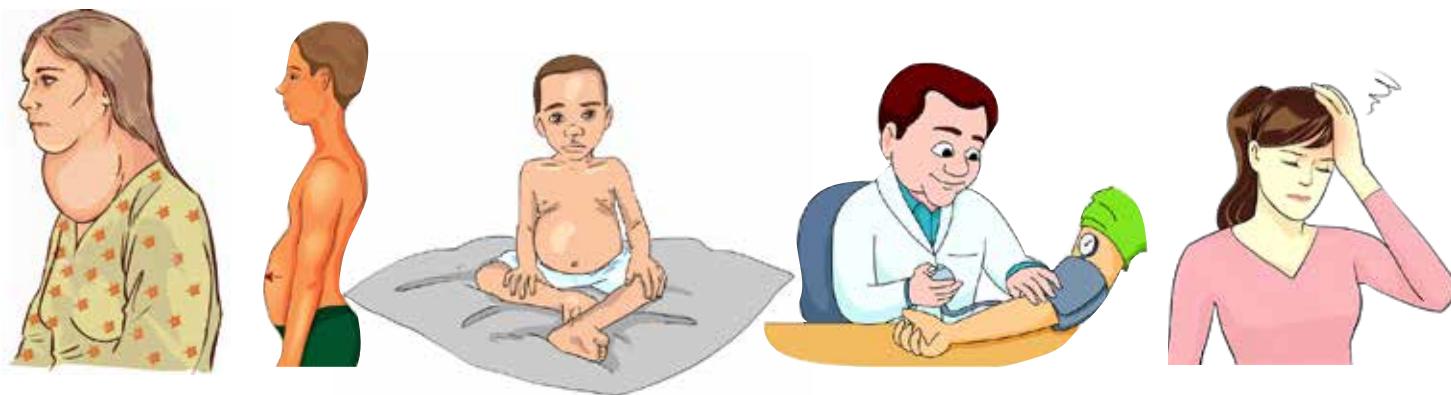
Prevention from Diseases

- ◆ Do not eat food that is kept in the open area and flies on it. In fact, flies transfer diseases.
- ◆ Always drink clean and boiled water.
- ◆ Take bathe regularly. Clean your body parts. Wash your hands after using the toilet and before eating foods.
- ◆ Always keep your house and surrounding clean.

Non-communicable Diseases

Diseases which cannot spread from one person to another are called non-communicable diseases. These diseases are caused due to the problems in the proper function of different functions of the body. Diabetes, cancer, heart diseases, blood pressure, goitre and asthma are some non-communicable diseases.

Some of these diseases are also caused due to the lack of some nutrients in the body.



Night blindness, beri-beri, scurvy, rickets, goitre and anemia are some diseases which are caused due to lack of some nutrients in body. These are also called as deficiency diseases.

A diet containing less nutrients for our body causes malnutrition. Malnourished children cannot gain weight and do not grow well.

Cholera and Dysentery

These are very common diseases of our country, Nepal. These are caused due to the contamination of foods and water. A person suffering from these diseases discharges slippery stool with blood. The victim suffers from stomach pain.



To prevent these diseases, sick persons should drink plenty of clean water, fresh juice and light fresh food. We should not eat fatty food.

Measles

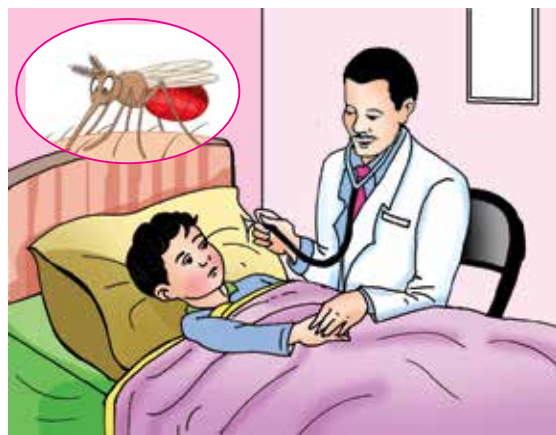
It is a skin disease and spreads in small children. Small germs (virus) are responsible for this disease. Sick person shows fever, cough, red eyes, small red blisters on the skin.

To prevent this disease, we should not use handkerchief and towel of a sick person. We should bathe time to time and wear neat and clean clothes.



Malaria

We get malaria from mosquitoes. Sick persons show high fever and feel weak. Mosquitoes bite a sick person and suck blood containing disease germs. These disease germs are transmitted into the body of a healthy person through mosquitoes.



Common Cold

Common cold is a very common type of illness caused to viral attack. It typically affects our respiratory system. The nose blows when a person is suffering from common cold. The patient complains about headache and fever. He or she sneezes frequently. We should take sufficient hot fluids and rest during common cold.



Diarrhoea

During diarrhoea, person passes loose stool for more than 5-6 times a day. Feels uncomfortable with stomachache and becomes weak. Severe diarrhoea causes dehydration in our body. Diarrhoea is caused by bacteria, virus and some protozoa. To prevent diarrhoea, we should consume health foods and pure drinking water. Plenty of water and jiwan jal should be given to the patients to replace the loss of water.

[Note: Tuberculosis is highly communicable disease caused by a bacteria called Mycobacterium Tuberculosis.]

Tetanus is caused by bacteria called Clostridium tetani. The body of patient bends like a bow (dhanush) and muscles get tight. Therefore in Nepali, it is called “Dhanustankar”.

Vaccination

The practice of protecting ourselves before we become sick is known as vaccination. The ability to fight against diseases of our bodies can be increased by vaccination. B.C.G. vaccine is taken for tuberculosis; D.P.T for whooping cough, diphtheria and tetanus.



These vaccines are available in most of the health posts and hospitals.

B.C.G. and measles vaccines should be taken only once. Polio and D.P.T. are taken three times and T.T. vaccine is taken five times.

Some Non-Communicable Diseases

Some common non-communicable diseases with short description are given below:

a. Diabetes

Diabetes is a non-communicable disease. It is caused by lack of hormone secreted by or pancreas which controls sugar level in our blood. Patient becomes weak and urinate frequently. Therefore, a person feels thirsty after a short duration. Regular exercise and change in lifestyle can control the bad impact of diabetes.

b. High Blood Pressure

High blood pressure is called hypertension. The blood flow with great force. The person suffering with high blood pressure shows symptoms such as nausea, headache, nasal bleeding, vomiting etc. A person suffering high blood pressure should do regular exercise and change luxurious lifestyle to normal lifestyle.

c. Cancer

The uncontrolled growth of cells in our body is called cancer. It may occur in different parts of body; e.g.: throat cancer, breast cancer, etc. It is caused by consuming alcohol (*raksi*) and smoking.

Preventive Measures of Diseases

1. We should follow rules of personal hygiene and community sanitation.
2. Potable drinking water and fresh foods should be consumed daily.
3. We should consume a balanced diet which contains all essential nutrients.
4. We should do regular exercises and play games.
5. We should not pollute our environment.

Health Centres

The places where ill people are treated, take vaccination are known as health centres. Health centres give several health services. The health services are there to help people to remain healthy. There are many health services in village and town which provide health services to the people. There are hospitals, health posts and sub-health posts. Some of the hospitals and health posts have good facilities for treatment. Doctors check and help sick persons for the treatment. Doctors and nurses provide good services to sick people. They help to cure diseases by providing medicines with good suggestions.

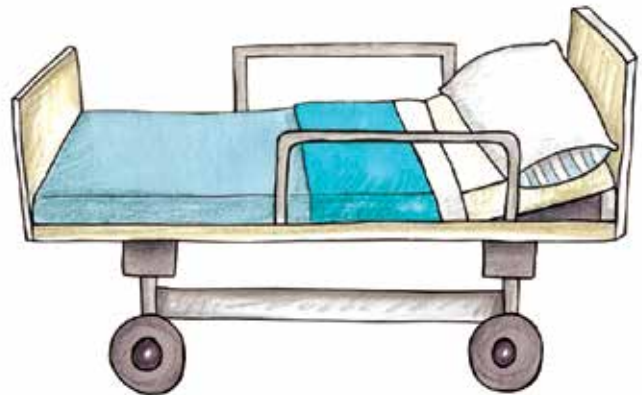
Many cities have hospitals, nursing homes and clinics. Many hospitals have their ambulance to carry sick persons. Ambulance can be used during health emergency.

Stretchers are used to carry sick persons during emergencies to health posts.



Do you know?

- Cancer has cure but only if you visit hospital before it is too late.



Do you know?

- Measles and mumps are two diseases caused by the same virus.

Do you know?

- Heart diseases may transfer from parents to babies.





Quick Reply

- Tell the name of diseases:
 - red blisters in skin.
 - slippery stool with blood.
 - running nose and cough.
 - frequent urination.
- Name two common communicable diseases.
- Name two non-communicable diseases.
- Do you go to hospital or health post?



Points to Remember

- A condition in which certain important functions of the body get disturbed and make the person ill is known as disease.
- The diseases which can be transmitted from one person to another are known as communicable diseases.
- The diseases which cannot be transmitted from one person to another are known as non-communicable diseases.
- A diet containing less nutrients in our body causes malnutrition.
- Lack of some nutrients in body causes some diseases. They are known as deficiency diseases.
- The practice of protecting ourselves before we become sick is known as vaccination.
- We should visit health centres regularly after 3-6 months to get medical advices.



Note to the Teacher

Explain about some common communicable and non-communicable diseases. Discuss the ways to protect ourselves from different diseases. Help students to identify the importance of vaccine and health centres.

Glossary

hormone	: a chemical substance produced inside our body which influences the development of the body
pancreas	: a mixed glands in our body
dehydration	: loss and water
stretcher	: a device that is made of a long piece of thick clothe stretched between two poles and is used for carrying and injured or dead person
contamination	: mixing of unwanted substances in food materials



Exercise

A. Choose a word to fill the blanks in each of the following sentences.

communicable	deficiency	protects
non-communicable	tuberculosis	sick

1. B.C.G. vaccine is given against.....
2. Doctors check up the..... persons.
3. Cholera is a diseases.
4. Vaccine us from certain disease.
5. Goiter is a disease.
6. Diabetes is disease.

B. Write 'T' for true and 'F' for false statements.

1. Sick people should meet traditional healers to cure diseases. ☐
2. Health post consists of several medicines. ☐
3. D.P.T. is given to protect from tuberculosis. ☐
4. Sick persons should not reach hospital fast. ☐
5. Polio vaccine is given orally. ☐
6. Uncontrolled growth of cells is called cancer. ☐



C. Match the followings:

B.C.G.	prevent weakness of bones
D.P.T.	non-communicable diseases
T.T.	whopping cough, diptheria
Polio drops	tuberculosis
Heart diseases	tetanus

D. Answer these questions.

1. What are diseases?
2. What are communicable diseases?
3. What are non-communicable diseases?
4. What is malnutrition?
5. What is vaccination?
6. How are communicable diseases spread?
7. What should be done to prevent spread of communicable diseases?
8. Write the main roles of hospitals and health posts.
9. What do the nurses do?
10. What are deficiency diseases?
11. Write the symptoms of cholera and dysentery.
12. Write symptoms of measles.
13. Describe briefly about cancer.

E. Choose the best answer from the given alternatives.

- i. It is a communicable disease.
 - a. cancer
 - b. dysentery
 - c. heart disease
 - d. diabetes
- ii. It is a non-communicable disease.
 - a. cancer
 - b. diarrhoea
 - c. dysentery
 - d. cholera

iii. It is caused by amoeba.

a. diarrhoea

b. dysentery

c. cancer

d. headache

iv. It is unnecessary growth of cells in the body.

a. diarrhoea

b. cholera

c. cancer

d. diabetes

v. It makes red skin rashes.

a. measles

b. cancer

c. diabetes

d. heart diseases

F. Match the following.

Amoeba

polluted water

Typhoid

uncontrolled growth of cells

Cancer

red skin rash

Measles

excessive sugar in blood

Diabetes

dysentery

G. Name the following figures.



H. Make meaningful words from the jumble letters.

ERDYSENTY



THOIDYP



PLIOO



CRICKETS



HRTEA



Warm up activity

a.



b.



c.



d.



1. Can you identify the given diagrams? Express your response with a tick (✓) or a cross (×).

a	b	c	d

2. Have you really seen such patients? Respond with a tick (✓) or a cross (×).

a	b	c	d

3. Can you write the names of these diseases?

a	b	c	d



Project Idea

1. Ask your parents regarding the vaccines which you have taken till now.
2. Make a group of patients and doctors and tell them to act accordingly.
3. Complete the following table.

Name of vaccine and number of vaccines

D.P.T	Three times
1.	
2.	
3.	

SAFETY AND FIRST AID

Unpleasant events take place due to our carelessness which are known as accidents. Most accidents happen when we are playing, walking, running or working. Accidents happen suddenly. People get hurt in accidents. Sometimes accidents can put lives in danger. We can avoid accidents if we are careful and follow safety rules. The following rules should be followed to save ourselves from accidents.

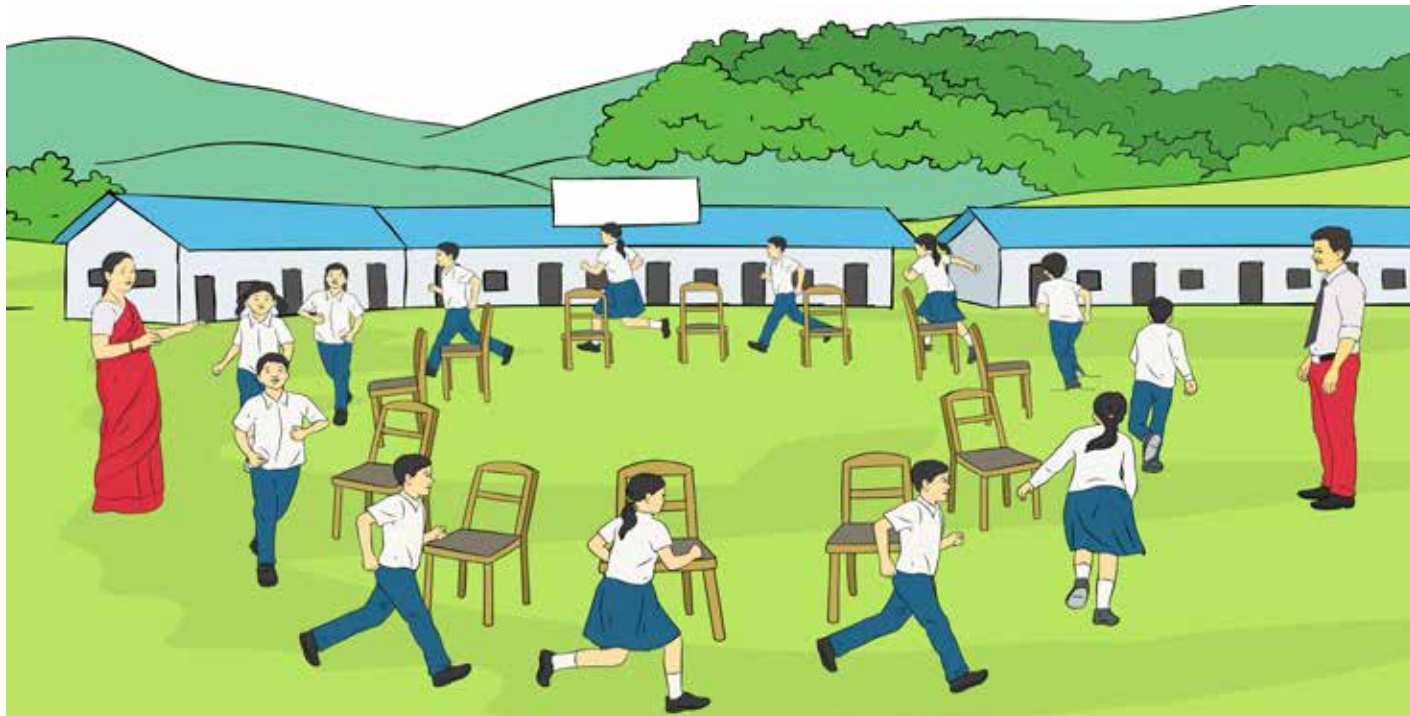
Safety in the Classroom



- Do not hit or throw things at one another.
- Do not climb onto desks.
- Use a sharpener to sharpen pencils.
- Be very careful while using scissors and needles.
- Do not pull and push your friends.



Safety on the Playground



- ◆ Learn and obey the rules of the game.
- ◆ Do not hit others with a bat, ball or anything which can cause injury.
- ◆ Wait for your turn at the swing, at the see-saw; in fact, everywhere.
- ◆ Play games under supervision of your teacher.

Safety on the Road



- ◆ Walk on the footpath or on the safe side of the road.
- ◆ Cross the road at the zebra crossing. Before crossing, look to your right, then to your left and then again to your right.
- ◆ Follow the traffic stops.
- ◆ While riding a cycle, keep to the left.
- ◆ Do not keep your head or arm out of the bus.
- ◆ Do not get in or get off from a moving bus.
- ◆ Follow the traffic lights. Cross the road when the traffic stops.



Safety at Home

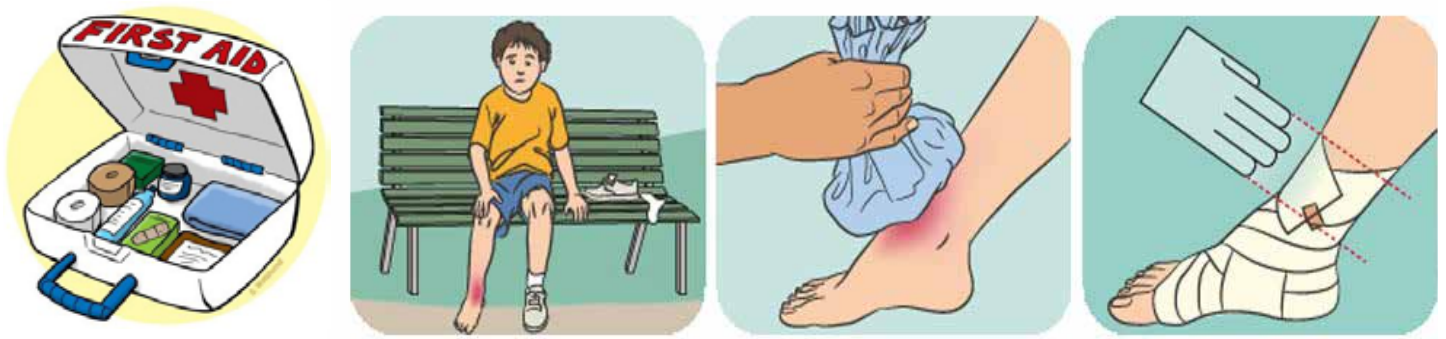
- ◆ Be careful with sharp things such as knives, blades, scissors etc. You may hurt yourself.
- ◆ Be careful near stoves. Do not touch hot pans or boiling water.
- ◆ Do not touch electrical gadgets or switches with wet hands.
- ◆ Do not play with plastic bags, bedsheets or pillow cases.



Do you know?

- Drivers are not allowed to use mobile phones while driving.

First Aid



After an accident, the first help that the injured person gets is called first aid. When your friends get hurt, you may need to give them the first aid before a doctor is able to reach you and help to the injured person.

- Keep calm and do not gather around the injured.
- Do not let the wound bleed. Loosely tie a clean hanky or bandage over the wound.
- Make the injured sit or lie down.
- Clean the wound with dettol.
- Comfort the injured person.
- We should keep first aid box in our homes.
- We can avoid accidents if we are careful and follow safety rules.

Do you know?

- Sky (overhead) bridge or sub-ways are made on roads to cross it.

Do you know?

- Electric wiring should not be done in damp places.



Note to the Teacher

Explain about the reasons and places of accidents with examples. Describe prevention from accidents through pictures. Tell the benefits of first aid.

Glossary

- accident** : a sudden event (e.g.: crash) that is not planned or intended and that causes damage or injury
- traffic** : the vehicles, pedestrians, ships or planes moving along a route
- gadgets** : electronic devices
- first aid** : emergency care or treatment given to an ill or injured person before regular medical aid can be obtained



Exercise

A. Choose a word to fill the blanks in each of the following sentences.

Careful	zebra	suddenly	wet	play
---------	-------	----------	-----	------

1. We should not..... rough games.
2. Accidents can be prevented if we are
3. We must cross a road only at the..... crossing.
4. Do not touch electrical gadgets withhands.
5. Accidents happen.....
6. We should follow.....rules.

B. Write 'T' for true and 'F' for false statements.

1. It is good to run in a slippery road. ☐
2. The red light tells the vehicles go ahead. ☐
3. Safety rules help us to avoid accidents. ☐
4. We can play rough game sometimes. ☐
5. We should not spit from a moving bus window. ☐
6. Accidents happen suddenly. ☐

C. Match the followings:

Health centre	transportation facilities
First aid	prevent from accident
Play ground	immediate help
Traffic rules	treatment of sick persons
City	safe to play

D. Answer these questions.

1. Why do accidents happen?
2. Name one safety rule you know:
 - In the classroom
 - On the playground
 - On the road
 - At home
3. What should be done to prevent us from accidents?
4. Why is it necessary to follow traffic rules?
5. What is first aid?
6. What should you do if your friend gets hurt?
7. What will you do if your friend has cut his hand?
8. What do you understand by accidents?
9. Draw a picture of traffic lights.

E. Choose the best answer from the given alternatives.

- i. We should always walk on it.
 - a. foot-path
 - b. road
 - c. bus
 - d. roof
- ii. It is immediate help.
 - a. treatment
 - b. vaccines
 - c. first aid
 - d. medicine
- iii. It prevents accidents.
 - a. safety rules
 - b. first aid
 - c. balanced diet
 - d. sleep
- iv. It is from where we should cross roads.
 - a. foot-path
 - b. anywhere
 - c. nowhere
 - d. sky bridge
- v. It is a bad habit.
 - a. playing in the road
 - b. jumping on moving bus
 - c. playing with knife
 - d. all of above



F. Make meaningful words from the jumble letters.

RSSTAI



RCA



LETAB



FROO



DOWWIN



Warm up activity



1. Can you identify the given diagrams? Express your response with a tick (✓) or a cross (×).

a	b	c	d

2. Have you really seen such patients? Respond with a tick (✓) or a cross (×).

a	b	c	d

3. Can you write the names of these diseases?

a	b	c	d

SMOKING



There are several things that harm our social environment. **Activities which lead us to serious physical and mental sufferings are called harmful habits.**

Consuming tobacco or tobacco products such as cigarettes, bidi, tamakhu is known as smoking.

Smoking is very dangerous for health. Tobacco contains poisonous substance which has bad effects on body. Poisonous substance which is found in tobacco is called nicotine.

If the parents smoke, children also may learn the bad habit of smoking. Some people smoke just to show that they are smart.

When we are near by a person who is smoking, then we also get affected. Smoking causes disease of the lungs, throat and stomach ulcer. It also causes wound in the mouth, coughing, asthma and lungs cancer.

Smokers' teeth and lips remain black and produce unpleasant odour from their mouths. We should request people not to smoke in public places and in front of others.

We should try to stop our elders to smoke.

We should start public awareness program in our locality to stop smoking and make that area a smoke-free zone.



Do you know?

- Nicotine is the name of a person who first started business of cigarette.

Do you know?

- Smoking makes lungs stronger is false belief but it damages them.



Points to Remember

- Activities which lead us to serious physical or mental sufferings are called harmful habits.
- The most harmful substance which is found in tobacco is known as nicotine.
- Lungs cancer, mouth and stomach wound, high blood pressure, heart diseases, asthma and bad smell while breathing are some common diseases due to smoking.
- Public awareness program is necessary to stop people from smoking.



Note to the Teacher

Discuss, find out and identify the harmful effects of smoking. Encourage students to help the people to stop smoking. Perform some public awareness activities and say 'no' to smoking.

Glossary

- asthama** : a physical condition that makes it difficult for someone to breathe
- unpleasant** : causing discomfort or pain
- aware** : knowing something
- habit** : something that a person does often in a regular and repeated way
- supervision** : the action or process of watching and directly what someone does or how something is done



Exercise

A. Choose a word to fill the blanks in each of the following sentences.

cigarettes

diseases

nicotine

friends

elders

1. Tobacco is used in
2. Small children should not smoke by copying.....
3. Harmful substance which is found in tobacco is.....
4. Continuous smoking causes many.....
5. We should not smoke if our..... force us to smoke.

B. Write 'T' for true and 'F' for false statements.

1. We can smoke only sometimes. ☐
2. Smoking causes early death. ☐
3. Older people can smoke anytime. ☐
4. Most of the lungs cancer is caused due to smoking. ☐
5. It is good to discourage people from smoking. ☐

C. Answer these questions.

1. What do you understand by harmful habits?
2. What is smoking?



3. What harm does smoking do to our body?
4. What is the poisonous substance found in tobacco?
5. How can you discourage people from taking tobacco?
6. Name some tobacco products.
7. What is nicotine?
8. Name the disease which are caused by smoking.

D. Choose the best answer from the given alternatives.

- i. It is good habit.
 - a. smoking
 - b. drinking alcohol
 - c. eating green vegetables
 - d. chewing tobacco
- ii. It is bad habit.
 - a. eating green vegetables
 - b. chewing tobacco
 - c. physical exercises
 - d. enough rest and sleep
- iii. It is found in tobacco.
 - a. vitamin
 - b. protein
 - c. nicotine
 - d. iodine
- iv. It is a chewing tobacco.
 - a. cigarette
 - b. khaini
 - c. medicine
 - d. opium
- v. It is good for health.
 - a. cigarette
 - b. khaini
 - c. opium
 - d. vegetable

E. Make meaningful words from the jumble letters.

ACTOBCO

RETCIGATE

KESMO

RENCHILD



Warm up activity

a.



b.



c.



d.



1. Can you identify the given diagrams? Express your response with a tick (✓) or a cross (×).

a	b	c	d

2. Have you really seen people doing like these? Respond with a tick (✓) or a cross (×).

a	b	c	d

3. Is it good habit?

a	b	c	d



Project Idea

a) Make a list of people who smoke in your family and relatives. Write how you prevent them from smoking.

PHYSICAL EDUCATION



Basic Skills

Walking, Running, Jumping and Throwing

Activities of basic skills make our body warm and make us physically fit. Movement of body from one place to another while playing games is known as locomotor skill.

Walking

We can move our body from one place to another. Our legs help us in walking. It is good to walk in a proper way. We should keep our body straight and look forward. We can walk left-right or back-front or in jig-jag patterns.



Running

Running skills are used to take part in races. Running helps our body to warm up and keep body in perfect condition. While running, we should press the ground with our toes to move forward and raise the legs up to the height of the knees. It is good to run along the tracks according to the command of a teacher. Students can run 30m distance with the command of a teacher.



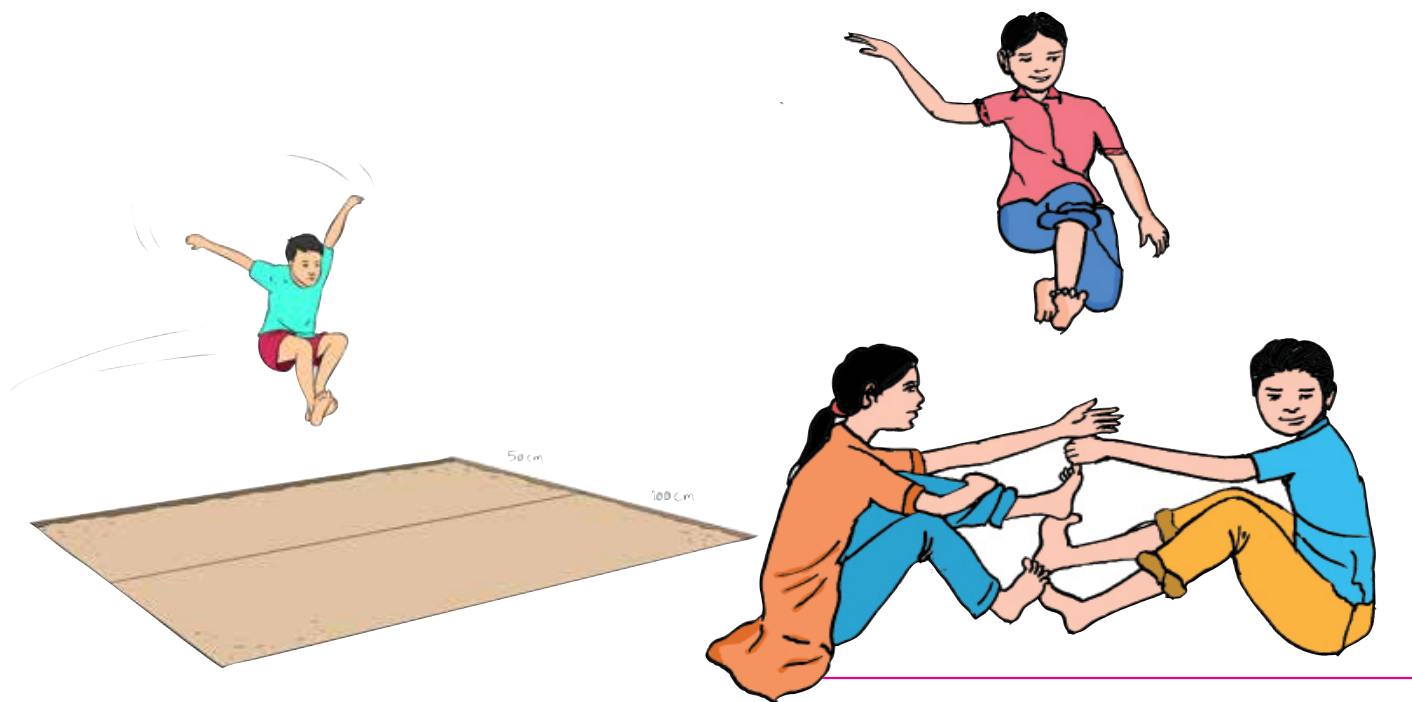
Hopping and Skipping

Hopping can be done alone or in groups. It can be done with one or both legs. Skipping can be done over a rotating rope by moving it in forward and backward direction over the head and under the feet.



Jumping

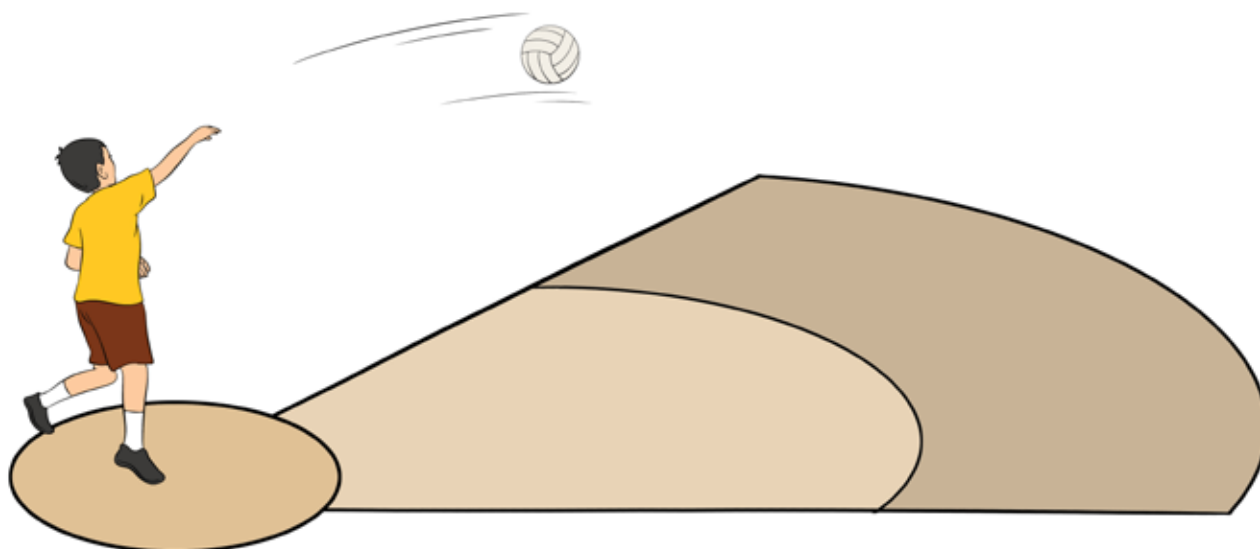
Short and long distance jumping can be done. It can be done by raising our hands and lifting both feet up in the air. It is necessary to run for a short distance while jumping over the rope and land on the sand pit. Rope should not be touched by any parts of our body while jumping.



Throwing

We can throw ball in different ways. Make a small size circle and hit the target. Wait from the signal of a teacher to throw the ball. Finally, throw it as far as possible.





Note to the Teacher

Perform different activities of basic skills. Make students stand in different groups and help them to perform basic skills according to your command.

Glossary

command	:	order given to do something
signal	:	a sign or sound given to follow a common
target	:	a mark to shoot at



Exercise

Answer these questions.

1. What are the basic skills of physical education?
2. What is walking?
3. How you can walk by different ways?
4. What should be the position of your legs and hands while walking?
5. How do your start running?
6. How can skipping and hopping be done?



NON— LOCOMOTOR SKILLS

The exercises that are done in one place or without changing position are known as non-locomotor skills (static skills) of physical education.

Hanging, Swinging and Climbing Activities

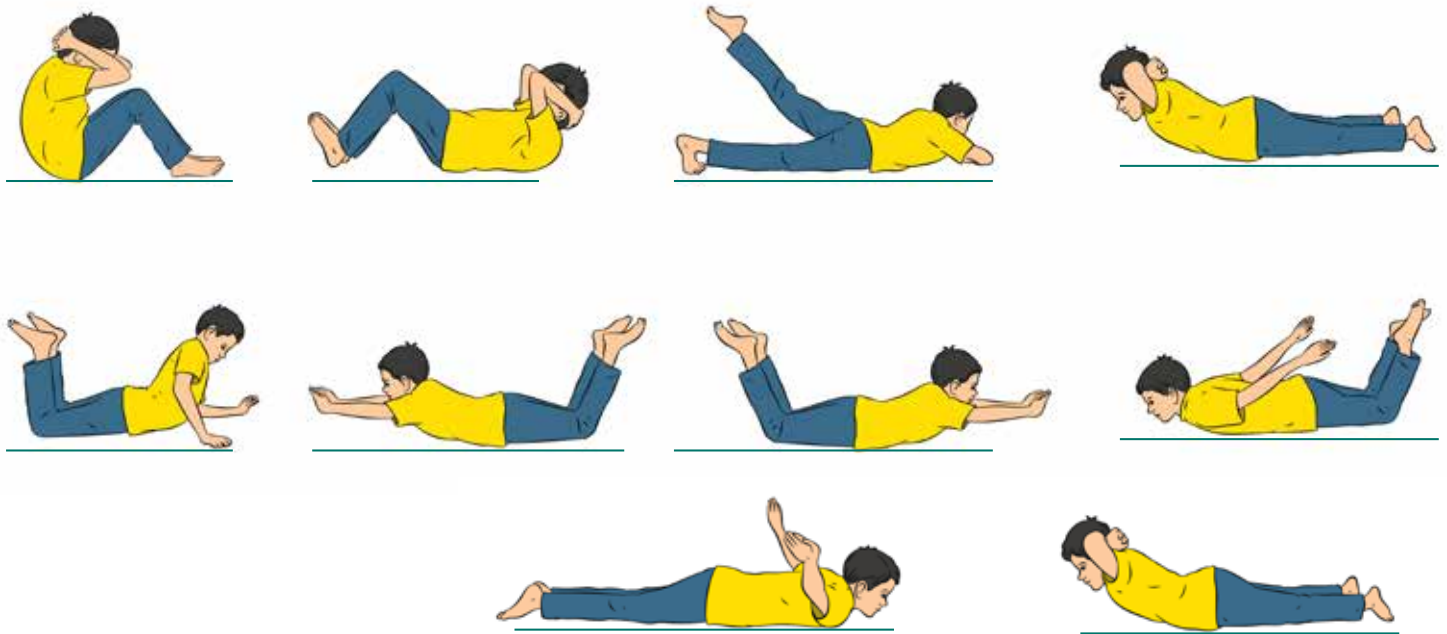
These activities can be done alone or in groups in the presence of a teacher only. Swinging can be done by catching a rope firmly and landing in another place. It is not difficult to climb on the tree trunks and branches.

Climbing on a rope is also possible by catching rope firmly and moving body up. The rope should be thick and tightly fixed to a strong support.



Exercise by sleeping

We should sleep on a clean ground or a carpet of floor and practise all activities



Note to the Teacher

All the activities should be performed in the presence of a teacher only.

Glossary

- skill** : the ability to do something with ease and comfortable
- swing** : to move with a smooth, curving motion
- trunk** : the main stem of a tree



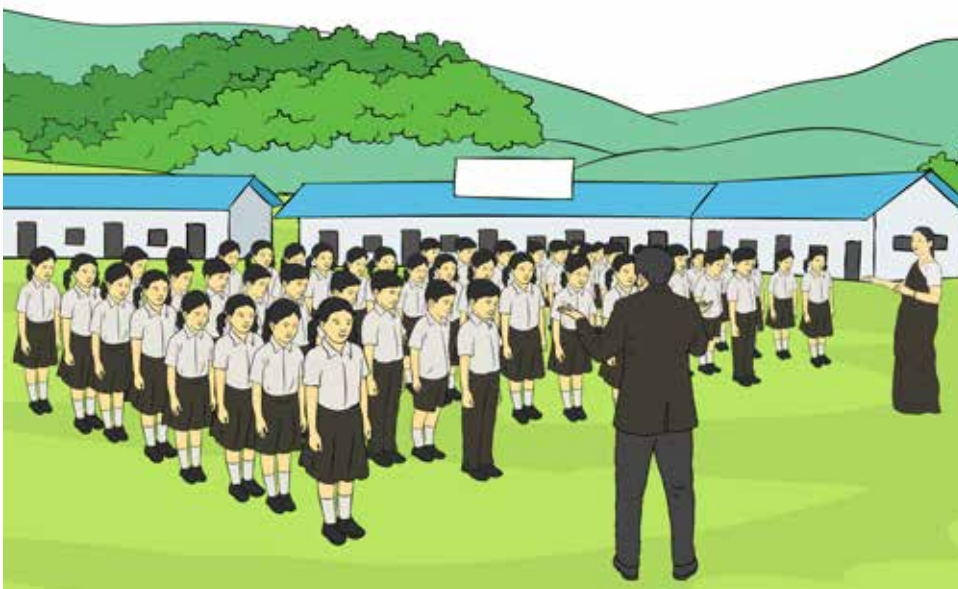
Exercise

Answer these questions.

1. What are non-locomotor skills?
2. How can swinging be done?
3. Can you climb in a rope?
4. What will happen if rope is not tightly fixed to a strong support?
5. Why are exercises by sleeping necessary for our body?

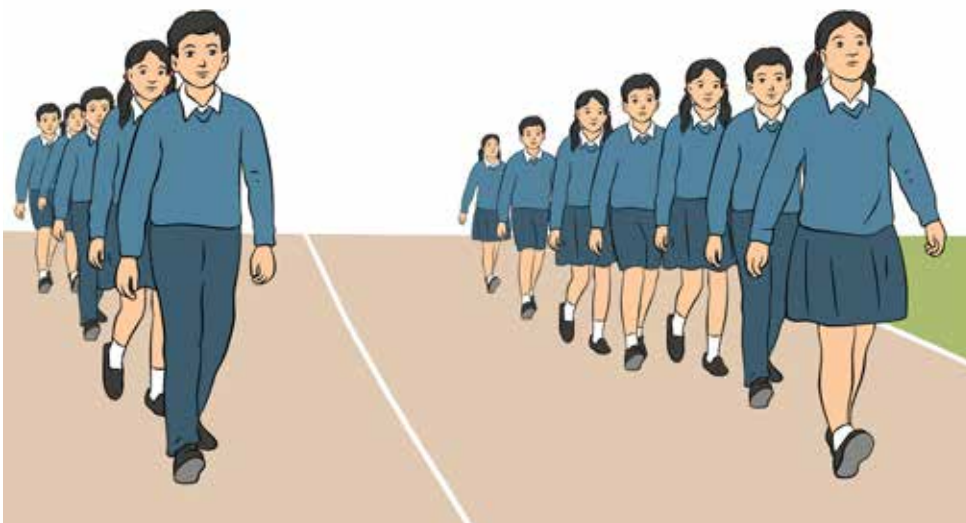
DRILLS

Drills can be done together with friends. We should always follow teacher's command while doing drills. Drills are essential to make our bodies smart and develop discipline. We should always stand just behind our friends while standing in a row. Always keep the same distance between friends.

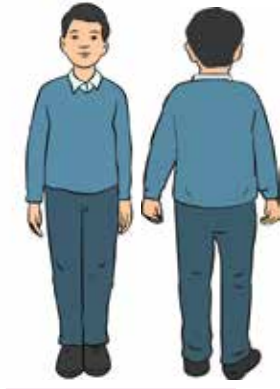


Activities of Standing in Line

While standing in a line, raise your hand up to the shoulder of the person on your right and set the distance by touching the shoulder of your friend and move left.



Attention



Attention



Stand at ease



Stand easy (rest)

It is an alter position. Raise left leg about half way up. Then, put it down close to the right leg. Heels should touch together in this position. Keep your heels together and toes a little distance apart while standing. You are not allowed to move and speak.

Stand at Ease

Lift left leg a little way up and move it a small distance from the right leg. Keep your hands behind on the back of body, placing the right palm on the left.

Stand Easy (Rest)

This drill gives you a short rest. The action of stand easy is similar to stand at ease position. Hands should be on the sides and keeping heels together.



Note to the Teacher

All the activities should be performed in the presence of a teacher only.

Glossary

smart	: having or showing a quick intelligence
discipline	: the practice of training people to follow rules
drill	: instruction or training to do exercise
attention	: action of doing special care
stand at ease	: a relaxed position
stand easy	: command to relax further
action	: a thing done, an act, deal with



Exercise

Answer these questions.

1. What is drill?
2. Why are drills necessary for our bodies?
3. What should you do while standing in a line?
4. How is attention done?
5. How is 'stand at ease' done?
6. Do you practise all the drills in your school?



PHYSICAL EXERCISES

Physical training is an exercise that strengthens different parts of the body. It makes students alert and active. Practise doing all physical training which are given below:

Activity 1: Exercise of Hands

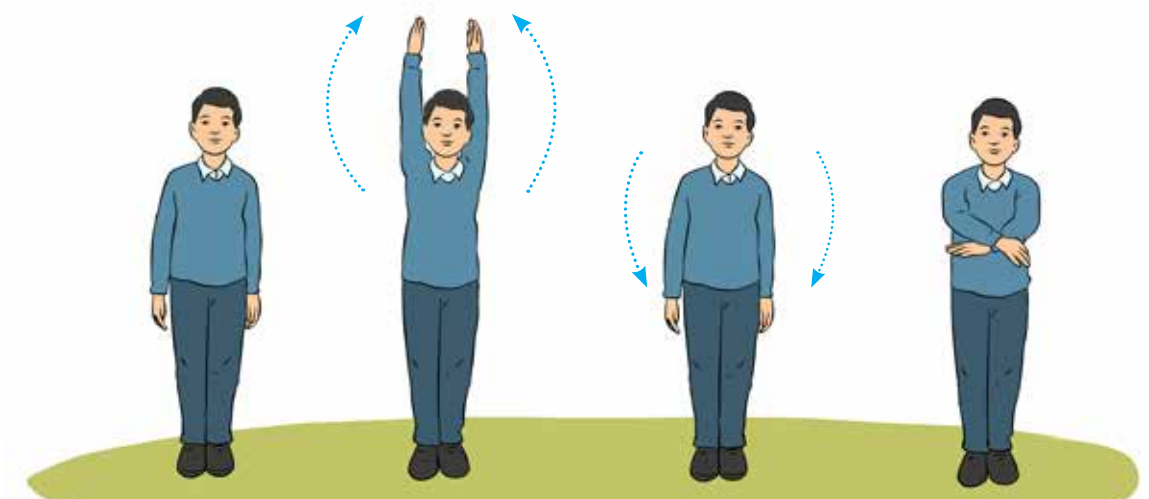


Fig. 1

Raise your heels and stretch your arms above the head from the front. Lower the heels and put your hands down from the front. Repeat the actions.

Activity 2: Exercise of Hands and Legs

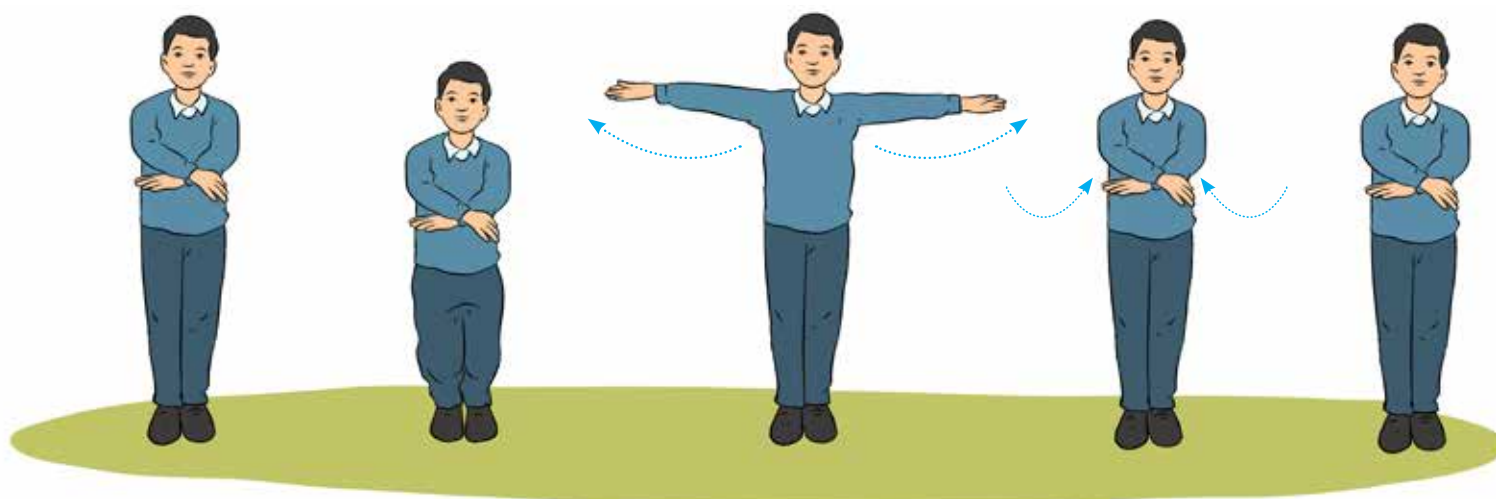


Fig. 2

Stand straight with crossed hands, bend both knees, raise your heels and stretch arms sideways at shoulder level. Lower the heel and bring your hands down.

Activity 3: Exercise of Shoulders

Stand straight with crossed hands. Raise your heels and stretch arms above the head. Put down your hands with a swing and stretch arms sideways at shoulder level.

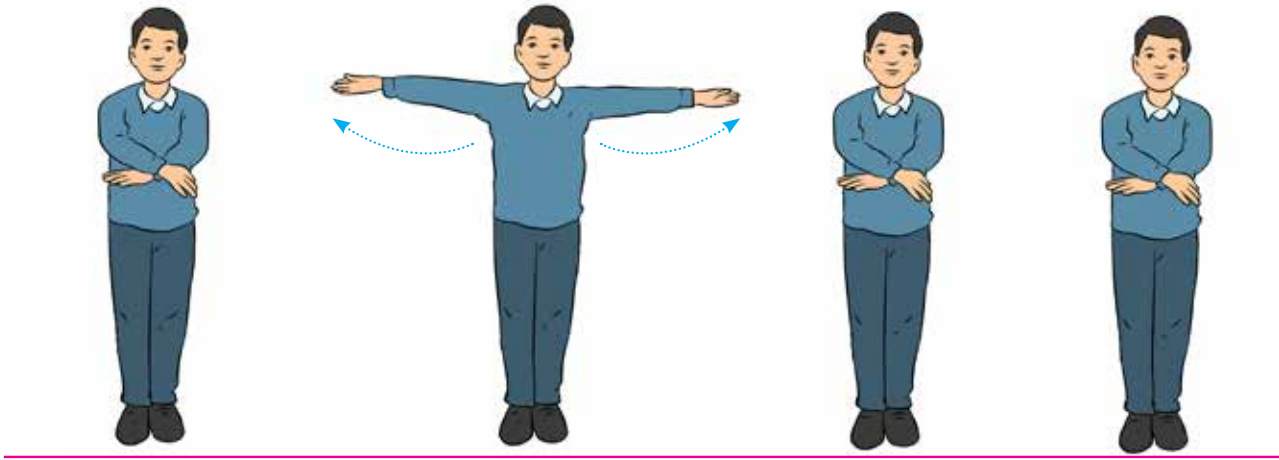


Fig. 3

Activity 4: Exercise of Hands and Chest

Stand straight with crossed hands. Stretch your feet sideways and stretch arms sideways at shoulder level. Lower the hand and cross it in the front. Now, stretch arms above the head and pull head back looking upward.

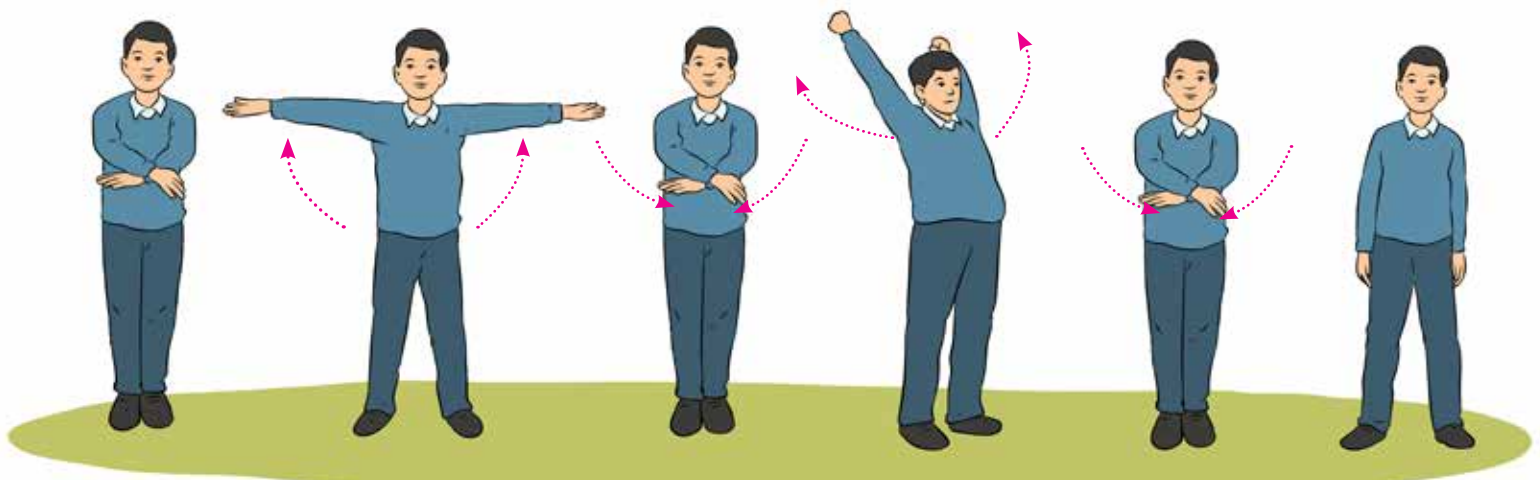


Fig. 4

Activity 5: Exercise of Hands and Waist

Stand in attention position. Stretch your feet sideways. Stretch right arm above the head and bend the body towards left side. Stretch left arm above the head. Bend the body towards right side.

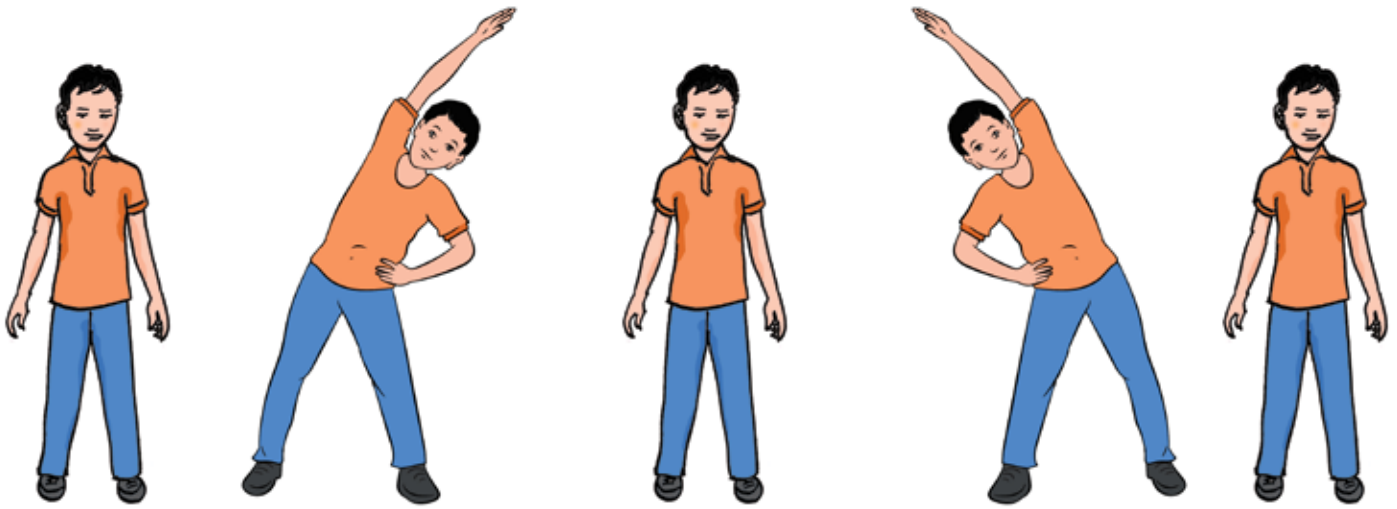


Fig. 5

Activity 6: Exercise of Waist

Stand at attention position. Stretch feet sideways. Bend your body forward keeping the leg straight and try to touch the ground with your hands. Stand straight and bend your body backward by keeping your arms on the hip. Look towards the sky. Now, stand straight and repeat this activity.

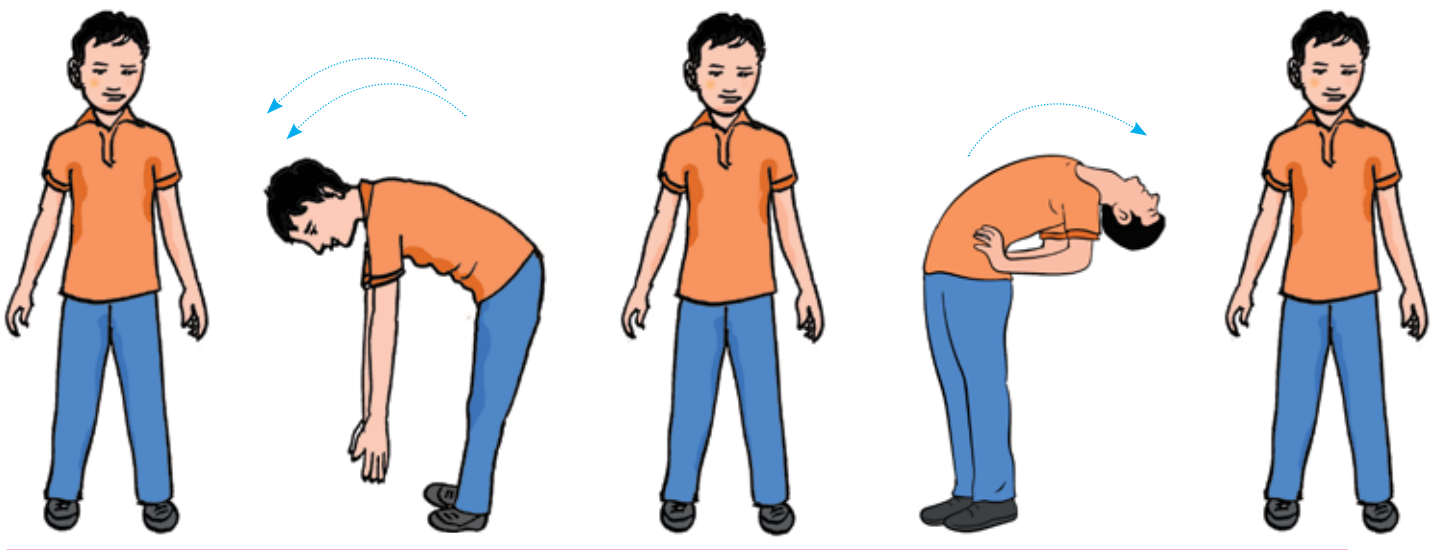


Fig. 6

Activity 7: Twisting Exercise

Stand at attention position. Stretch feet sideways. Rotate body slowly from left to right and slowly stretch arms above the head. Rotate body lightly from right to left and follow the above activity.

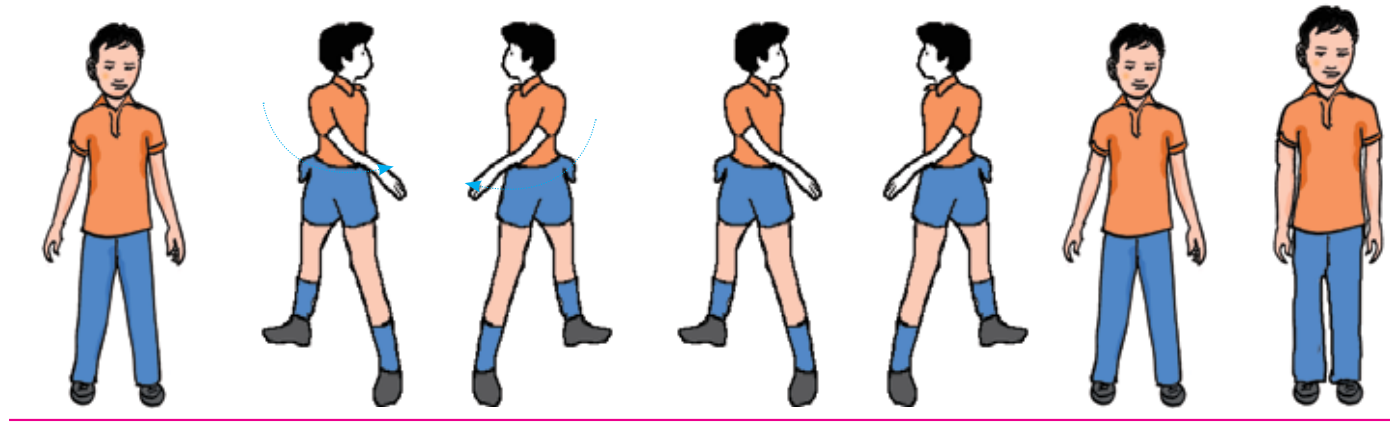


Fig. 7

Activity 8: Stretching Exercise

Stand at attention position. Stretch your feet sideways and touch both shoulders with fingers, bend elbows. Raise heels, stretch arms above the head and look towards the sky. Lower the heels and repeat the action. Come back to the attention position again.

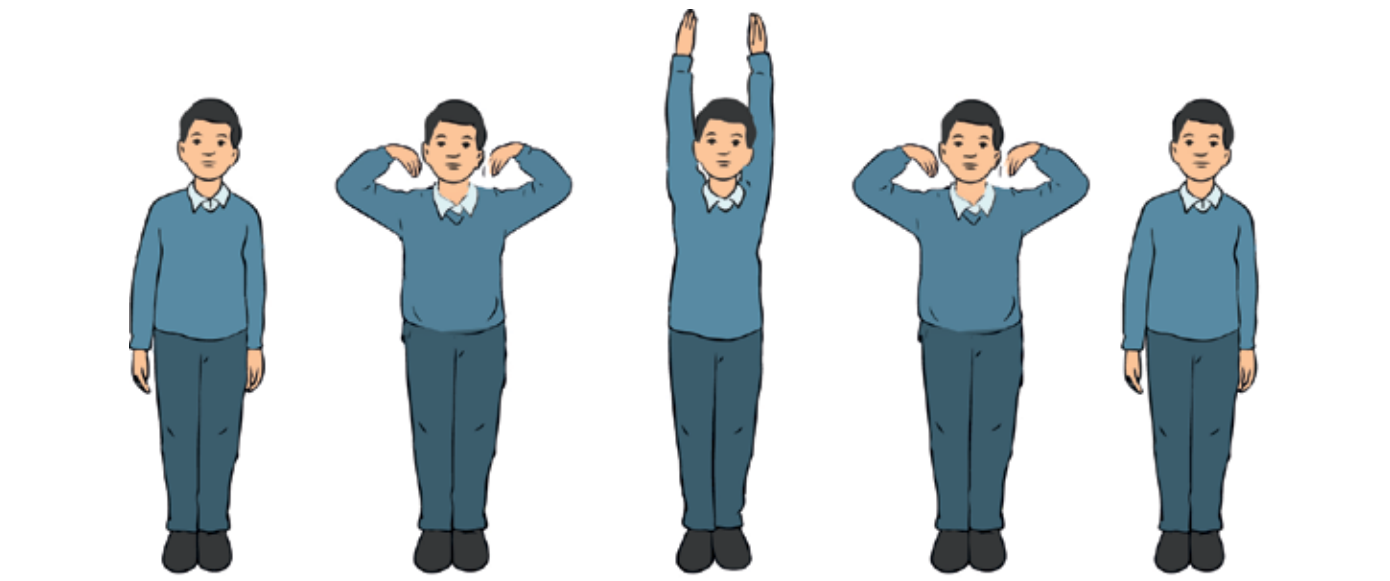


Fig. 8

Activity 9: Bending Exercise



Fig. 9

Stand in attention position. Spread both feet sideways. Bend body to the left side to touch the left toe by stretching arms together. Stand straight with spread legs. Push both arms straight back and stretch body. Bend body to the right side to touch the right toe by extending arms together. Repeat the activity and finally stand erect. Move and raise both arms to the left side, up to the shoulder level. Place right side up to the shoulder level extending together and return to attention position.

Activity 10: Body Movement Exercise



Fig. 10

Stand straight and spread feet little apart. Keep both arms

extended along the body. Rotate body from the left side making a circle in the air. Keep both arms extending while rotating of the body. Raise both your extended arms upward while rotating the body from left side and then from right side.



Note to the Teacher

Make your students perform all the above physical training and students should follow your command and do it correctly. Thus, P.T. also can be done for warm-up exercises.

Glossary

physical	:	relating to the body
training	:	the action of teaching a person or animal
stretch	:	extend one's body or parts
waist	:	the part of the human body below ribs and above hips
extending	:	able to be lengthened or spread out
apart	:	separated by a specified distance



Exercise

Answer these questions.

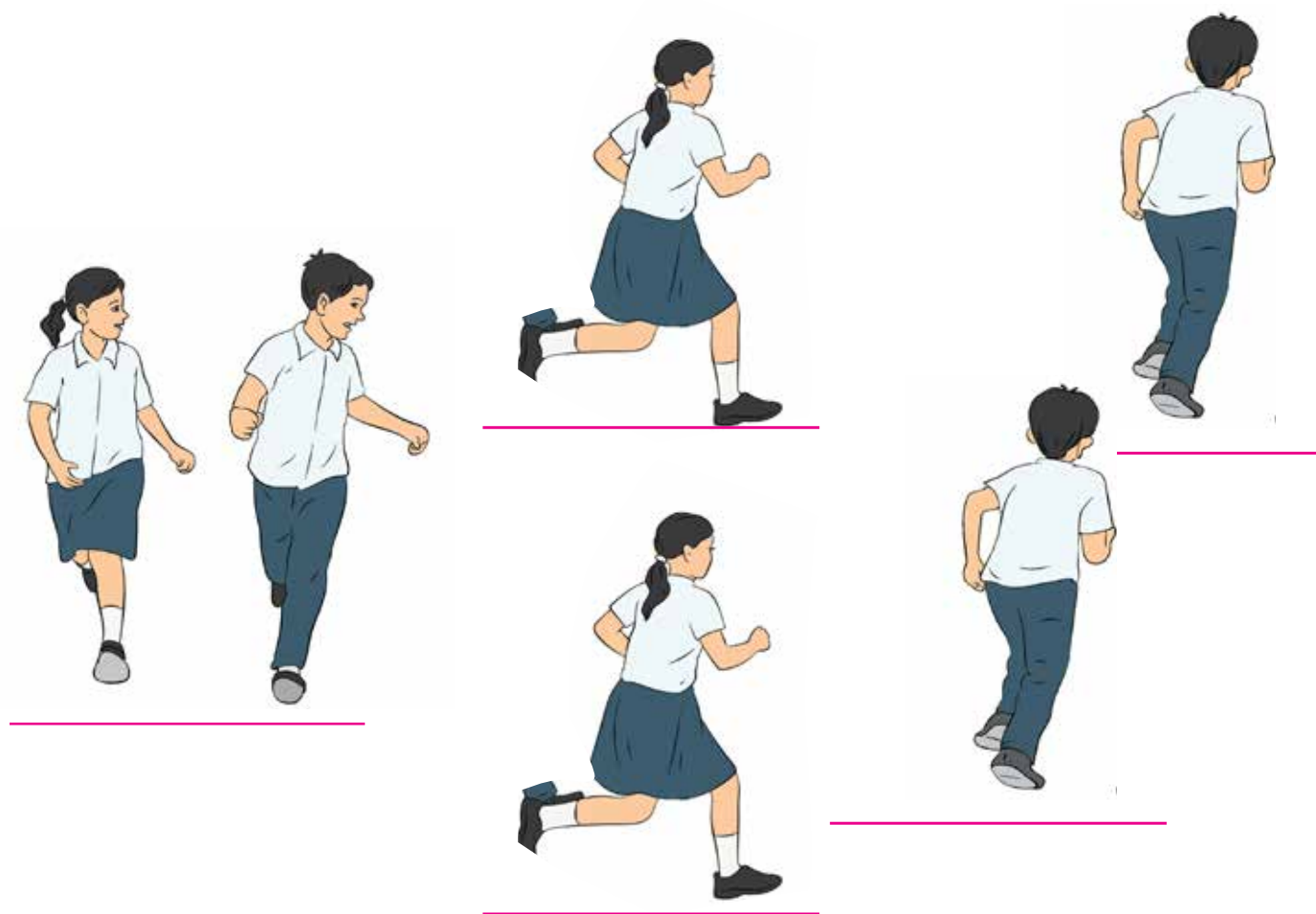
1. What is physical training (P.T.)?
2. How will you do the exercise as shown in activity 1?
3. How will you do the exercise as shown in activity 5?
4. Why is P.T. important for us?



SIMPLE GAMES

The games which are played easily with simple rules are known as simple games. Simple games are played in different ways.

Pair Chasing



First of all, pair should be made by holding the hands of two students. This is played in a fixed boundary. Here, one of the pairs is chaser and other pairs are scattered on the ground without breaking pairs. If a pair of players is touched by the chaser pair, they become the new chaser pair. The pair which remains untouched till last will be the winner.



Chain Chasing

Two students make a chain by holding hands together. The chain forming students run after other students to touch them. Students being touched by the chaser should come to join the chain and start chasing others. The chasers are not allowed to break the chain. The last student left untouched is the winner of the game.



Note to the Teacher

Make a boundary for this game. Warm up exercise is needed before playing simple games. Students should play games in the presence of a teacher.

Glossary

rules	: understood regulations
chasing	: pursue in order to catch up with
boundary	: a line which marks the limits of an area
winner	: a person or things that wins something
chain	: a sequence of items of the same type forming a line



Exercise

Answer these questions.

1. What are simple games?
2. What are some simple games which are played in Nepal?
3. Why are some simple rules necessary?
4. How is pair chasing game played?
5. How is chain chasing game played?



LOCAL GAMES

Games which are played in our localities with some rules are known as local games. Rules of these local games vary from place to place.

Gatta Game

We can see this game is played by girls in the villages. Here, five small stones are used. Girls pick up the stones from the ground and hold them in the palm of their hands.



Ghyai-Kasa

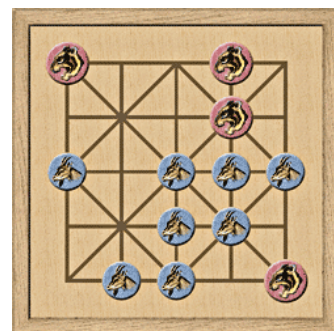
This game is played by using a flat stone in a rectangular space with many compartments. A player should push a flat stone using only one leg continuously forward in different compartments.



Baghchal

It is played between two players. It can be played on a wooden board or floor or on a flat stone.

It consists of four tigers (*baghs*) and twenty goats (*bakhras*). Two different objects are selected for the tiger and the goat. Four tigers are at the four corners and goats are at the intersection of the lines. Goat start to move at the crossing lines and tigers hunt the goat by jumping over it. The goats are moved to block the tigers.



Chungi

A small ball of rubber bands are used to play this game. Ball is balanced by kicking with the feet. Both feet can be used but not the hands. A player counts the number of times the chungi bounces with feet and keep it up in the air.



Dandibiyo

It is a popular and traditional game of Nepal. Game is played in two groups. Two sticks are used. The dandi is long and the biyo is a short stick. Dandi is used to hit the biyo. Each group hits the biyo with the dandi and counts the times they hit the biyo with the dandi.

Another group of players are allowed to block the biyo. If they catch the biyo or hit dandi with it the player is no longer in the game. Any group who reaches final number first are declared the winner.



Note to the Teacher

Teacher should encourage students to play other local games of that locality as well. Make students aware about the possible accidents while playing simple games. Warm up exercise is needed before playing local games. Students should play local games only in the presence of a teacher.

Glossary

local	: relating or restricted to a particular area
palm	: the inside part of hand from wrist to the base of fingers
intersection	: a point or line common to lines
traditional	: existing in or long established



Exercise



Answer these questions.

1. What are local games?
2. Why are local games popular?
3. Why cannot we see people playing local games in cities?
4. How is gatta game played?
5. How many tigers and goats are used in baghchal game?
6. How is baghchal played?





UNIT 25

ACTING GAMES

The games which are played by imitating the sound or the work of people or animals are known as acting games. Acting games help the students to remove shyness and develop self confidence. Here, we can copy the jumping action of different animals.



jumping like a rabbit



jumping like a frog



walking like a tortoise



walking like a duck



Note to the Teacher

Help students to several acting games.

Glossary

acting	: the art of performing roles
imitating	: take or follow as a model or copy
confidence	: the feeling or belief



Exercise

1. What are acting games?
2. How are acting games played?

STORY GAMES

Games which are played according to the story by doing acting of each member are known as story games. We can perform different types of activities according to story with the movement of body and some expressions.

Read the story below and do acting accordingly:

Activity 1

A rat was walking around with “chi-chi” sound. Suddenly, a cat appeared with “meow” sound. Then, the rat stopped producing sound “chi- chi”.



Activity 2

Mother was hanging wet clothes. Sister Sangita was also washing clothes near a tap. Sita was bringing some grass from the field and suddenly a jackal produces sound “hueaa- hueaa”, Sangita and Sita ran away towards their homes due to the sound of the jackal.



Activity 3

Rampyari was washing clothes near the well. With the help of a small bucket, she was pulling water from the well and poured in an empty tub. After washing clothes, she hanged on a rope to dry.



Note to the Teacher

Give chance to each student to take part in the story games. Warm up exercise is needed before playing these games. Make a good environment to play story games.

Glossary

perform	: carry out
expression	: the action of making known one's thoughts or feelings
suddenly	: quickly and unexpectedly
appeared	: come into sight or become visible
bucket	: a cylindrical open container with a handle



Exercise

Answer these questions:

1. What do you understand by story games?
2. How can you play story games?
3. Name some of the story games.



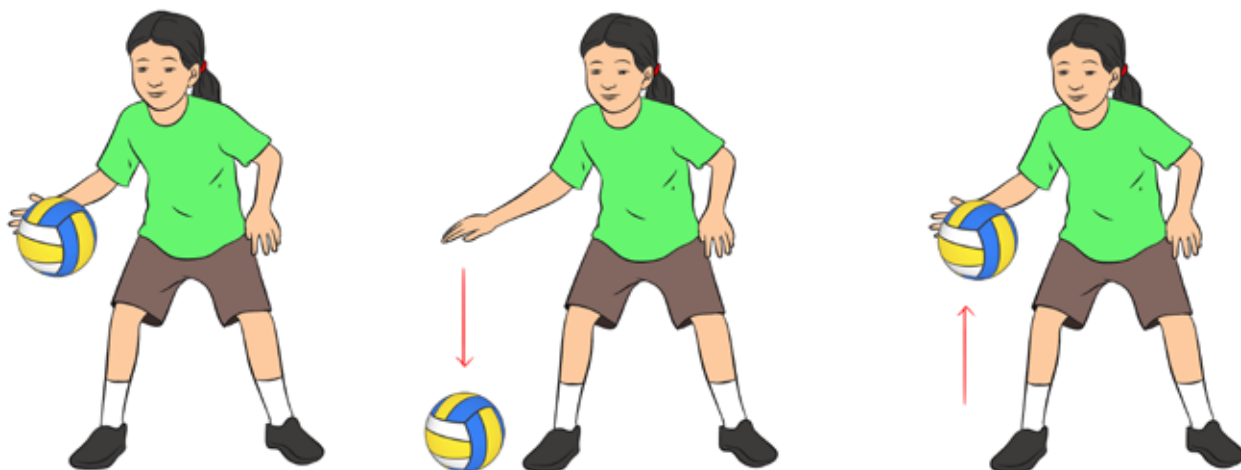
BALL GAMES

Ball games are played by different ways. Ball games make us to do many physical exercises and give us lots of entertainment. Bouncing, throwing and catching ball are some techniques of ball games.

Activity 1

Both hands can be used for dribbling a ball. In dribbling, the ball is sent towards the ground and it bounces. We can also press the ball with one hand by spreading fingers.

Activity 2



Dribbling can be done by using one hand. Take a ball in hand and send it towards the ground.

Activity 3

We play ball game by throwing a ball with one hand or both hands. We can also throw the ball over arms or under arms and forward or backward.



Activity 4

We can use our legs to pass the ball. This is done continuously by passing a ball with each other.



Read and Play

- Stand inside a circle and do dribbling and catching a ball.
- All your friends stand in a line and do dribbling one by one.
- Make a circle by standing and one of the students should go in the centre to do dribbling of a ball using leg.



Note to the Teacher

Ball games should be played in the presence of a teacher only. Give good instruction to your students and make each student participate. Do not forget to do warm up exercise before you let the students play ball games.

Glossary

bouncing : moving up or away after hitting a surface

dribbling : taking forwards with slight touches of the feet or stick by continuous bouncing



Exercise

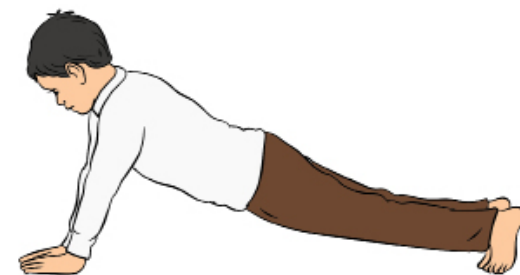
- What are ball games?
- Why is warm up exercise needed before playing ball games?
- Name some ball games.
- What is dribbling?

GYMNASTICS AND BALANCING BODY

Gymnastics helps our bodies to become more flexible. Exercise of gymnastics makes our bodies balance.

Activity 1 : Hands Balance

We can balance on the hands while doing push-ups. Keep legs and hands straight.



Activity 2 : Legs Spreading

Spread both legs and hold the feet with both hands. We can jump over the bending of body of our friend.



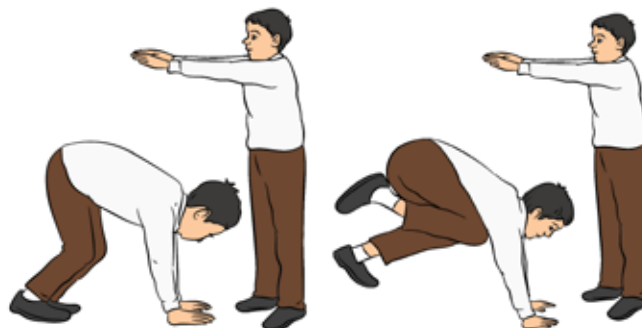
Activity 3 : Body Balance

Balance body by stretching legs and standing on one leg. Keep hands either horizontal or in an upward position.



Activity 4 : Half-hand Stand

Sit and bend body towards the ground. Keep both palms of both hands on the ground, then lift legs.



Activity 5 : Box Cartwheel

Practise doing box cartwheel at a low height. A box should be fixed on the ground firmly.



Activity 6 : Cartwheel

Cartwheel can be done by bending body in the left side and rotate body as shown in the pictures.



Note to the Teacher

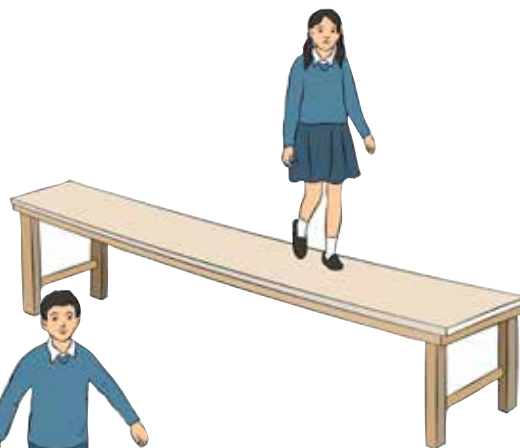
Help students to play gymnastics very carefully; tell them about the possible accidents and take precautions.

Balancing Body

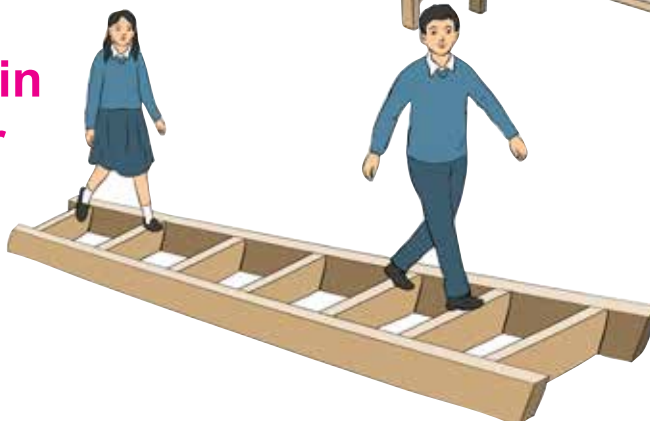
Walking in a straight position even in a difficult situation is known as balancing body. This activity helps our body to balance and walk with perfection.

Activity 1 : Balance in a Plank

We should take a wooden bench of low height. Step on the bench and walk by spreading hands in the sides.



Activity 2 : Balance in the Steps of Ladder

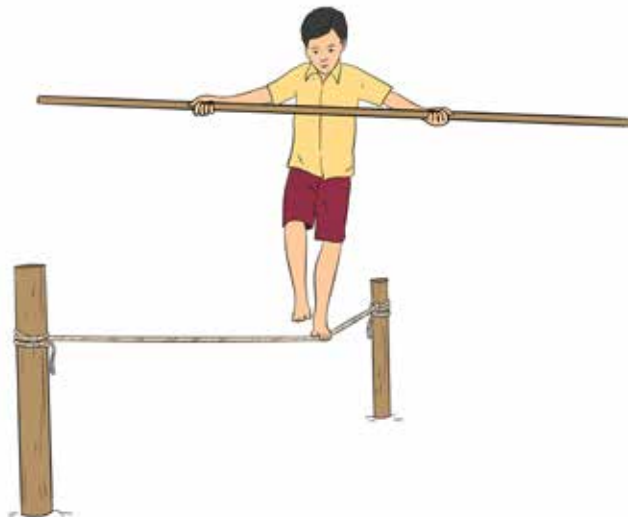


We should practise balancing our body using small steps. Lay a ladder flat on the ground and walk on the steps as well as in between the struts of the ladder.

Activity 3 :

Balance in a Rope

Tie a thick rope firmly to two wooden poles at a low height. Hold a long stick in hands, step onto the rope and walk slowly along it. Stick helps to balance body while walking on the rope.



Note to the Teacher

Make your students aware about the possible accidents and help them to take precautions. All the activities should be done in the presence of a teacher only.

Glossary

flexible	:	capable of bending easily without breaking
gymnastics	:	physical exercises and activities performed inside
horizontal	:	parallel to the ground or to the bottom or top of something
cartwheel	:	skillful movement like a wheel turning
rotate	:	move or cause to move in a circle round
ladder	:	a piece of equipment consisting of a series of bars or steps between two upright lengths of wood, metal or rope, used for climbing up or down something



Exercise

Answer all the questions.

1. What is gymnastics?
2. What is balancing body?
3. How can you stand on hand?
4. Is it possible for you to walk on rope?
5. Can you balance body on ladder? How?



A. Fill in the blanks.

(1x10=10)

1. Plants breathe through.....
2. Carnivores haveteeth.
3. Frogs are seen during the.....season.
4. Fruits consist of
5. Donkey carriesfor us.
6.should be made from decaying wastes.
7. Man is responsible for making..... dirty.
8. Salt is.....in water.
9. Plastic isin water.
10. Hydroelectricity is produced due to thewater.

B. Write 'T for true and 'F' for false statements.

(1x10=10)

1. Glass is not a transparent object. ☐
2. Sugar dissolves in water. ☐
3. Air helps an aeroplane to fly in the sky. ☐
4. Dew drops are seen during winter nights. ☐
5. Rock is the hardest part of the earth on surface. ☐
6. Graphite is white in colour. ☐
7. Letter is an example of two-way communication. ☐
8. Cold storages keep foods very warm. ☐
9. Long nails are good for health. ☐
10. It is easy to work again after taking rest. ☐



C. Match the followings:

(2x5=10)

Protective food	chicken, meat, beans
Energy-giving food	spoils foods
Germ	vegetables, fruits
Body-building food	eggs
Hens and ducks	wheat, rice, maize

D. Answer the following questions.

(6x10=60)

1. Can you balance body on ladder? How?
2. How is pair chasing game played?
3. How can swinging be done?
4. How can we walk in different ways?
5. How can you discourage people from taking tobacco?
6. What should you do if your friend gets hurt?
7. What are the roles of a nurse in hospitals or health posts?
8. What do you understand by body-building and energy-giving foods?
9. Name three benefits from animals.
10. Name any three plants that grow in hills and cold regions.

E. Draw a diagram of a plant with good labeling of its parts.

(5+1x5=10)

