Interactive SCIENCE 3

FREE

MULTIMEDIA CD WITH ANIMATIONS

As Per New Continuous and Comprehensive Evaluation (CCE) Scheme

AMANDA IMPRINT
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Interactive Science 3

Jhara Roy

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Key features

This book provides ample material needed for learning various aspects of science. This includes Study Tools, Assessment and Fun Activities.

Study Tools

Set of well-thought tools which aid the students in absorbing and retaining the vital concepts of science.

Chapter-starting Illustration

A single page, in cartoon format, providing a fun element to the learning process, at the start of each chapter, which provides an idea of the topic, about to be taught in the chapter.

Amazing Fact

Surprising facts related to the topics are discussed.

Fun to Learn

Facts that add to the general knowledge of the students.

Word Bee

A small exercise at the end of each chapter, which acts as a vocabulary builder, by asking the students to read and write bold words.

Now I Know

Encapsulates the basic idea of the topic taught in the lesson.

Assessment

This assessment reinforces learning, usually through a variety of pen-and-paper tests, such as MCQs, Descriptive, etc.

Conceptual Canvass

A set of short questions in the middle of the chapter for self-assessment and revision.

Exercises

A set of questions, including MCQs, Fill in the Blanks, Oral Questions, Match the Columns, Short Questions, Long Questions, so as to test the grasping ability of the students.

HOTS Questions

Questions that invoke the thinking skills of the students, including problem solving, decision making and creative thinking, i.e., applying the learned concepts to practical problem solving.

Fun Activities

Encompass activities, life skills and fun time.

Activities

Aid in learning of the students by encouraging them to indulge in practical activities using material that is easily available, and role play, etc.

Life Skills

Give directions for activities that will help the students to become successful in living a productive life.

Subject Link

Asks short questions to the students which are related to the topic taught in the chapter.

Fun Time

Suggests for activities, inside and outside the home, which provide a practical edge to theoretical learning.

Preface

Science is a fascinating subject which is omnipresent in the world we live in, as it intrudes into the cause and effect, besides the reasons. Thus, it is of extreme importance to initiate a scientific temperament into children as early as possible. Science becomes fun and interesting to a child when it is taught in an interactive manner and is related to his/her surroundings.

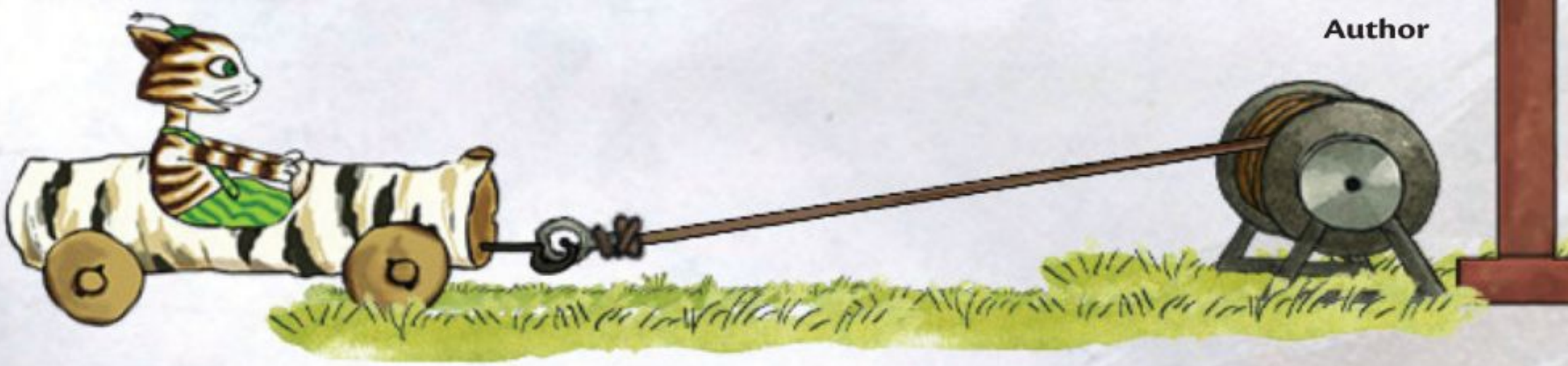
Children are naturally curious and a healthy scientific inquiry forms a part of their behaviour, right from their birth. They gain knowledge about themselves and the world around them by observing and experimenting. This natural spark should be kept alive and encouraged to blossom.

The present edition of **Interactive Science** is a set of eight books, which have been divided into two sub-groups— the first one consists of books for classes 1 to 5, and the second one consists of books for classes 6, 7 and 8. The series confirms to the vision of **National Curriculum Framework, 2005**, which states that *"the child should be engaged in joyfully exploring the world around him and harmonizing with it"*. Thus, the series is designed according to the new NCERT upper primary syllabus, 2005, as a live body of knowledge rather than an overload of information. The books emphasizes meaningful learning for the overall development of children rather than learning by rote. **Interactive Science** introduces young students to the world of science in a simple and child-friendly language. The books are graded to the cognitive levels of the students and comprehensively cover areas such as Study Tools, Assessment and Fun Activities. These features focus the students' attention on the everyday science-related activities, making them more aware of their immediate environment.

Special attention has been paid to develop analytical skills by including Higher Order Thinking Skills (HOTS) Questions in the exercises at the end of each chapter. These questions encourage the students to gain conceptual clarity about the effects and applications of scientific facts, besides encouraging them to use those facts for solving everyday problems.

This being the first edition of the series, some inadvertent mistakes might have crept in. The editor and the publisher tender unconditional apology for the same. Constructive criticism and suggestions from our esteemed readers are most welcome and shall be incorporated in the subsequent editions.

Author



Contents

1 Living and Non-living Things

Let's Learn More About

- What are living and non-living things?
- Characteristics of living and non-living things

If you look around, you will find various objects. Some of them are living things while others are non-living.

A few living and non-living things are given below. Use the code to spell their names and write L for living and NL for non-living things.

O=□, L=✖, P=★, A=➔, I= ●, C= ◂, R=Δ, K=▸, D=■, N=◊, S=☆, T=✪, B=⏩, E= ✚

	Name	L/NL
● ◂ ✚	**ICE**	**NL**
➔ ◊ ✪		
Δ □ ◂ ▸		
☆ □ ● ✖		
★ ✖ ➔ ◊ ✪		
✖ ➔ ★ ✪ □ ★		
✪ Δ ✚ ✚		

Some of the living or non-living things are found in nature. They are not made by man. They are called **natural things**. For example, air, water, soil, snow, cloud, rocks and sand are **non-living natural things**.

Objects like car, train, buildings, soap and glass are man-made. These are **non-living things**. They are not found in nature. So they are called **man-made non-living things**.


Cloud


Plant


Water

Natural things


Car


Train


Building

Man-made things

Plants, animals, human beings and microbes are **living things**.

Characteristics of living and non-living things

Living things are alive. They grow, breathe, move, react and reproduce.

Non-living things cannot grow, breathe, move, react and reproduce. They are not alive.

Let us learn more about them.




Living things

Living things grow

All living things grow.

A calf grows into a cow

A chick grows into a hen

A human baby grows into an adult

A mango seedling grows into a big mango tree

Non-living things do not grow.

A pen never grows into a bigger pen

A bottle does not grow into a bigger bottle

A car does not grow into a bigger car

A toy never grows into a bigger toy

Living things need food

All living things need food to grow.

Plants make their own food with the help of air, water and sunlight.

All animals need food. So they eat either plants or other animals.

We eat food because food gives us energy to do work.

Non-living things do not eat food.

A dog eating food

A lion eating flesh

A bird eating insect

A family at the dining table

CONCEPTUAL CANVASS

1. Name two natural things.
2. All natural things are living things. (True/False)
3. What does a kitten grow up into?
4. Write any two differences between a pencil and a butterfly.

Living things move

Most of the living things move. They can move on their own.

Birds fly in the air with the help of wings

Human beings walk or run for doing their work

Fishes swim in water

Elephants walk in search of food

Most plants do not move from one place to another. They move their leaves or petals. For example, a sunflower tilts towards the sun. The roots of a plant move towards the soil.

A sunflower tilts towards the sun

But non-living things do not move on its own.

Living things feel

All living things can feel.

Sometime or the other we all become happy or sad, we feel pain when we get hurt.

When your teacher praises you, you feel good

A cat mews when it sees fish or milk

A dog barks at a stranger

Plants can also feel changes around them. Leaves of a mimosa plant 'feel' a touch. Leaves of this plant close when touched. They also grow towards light.

Non-living things cannot feel.

Leaves of a mimosa plant close when touched

Living things breathe

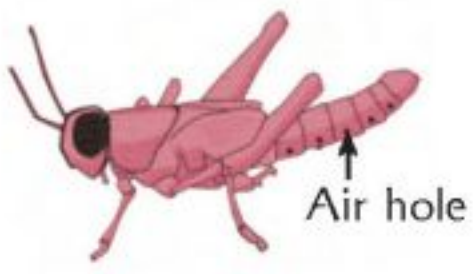
All living things breathe in air.

Fishes have gills to breathe.

Insects breathe through air holes on their bodies. Human beings breathe through their nose.

Plants exchange air through tiny holes on their leaves. These tiny holes are called **stomata**.

A fish breathes through gills



A grasshopper breathes through air holes

Plants breathe through stomata

Non-living things do not breathe.

Living things reproduce

A plant bears fruits. The seed inside a fruit grows into a baby plant.

A bird lays eggs. Baby birds hatch out of eggs.

A cow gives birth to a calf.

A woman gives birth to a baby.

So, only living things can reproduce.

A seed growing to a baby plant

A hen gives birth to a chick

A cow gives birth to a calf

A woman gives birth to a baby

Non-living things cannot reproduce.

Now you know that there are many differences between living and non-living things. Fill in the blanks given in the table:

LIVING THINGS	NON-LIVING THINGS
1. Living things grow.	1. Non-living things do not grow.
2. Living things need food.	2. Non-living things do not _____.
3. Living things _____.	3. Non-living things do not feel.
4. Living things breathe.	4. Non-living things do not _____.
5. Living things _____.	5. Non-living things do not move.
6. Living things _____.	6. Non-living things cannot reproduce.

Now I Know...

1. All things can be divided into living and non-living things.
2.

3. Non-living things cannot grow, breathe, move, feel or reproduce.

WORD BEE

Find bold words from the lesson, read them aloud and write them below.

_____ _____ _____ _____

_____ _____ _____ _____

_____ _____ _____ _____

_____ _____ _____ _____

_____ _____ _____ _____

EXERCISES

A. Tick (✔) the correct option.

1. Which of these can grow?
   (a) Rock (b) Calf (c) Table (d) Toy car
2. Animals that lay eggs to reproduce.
   (a) Birds (b) Whale (c) Horse (d) Giraffe
3. Thing which is man-made.
   (a) Tree (b) Mountain (c) Bus (d) Water
4. Thing that needs food.
   (a) Car (b) Elephant (c) Helicopter (d) Chair
5. Thing that can move but is not a living thing.
   (a) Cloud (b) Girl (c) Giraffe (d) Earthworm

B. Fill in the blanks with the words given in the brackets.

1. _____ is a plant that can move from one place to another. (Water lily/Water hyacinth)
2. A female dog gives birth to a _____. (calf/puppy)
3. A cockroach has _____ for breathing. (air holes/gills)
4. A _____ thing can reproduce. (living/non-living)
5. A man _____ pain when gets hurt. (feels/sees)

C. Match the following.

1. Cat	(a) Grains
2. Sunflower	(b) Stomata
3. Humans	(c) Kitten
4. Leaves	(d) Nose
5. Bird	(e) Sun

D. Answer the following questions in one word or a sentence.

1. Name a natural non-living thing.
2. What does a puppy grow into?
3. Name a man-made thing.
4. Name the breathing organ of a cockroach.
5. What happens when mimosa leaves are touched?

E. Answer the following questions in short.

1. Give two examples of movement in plants.
2. Why do animals move?
3. Things like a car, a bus or a train can move, but these are non-living things. Why?
4. What will happen if you do not give any food to your Barbie doll or Teddy?

F. Answer the following questions in detail.

1. Enlist at least five man-made materials.
2. Name the breathing organs of fish, cockroach and human being.
3. Identify the pictures, write their names and circle those which are non-living.

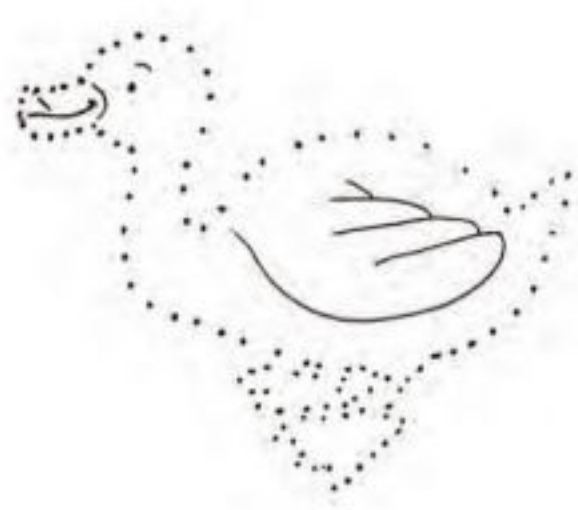



G. Oral questions.

1. Name any two non-living natural things.
2. Why do some animals kill other animals?
3. What does a calf grow into?
4. Name any two egg-laying animals.

ACTIVITY

Draw the pictures by joining the dotted lines and colour them and name them:

HOTS QUESTIONS

1. Andy wonders when he sees clouds in the sky. In the rainy season, they increase in size and volume. Then why are clouds not living things?

Funny riddles

(a) I have two wings
But I cannot fly
A man can help me to fly. Who am I?

(b) I have two wings
But I cannot fly
I lay the largest egg. Who am I?

2. Anil wonders how money plants grow when they do not have any flowers, fruits or seeds.

LIFE SKILLS

When your teachers or parents praise you, you feel good. If your friend hits you, you feel angry. So, never hurt animals because animals also can feel like us. Do care for stray animals. Give some food and water to them. If you have any pet or domestic animals like cow, buffalo pat them for sometime. They love it.

SUBJECT LINK

Raman went to a zoo. He saw 5 elephants, 2 lions, 3 peacocks, 2 cheetahs, 8 monkeys, 2 apes and 2 wolves. How many animals he saw?

FUN TIME

Head, Heart and Hand

Most plants do not move from one place to another. But they move their stems, leaves and roots. Perform this activity to show roots always grow downward towards the soil and stems grow up towards the sun.

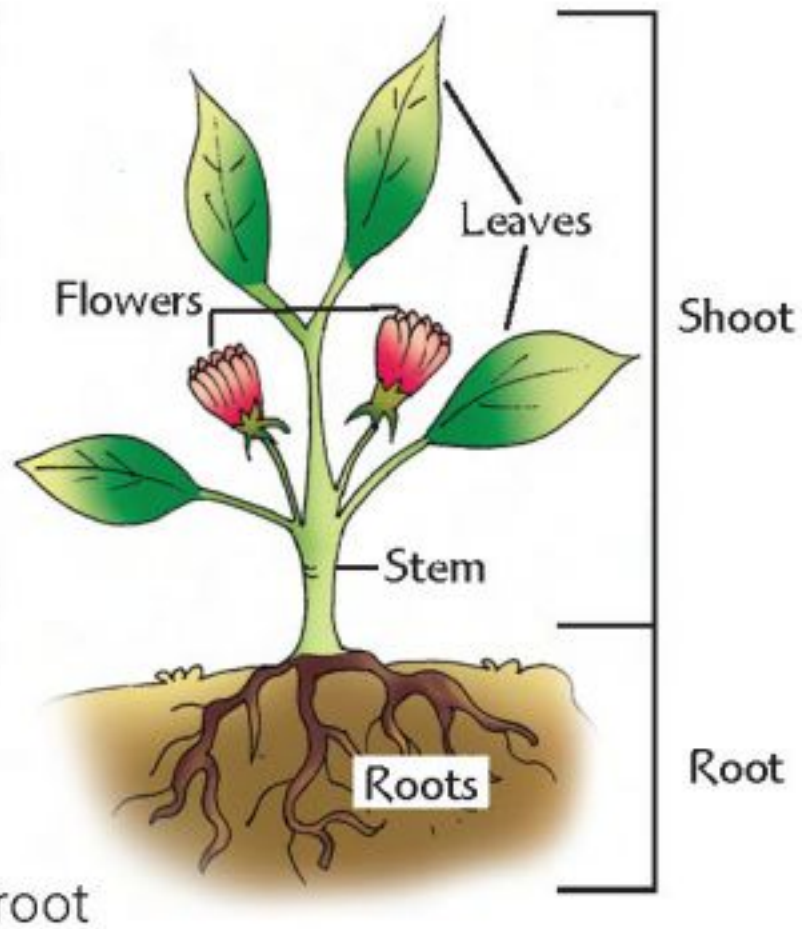
1. Take a potted plant and make a small hole at the base of the clay pot.
2. Keep the pot with the plant horizontally on a table near a window.
3. Everyday make it upright for 10 minutes and pour water. Then again keep it at the same horizontal position.
4. After a few days, you will be surprised to see the movements of the roots and the stems of the plant.
5. Write your observation in your activity record file.

2 Parts of a Plant

Let's Learn More About

- The root
- The shoot

In the previous chapter, you have learnt that plants are living things. They need air, water and sunlight to live and grow. Most plants have roots, stems, leaves and flowers. These are the parts of a plant. A plant has two main parts—the root and the shoot.



Parts of a plant

The root

The part of a plant which grows below the ground is called **root**. Roots are usually colourless.

Types of roots

There are mainly two types of roots—tap root and fibrous root.

Tap root

Some plants have a main root. It grows from the end of the stem. Many small roots arise from this main root. This main root is called **tap root**. Plants like carrot, mango, *tulsi* and rose have tap roots.


Tap root


Fibrous root

Fibrous root

In some plants many thread-like roots grow from the end of the stem. These are called **fibrous roots**. Plants like onion, garlic, rice and wheat have fibrous roots.

Functions of the roots

- Roots fix the plant in the soil.
- They absorb water and minerals from the soil.
- In some plants, roots store the extra food prepared by the plant. For example, carrot, radish, turnip, beetroot and sweet potato.

Carrot

Radish

Turnip

Beetroot

Roots of some plants store extra food

The shoot

The part of a plant which grows above the ground is called **shoot**. The shoot bears the stem, branches, leaves, buds, flowers and fruits.

The stem

The stem is the main part of the shoot. Branches, leaves, buds, flowers and fruits grow on the stem. The stem is soft in young plant, but hard and woody in older plants.

The main stem of a tree is called **trunk**. It holds the tree upright. Branches and leaves form an umbrella-like crown on the trunk. For example, neem, mango and banyan.

Luffa plant

Money plant

In some plants, the stems are weak. These plants cannot stand erect. They need some support to climb up. These plants are called **climbers**. For example, betel leaf (*paan*), luffa (*torai*) and money plant.

Some plants have really weak stems. They grow and spread on the ground. They are called **creepers**. For example, watermelon and pumpkin.

Watermelon

Pumpkin

Functions of the stem

- The stem supports branches which bear leaves, buds, flowers and fruits.
- It transports water and minerals from the roots to the leaves, flowers and fruits.

- The stem carries food prepared in the leaves to the roots and to all parts of the plant.
- In many plants, the stems store extra food and become swollen. We eat some of these stems. For example, potato, ginger and sugarcane.

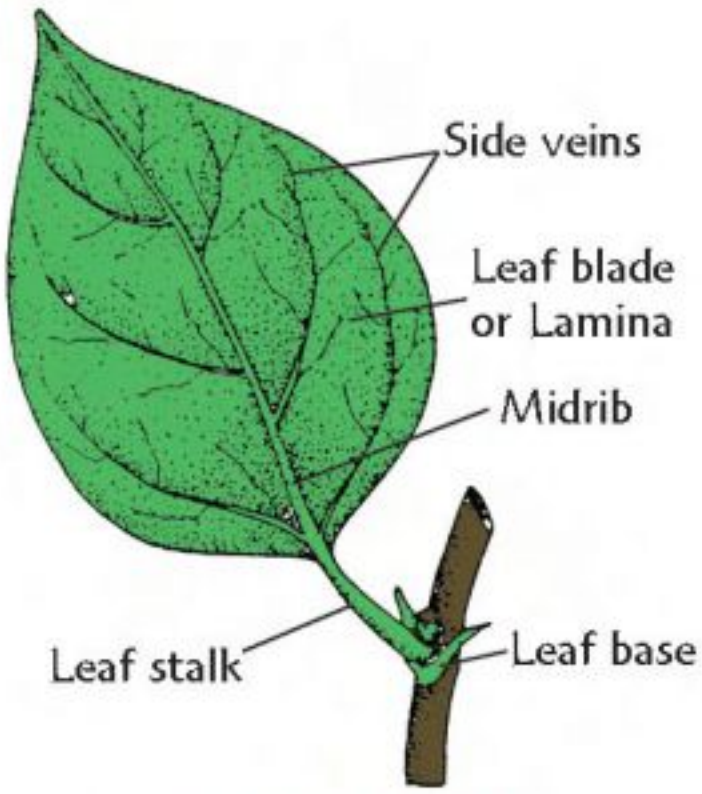
Stems of some plants store extra food

The leaf

The stems bear leaves. Leaves are green, thin, flat and small or big. The green colour of the leaf is due to chlorophyll.

A leaf has the following parts:

- **Leaf base:** Leaf base is the part of a leaf which is attached to the stem.
- **Leaf stalk:** Leaf stalk is the part of a leaf which joins the lamina to the leaf base.
- **Leaf blade or Lamina:** Lamina is the flat, thin, green part of a leaf.
- A main vein runs through the middle of the lamina. It is called **midrib**. Many **side veins** arise from the midrib.



Parts of a leaf

Functions of the leaf

- A green leaf makes food for the plant with the help of air, water, sunlight and chlorophyll. So, a leaf is called the kitchen or the food factory of a plant.
- Air and water vapour go in and out of the leaf. Thus, leaf helps the plant to breathe.
- In some plants, leaves store food. We eat these leaves as green vegetables. For example, spinach, cabbage, lettuce, mint and coriander.


Spinach


Cabbage


Mint


Coriander

Leaves of some plants store extra food

CONCEPTUAL CANVASS

1. Name a plant that has fibrous root.
2. Write three functions of the stem.
3. Why is a leaf called kitchen of the plant?

AMAZING FACT

There are over 2,00,000 identified plant species and the list is growing all the time.

The flower

Stems bear flowers. Flowers are colourful and pretty. They make the plant look beautiful. They usually give out a sweet smell.


Water lily


Hibiscus


Water hyacinth


Rose


Jasmine

Functions of a flower

- Flowers turn into fruits. Fruits bear seeds. Seeds grow into new plants. Thus, flowers help in reproduction.
- Flowers give off a nice smell. So, flowers are used to decorate our houses and gardens.


Flower turns into fruit

- We eat some flowers as vegetable, such as cauliflower and broccoli.


Cauliflower


Broccoli

Flowers of some plants are used as vegetables

Fruits and seeds

Flowers turn into fruits. Fruits have seeds inside them. Some fruits such as mango and coconut have only one seed. Other fruits such as papaya and guava have many seeds. The fruit protects the seeds.

Papaya has many seeds

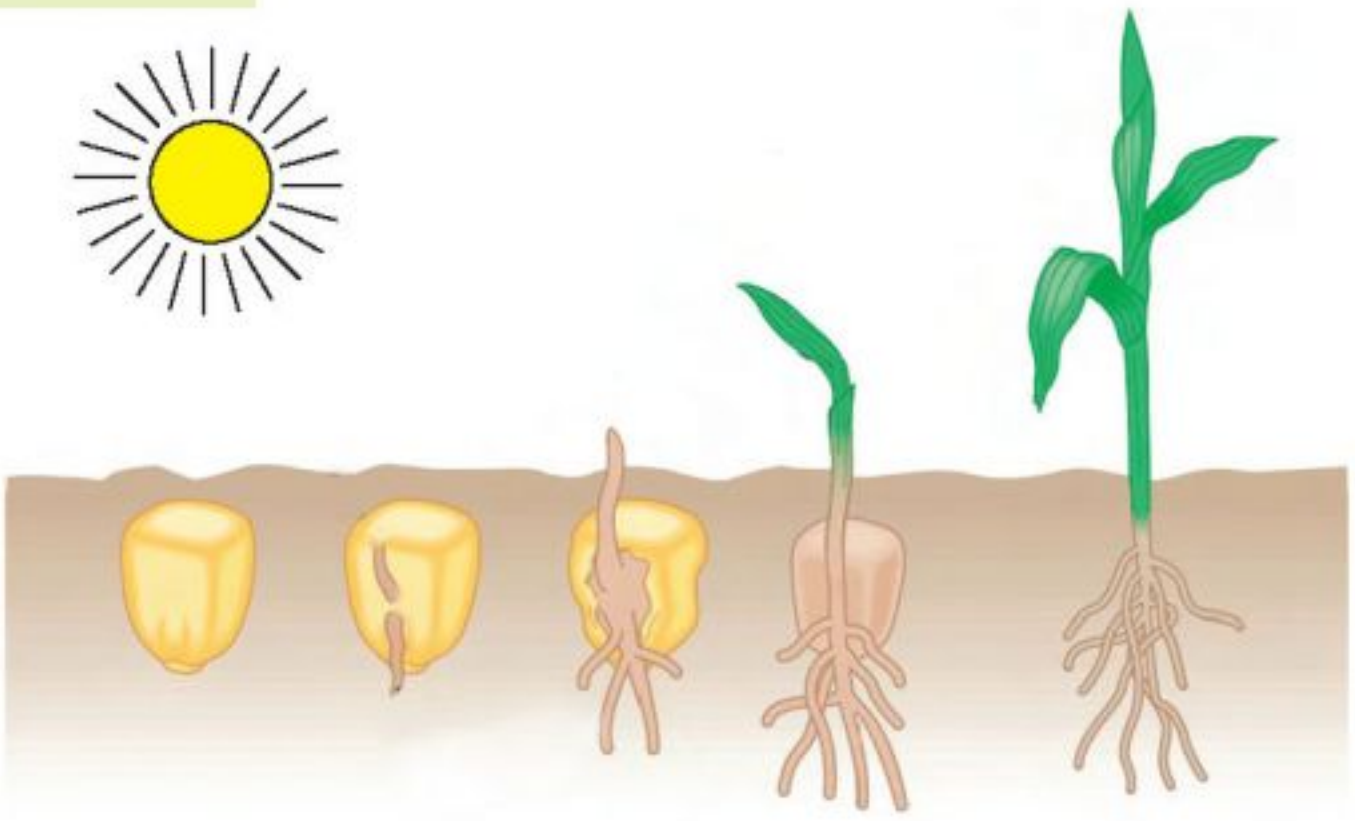
Mango has one seed

Seeds grow into baby plants. Every seed contains a tiny baby plant inside it.

AMAZING FACT

A banana does not have any seed.

When the seed gets air, water and sunlight or warmth, the tiny baby plant begins to grow. This is called **seed germination**. Most plants reproduce through seeds.



Germination of a maize (corn) seed

Now I Know...

1.

2. The flower turns into the fruit. The fruit has seeds inside it.
3. A seed grows into a plant.

WORD BEE

Find bold words from the lesson, read them aloud and write them below.

_____ _____ _____ _____

_____ _____ _____ _____

_____ _____ _____ _____

_____ _____ _____ _____

EXERCISES

A. Tick (✔) the correct option.

1. The part of the plant that helps to fix it in the soil.
   (a) Stem (b) Flower (c) Root (d) Fruit
2. The kitchen of the plant.
   (a) Leaf (b) Flower (c) Fruit (d) Root
3. The part of the plant that helps in breathing.
   (a) Fruit (b) Seed (c) Leaf (d) None of these
4. The leaf that we eat as a green vegetable.
   (a) Spinach (b) Brinjal (c) Bitter gourd (d) Potato
5. The plant that has fibrous roots.
   (a) Garlic (b) Jackfruit (c) Banyan (d) Peepal

B. Fill in the blanks with the words given in the brackets.

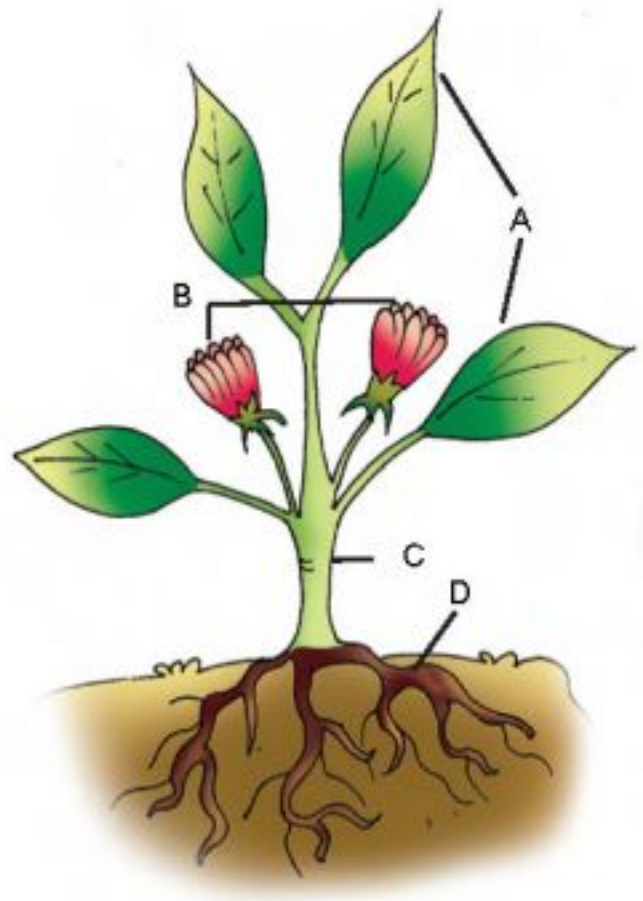
1. Roots absorb _____ and _____ from the soil. (water, minerals/food, soil)
2. The part of the plant that grows above the ground is called _____ . (root/shoot)
3. A _____ joins the lamina to the leaf base. (leaf stalk/midrib)
4. The green colour of the leaf is due to _____ . (chlorophyll/minerals)
5. Fruits bear _____ that grow into new plants. (seeds/roots)

C. Match the following.

1. Carrot	(a) Germination
2. Flower	(b) Fibrous root
3. Garlic plant	(c) Kitchen of the plant
4. Sugarcane	(d) Reproduction
5. Leaf	(e) Tap root
6. Seed	(f) Stem

D. Answer the following questions in one word or a sentence.

1. What is a lamina?
2. Which part of a plant bears flowers?
3. Name a fruit that contains many seeds.
4. What are the two main parts of a plant?
5. Which part of the plant protects the seed?



E. Answer the following questions in short.

1. Write any two functions of a leaf.
2. What is seed germination?
3. What is tap root?
4. Name two plants that have weak stems.

F. Answer the following questions in detail.

1. Observe the diagram and name A, B, C, and D.
2. Write any three functions of a flower.

ACTIVITY

1. Divide the students of your class into six teams. Write Team A, Team B, Team C, Team D, Team E and Team F on 6″ × 3″ cards. Now, place cards at their respective positions, i.e., team A's card on team A's table, team B's card on team B's table and so on.
2. Make another six cards. Write ROOT on one card, STEM on the second, LEAF on the third and FLOWER, FRUIT, SEED likewise on the other three cards.
3. Appoint one student as a time keeper.
4. Request your teacher to be the judge.
5. Ask the team leaders to pick up their cards. Give them five minutes to discuss about their topic.
6. Now ask them to speak on each topic continuously without any break for one minute.
7. Your teacher will give points on the basis of the information given out by the teams.
8. Display the list of the students of the winning team on the bulletin board of your class.

HOTS QUESTIONS

1. Neeta was helping her mother in the kitchen. She was peeling potatoes. She found some part of one or two potatoes to be green in colour. She wondered and asked her mother! What did Neeta's mother tell her as the answer?
2. While visiting Assam with his family, Jigs found bitter gourd plants growing in farms. All the stems of the plants were twining around some tall sticks. But the watermelons were growing on the ground, why?

LIFE SKILLS

Take a few seeds. Soak them in water. You will find most of them sink in water but some of them will float. The floating seeds are not healthy seeds. Throw them out. These seeds will not germinate. Now grow the soaked seeds in a clay pot with soil to see the germination of seeds. Write and draw each step of your observation.

SUBJECT LINK

Create a name chain with names of fruits and vegetables. Make this list 20 words long.

Mint Turnip Pea

FUN TIME

Head, Heart and Hand

Magic Flower

1. Take a white flower like chrysanthemum, an empty glass, water and blue ink.
2. Fill the glass with water and blue ink.
3. Ask your parent or teacher to cut the end of stem about 1 cm.
4. Place the flower in the glass.
5. Leave it undisturbed for few hours.
6. You will observe the change of colour of flower from white to blue. The stem absorbs water and sends it upwards towards the flower.
7. Now, write in your notebook, what you observed in the suggested format.

Magic Flower

1. Name of flower: .
2. Colour of flower (before): .
3. Colour of ink: _____.
4. Left the flower in glass for hours.
5. Change of colour from _____ to _____.
6. Paste the flower like this one original and second dipped in coloured ink of your choice.

3 Green Talk

In a forest all animals live happily. Sometimes they speak to each other and to the trees. Let's hear their conversation.

Hi! How old are you Mrs Douglas Fir?

Hello! Don't you know that you shouldn't ask the age of a lady?

Oops! I'm sorry.

Ok, Ok, better let me tell you how tall I am. I am 90 metres tall!

Really? Are you that tall?

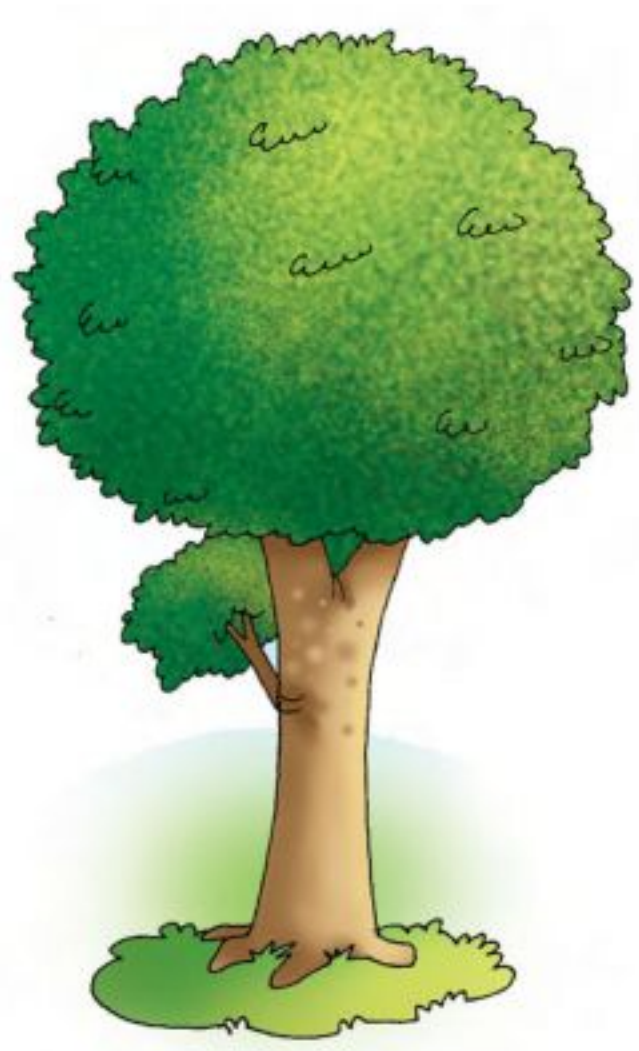
Yes I am. But do you know that Mr Founder's Tree in Humboldt National Park in California, US, is even taller? He stands 110 metres!

Let's Learn More About

- Why plants are important to us.
- What we should do to protect plants.
- What plants do for us and animals.

In the heart of a seed,
Buries deep, so deep,
A dear little plant,
That lays fast asleep.
'Wake', said the sunshine
'and creep up to the light'.
'Wake', said the voice
Of the raindrops bright.
The little plant heard,
And it rose to see,
What the wonderful
Outside world might be.

— Kate Louise Brown



Imagine the plant waking up and coming out of its bed with a big smile. Now it has to do so much for the world. It needs to supply food to us. It has to give oxygen to us for breathing. It has to provide shelter to so many creatures.

Imagine what if the plant did not wake up? It remained asleep forever thinking, if I go out, people will cut me into pieces.

What would happen if there were no plants on the earth?

From where would we get food? Plants make their own food. All animals and human beings depend on plants for their food. Plants not only give food, but also provide fibre for our clothes, wood for our shelter. They provide shade to the travellers and make the air clean and pure. Branches and wood are used as fuel. Plants are used for making medicines.

So they are our green friends. We must, therefore, take care of plants.

How can we take care of plants?

We should plant more trees around our neighbourhood.

We should not cut or fell trees.

If a tree has to be cut, we should plant ten more saplings against felling of one tree.

We should maintain gardens and parks.

Look at the pictures and write how these children are taking care of their school garden.

Jim

Radha

Aruna

Manas

1. Jim: _____
2. Radha: _____
3. Aruna: _____
4. Manas: _____

CONCEPTUAL CANVASS

1. Name a living thing that can make its own food.
2. Why do we call plants our green friends?
3. We should plant more and more trees. (True /False)
4. How does a big roadside tree help a traveller?

FUN to Learn

- Horse can sleep both lying and standing up.
- Young sheep are known as lambs whereas young goats are known as kids.

Plants also provide shelter to animals. Wild animals are becoming homeless because we are destroying the forests. We should save forests to protect their homes.

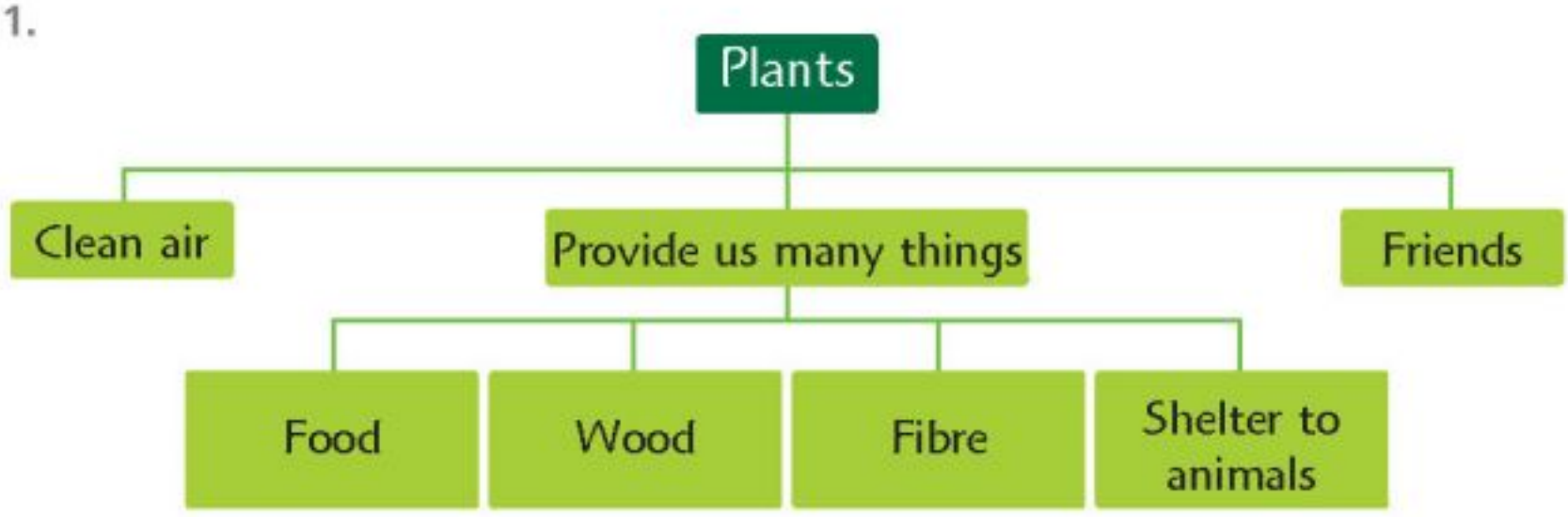
Animals are also our friends. They are useful for nature. We should take care of them. Animals provide us food, wool and leather. Some animals are used to carry load. Some other animals are used as good pets. The dung of cattle is used as fuel and manure. Some animals are used for our entertainment. Bears and monkeys can be trained to show tricks.

Some useful animals

So, we should take care of animals too. Wild animals are being hunted for our selfish needs. We should never kill animals. Never throw stones at stray animals. They can also feel pain like we do. Always be kind to animals. They need our care and love.

Now I Know...

1.



2. Animals provide us food, wool and leather. They are useful for us.

WORD BEE

Re-read the lesson, write below the new words and read them aloud.

EXERCISES

A. Tick (✔) the correct option.

1. Plants give us
   (a) fibre (b) food (c) wood (d) all of these
2. Animals are our
   (a) enemies (b) relatives (c) friends (d) none of these
3. Animals give us
   (a) food (b) wool (c) dung (d) all of these
4. Plants provide shade to
   (a) travellers (b) animals (c) both (a) and (b) (d) none of these
5. The cattle dung is used as
   (a) fuel (b) manure (c) both (a) and (b) (d) none of these

B. Fill in the blanks with the words given in the brackets.

1. Bears and monkeys can be _____ to show tricks. (trained/chained)
2. _____ are our green friends. (Plants/Animals)
3. Plants _____ air. (pollute/clean)
4. Plants are also used for making _____ . (medicines/pesticides)
5. Animals cannot make their own _____ . (food/babies)

C. Answer the following questions in short.

1. Apart from food what else we get from plants?
2. If plants disappear from earth, what will happen?
3. What do we get from domestic animals?
4. Why should we not cut trees?
5. Which animals are used for carrying load?

D. Oral questions.

1. Name the gas given out by plants into the air.
2. Which animal gives us milk?
3. Which living things are called our green friends?
4. How many saplings should we plant against cutting of one tree?
5. It is to tease stray animals. (good/bad)

ACTIVITY

Organise a tree plantation drive in the month of June-July every year in the school. You may collect saplings from the Forest Department free of cost.

HOTS QUESTIONS

1. Amisha asked her teacher if plants can make their own food why can't we make our food in the body?
2. Another question coming in Amisha's mind. She asked her teacher "Can animals understand each other, i.e., can they communicate with each other?"

LIFE SKILLS

1. Plan a visit to a veterinary hospital with your teacher and classmate. Interact with the veterinary doctor and find out:
   (i) Name of the common diseases, animals are suffering from, in the hospital.
   (ii) How they behave when he treats them?
   (iii) Whether they feel pain or have temperature (fever) like us.
   (iv) How they eat medicines? Are they given medicines only through injections?

2. Get ready to be a green crusader. Whenever you find people/sweepers/gardeners burning dry leaves, stop them. Make them understand that they are losing precious wealth. Dry leaves can be degraded naturally and converted into manure.

SUBJECT LINK

Collect picture of Earth and Mars from Internet. Which one do you like? Write 15 sentences why you like it.

FUN TIME

Head, Heart and Hand

Let's make a class tree.

1. Collect photos of all students in class, green coloured sheets, glue, scissors, brown chart (for stem), white chart for base, cardboard and sketch pens.
2. Cut green sheet into shapes of leaves, so that photos can be pasted on it. They should be as per exact number of students in class like 40 leaves for 40 students.
3. Stick photo on each leaf.
4. Make a thick trunk and paste it on white chart.
5. Paste white chart on cardboard for support and start decorating tree trunk with picture leaves.
6. Your class tree is ready. Put picture of your science teacher on trunk of tree.
7. You can also make your family tree at home like this.

4 Animals—Our Friends

Animals are found everywhere on earth. They live on land, in water, in the air and on the trees.

Animals that live in the jungle are called **wild animals**. Their names are given below.


Tiger


Chimpanzee


Wolf


King cobra


Elephant


Baboon


Ostrich


Monkey


Peacock


Deer

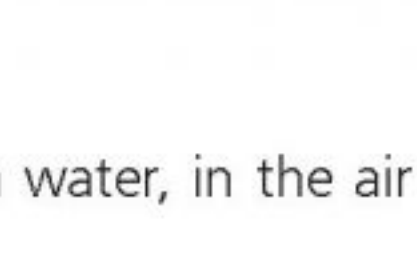

Kangaroo


Bear

Features of animals

Some animals are very intelligent like the house crow. Dolphins are the most intelligent animals next to man.


Dolphin


Crow


Bat


Owl


Tiger

Some animals are **nocturnal**. They are active at night. For example, owls, bats, fox, tigers and lions.

Some animals like horses are fast runners. The cheetah is the fastest animal on earth.


Horse


Cheetah


Kangaroo

Kangaroos are **pouched animals**. The mother kangaroo rears the young one in her pouch. Kangaroos are mostly found in Australia.

Zebras are animals with black and white stripes on their coats. They resemble donkeys except for the stripes on their body.

Zebra

FUN to Learn

Sloth bears are most lazy creatures. They sleep on an average 18 hours a day!

Giraffe

Giraffe is the tallest animal in the world. It has a long stretched neck.

The largest snake is the python. It may grow up to ten metres in length.

Python

Ostrich

Ostrich is a flightless bird. It is the largest and heaviest bird. It can run very fast. It lays the largest egg in the world.

The whale is a fast swimmer. Blue whales are the largest animals on earth.

Whale

Camel

Camels are found in deserts. They have a hump on their back. They store extra fat on their humps. So they can survive a long period of time without food and water.

Cuckoos (*Koel*) are known for their melodious voice. They lay their eggs in crow's nests.

Cuckoo

Parrots

Parrots can imitate human voice.

Peacock is our national bird. Male peacocks have brightly coloured feathers.

Peacock

Dog

Dogs have an excellent sense of smell. Sniffer dogs are used for tracking criminals by the police.

Importance of animals

Animals are used for various purposes by humans.

Animals such as cows, buffaloes, goats and sheep are domesticated for their useful products. They give us milk (cows and buffaloes) and wool (goats and sheep).

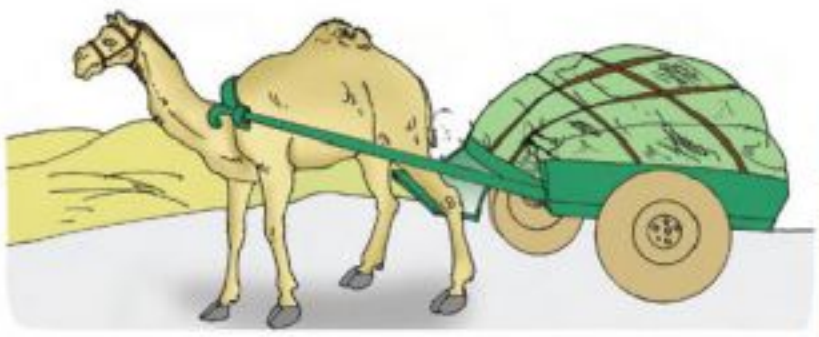
Cow

Buffalo

Goat

Sheep

Some animals are used for labour. They are known as **beasts of burden**. Donkeys, oxen, bullocks, camels, mules and elephants help us in carrying loads.



Camel

Elephant

The skins of animals such as crocodiles, cows, camels, buffaloes and snakes are used for making leather bags, shoes and belts.

Crocodile

Snake

Cow

Hair of sheep and rabbit is used to make woollen shawls, sweaters and blankets.

Some animal products are used to make medicines and vaccines.

Sheep

Rabbit

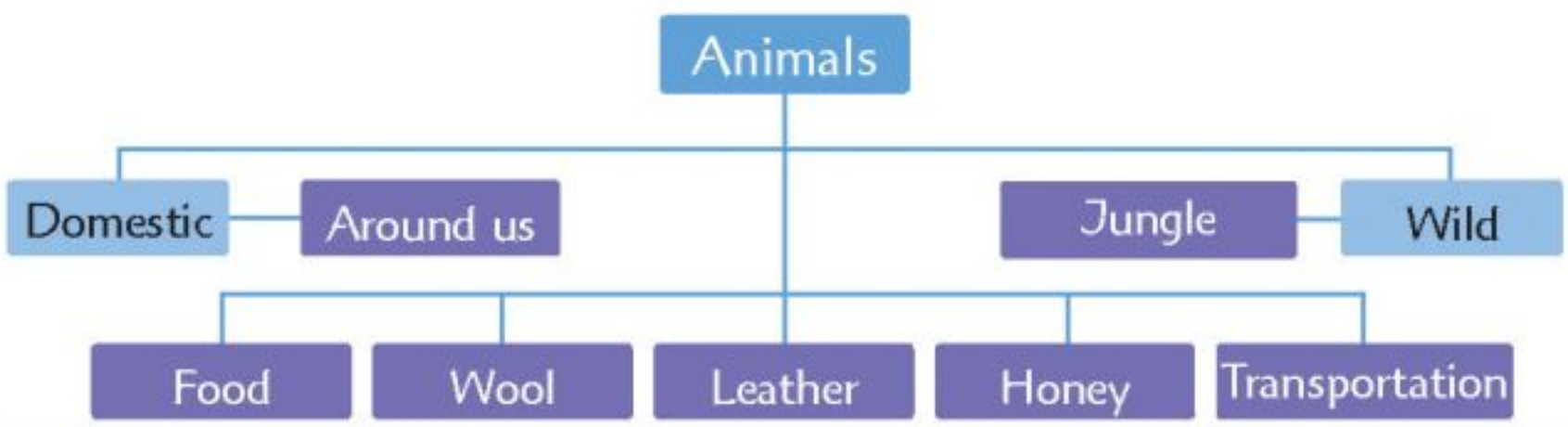
CONCEPTUAL CANVASS

1. Name two animals that give us leather.
2. Female peacock has colourful feathers. (True/False)
3. Which animals are called beasts of burden?
4. Where does a cuckoo lay its eggs?

FUN to Learn

Snakes do not have external ears. They can only feel the vibrations of the music of the snake charmer through the ground.

Now I Know...



WORD BEE

Find bold words from the lesson, read them aloud and write them below.

EXERCISES

A. Tick (✔) the correct option.

1. The largest animal in the world.
   (a) Octopus (b) Dolphin (c) Starfish (d) Blue whale
2. Animals that can be adopted as pets.
   (a) Dog (b) Cat (c) Parrot (d) All of these
3. Birds that cannot fly.
   (a) Parrot (b) Mynah (c) Ostrich (d) All of these
4. Animals that are known as beasts of burden.
   (a) Donkeys (b) Camels (c) Elephants (d) All of these
5. The largest snake.
   (a) Python (b) King cobra (c) Rattle snake (d) Green snake

B. Observe the following pictures and answer the questions given below:

A B C D E

1. Name the animal shown in picture A. What is it known for?
   Ans:
2. Name the animal shown in picture B. Where is it found?
   Ans:
3. Name the animal shown in picture C. How is it useful to us?
   Ans:
4. Our national bird is shown in picture D. Which one has more colourful feathers, the male or the female?
   Ans:
5. The animal shown in picture E is known for what?
   Ans:

C. Fill in the blanks with the words given in the brackets.

1. The animals that live in the jungle are called _____ animals. (pet/wild)
2. _____ is the tallest animal in the world. (Giraffe/Dog)
3. _____ is known for its melodious voice. (*Koel*/Crow)
4. _____ have an excellent sense of smell. (Crows/Dogs)

D. Answer the following questions in one word or a sentence.

1. Name an animal that lives in the jungle.
2. Which is our national bird?
3. What are wild animals?
4. Name two animals whose skin is used to make bags, shoes and belts.
5. Name one animal that lives in the desert.

E. Find the odd one and circle it with a coloured pencil.

1. Cow, Buffalo, Tiger, Goat, Camel
2. Donkey, Bullock, Dog, Oxen, Camel
3. Snake, Camel, Crocodile, Sparrow, Buffalo
4. Dog, Cat, Hyena, Parrot, Tiger
5. Owl, Bat, Crow, Fox, Tiger

ACTIVITIES

ACTIVITY 1

1. Collect feathers of at least five birds.
2. Paste them in your scrapbook.
3. Write the names of the birds under each feather.

ACTIVITY 2

1. If you are not living in a village, visit a village or a farmhouse nearby.
2. Observe the animals working in the farm.
3. Find out what products of these animals are used by the farmer.
4. Try to pat or touch cow/buffalo taking help from the farmer or your elders.
5. Observe how do they extract milk or feed the animal.

ACTIVITY 3

1. Visit a zoo with your parents on a holiday. Take photographs of the animals. Make your own album by using thick black chart papers. Cut the chart papers into pieces for making your album.
2. Once the photographs are ready, paste them in your album. Write the names of the animals and the date of visit to the zoo under each photograph. Preserve your album, when you will grow up, you will remember your days in school and the visit. This will also help you to know more about the wild animals.

HOTS QUESTIONS

1. Rimi asked her mother "How do birds hear? Do they have ears?"
2. She also asked her "How elephants' ears help them to keep cool?"

LIFE SKILLS

Love all animals. Never irritate them or go close to them.

SUBJECT LINK

If you need a pet, which animal you would like to choose and why? Write 5 sentences and draw its picture.

FUN TIME

Head, Heart and Hand

Make your own aquarium.

1. Take a clean wide mouthed glass bottle/jar.
2. Get few goldfish and food packets from the aquarium shop.
3. Put some sand, gravel, aquatic plant like hydrilla and water in the jar.
4. A small air pump has to be inserted inside the jar for air circulation.
5. Keep your jar/bottle ready before buying the fish.
6. Now leave the fish in the same water for too long. Keep changing the water every 4–5 days.
7. Give food to the fish daily. The quantity of the food should be as told by the shopkeeper.
8. Enjoy the movements of the fish in your aquarium.
9. Give each of them a name.
10. Take care of the aquarium as told by the shopkeeper.

5 Animals and their Feeding Habits

Let's Learn More About

- What animals eat
- Food for domestic animals
- How animals feed
- Food chain

Food is the basic need of all living things. Animals are living things. They need food to grow and live. All animals move, work, run, breathe and reproduce. For all these activities they need energy. Food gives them energy. They need food to remain healthy.

A lioness and its cub

Animal in search of food

Animal carrying load

A puppy is sleeping

What animals eat

All animals depend on plants for their food.

Some animals eat plants. Some animals feed on other animals.

Animals are grouped into three categories on the basis of their feeding habits.

Plant eaters or herbivores

Some animals eat grass, leaves, fruits, vegetables and nuts. They are called **herbivores**. Deer, buffaloes, elephants, rats, bats and rabbits are herbivores.

Deer

Buffalo

Elephant

Rabbit

Meat eating animals or carnivores

Some animals eat the flesh of other animals. They are called **carnivores**. Frogs, snakes, lizards, wolves and tigers are carnivores.

Frog

Snake

Wolf

Tiger

Animals that eat both, or omnivores

Some animals eat both animals and plants. They are called **omnivores**. They eat various parts of plants and the flesh of other animals. Crows, bears and human beings are omnivores.

CONCEPTUAL CANVASS

1. Why do animals need food?
2. A bat is a herbivore. (True /False)
3. What does a frog eat?

Crow

Bear

Human being

Food for domestic animals

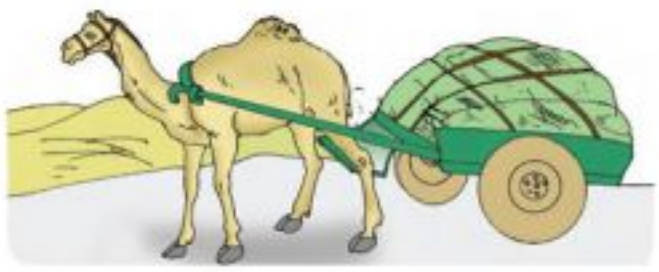
The animals we rear at home or in animal farms are called **domestic animals**.

Cows, horses, donkeys, goats and dogs are domestic animals. They help us in many ways. So we should give them healthy food.

Horses, elephants, camels, donkeys and oxen carry loads for us. They need energy-giving food.

Horse

Elephant

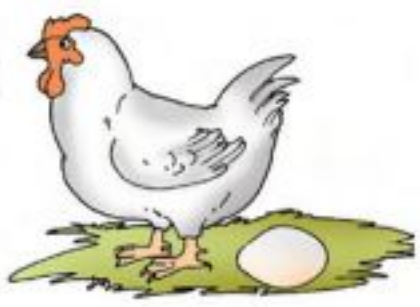


Camel

Cows and buffaloes give us milk. They need food like leaves, grass, oil seeds and oil cake.

Cow

Buffalo



Hen

Duck

Hens and ducks give us eggs. They need protein rich foods.

How animals feed

Feeding habits of animals depend on the type of food they eat. The structure of the mouth and teeth depends on the type of food they eat.

Grass eating animals

Cow chewing

Cows and buffaloes eat grass, leaves and grains. They have flat and broad teeth. These teeth help them to bite or cut their food. They also have strong grinding teeth at the back.

Have you ever noticed cows and buffaloes chewing when there is no food in front of them?

Cows and buffaloes swallow their food first, without chewing it properly. Later they bring back the food into the mouth from the stomach and chew it for hours. This is called **chewing the cud**. Sheep, giraffes, and camels also chew the cud.

Animals that gnaw their food

Squirrel gnawing

Some animals like rats, rabbits, squirrels eat grains and nuts. They have very sharp front teeth. These teeth help them to cut and bite nuts and seeds. These animals **gnaw** (constantly bite or chew) the food.

Butterfly sucking nectar

Animals that suck their food

Animals like butterflies, bees and mosquitoes have a long tube in their mouth. They suck their food with this tube. This tube is called **proboscis**. It works like a straw.

Animals that chew and swallow their food

An elephant has a long muscular trunk. Trunk helps it to pick up the food and push them inside the mouth. The elephant has large grinding teeth to chew and grind its food. It also uses its trunk for drinking water. It sucks water like a straw through the trunk and blows it inside.

Elephant drinking water

Animals that only swallow their food

Some carnivores swallow their food whole. Animals such as snakes, frogs and lizards do not have chewing teeth. They swallow their food whole. They do not bite or chew their food and take days to digest it.

Frogs and lizards have long sticky tongues to catch their prey. When a frog spots an insect, it darts out its long tongue and catches the prey. Then it rolls back the tongue into the mouth.

Snake swallowing a rat

Frog catching insect

Lizard catching insect

Animals that tear, grind and chew their food

Flesh eating animals tear the flesh before chewing.

Open mouth of a lion

Open mouth of a dog

Some carnivores like tigers, lions and dogs have sharp and pointed front teeth. These teeth help them to tear the flesh. They have strong grinding teeth at the back of their mouth. These teeth help them to chew the flesh.

Cat lapping up milk

Dog lapping up water

Animals that lap up liquid food

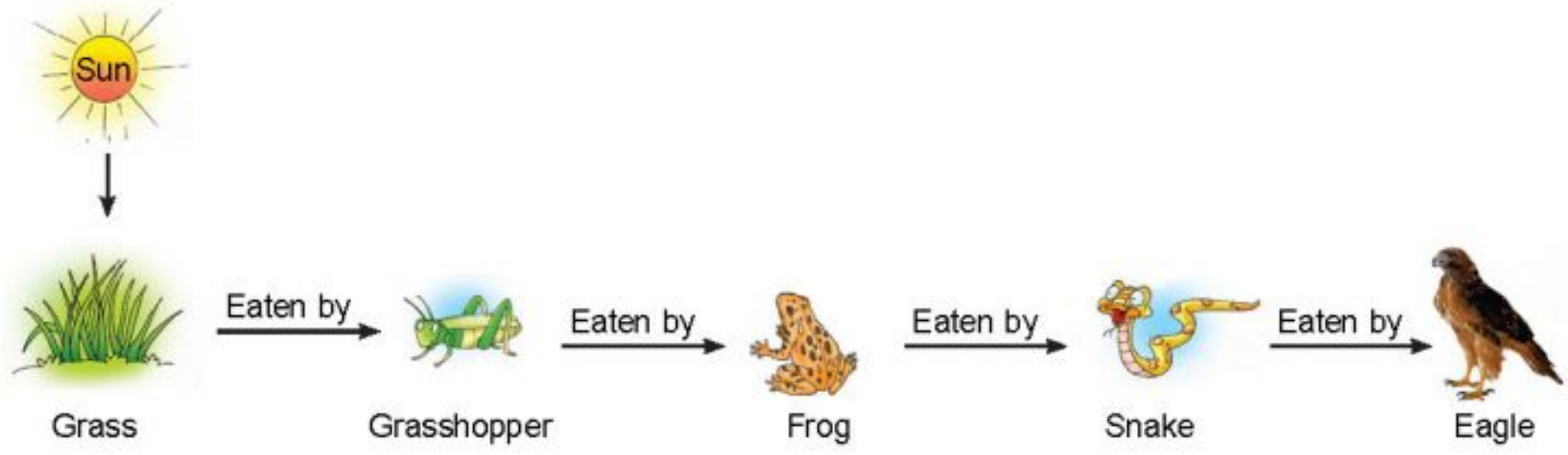
Animals like cats and dogs lap up milk or water with the help of their tongues. Rasp like barbs on their tongue help them lap up liquid.

FUN to Learn

The world has approximately one billion cattle, of which about 200 million belong to India!

Food chain

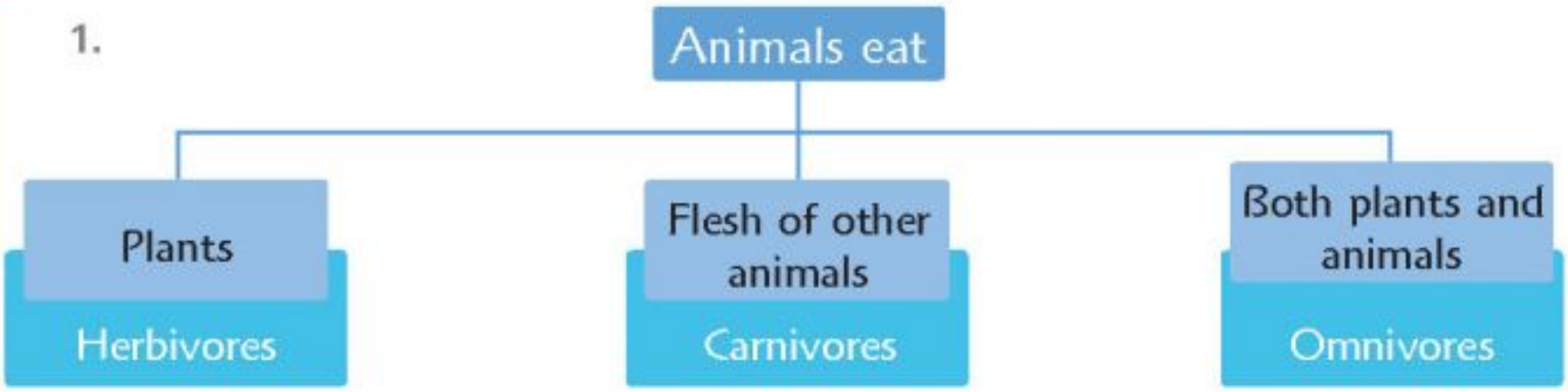
Plants make their own food. Some animals eat plants. These plant eating animals or herbivores are eaten by flesh eating animals or carnivores. This process of one organism eating another organism is called **food chain**. All food chains start from plants.



A food chain

Now I Know...

1.



2. **Food Chain:** The process of one organism eating other organisms for its energy needs.

WORD BEE

Find bold words from the lesson, read them aloud and write them below.

EXERCISES

A. Tick (✔) the correct option.

1. Which of the following animals is a carnivore?
   (a) Deer (b) Buffalo (c) Large bat (d) Snake
2. Which is not a domestic animal?
   (a) Lion (b) Horse (c) Buffalo (d) Donkey
3. Flesh eating animals have
   (a) sharp and pointed teeth (b) broad and biting front teeth
   (c) no teeth (d) very sharp small front teeth
4. Animals that eat both plants and animals are
   (a) herbivores (b) carnivores (c) omnivores (d) all of them
5. Which of these sucks its food with a long tube called proboscis?
   (a) Frog (b) Butterfly (c) Lizard (d) None of these

B. Fill in the blanks with the words given in the brackets.

1. Fill in the missing link in the following food chains
   (a) Grass ⟶ Deer ⟶ . (Hawk/Lion)
   (b) Plants (weeds underwater) ⟶ ⟶ Kingfisher. (Fish/Deer)
2. Animals need food to get for various activities. (energy/water)
3. A gnaws its food. (dog/rat)
4. Cows / buffaloes bring back food from their stomach into their mouth for . (chewing/biting)
5. A is a good pet. (dog/tiger)

C. Who am I? Answers are given in jumbled letters. Set them correct to get the answers.

1. I am a domestic animal and give you milk. FFABLUO
2. I don't have chewing teeth but I swallow food. KESNA
3. I carry load for you. SEROH
4. I am a plant eater. EDER
5. I have a straw to suck in liquid food. LYFTTBEUR

D. Answer the following questions in one word or a sentence.

1. Name an animal that laps up its liquid food.
2. What kind of teeth does a tiger have?
3. Name an animal that has a long sticky tongue.
4. Name an omnivore.
5. Name an animal that carries load for us.

E. Answer the following questions in short.

1. How do we take care of domestic animals? Write any two points.
2. Why does a butterfly sit on a flower?
3. Why do animals like cows and buffaloes need to be feed on leaves, grass, oil seeds and oil cakes?
4. What are herbivores? Give two examples.
5. What is a food chain? Draw a food chain.

F. Solve the riddle.

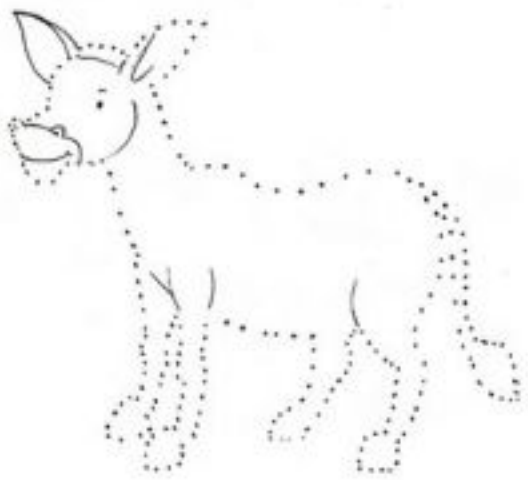
1. I am a pet but also live in the jungle.
   My first letter sounds like a seed.
   I can hide in the trees because of my body colour.
   I have a red beak.
   I love to eat fruits.
   Ans: _____
2. I live in the jungle.
   I have a colour that helps me to hide in the jungle.
   Sometimes I leave pug marks on riverbeds.
   My beard rhymes with name.
   Ans: _____

G. Observe the following pictures and write 'H' for herbivores, 'C' for carnivores and 'O' for omnivores in the given box.





H. Join the dots and colour it. Write two sentences about it.



ACTIVITIES

ACTIVITY 1

Visit a zoo and find out how zoo keepers take care of the animals. What type of medical care do they provide to the animals in the zoo?

ACTIVITY 2

Find out the animals in the word maze. One is done for you.

D	O	G	Q	R	D	A	B	E	A	R
Z	C	O	W	X	P	E	A	H	E	N
E	L	E	P	H	A	N	T	O	Q	C
M	U	L	I	O	N	S	G	R	R	A
D	G	T	Y	U	P	L	D	S	R	T
F	H	J	V	Z	C	E	T	E	H	G

HOTS QUESTIONS

1. Earthworm swallows soil and throws it out. How does it help farmers?
2. Give reason for tigers refusing to eat curd and rice.

LIFE SKILLS

1. Every year, in a particular season, a number of stray dogs increase in our neighbourhood.
2. Make a group of ten friends and do a survey for 10 days to find out their numbers.
3. Also find out how many of them are sick.
4. Report it to the local authority, Residents Welfare Association or any NGO. They will take care of them. Take help of your parents to contact these people.
5. You also can take care of them by giving some food, water and a temporary shelter.
6. Be kind to the animals, do not tease them.

SUBJECT LINK

Munnu and Chunnu went to jungle. Just before crossing the river they noticed footprints of animals on wet bed. They counted the footprints which were 24 in number. Can you guess how many animals had crossed the river before them?

FUN TIME

Head, Heart and Hand

1. Let's make footprint with palm. All you need is white drawing sheet and black water colour.
2. Dip base of your fist in water colour and press it back on paper to get an impression. Now dip your finger tips to make an impression of toes.
3. Your hand-made footprints are ready.

6 The World of Birds

Let's Learn More About

- Body structure of birds
- Nests of birds
- Parent birds take care of their babies

Birds are one of the most unique creatures on earth.

They are the only animals that have feathers.

Most of them can fly with the help of wings, feathers and chest muscles.

Body structure of birds

What makes a bird fly? Its boat-shaped body helps it to fly. The wings, feathers and the light body help a bird to fly. The main parts of the body of a bird are:

1. **Head** and **trunk**
2. **Wings** and **feathers** which help it to fly.
3. **Hollow bones** filled with air and **strong flight muscles**. The wings are attached to its body with strong muscles.
4. A **tail**, which helps it to change its direction during flight.

Some birds cannot fly as they have a large body and small wings. Ostrich, Emu, Kiwi and Penguin are flightless birds.

Body structure of a bird

Feathers

All birds have three kinds of feathers.

1. **Body feathers:** Feathers which cover the body of a bird are called body feathers. They give shape to its body.
2. **Flight feathers:** Feathers which are attached to the wings and tail of a bird are called flight feathers. They are long, flat and strong. They help a bird to fly.
3. **Down feathers:** These feathers are soft, short and fluffy. They cover the bird just like a sweater and keep its body warm. A newborn bird has a lot of down feathers.

Feathers of a bird

CONCEPTUAL CANVASS

1. Name the important body parts of a bird.
2. Name two birds which cannot fly.
3. The bones of all birds are heavy. (True/False)

FUN to Learn

A swift bird is the bird that can stay in the air for almost three years at a stretch without landing.

Beak

Beak, feet and claws of a bird vary according to its eating habits.

The beak of a bird helps it to hold and eat its food. It also helps a bird in collecting different materials for making its nest.

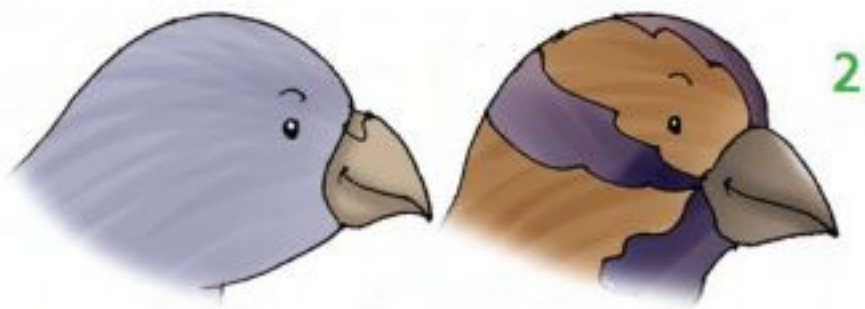
Birds use their beaks to clean their feathers.

A beak is also called a **bill**.

Different types of beaks are:

1. **Strong, sharp and hooked beak:** Birds which eat flesh have strong, sharp and hooked beaks. These birds tear the flesh before eating their prey. For example, eagles, hawks, kites, owls and vultures. Such birds are called **birds of prey**.

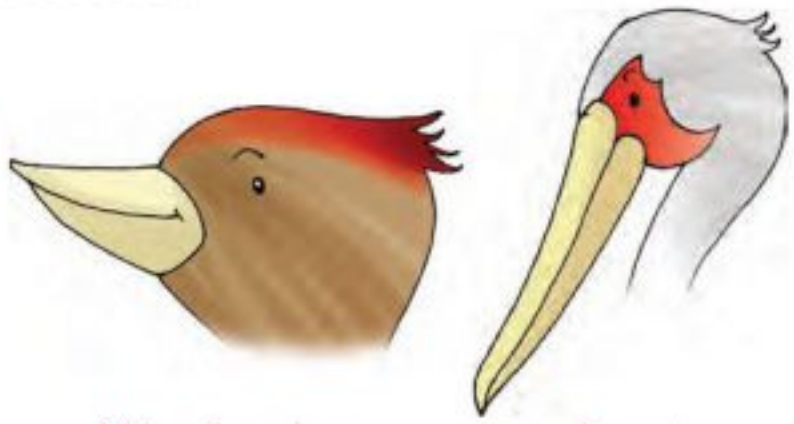
Eagle Owl



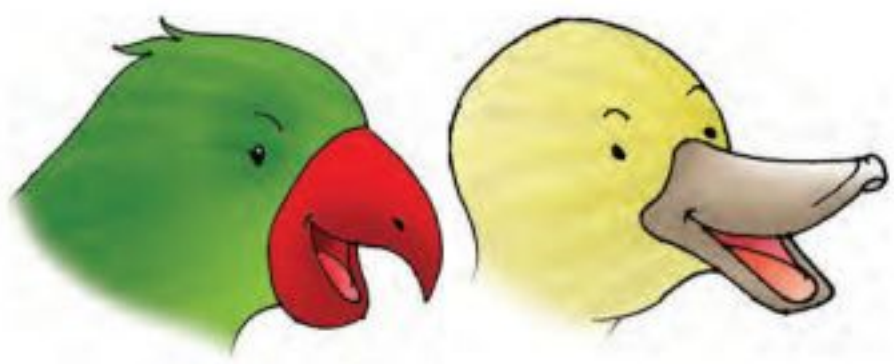
Sparrow Pigeon

2. **Horny, short and hard beak:** Birds which eat grains, nuts and seeds have these types of beaks. For example, pigeons, sparrows, peacocks and doves. It helps them to crack open their foods.

3. **Strong, slender and chisel-shaped beak:** Birds that eat insects have long, slender and chisel-shaped beaks. These beaks help them to poke holes into bark of tree and pull out insects. For example, woodpecker, cattle egret and hoopoe.



Woodpecker Egret



Parrot Duck

4. **Curved beak:** Curved beak of a parrot helps it to crack nuts and hard fruits.

5. **Broad and flat beak:** A duck has broad and flat beak with two tiny holes on its sides. It takes in insects and tiny plants along with mud and

water. It then throws the mud and water through the holes keeping the insects and plants in its mouth.

6. **Long and pointed beak:** Some birds like hummingbird, kingfisher and the sunbird have long and pointed beaks. They use them to poke flowers and suck nectar.

Kingfisher

Sunbird

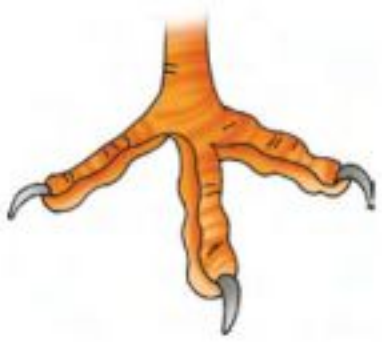
Feet and claws

FUN to Learn

Emu is a flightless bird whose eggs change colour. They are dull green in colour when they are laid. Then after a few days they become black.

Different birds have different types of feet and claws. They use their feet and claws to catch and eat food. They also use them to move and protect themselves from their enemies.

1. **Perching birds:** Birds like sparrows, pigeons and crows have three toes in front and one toe at the back. This helps them to hold the branches of trees firmly. They can remain seated or sleep throughout the night on a branch. This is called **perching**.



2. **Birds of prey:** Birds like eagles, hawks and owls use their feet and claws to catch their prey. They have very strong, sharp claws called **talons**. They use their claws for tearing the flesh of their prey.

3. **Climbing birds:** Birds like woodpeckers and parrots have four claws, two claws in upward and two claws in downward direction. This type of claws helps them to cling to and climb up branches of trees.

4. **Swimming birds:** Birds like ducks and swans have webbed feet. They have three toes in the front and one toe at the back. These four toes are all joined by a skin. This is called **webbed feet**. This helps them to swim in water.

5. **Scratching birds:** Birds like hens have sharp scratching claws. They scratch the ground for insects and grains.

6. **Wading birds:** Birds like cranes and herons have long legs with spread-out toes. These help them to walk through mud and shallow water to catch fish.

ACTIVITY

1. Organise a fancy dress show in class in which you and your friends can dress up like birds.
2. The students can dress up like a parrot, a crow, an eagle, a sparrow, a hen, a duck, a woodpecker, etc.
3. Each participant will speak at least five sentences about the bird he/she is dressed up as.

CONCEPTUAL CANVASS

1. Do all birds have the same type of beaks, feet and claws?
2. List three uses of beaks for birds.
3. List three uses of feet and claws for birds.
4. Name the different kinds of beaks and two birds as examples of each.

FUN to Learn

The fastest running bird is ostrich, but it cannot fly. An ostrich is also the fastest two legged runner amidst all the animals on earth. It is also the largest bird.

Nests of birds

A bird's home is called a **nest**. Birds make their nests on trees, bushes, on the ground and roofs of houses. They use these nests to lay eggs. They keep their young ones warm and safe in the nest. To make their nests, they use materials like cotton, twigs, dry sticks, grass, leaves and mud.

1. **Nest of a sparrow or a pigeon:** A sparrow or a pigeon makes its nest in houses or branches of trees. It uses dry grass, sticks, leaves and straw to make its nest. The nest looks like a soup bowl.

Nest of a sparrow

Nest of a tailor bird

2. **Nest of a tailor bird:** A tailor bird uses its beak as a needle and sews two leaves together to make its nest. It uses fibres to sew the leaves. It sews the leaves perfectly like a tailor does. Hence it is called a tailor bird.

3. **Nest of a weaver bird:** A weaver bird makes its nest on the branch of a tree. It weaves its nest with dry grass like a perfect weaver. The nest hangs from the branch of a tree and does not fall off. At the bottom, there is an opening through which the bird enters into the nest. Sometimes the bird makes compartments inside the nest.

Nest of a weaver bird

Nest of an eagle

4. **Nest of an eagle or a vulture:** An eagle or a vulture makes its nest on the uppermost branch of a tree. It uses dry sticks to make its nest. An eagle's nest looks like a bowl.

Nest of a woodpecker

5. **Nest of a woodpecker:** A woodpecker makes its nest in a tree trunk. It pecks a big hole in the tree trunk with its beak. To make the nest cosy, it puts some pieces of wood inside its nest.

Nest of a plover bird

6. **The nest of a plover bird:** A plover bird makes its nest on the ground. It selects a small hole dug on the ground. Then it makes the nest with straw, hay and sticks and lays its eggs. The shell colour of these eggs are like the colours of stones and rocks.

7. **The nest of a penguin:** A penguin also makes its nest on the ground. It walks miles away from the ocean to make its nest and lay eggs. It uses some pebbles and stones to make its nest on the ground. The penguin holds the eggs on its legs to keep it off the cold ground.

Nest of a penguin

Parent birds take care of their babies

A bird on nest warms eggs

Birds lay eggs in warm, cosy nests.
The mother bird sits on the eggs to give them warmth.
After a few days, the small babies develop fully inside the egg and come out. This is called **hatching**.
Both mother and father birds take care of their chicks and feed them.
They protect them from cold, heat and rain. Once the babies grow up, can fly or eat on their own, birds leave their nests.

FUN to Learn

- Sometimes weaver birds catch fireflies and keep them inside their nests for light!
- Weaver birds, tailor birds, ants, wasps and bees are among nature's master designers and engineers. They make different types of nest using leaves, fibres, mud, saliva and wax.

Now I Know...

1.

Birds have different beaks

Strong, sharp and hooked	Horny, short and hard	Strong, slender and chisel-shaped	Curved	Broad and flat	Long and pointed
E.g. _____	E.g. _____	E.g. _____	E.g. _____	E.g. _____	E.g. _____

2.

Birds have different claws

E.g. _____ E.g. _____ E.g. _____ E.g. _____ E.g. _____ E.g. _____

3. Birds lay eggs and hatch them in their different and interesting nests.

WORD BEE

Find bold words from the lesson, read them aloud and write them below.

EXERCISES

A. Tick (✔) the correct option.

1. Which part of a bird's body helps it to change direction?
   (a) Head (b) Tail (c) Beak (d) Claws
2. Which part of a bird's body is called a bill?
   (a) Eyes (b) Claws (c) Beak (d) Feathers
3. Which of these birds makes its nest by sewing two leaves together?
   (a) Tailor bird (b) Woodpecker (c) Sparrow (d) Eagle
4. Flesh eating birds have
   (a) strong hooked beaks (b) horny beaks
   (c) chisel shaped beaks (d) thin and flat beaks
5. Which of these birds makes its nest like a weaver?
   (a) Pigeon (b) Sparrow (c) Weaver bird (d) Tailor bird

B. Fill in the blanks with the words given in the brackets.

1. A bird's body is shaped like a _____. (boat/train)
2. Eagles have _____ beak for tearing flesh. (strong hooked/horny)
3. Birds have _____ bones. (hollow/strong)
4. A/An _____ has a beak suitable to crush grains and seeds. (sparrow/eagle)
5. A _____ has a broad and flat beak. (duck/parrot)

C. Write 'T' for true and 'F' for false in the boxes given against the statements.

1. All the birds look the same.
2. Birds make their nests to lay eggs.
3. All birds can fly.
4. Penguin is a flightless bird.
5. Wading birds have webbed feet.

D. Match the following.

1. Ostrich	(a) Help in flying
2. Flight feathers	(b) Long and pointed beak
3. Peacock	(c) Flightless bird
4. Humming bird	(d) Long and spreading toes
5. Crane	(e) Horny beak

E. Answer the following questions in one word or a sentence.

1. What do you mean by 'hatching'?
2. Name two flightless birds.
3. Name three types of feathers of birds.
4. Which feathers help a bird to fly?
5. Where does a sparrow or a pigeon make its nest?

F. Give reasons for the following.

1. Ostrich, emu and penguin cannot fly.
2. A crane is called a wading bird.
3. A duck has holes on each side of its beak.
4. Birds make nests.

G. Answer the following questions in detail.

1. Name some materials which are used by birds for making their nests. Which birds make the most beautiful and strongest nest?
2. Observe the pictures given below. Identify them and write one sentence about them.

(a) 

(b) 

(c) 

(d) 

(e) 

ACTIVITIES

ACTIVITY 1

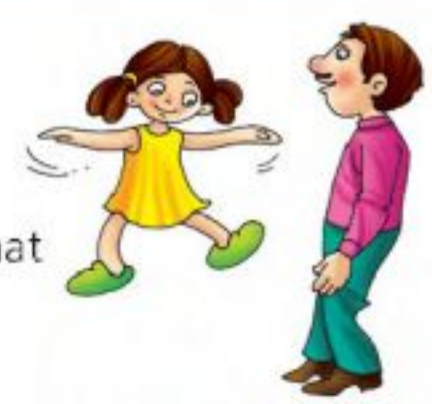
1. Collect different types of feathers you find in your surroundings.
2. Try to identify them and write the name of the bird whose feather it is.

ACTIVITY 2

Names of some birds are hidden in the word maze. Find them out and circle them with different colours.
(woodpecker, hoopoe, parrot, cuckoo, vulture, eagle, crane, hen, duck, crow, sparrow, emu)

W	O	O	D	P	E	C	K	E	R	M	C	R	O	W	L
A	H	R	Q	A	V	U	M	P	Q	Y	O	X	T	S	R
D	O	S	T	R	S	C	R	A	N	E	N	E	M	U	Z
E	O	Z	Y	R	Y	K	L	S	R	A	Q	W	X	T	P
C	P	X	L	O	A	O	X	B	Q	G	K	D	L	H	Q
M	O	A	N	T	M	O	W	V	U	L	T	U	R	E	N
B	E	B	E	D	G	A	K	F	C	E	E	C	L	N	P
S	P	A	R	R	O	W	D	W	X	Y	N	K	X	Y	T

HOTS QUESTIONS



1. Roopam asked her father how fast can birds fly?
2. She also asked how can parrots talk? Do they understand what they say? How are they able to imitate human speech so well?

LIFE SKILLS

1. Observe birds around your house and neighbourhood. Watch them for their varied colours. What do they eat, how do they perch on trees?
2. Keep a water pot and a flat plate in the balcony/courtyard to give water and cereals to the birds.

SUBJECT LINK

John had 29 chickens. He gave 4 chickens to his friend Yusuf and 9 to his father. Now tell how many chicks he is left with.

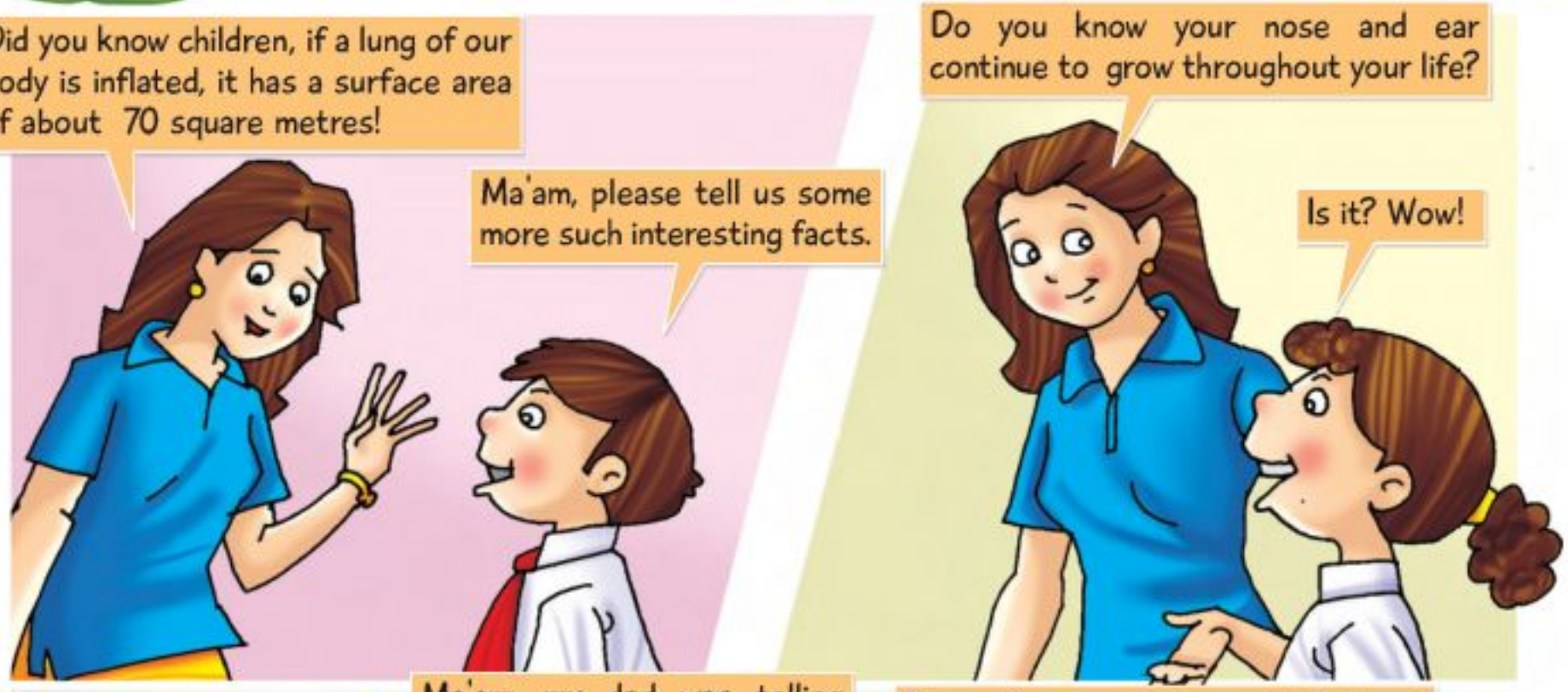
FUN TIME

Head, Heart and Hand

Making a greetings card with feathers

1. Collect fallen feathers from balcony, park and school.
2. Take a drawing sheet and fold it into two halves.
3. Add colours to the white drawing sheet and then paste the feather with fevicol over it.
4. The card is ready! You can also use stones and glitter to further decorate it.

7 Our Body Systems



Let's Learn More About

- Organs
- Organ systems

A car runs on the road and a binocular helps you to see things that are far. These all are machines. They cannot do their work on their own. But our body is a machine which works on its own.

A car running on road

A kid watching through a binocular

Organs

We see with our eyes.

We hear with our ears.

We taste with our tongue.

We smell with our nose.

We feel with our skin.

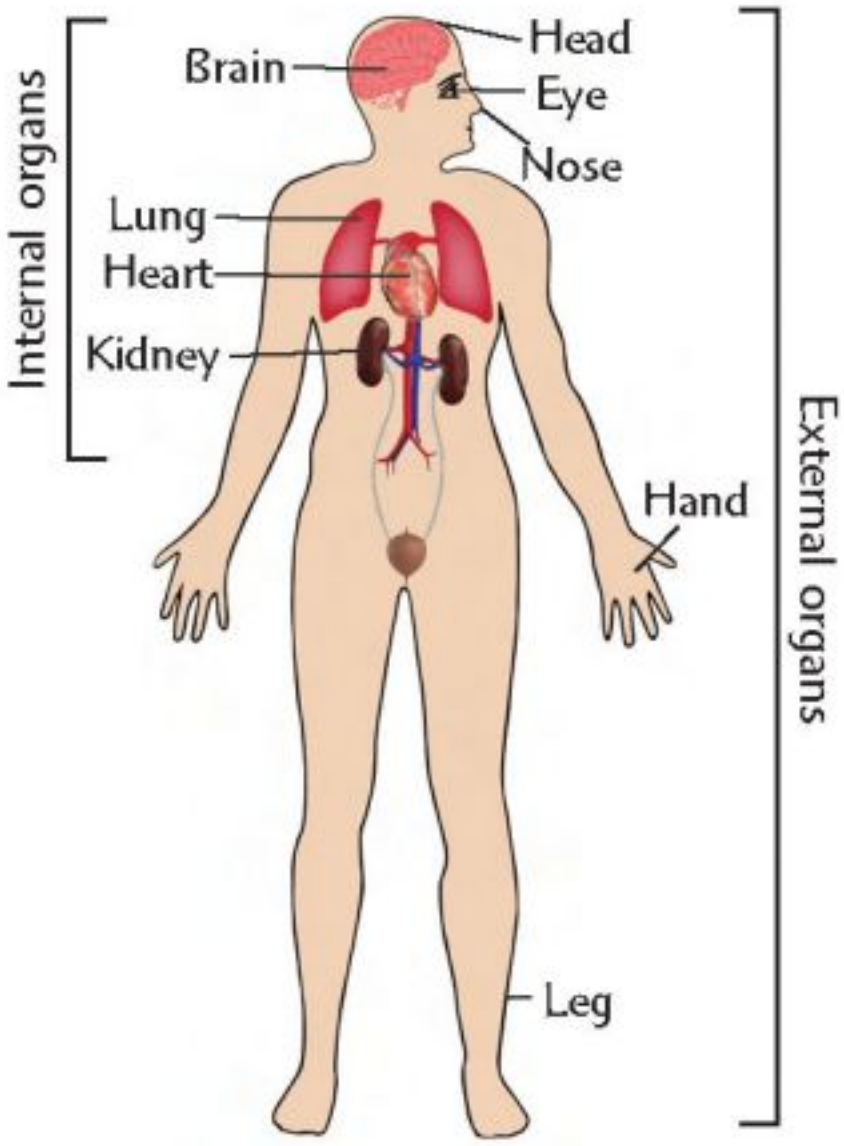
Eyes, ears, tongue, nose and skin are our five **sense organs**. All these sense organs are connected to the brain through the nerve.

Our hands and legs help us to do many tasks. These all are our **external organs**.

There are many **internal organs** inside our body. Some of these are lung, heart and kidney.

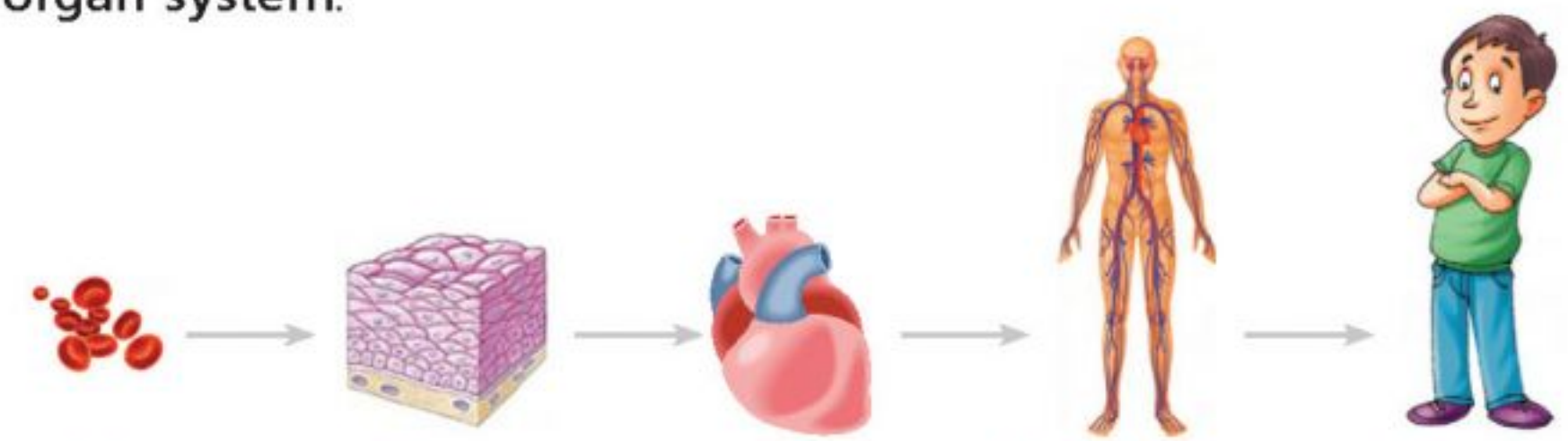
Organ systems

Our body is made up of **cells**. A group of similar cells performing a particular function is called a **tissue**. A group of tissues performing a particular function is called an **organ**.



Some internal and external organs of our body

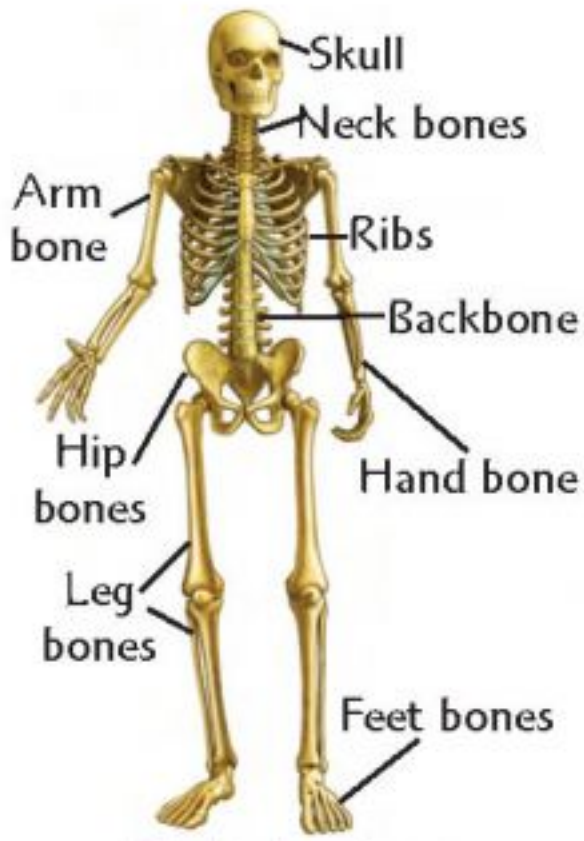
When a group of organs work together to perform a common function is called an **organ system**.



There are many organ systems in our body. They are:

Skeletal system

Bone is a solid and hard substance in our body. There are 206 bones in an adult human. All the bones join together to form a framework called **skeleton**. Skeleton gives shape and support to our body. It also protects all the internal organs like heart, lung, etc.



Skeletal system

AMAZING FACT

A newborn baby has 300 bones. As he/she grows older, the bones are fused together. Later in life, an adult has 206 bones.


Muscular system

Muscular system

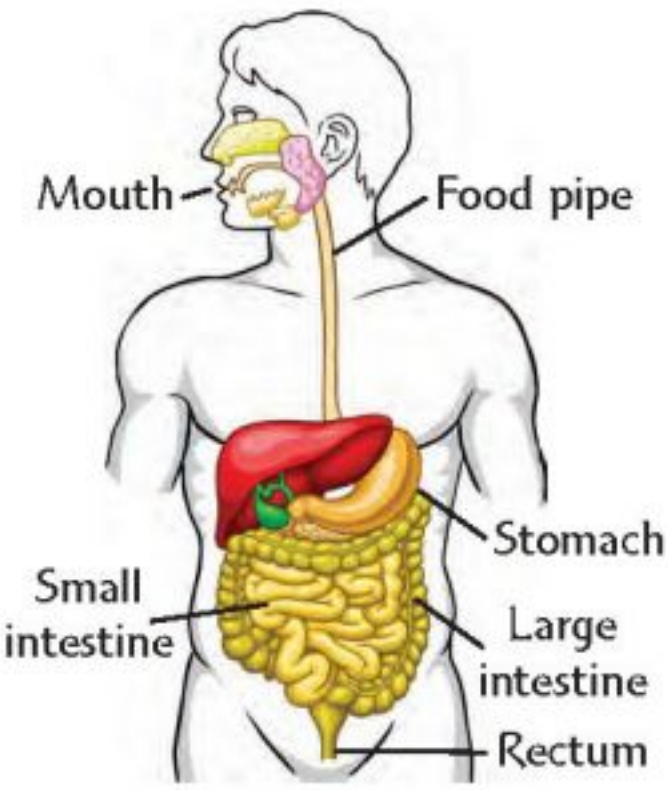
The muscular system is made up of muscles. There are about 639 muscles in the human body. The muscles along with bones help us in body movements.

FUN to Learn

Our heart is an amazing pump! It sends out about one hundred cubic centimeters of blood with each beat.

Digestive system

We eat food to get energy. Before food is used, it is broken down into simpler substances in our body. This process is called **digestion**. The human digestive system starts in the **mouth**. The food is chewed and broken into smaller pieces by the teeth. The saliva gets mixed with the food and helps in digestion. Food then goes to the stomach through the **food pipe**.

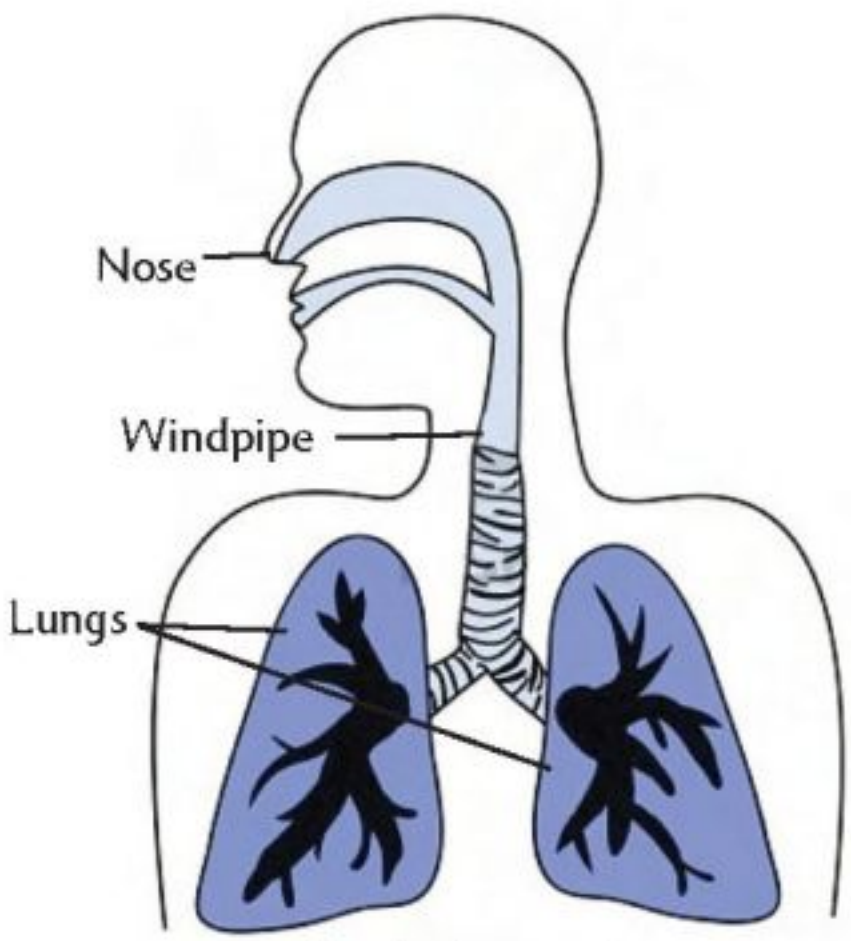


Digestive system

In the **stomach**, the food gets mixed with the digestive juices for digestion. The food then goes to the small intestine.

In the **small intestine**, the food gets completely digested into simple substances. Blood carries these substances to various parts of the body. The undigested food and water goes to the **large intestine**.

Here water is absorbed by the body. The remaining undigested food goes to the **rectum** and goes out through **anus**.



Respiratory system

Respiratory system

The process of releasing energy from food is called **respiration**. For this, oxygen is needed. The respiratory system consists of the **nose**, the **windpipe** and **lungs**.

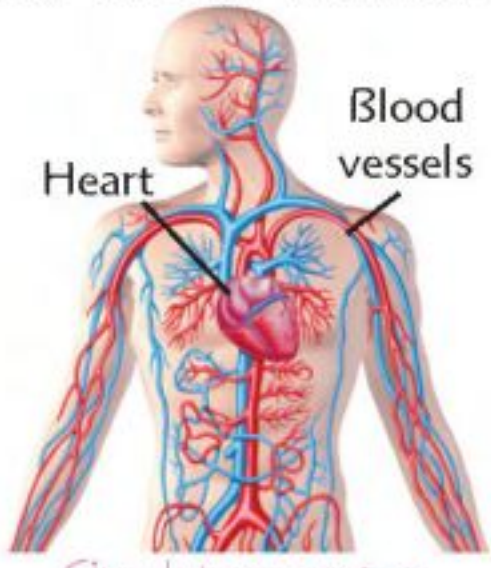
We take in oxygen from the air through our nose. It then reaches the lungs through the windpipe. The hair in the nose helps to prevent dust and germs from entering our body.

The blood in the lungs absorbs oxygen and supplies it to all parts of the body.

The air that we breathe out is carbon dioxide. It is a waste product.

Circulatory system

The circulatory system consists of the heart, blood and blood vessels. The heart beats throughout our life. It pumps blood to different parts of the body through thin tubes. These tubes are called **blood vessels**.



Circulatory system

Excretory system

Natural removal of harmful substances from the body is called **excretion**. Our body produces many harmful substances. These harmful substances are thrown out of the body by the excretory system.


Excretory system

The excretion is done by a pair of kidneys, lungs and skin.

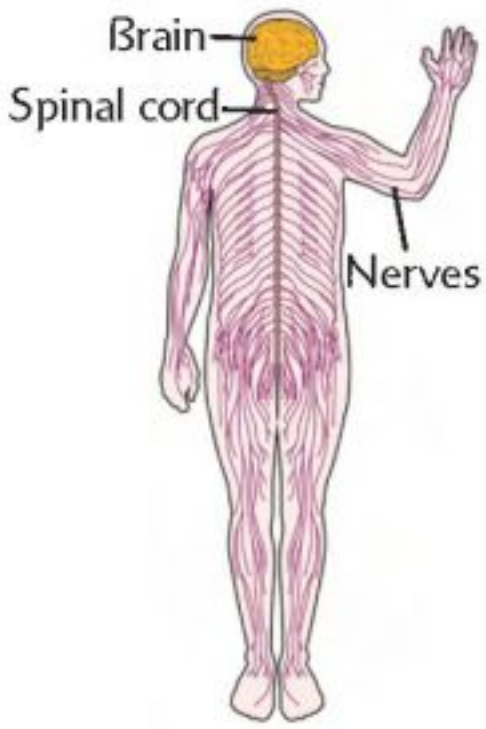
Kidneys throw out wastes in the form of urine.

The lungs throw out carbon dioxide gas.

The skin throws out wastes in the form of sweat.

Nervous system

The nervous system comprises of the **brain**, **spinal cord** and **nerves**. The brain controls all our activities like running, reading, laughing and crying. It sends messages to all parts of the body through nerves. The spinal cord connects the brain to all parts of the body through nerves.



Nervous system

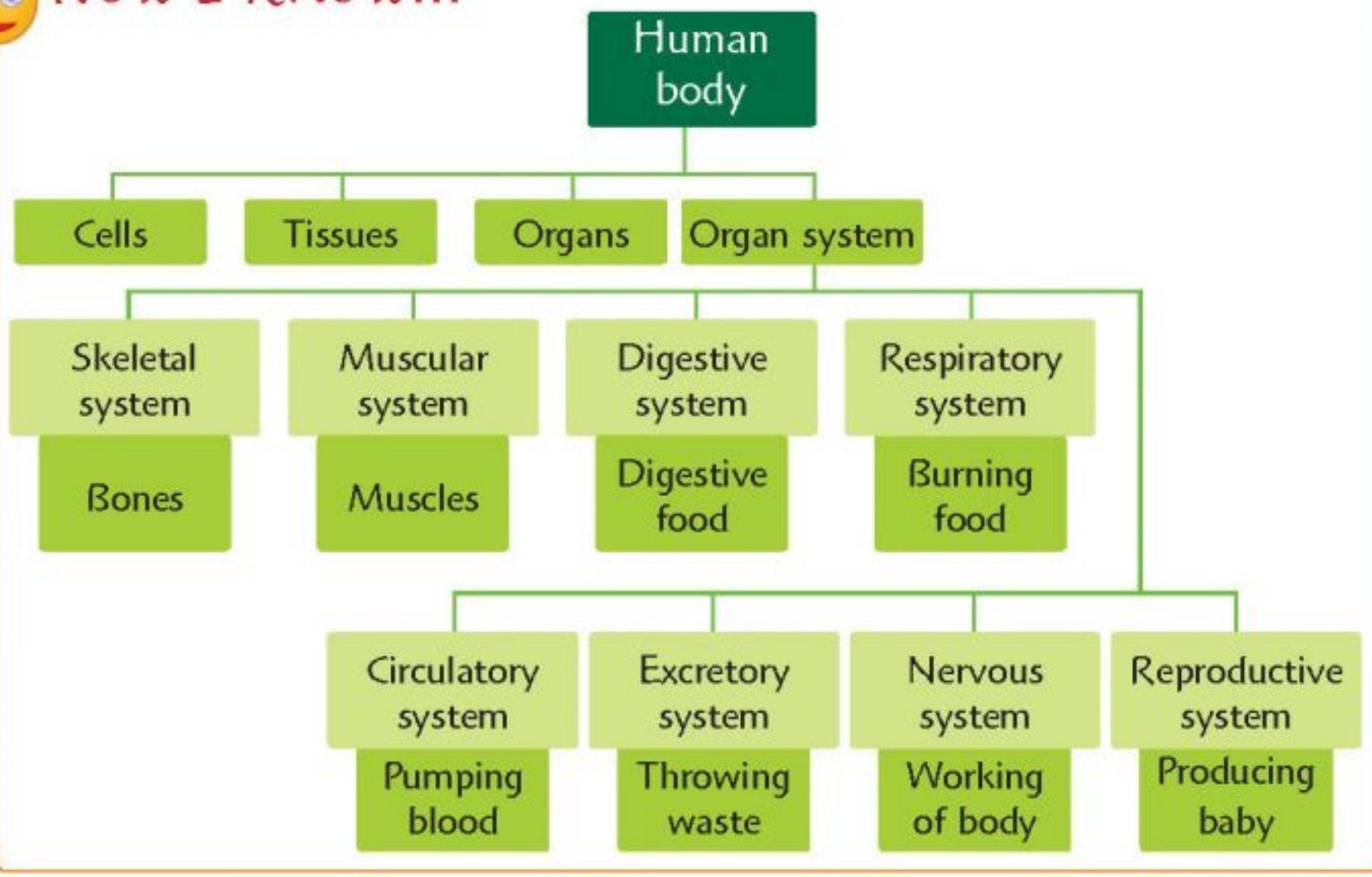
CONCEPTUAL CANVASS

1. What is an organ system? Give an example.
2. Name the parts of the digestive system.
3. Define respiration.
4. Which system gives shape to our body?
5. Which gas do we breathe in?

Reproductive system

Babies are born via the reproductive system. Both men and women have different reproductive organs.

Now I Know...



WORD BEE

Find bold words from the lesson, read them aloud and write them below.

EXERCISES

A. Tick (✔) the correct option.

1. Number of bones in human skeletal system is

   (a) 206 (b) 208 (c) 306 (d) 308

2. Digestion completes in

   (a) stomach (b) small intestine (c) large intestine (d) mouth

3. Heart is an organ of
   (a) excretory system (b) nervous system
   (c) digestive system (d) circulatory system
4. Harmful substances are eliminated through
   (a) kidney (b) lungs (c) skin (d) all of these
5. A group of tissues performing a particular function is called a/an
   (a) organ system (b) organ (c) cell (d) organism

B. Write 'T' for true and 'F' for false in the boxes given against the statements.

1. The brain controls most of our activities.
2. Blood flows through nerves.
3. Oxygen enters the lungs from the nose through the wind pipe.
4. There are about 600 muscles in the human body.
5. A woman gives birth to a baby via the reproductive system.

C. Match the following.

1. Tongue	(a) Digestive system
2. Stomach	(b) Sense organ
3. Bones	(c) Support to body
4. Skeleton	(d) Circulatory system
5. Heart	(e) 206 in human

D. Answer the following questions in one word or a sentence.

1. How many muscles are there in our body?
2. Name the organ which beats throughout our life.
3. Which gas do we breathe out?
4. Which organ helps us to feel changes?
5. Which system gives support to our body?

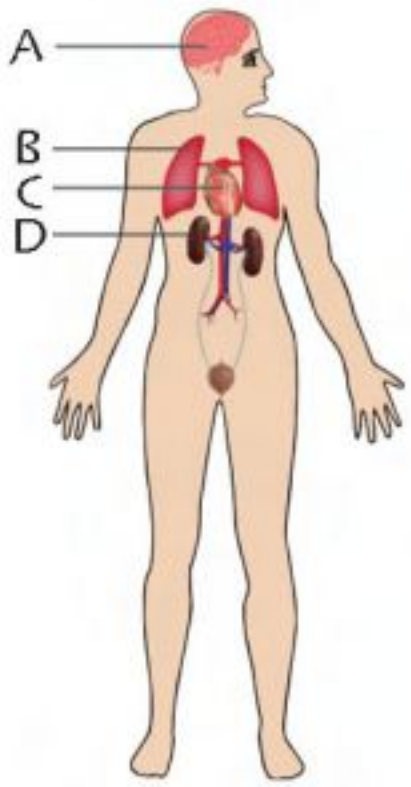
E. Answer the following questions in short.

1. What is respiration?
2. Define excretion.
3. What gets mixed with the food in the stomach and digests it?
4. Name three things which are eliminated from the body during excretion.
5. What are the functions of the skeletal system?

F. Answer the following questions in detail.

1. Draw the excretory system of a man. Write the functions of this system.
2. What does the nervous system comprise of?
3. Define respiration. Draw and describe the human respiratory system.

4. Observe the diagram and identify the organs labelled as A, B, C and D. Write functions of each organ.



ACTIVITIES

ACTIVITY 1

1. Make a model of the digestive system.
2. Use a full-sized chart paper, thermocol, wool ball, glue/fevicol.
3. Draw the diagram neatly on the chart paper with a pencil.
4. Fix the wool thread along the border of the diagram using glue/fevicol.
5. Now mount the chart paper on the thermocol.
6. Label all the parts and display it in the class.

ACTIVITY 2

1. Make a group of 8 students in your class.
2. Role play an organ of each organ system.
3. Let's say, one boy becomes the heart of the circulatory system, the second one becomes the lung of the respiratory system. Likewise, assign one boy or a girl to play the role of a major organ of each organ system.
4. Each participant will draw the diagram of the organ on a half chart paper and hang it on his/her chest.
5. Each one will speak about the major function of the organ and also will speak about what will happen if it does not work properly.

HOTS QUESTIONS

1. Mummy always says eat and chew your food slowly. Do not eat hurriedly. Why do you need to chew food properly before swallowing?
2. Agniv sat and immediately jumped off his father's scooter which was parked in the sun on a hot summer day. Why did he jump and how did he get to know about it?

LIFE SKILLS

There are some special children. Do you have any special children in your school or in the neighbourhood? Find out what difficulty they face. You may find that they are either unable to hear or speak. Try to make one such a special child your friend. Try to communicate with him/her in sign language with your hand or facial expressions. Ask your friend about his/her feelings, happiness and desires. When you grow up, be sensitive to such people and help them.

[**Note for Teacher:** Create awareness and tolerance for differently abled children among your class and discuss thoroughly.]

SUBJECT LINK

Rohan exercises 15 minutes in the morning and 30 minutes in the evening. After a month without missing once how much time he had given to exercise each day?

FUN TIME

Head, Heart and Hand

PADAMASANA

Spread a sheet/exercise mat in the garden or in an open area. Sit cross-legged. Sit with your back straight, hands on both the knees and eyes closed. Take a deep breathe, hold it for a while and breathe out again slowly. Do this 8 to 10 times. You will feel fresh and energetic.

MAKARASANA

Now, lie down on your stomach. Place your elbows on the ground and place your palms under your chin and look forward. Count 1 to 10 and come back to normal position.

BHUJANGASANA

Again lie down on your stomach. Place your palms on the ground. Take a deep breathe and raise your body and take your head back to look at the sky. Count 1 to 10 and come back to the original position.

8 Be Safe: Follow Rules

Well, I hope you all will start using it soon. So you must follow some safety rules before starting.

1. Protect your user name and password. Never let it out to anyone.
2. Never disclose your personal information online such as your name, address, phone numbers.
3. Likewise never put online information about your parents or other family members.
4. Never download anything without informing your parents.
5. Do not get friendly with strangers, no matter how friendly they appear.

Will you remember all these points and follow them?

Well. Now let's learn more about other safety rules.

Yes ma'am and thank you.

Let's Learn More About

- Safety at home
- Safety on road
- Safety at school
- First aid

Look at the pictures. People often meet with such accidents.




We should always be careful while doing our work. We should follow some safety rules at home, while on the school bus, on the road and at school to avoid such accidents.

Safety at home

You must follow these safety rules at home to avoid accidents. You may hurt yourself if you do not follow them.

- Do not keep your toys, clothes and shoes lying on the floor. If anyone steps on these things, he/she may fall down.

Toys lying scattered on the floor

Boy playing with sharp objects

- Do not play with sharp objects like blades, knives and scissors. You may cut your finger and bleed.

- Do not touch electric plugs, wires, and an electric heater with wet hands. You may get an electric shock.

Girl got an electric shock

Fire objects

- Do not play with a matchbox, fire crackers or burning candles. You may get burned. Always ask your elders to help you if you need to use these objects.

- Do not climb up or down the stairs hurriedly. You may fall and get hurt. Always go slow on the stairs, while going up or coming down.

Boy fell down from stairs

Boy climbs up on a table

- Do not climb up on tables or stools to reach the things kept on upper shelves. You may lose balance and fall down. Ask your elders to help you.
- Do not take medicines in the absence of an adult.

Safety on road

You should follow these safety rules while on the road.

- Always walk on the footpath.
- Cross the road only when the pedestrian light is green. Look to your left, then right, again to your left. If the road is clear, cross the road at a zebra crossing.

People using footpath

- Use a subway to cross busy roads. Subway is a path that goes under a road for use by pedestrians.
- Do not play, talk or use the mobile phone while crossing a road.
- Walking or cycling on the wrong side is dangerous.

Man using mobile phone

Boy cycling on wrong side

Safety at school

You should follow these safety rules at school.

- Do not push your friends while playing games or riding swings.
- Never climb on the desks. You may fall down and hurt yourself.
- Play only in the playground or in an open space.
- Do not spill water on the classroom floor. You may slip and get hurt.
- Do not throw banana skin on the classroom floor. Anyone stepping it may slip and get hurt.
- Never go alone into the swimming pool. Always go with an elder into the water.

Children riding swings

Trainer instructing children

Student alighting from the bus

- Do not board or get down from a moving bus. Always stand in a queue to board or alight from the bus.

- Do not lean or put your hands/body out of a running bus. It can be dangerous.

Children putting their hands out of running bus

CONCEPTUAL CANVASS

1. What is a subway?
2. Walking or cycling on the wrong side is dangerous. (True/False)
3. Why should you not stand in a running bus?

First aid

Immediate care or help given to an injured person before a doctor attends is called **First Aid**. If your friend or anyone gets injured:

- Help him/her to sit in a comfortable position.
- Wash the wound with water.
- Apply antiseptic lotion with cotton and bandage the wound.
- If he/she is serious, immediately call a doctor.

Boy giving first aid

Boy met with an accident

Always inform about the accident to your elders or teachers.

Do not form a crowd around the wounded or the sick person.

A first aid kit should always be kept ready at home, in the car and in the school bus.

If anyone faints, sprinkle some water on the face and call a doctor.

Now I Know...

1. We should not keep things like _____, _____ and _____ lying on the floor.
2. We should not play with _____objects.
3. We should not touch electrical plugs, wires, etc., with wet hands.
4. We should not play with a matchbox or fire crackers.
5. We should not run or jump on _____.
6. We should always walk on the footpath.
7. We should cross the road at a _____.
8. We should not lean out of the moving bus window.
9. We should always stand in a queue to board or alight from the bus.
10. We should never go _____into the swimming pool.
11. _____is the immediate care or help given to an injured person before a doctor attends.

WORD BEE

Re-read the lesson, write below the new words and read them aloud.

_____ _____ _____ _____

_____ _____ _____ _____

_____ _____ _____ _____

_____ _____ _____ _____

EXERCISES

A. Tick (✔) the correct option.

1. We should not play with a
   (a) matchbox (b) bat (c) ball (d) toy
2. We should cross the road at a zebra crossing when the pedestrian light is
   (a) red (b) green (c) yellow (d) pink
3. We should play games in the
   (a) sports ground (b) park (c) open area (d) all of these
4. We should go to the swimming pool along with
   (a) friends (b) youngers (c) elders (d) none of these
5. We should always walk on the
   (a) footpath (b) busy road (c) middle of the road (d) all of these

B. Fill in the blanks with the words given in the brackets.

1. We should wash a wound and apply _____ lotion on it. (salt/antiseptic)
2. We should follow _____ to avoid accidents. (safety rules/students)
3. We should not _____ out of the window of a moving bus. (lean/play)
4. We should not go _____ into the swimming pool. (outside/alone)
5. We should not play with a _____ . (knife/toy)

C. Answer the following questions.

1. What should you do when one of your friends gets hurt in the playground?
2. Write any two safety rules to be followed on the road.
3. Why should we not throw banana peels on the road?
4. Should we play inside the classroom? Why?
5. What is First Aid?

ACTIVITIES

ACTIVITY 1

1. Organise a FIRST AID AWARENESS camp in your school.
2. You may take the help of your school's Doctor/Nurse or a medical practitioner from outside.
3. You can collect extra medicines at home that have not passed the expiry dates. You can also appeal to your classmates/schoolmates to donate such medicines.
4. After collecting them, visit a Red Cross Society office or any NGO with your teachers/elders and donate these medicines for a good cause.

ACTIVITY 2

Observe traffic signs. The words that depict the signs are given below. Pick them up and write in the box given below each picture.

1. No horn **2.** Stop **3.** Pedestrian crossing **4.** One way
5. No entry **6.** Go slow **7.** No parking **8.** Left turn

HOTS QUESTIONS

Alok asked his father when he saw a serious accident on the road while he was travelling in a car with his father, "Dad, why you didn't stop to help the man lying on the road? Where is the vehicle driver who had injured this man?"

LIFE SKILLS

Visit a hospital with your teacher or parents. Go to the casualty section/ward to see the accident victims. Observe how the doctor takes care of them.

SUBJECT LINK

Neha went to see a friend in hospital. She took along a bunch of 25 red roses. Each rose costed her ₹11. How much did she pay for the bunch?

FUN TIME

Head, Heart and Hand

1. Make your school safety sign like the given one.
2. Discuss in class and make them keeping the same format of traffic signals and colour scheme.
3. Now you have class and school safety rules ready.

9 A House A Home

You know children, some people make strange houses to live in.

Strange house! What's that ma'am?

Like, a gentleman in Poland has made an upside down house.

Upside down? Then how do people walk in that house?

Is it? Well, I have seen the picture of a house in South Africa, which looks like a shoe. It is called a shoe house.

Any way, lets now discuss about various types of houses and the materials required for that.

It's simple! They walk on their head!

No joking kids. From the outside (exterior part) the house looks like upside down.

Ma'am, when my father visited the USA, he brought a picture of a house which looks like a bunch of mushroom!

Let's Learn More About

- Our house
- Why we need to live in a house
- A good house
- A clean house

Our house

All living organisms need a shelter to live in.

Early man used to live in caves.

Later man learnt to make different types of houses.

There are many types of houses found all over the world. They can be grouped into:

Early men living in caves

1. **Permanent houses (Pucca houses):** Houses made of bricks, cement, sand and stone last for many years. They are called **permanent houses**. They are strong houses.

Bungalow

Multi-storey building

Skyscrapers

Permanent cottage

2. **Temporary houses (Kutcha houses):** Houses made of mud, bamboo and straw last for a short time. They are called **temporary houses**. They are not strong houses.

Straw house

Bamboo house

Mud house

3. **Stilt houses:** Stilt houses are made in places where it rains heavily. These houses are made almost ten to twelve feet above the ground. These houses are made on bamboo and wooden poles. The floor, walls and roofs are made of bamboo or wood. Stilt houses are found in Assam in India.
4. **Igloo:** Igloos are houses made up of large blocks of hard snow. They are built by Eskimos who live in polar regions. These snow houses melt in summer.

Stilt house

5. **Caravan:** A caravan is also called a **house on wheels**. This house is built on a carriage. The carriage is pulled by animals or by motorised engines.
6. **Houseboat:** It is a house built on boats. It floats on lakes and rivers. It is mainly made of wood. In India, such houses are found in Kashmir. Tourists love to stay in houseboats.
7. **Tent:** A tent is a temporary shelter. It is made up of a kind of cloth called canvas. People who roam around from one place to another live in tents. Soldiers, police, pilgrims, scouts and guides live in tents for short stays.

Igloo

Caravan

Houseboat

Tent

CONCEPTUAL CANVASS

1. What are the materials required to make a permanent house?
2. In which place are stilt houses made?
3. Eskimos live in a houseboat. (True/False)
4. Are the houseboats found in Kashmir in India?

FUN to Learn

The traditional family homes in Kerala are known as 'NALUKETTU'. This is an architectural layout with a central courtyard, rooms are arranged around it.

Why we need to live in a house

We need a house to live in because:

- It gives us shelter.
- It protects us from heat, cold, rain, snow and storm.
- It protects us from wild or stray animals and thieves.

A good house

A good house should:

- Be located in a clean open area.
- Be strong enough to protect us from harsh climate.
- Be open, airy, spacious and clean.

A good house

- Be fitted with wire-netted big windows and doors to keep away the flies, and mosquitoes.
- Have a proper drainage system to get rid of waste water.
- Have a garden around the house to keep the area cool.

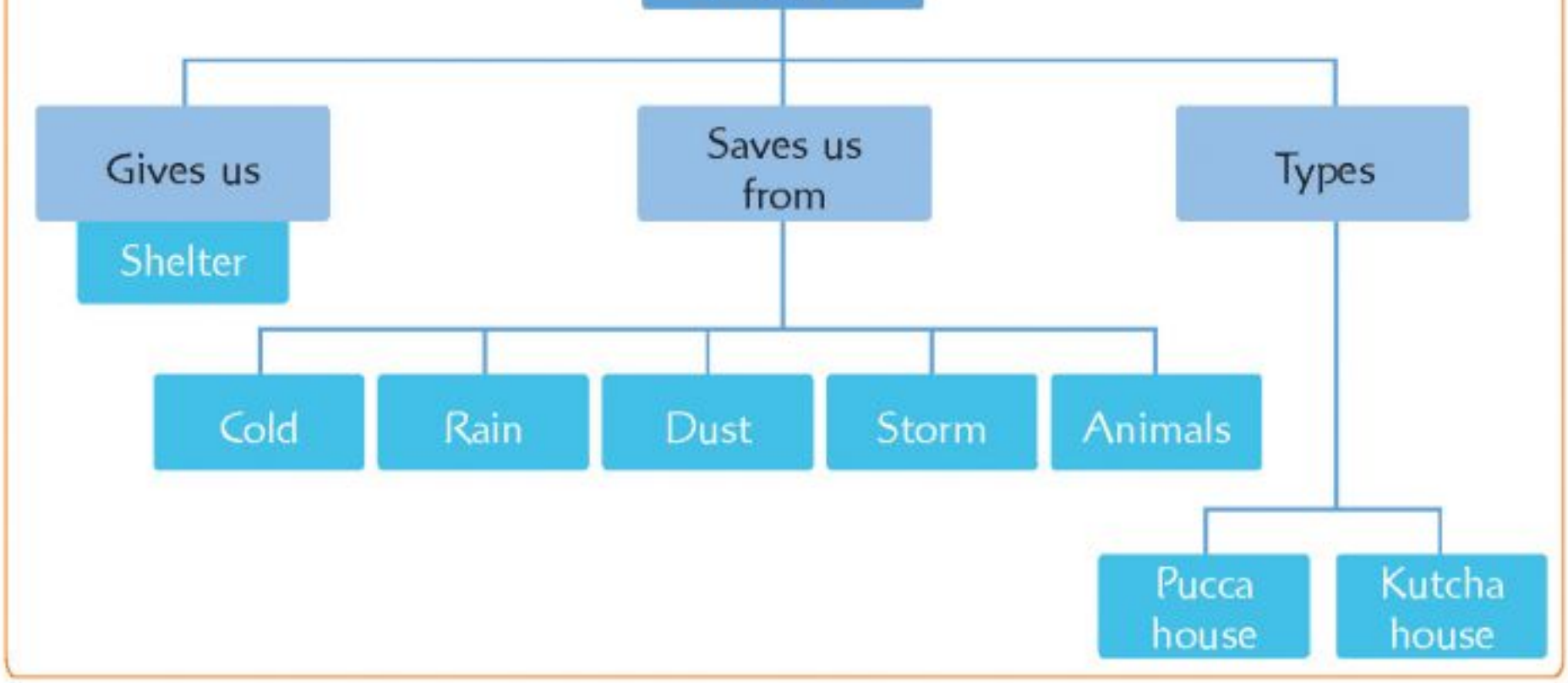
A clean house

We should clean our house everyday. It keeps us away from germs and diseases. We should do the following things to keep our houses clean:

- The floors of all rooms must be cleaned with brooms and mops. If carpeted, the carpet should be cleaned everyday.

- All the belongings in the rooms must be cleaned to remove dust.
- Dustbins must be cleaned with soap and disinfectants.
- Bathrooms and washbasins should be washed daily with soap water.
- A house must be painted regularly.

Now I Know...



WORD BEE

Find new words from the lesson, read them aloud and write them below.

EXERCISES

A. Tick (✔) the correct option.

1. Which one is a permanent house?
   (a) Igloo (b) Tent (c) Bungalow (d) Caravan
2. Which is a stronger house?
   (a) Multi-storey building (b) Igloo (c) Stilt house (d) Houseboat
3. A house protects us from
   (a) heat (b) cold (c) wild animals (d) all of these
4. A stilt house is made up of
   (a) bricks (b) mud (c) straw (d) bamboo and wood
5. An igloo is a temporary house made by
   (a) Eskimos (b) Red Indians (c) Africans (d) Arabs

B. Write 'T' for true and 'F' for false in the boxes given against the statements.

1. A house protects us from thieves.
2. Early man used to live in caves.
3. A caravan is a house made of canvas.
4. In India, we see houseboats in Rajasthan.
5. Igloos are made from hard snow.

C. Match the following.

1. Caravan	(a) Wood
2. Stilt	(b) Canvas
3. Igloo	(c) Bamboo or wood
4. Tent	(d) Early man
5. Caves	(e) House on wheels
6. Houseboat	(f) Snow

D. Answer the following questions in one word or a sentence.

1. Name two kutcha (temporary) houses.
2. What should be fixed on the doors and windows to keep flies/mosquitoes away?
3. Give another name of caravan.
4. Why should houses have a proper drainage system?

E. Answer the following questions in short.

1. Why do we need a house?
2. What is the difference between a permanent house and a temporary house?
3. List any five things that you should do to keep your house clean and tidy.
4. List any three materials used to make a temporary house.

F. Answer the following questions in detail.

Observe the pictures given below and answer the following questions:

1. 

   (i) What type of house is this?
   (ii) Where do we find this house?
   (iii) Why are these houses built on bamboo pillars?

2. 

   (i) Where do we find this house?
   (ii) Is it a permanent or a temporary house?
   (iii) Why do people make these houses?

3. 

   (i) What are the materials required for making this house?
   (ii) Where do we find this type of house?
   (iii) Why do people make such houses?

ACTIVITIES

ACTIVITY 1

Find different materials used for making houses in the word maze. There are total 10 materials hidden in the word maze.

One is done for you.

Q	L	M	U	D	P	X	I	R	O	N	Z
A	B	E	G	M	N	L	E	U	V	Y	O
B	Z	N	G	P	T	N	T	K	L	T	S
A	E	G	R	G	O	B	R	I	C	K	F
M	C	T	A	T	K	U	Z	Y	A	M	X
B	N	Q	S	R	T	S	U	V	N	D	D
O	F	O	S	T	R	A	W	S	A	L	P
O	C	E	M	E	N	T	X	S	N	O	W

ACTIVITY 2

1. Observe the houses in your locality. What are they made up of?
2. Take photographs or draw the pictures of at least five different houses in your locality.
3. Arrange for an on-the-spot drawing competition on the themes "Temporary Houses" and "Clean Environment" in your school.

HOTS QUESTIONS

1. Renu asked her father while she visited a luxurious resort with a green campus and beautiful mud hutments "Dad, why did they have installed air conditioners in such lovely mud hutments?" "Do we need ACs in the mud houses?"
2. She also asked "Why do we need to care for our neighbours?"

LIFE SKILLS

1. Take a round in your neighbourhood with your friends. Check whether all the drains that are carrying household wastes are clear or not. If you find any point, the drain is choked, report it to the municipality or panchayat and get it cleared. This way you and your friends can help your neighbourhood clean. Take help of your elders to report the issue.
2. Plant trees around your house and neighbourhood as many as possible.

SUBJECT LINK

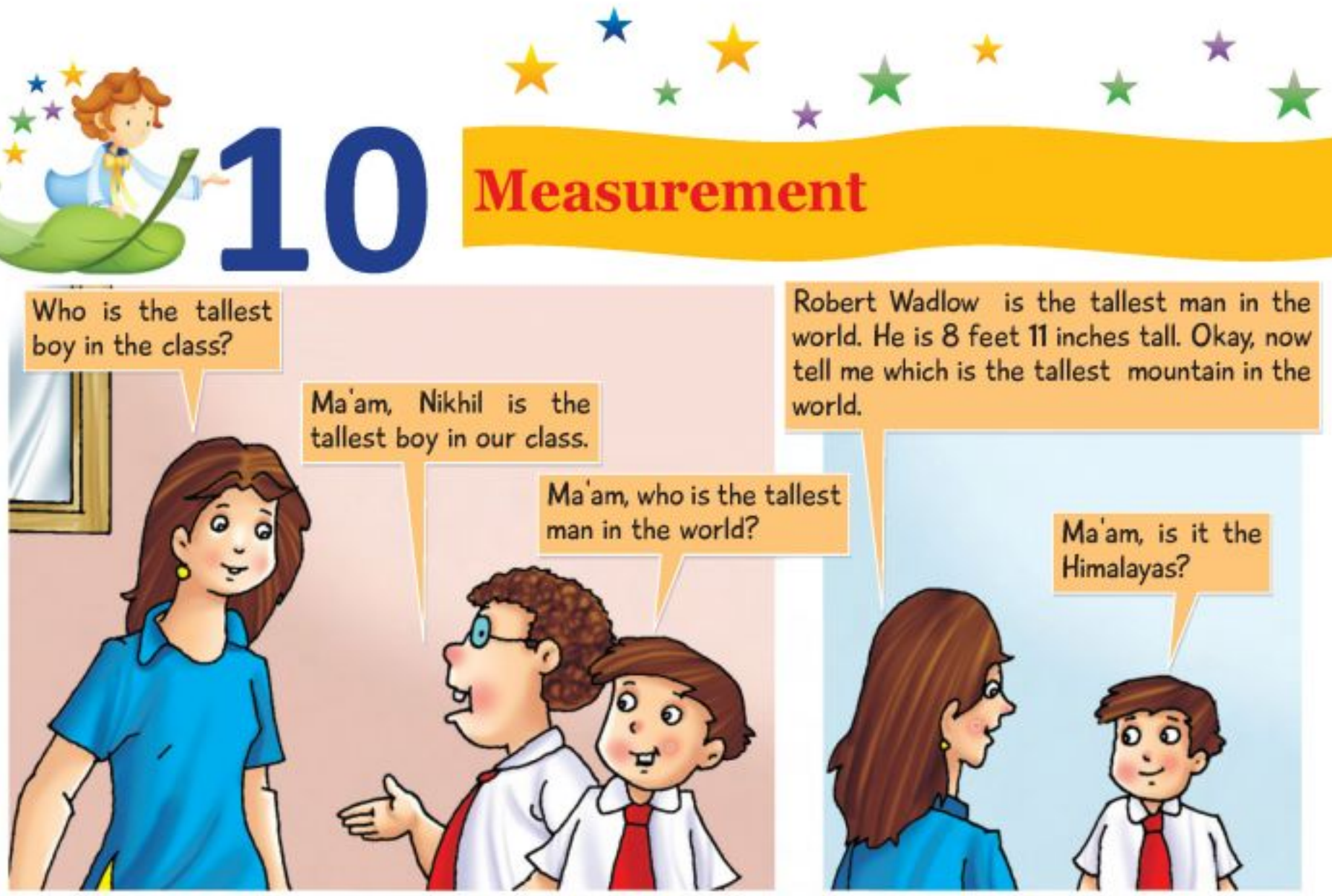
If you are given a choice to build your house, what kind of home will you like to have. Write 10 sentences about your dream house.

FUN TIME

Head, Heart and Hand

1. Make a tent house.
2. Use an old bed sheet/sheet of cloth, rope and small wooden pieces to fix on the base.
3. Take a strong thermocol.
4. Fix the wooden pieces on four corners.
5. Take three big (15") bamboo sticks.
6. Fix them in the middle of the thermocol.
7. Tie the third stick on the top of the two 15" sticks like a frame.
8. Now fix pieces of ropes on all four corners of the cloth piece and hang it from the frame. Tie the ropes of all corners to finish your tent house. Your tent house is ready!

10 Measurement



Let's Learn More About

- Measurement of length
- Measurement of weight
- Measurement of capacity
- Measurement of time
- Measurement of temperature

How far is your school from your home?

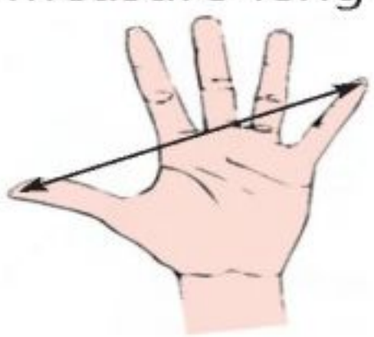
What is your height? Who is taller—you or your best friend? Which is longer—your pencil or your ruler? What is your weight?

To get the answers, you need to measure the length, weight or capacity of these things. We use a standard unit to measure things accurately.

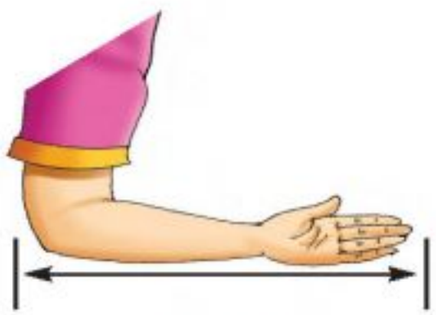
A **unit** is the smallest value whose multiples are used to measure length, weight, capacity, time, etc.

Measurement of length

In old days, people used their body parts like hands, arms, foot or steps to measure length. They are called handspan, cubit, footspan and stride.

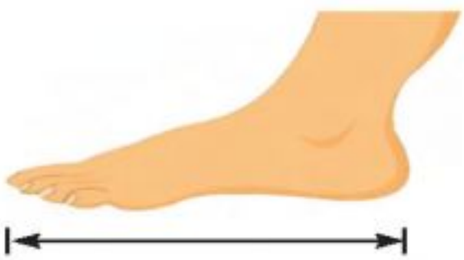


Handspan



Cubit

Stride



Footspan

ACTIVITY 1

1. Measure the length of your blackboard with your handspan.
2. Now ask your teacher to measure the same blackboard using his/her handspan.
3. Number of handspan counted by you: _____.
4. Number of handspan counted by your teacher: _____.
5. Can you say why the measurement differs?

The length of body parts vary from person to person. Hence measurement by using human body parts cannot be considered as a standard.

The standard unit of length is **metre** (m). Smaller lengths of objects are measured in **centimetre** (cm).

1 metre = 100 centimetres

When one metre is divided into 100 equal parts, each part is called a centimetre.

Even smaller objects are measured in millimetre. When one centimetre is divided into 10 parts, each part is called a **millimetre**.

1 centimetre = 10 millimetres

FUN to Learn

Easy way to remember:

"Mac Cain dances like monkeys, donkeys, hens and kittens"

Mac stands for Millimetre
Cain stands for Centimetre
Dance stands for Decimetre
Monkeys stand for Metre
Donkeys stand for Decametre
Hens stand for Hectometre
Kittens stand for Kilometre.

Longer distances are measured in kilometres such as the distance between two villages or cities.

1 kilometre = 1000 metres

Rulers, measuring tapes, measuring rods are used to measure the length of an object.

A tailor or a cloth merchant uses a measuring tape to measure cloth.

Students use a ruler to measure diagrams in geometry.

Ruler

Measuring tape

Measuring rod

Measure the following things using your ruler and write their length below each picture.

Ans = _____ cm

Ans = _____ cm

Ans = _____ cm

Measurement of weight

The standard unit of weight is **kilogram** (kg).

Heavy objects are measured in kilogram. When one kilogram is divided into 1000 equal parts, each part is called a **gram** (g).

1 kilogram = 1000 grams (g)

Lighter or smaller objects are measured in grams (g). Very light objects are measured in milligrams (mg).

When one gram is divided into 1000 equal parts, each part is called a **milligram** (mg).

1 gram (g) = 1000 milligrams (mg)

The common balance, double pan balance, spring balance and weighing machine are used to weigh various objects.

Physical balance

Double pan balance

Spring balance

Weighing machine

A vegetable vendor or a grocer or a shopkeeper uses a common balance.

A spring balance is used to measure a gas cylinder or jute bale.

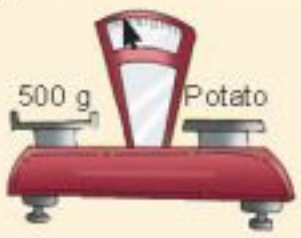
We take our body weight or the weight of a heavy bag of rice or wheat on a weighing machine. You must have seen a weighing machine at the railway station.

Electronic balance

Nowadays, an electronic balance is used to get the weight of an object more accurately.

ACTIVITY 2

Go to the market with your father/elders. Observe the weight of the following things that your father/elder buys, and fill in the blanks.



Potato = _____ g

Garlic = _____ g

Chillies = _____ g

Now calculate the total weight of all the items your father bought.

Total weight = _____ g.

Measurement of capacity

Capacity is the amount of liquid that a container can hold.

The standard unit of measuring the capacity of a container is **litre** (L).

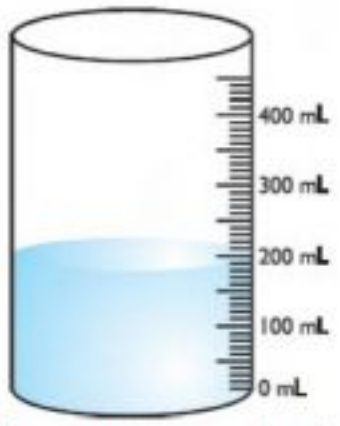
Smaller amounts of liquid are measured in **millilitres** (mL).

For example, the rainfall of a place is measured in millilitre. Water, milk and oil are commonly measured in litre.

1 litre (L) = 1000 millilitres (mL).

Larger amounts of liquid such as water stored in an overhead water tank, is measured in **kilolitres**.

1 kilolitre = 1000 litres.



Measuring cylinder

Measuring cylinders and cans are used to measure liquid such as water, oil, milk and petrol.

Measuring cans

Measurement of time

The standard unit for measuring time is **seconds** (sec).

Minutes and **hours** are also units for measuring time.

A clock or a watch is used to measure time.

A clock has three hands.

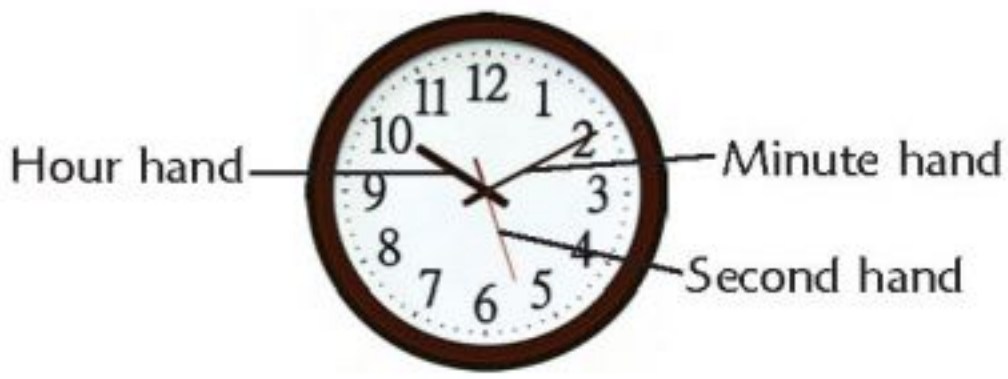
The thin hand shows seconds.

The short hand shows hours.

The long hand shows minutes.

1 hour = 60 minutes

1 minute = 60 seconds



Hands of a clock

There are 24 hours in a day. Night 12 o'clock the previous day to 12 o'clock tonight is a total of 24 hours. During the day, time is written as **am** till 12 o'clock in the morning and after 12 o'clock in the afternoon, it is written as **pm**.

Measurement of temperature

Temperature is the hotness or coldness of a body.

Temperature is measured in units called **degree centigrade** (°C) or **degree Fahrenheit** (°F).

We measure temperature by using a **thermometer**.

You must have seen a thermometer. Your mother uses it when you have fever.

Our normal body temperature is 37 °C or 98.4 °F.

Thermometer that a doctor uses is called a **clinical thermometer**. It measures temperature in degree Fahrenheit (°F).

Clinical thermometer

CONCEPTUAL CANVASS

1. Why do we need to use standard units of measurement?
2. How many centimetres make a metre?
3. What does a tailor use to measure clothes?
4. What does the short hand of a clock show?

Now I Know...

1. We need to measure the weight, length, capacity, time and temperature of different objects.
2. The units of length are metre (m), centimetre (cm) and millimetre (mm).
3. The units of weight are kilogram (kg), gram (g) and milligram (mg).
4. The units of capacity are litre (L) and millilitre (mL).
5. The unit of time is second.
6. The units of temperature are either degree Centigrade (°C) or degree Fahrenheit (°F).

WORD BEE

Find bold words from the lesson, read them aloud and write them below.

EXERCISES

A. Tick (✔) the correct option.

1. Distance from Delhi to Jaipur is measured in
   (a) metre (b) centimetre (c) kilometre (d) millimetre
2. Milk is measured in
   (a) litre (b) metre (c) kilogram (d) milligram
3. The length of a cricket pitch is measured using a
   (a) ruler (b) handspan (c) measuring tape (d) metre stick
4. Vegetables are weighed by
   (a) common balance (b) double pan balance (c) spring balance (d) none of these
5. When you get fever, the doctor measures your body temperature
   (a) by touching your hand (b) with a calorimeter
   (c) using a measuring tape (d) with a clinical thermometer

B. Fill in the blanks with the words given in the brackets.

1. Smaller amounts of liquid are measured in _____ . (litres/millilitres)
2. Weight of solid things is measured by using a _____. (balance/ruler)
3. Time is measured by using a _____ . (clock/measuring cylinder)
4. One thousand metre is equal to one _____. (kilometre/centimetre)
5. Metre stick is equal to one _____ in length. (metre/litre)

C. Match the following.

1. 1 metre	(a) 1,000 milligrams
2. 1 gram	(b) Spring balance
3. Body temperature	(c) Litre
4. Weighing a gas cylinder	(d) Clinical thermometer
5. Oil	(e) 100 centimetres

D. Write 'T' for true and 'F' for false in the boxes given against the statements.

1. At 12 o' clock, both hands of a clock remain on the 12 mark.
2. Petrol is measured in metre.
3. The standard unit of weight is kilogram.
4. Our body temperature is measured by a clinical thermometer.
5. Students use ruler to measure the length of diagrams.

E. Answer the following questions in one word or a sentence.

1. What is the standard unit of length?
2. Which balance is used to measure a gas cylinder?
3. How many litres make a kilolitre?
4. Degree Centigrade is the unit of what?

F. Answer the following questions in short.

1. Name three body parts that were used in early days for measuring length.
2. How many hours make a day?
3. Which units are used to measure time?
4. Which instrument is used to measure the hotness or coldness of an object?

G. Circle the correct unit.

1.  (a) Litre (b) Degree Fahrenheit (c) Centimetre

2.  (a) Litre (b) Kilometre (c) Hour

3. 

(a) Kilogram (b) Hour (c) Litre

4.  (a) Litre (b) Metre (c) Minute

5.  (a) Metre rod (b) Thermometer (c) Measuring cylinder

ACTIVITIES

ACTIVITY 1

Take a piece of paper. Measure its length and breadth using a ruler. When the four sides measure the same, it will be a square piece of paper.

ACTIVITY 2

How much water do you drink on a hot summer day? Measure the amount. In which unit will you measure it?

HOTS QUESTIONS

1. Early man used to measure the length of an object with t ıe handspan. Do you think that was better than the measuring sti :k or tapes? Why?
2. Ask your elders which mark do they check for when they buy gold jewellery and when they buy bottle of oil. Why are these marks printed on the packets?

LIFE SKILLS

1. Check the time shown in all the clocks and wrist watches at home. Check it with the time reflected in the mobile phones or announced in the radio/TV. Do they match? If not, then adjust the clocks accordingly.
2. When you go to the market with your parents to buy vegetables or groceries check the physical balance the shopkeeper is using. So that they do not manipulate it and give less amount to customers.
3. Find the above measurement units in the following word maze and circle them with different coloured pencils.

X	K	I	L	O	G	R	A	M
L	M	I	N	U	T	E	Z	Y
V	Q	S	L	I	T	R	E	X
W	S	E	C	O	N	D	P	N
N	A	C	D	P	G	R	A	M
T	U	X	M	E	T	R	E	T
O	R	S	W	V	Q	M	J	K

SUBJECT LINK

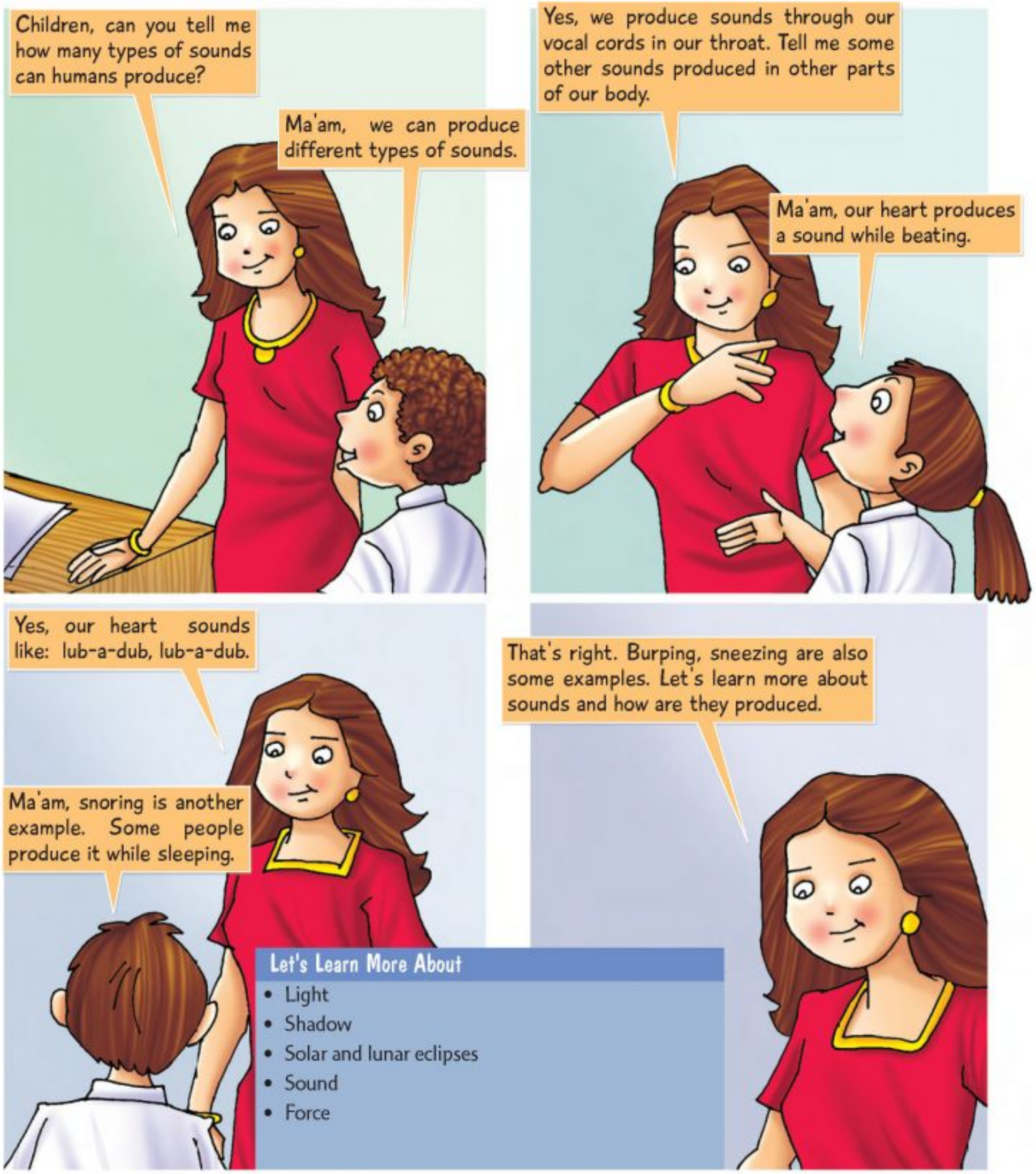
Mohit brought a two-litre Pepsi bottle for his birthday party. He had a pack of 50 glasses each measuring 50 mL. How many guests can he serve with this bottle of Pepsi? He had to serve each glass full.

FUN TIME

Head, Heart and Hand

1. Make a measuring cylinder with old pepsi or coke bottle. Cut the bottle's narrow head.
2. Now with a marked beaker (borrow from science lab) add 10 mL water. Mark that point with permanent marker. Mark after putting every 10 mL and draw a line after 4th marking.
3. Once marked, you can use this bottle for measuring liquids. Now measuring cylinder is available at home.

11 Light, Sound and Force



Light

Can you see anything if light goes out all of a sudden?

Can you read a book in a dark room?

Moonlight at night

Sunlight coming in building

We need light to see things or read books.

The sun is our main source of light and heat.

The stars and fireflies also emit light.

All objects are grouped into—**Luminous** and **Non-luminous objects**.

Luminous objects

Objects that give out light are called **luminous objects**. They can be natural or man-made.

The sun, stars, fireflies, etc., emit their own light and are called **natural luminous objects**.

Sun

Stars

Firefly

Natural luminous objects

FUN to Learn

Light travels very fast. The speed of light in vacuum is 3,00,000 kilometres per second but sound cannot travel through a vacuum!

ACTIVITY 1

Circle the luminous objects:

At night we use many objects to light our houses, streets and neighbourhood. For example, bulb, candle, torch, headlights of motor vehicles, etc. These are **man-made luminous objects**.

Lamp Lantern Torch Candle

Man-made luminous objects

Non-luminous objects

Objects that do not emit light of their own are called **non-luminous objects**. Table, book, glass and pencil are examples of non-luminous objects.

Table Book Glass sheet Pencil

Non-luminous objects

Shadow

Stand in the open ground under the sun.

Look at the ground. What do you see?

You can see your dark image on the ground.

This is called **shadow**.

ACTIVITY 2

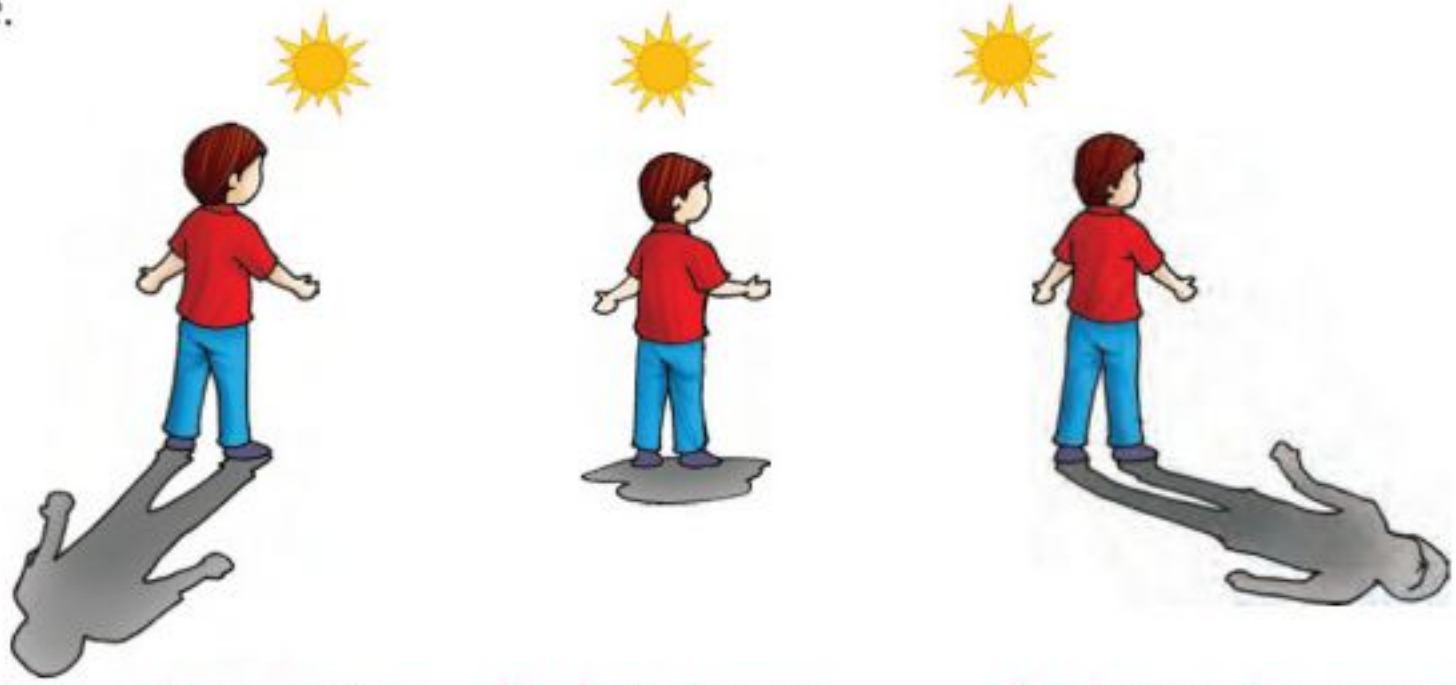
1. Take a torch.
2. Switch it on at night.
3. Keep your hand in front of the torch light.
4. What do you observe?
5. You can see a dark image of your hand on the wall.

A shadow is formed when an object blocks the path of light. Light travels in a straight line.

A shadow is always formed on the opposite side of light.

Light does not require any medium to travel.

The size of a shadow may be short or long depending on the position of the light source.



Shadow in the morning Shadow at noon Shadow in the evening

In the morning and evening, when the sun is at the horizon, the shadow is long.

At noon, when the sun is overhead, the shadow is short.

Solar and lunar eclipses

You know the sun rises in the east and sets in the west. Through the day, you see the sun moving slowly from the east to the west.

Our earth goes around the sun on a fixed path. It also spins on its own axis.

When the sun's light falls on a part of the earth, it is day.

The moon goes around the earth on a fixed path too. It also spins on its own axis. The moon does not have its own light. It reflects the light of the sun.

When the moon comes between the sun and the earth, the shadow of the moon falls on the earth. Then we cannot see the sun partially or completely. This is called **solar eclipse**.

Solar eclipse

Lunar eclipse

When the earth comes between the sun and the moon, the shadow of the earth falls on the moon. Then we cannot see the moon partially or completely. This is called **lunar eclipse**.

Sound

Everyday you hear various sounds such as chirping of birds, ringing of door bells, ringing of alarm clock and ringing of school bell.

Sound needs a **medium** to travel.

There are a variety of sounds all over the earth. Some sounds are **pleasant**. For example, sound of a flowing river, a water fall, rustling of leaves and music of musical instrument.

Flowing river

A waterfall

Music of musical instruments

Pleasant sounds

Some sounds are very **unpleasant**. For example, sound of a loudspeaker, honking of motor horns and bursting of crackers.

Loudspeakers

Vehicle horns

Fire crackers

Unpleasant sounds

Loud and unpleasant sounds are called **noise**. Noise makes us irritated. It also causes headache and hearing problems. So, what should we do to avoid making noise?

- We should speak softly.
- We should not make noise in the class.
- We should not blow/honk the car horn unnecessarily.
- We should play radio, television, music system at a low volume.
- We should avoid using loudspeakers near schools and hospitals.

CONCEPTUAL CANVASS

1. Differentiate between a luminous and a non-luminous object.
2. How does a shadow form?
3. What is solar eclipse?
4. What is noise?

Force

What do you do to enter a room if the door is closed? You pull or push to open the door. We move many things by pulling or pushing them. We pull or push to open and close a table drawer.

Push and pull

A pull or a push applied on an object is called **force**.

Force can change the speed of a moving object.

ACTIVITY 3

1. Take a top. Spin it on the ground with the help of a thread.
2. When the top spins with great speed, apply a force with your hand to slow down its speed. What do you observe?
3. A force can change the direction of a moving object.

ACTIVITY 4

1. Take a toy car.
2. Switch it on and allow it to run on the table top.
3. Now slowly touch the front of the car and push a bit to change its direction. What do you observe?
4. A force can bring a moving object to rest/stop.

Now I Know...

1. Objects that emit light are called luminous objects.
2. Objects that do not emit light are called non-luminous objects.
3. Light travels faster than sound.
4. Loud and unpleasant sounds are called noise.
5. A push or a pull applied on an object is called force.

WORD BEE

Find bold words from the lesson, read them aloud and write them below.

EXERCISES

A. Tick (✔) the correct option.

1. This object gives its own light.
   (a) Book (b) Sun (c) Pencil (d) Table
2. We can see any object when there is
   (a) dark (b) cloud (c) light (d) night
3. Sounds like rustling of leaves and flowing river are
   (a) pleasant (b) unpleasant
   (c) both (a) and (b) (d) none of these
4. When the earth comes between the moon and the sun, it is
   (a) solar eclipse (b) lunar eclipse (c) storm (d) tide
5. When you pull a toy car, you need to apply
   (a) work (b) force (c) light (d) sound

B. Fill in the blanks with the words given in the brackets.

1. We use our ear to hear _____ . (sound/smell)
2. A force can change the _____ of a moving object. (speed/weight)
3. Light travels in a _____ line. (straight/curved)
4. _____ needs a medium to travel. (Light/Sound)
5. A push or pull applied on an object is called _____ . (energy/force)

C. Write 'T' for true and 'F' for false in the boxes given against the statements.

1. We can see an object in the absence of light.
2. Firefly is a luminous object.
3. Sound needs a medium to travel.
4. Light needs a medium to travel.
5. Any object can be moved from one place to another by application of force.

D. Answer the following questions in one word or a sentence.

1. For changing the direction of a moving object, what do you need to apply?
2. Does the moon have its own light?
3. During solar eclipse, what comes between the earth and the sun?
4. What should you apply to stop a moving football?

E. Answer the following questions in short.

1. Why can't you read a book when there is no light?
2. The moon reflects light. From where does it get this light?
3. What is force?
4. What can we do to avoid making noise?
5. Make a list of luminous objects.
6. What is lunar eclipse?

E. Match the following.

1. 
2. 
3. 
4. 
5. 

(a) Heat and light

(b) Luminous object

(c) Applying force

(d) Sound

(e) Non-luminous object

ACTIVITIES

ACTIVITY 1

1. Make your own musical instrument.
2. Take an empty small tin can.
3. Take a piece of string or thin wire.
4. Make a small hole at the bottom of the tin can.
5. Pass the wire through the hole of the tin can. At the end of the wire, tie a small stick.
6. The stick will remain outside the base of the tin can so that the string/wire remains fixed. On the other end, tie another small piece of stick so that the string can be stretched by pulling the string.
7. Your instrument is ready. Now strike the stretched string with a piece of plastic to produce musical sound.

ACTIVITY 2

Make another musical instrument. Take four equal sized bowls made of porcelain. Fill all the bowls with different amounts of water. Take a smooth wooden stick or a wooden pencil and strike the bowls with it. Different musical sounds will be heard from different bowls. Listen to the music and practise it daily.

HOTS QUESTIONS

1. When you ride a bicycle or a car on a smooth road in the plains, you can move faster. But if you go uphill or up on a slope, you take more time. Why?
2. Why are people not allowed to use loudspeakers near hospitals or schools?

LIFE SKILLS

1. In towns and cities, the streetlights give different colours. Find out which gas is used to get
   (i) Red orange colour _____
   (ii) Reddish blue colour _____
   (iii) White, yellow or violet
   (iv) Blue or blue green _____

   Note: You can take help of your teacher/elder.

   (Hint: Gases like neon, helium, argon and xenon give different coloured light.)
2. While walking through the road, if you find the streetlights are on during the day, report it to the authority or electricity board.

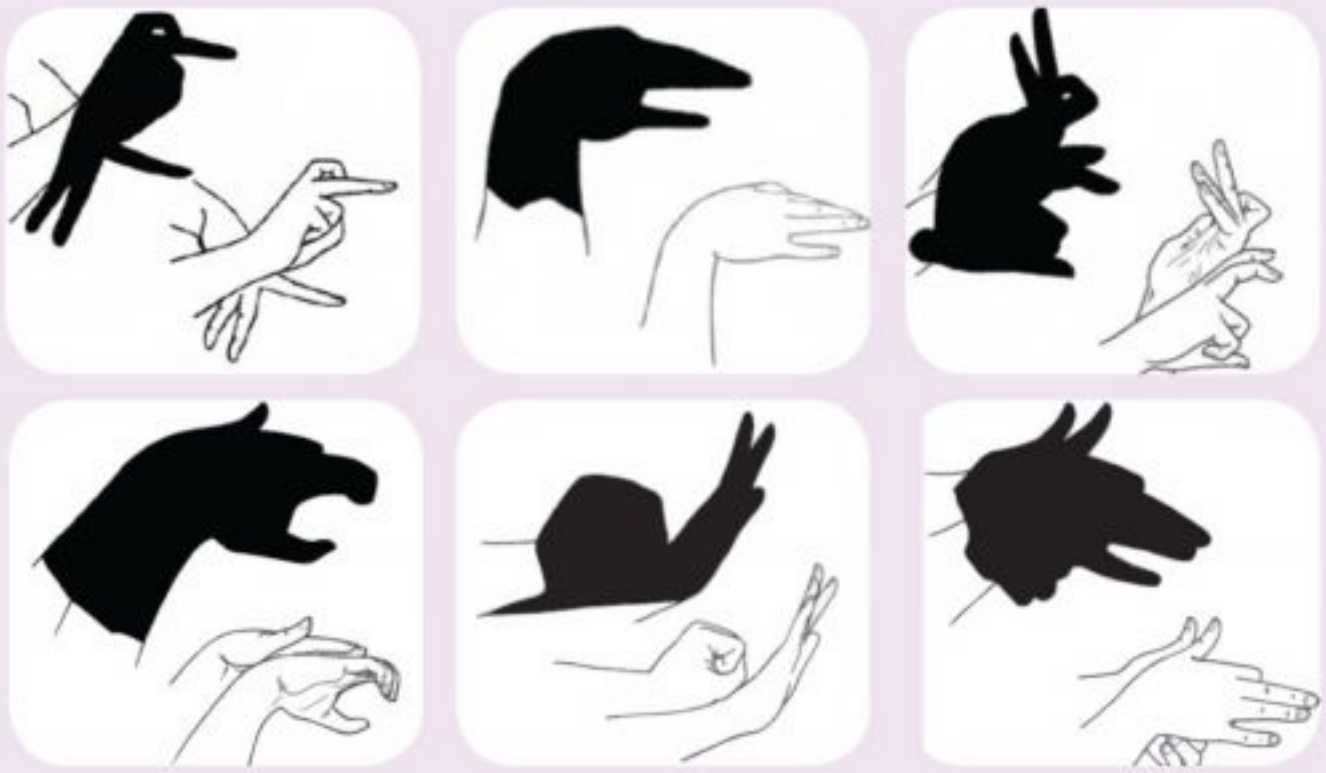
SUBJECT LINK

Draw a picture of a beautiful night sky on a drawing sheet and paste it in your science notebook.

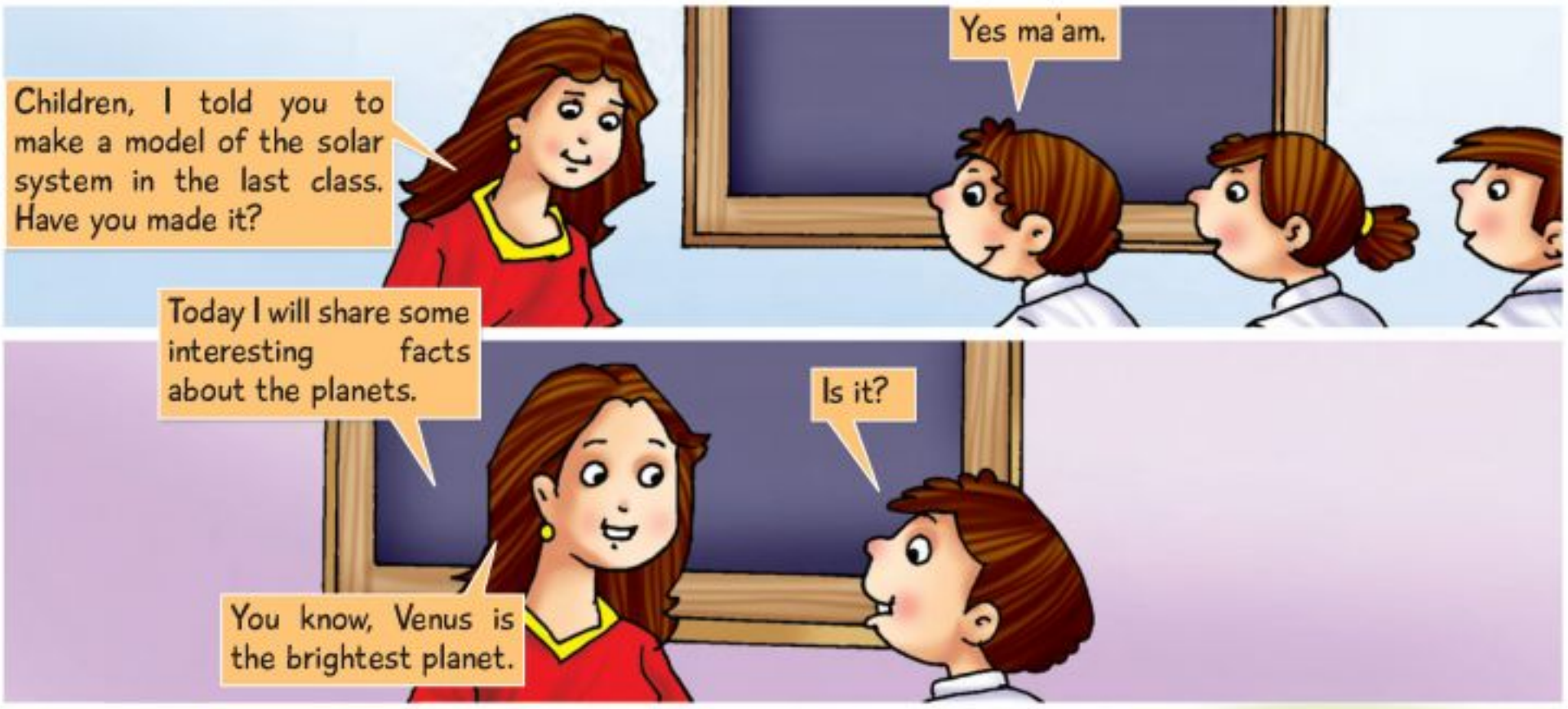
FUN TIME

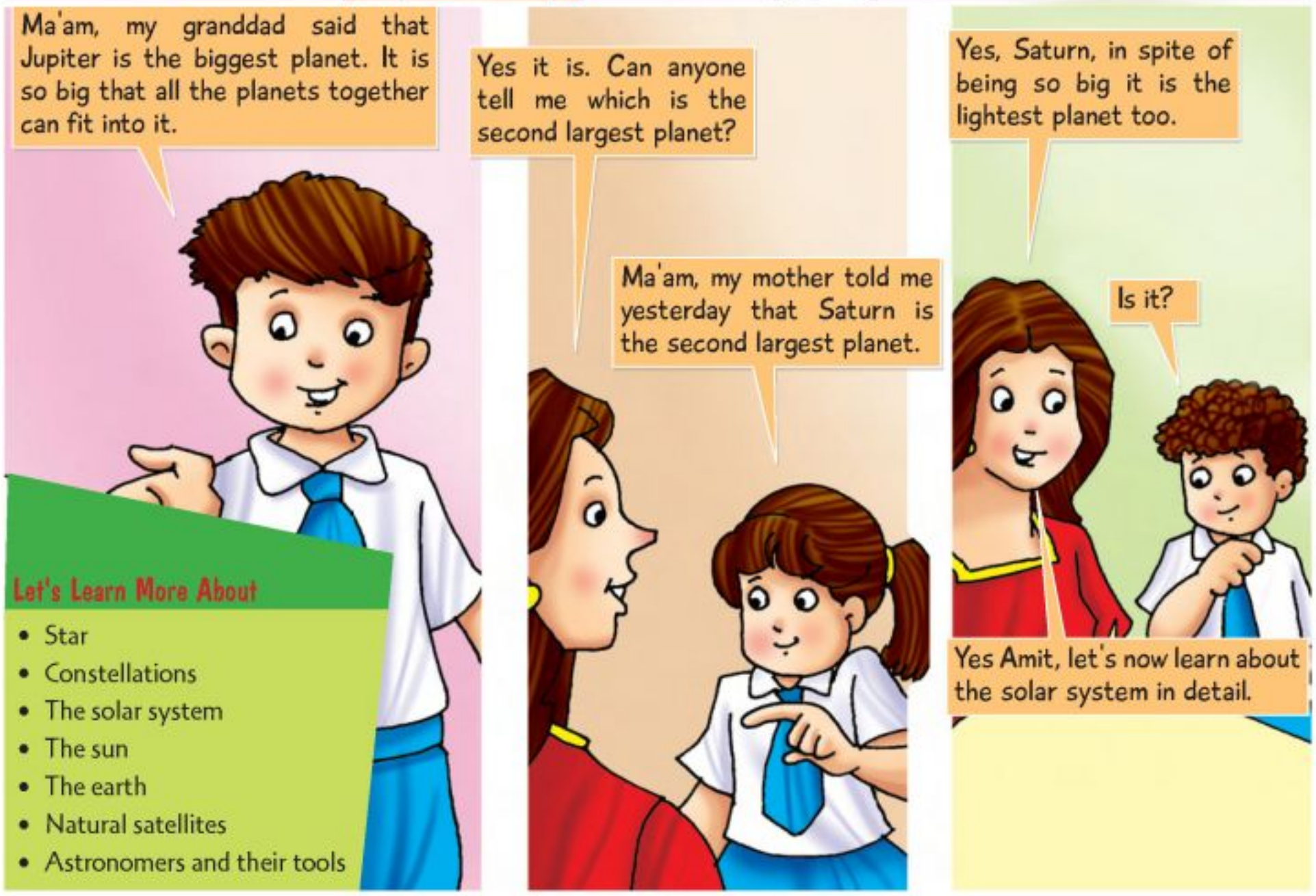
Head, Heart and Hand

1. Stand in a dark room facing a wall.
2. Switch on a torch.
3. Place your fingers in front of the torch.
4. Adjust your hand and the lighted torch to get shadows on the wall.
5. You can form various shadow figures such as peacock, dancing doll, fish, snail, dog, a bouquet, floral designs, etc., on the wall. Some of the forms are given below.



12 Stars, Earth and Other Planets





Look at the sky on a dark night.

You can see thousands of stars twinkling.

It seems they are very close to each other.

Apart from stars, there are planets and other heavenly bodies in the sky.

Let us know more about the stars and the solar system.

Star

Stars at night

A star is a huge rounded ball of fire.

It produces enormous amount of heat and light.

There are a variety of stars. Stars vary in size, temperature, and colour of the light they emit.

They lie very far from each other. They are also very far from us.

The sun is the closest star to the earth. It lies at a distance of 150 million kilometres from the earth.

Pole Star (*Dhruva Tara*) lies above the North Pole.

Travellers see the Pole star to find the direction at night.

Constellations

Some stars together form various patterns in the sky. Some of these patterns are the **Ursa Major** (The Great Bear), **Orion** (Hunter), **Scorpius** (Scorpion), **Leo** (Lion), etc.

These groups of stars forming patterns are called **Constellations**.

Ursa Major (The Great Bear)

It is also called the "**Sapt Rishi**". It has seven stars that together seem to look like the form of a big bear in the sky.

Ursa Major

Orion

Orion (Hunter)

It is also called the "**Vyadh**".

It seems to form an image of a hunting man in the sky.

Scorpius (Scorpion)

It is one of the oldest constellations known.

It resembles the insect scorpion.

Scorpius

Leo

Leo (Lion)

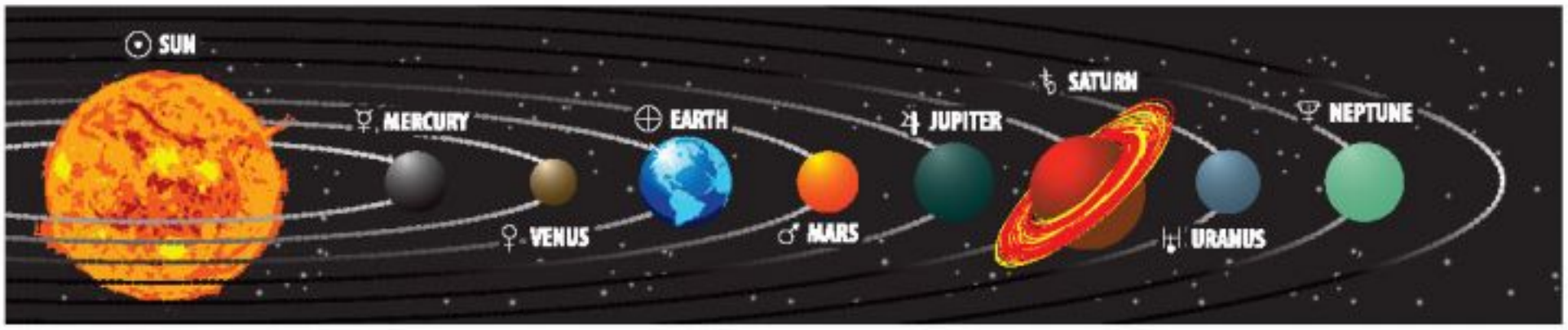
It resembles a lion in the sky.

The solar system

If we look at the sky on a clear dark night carefully, we may find some bright spots of lights. These spots of lights glow steadily. They do not twinkle like stars. These steady spots of light are planets.

Our earth is a planet.

There are eight major planets. They are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune. All the planets are far away from each other.



Solar system

FUN to Learn

Jupiter is the largest planet in the solar system.

Mars is called the red planet.

CONCEPTUAL CANVASS

1. Which is the nearest star to the earth?
2. Where does the Pole star lie?
3. What is Ursa Major?

These planets are of different sizes. They are located at different distances from the sun.

The sun and these eight major planets together form our **Solar system**.

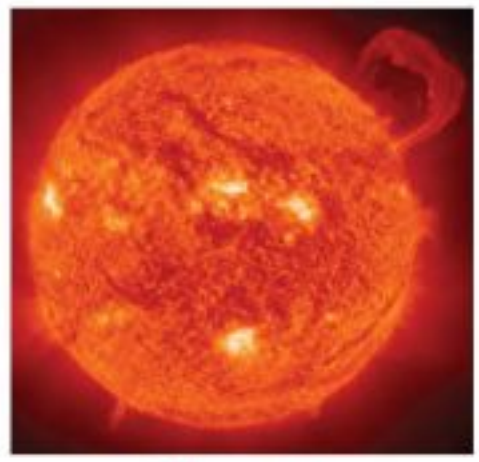
Pluto is no longer a part of the solar system because it is not a major planet.

Planets do not have their own light. They reflect the light of the sun that falls on them.

FUN to Learn

The sky is nothing but a space wherein stars, planets and other heavenly bodies exist. Pluto is now considered as a dwarf planet and not as a major planet.

The sun



The sun

The sun is a huge ball of fire.

It has its own light and heat.

It is the closest star to the earth. Hence, it seems bigger than the other stars in the sky.

The sun is so large that 13,00,000 earths can fit into it!

The earth

The earth

The earth is one of the eight major planets of our **solar system**.

The earth does not have its own light.

The sun is the main source of its light and heat.

The earth is made up of land, water and air.

It is surrounded by layers of air called **atmosphere**.

Three-fourths of the earth's surface is covered with water in the form of oceans.

One-fourth is land.

It is the only planet in which life exists.

If we dig deeper into the earth, it is very hot.

Movements of the earth

The sun rises in the east and sets in the west. But actually the sun is fixed at a place.

The earth rotates from west to east. It gives the appearance of the sun rising in the east and setting in the west.

The earth goes around the sun on a fixed path. It takes 365 ¼ days to revolve around the sun.

The earth also spins on its own imaginary axis. It takes 24 hours to spin around its own axis.

What causes day and night and seasons

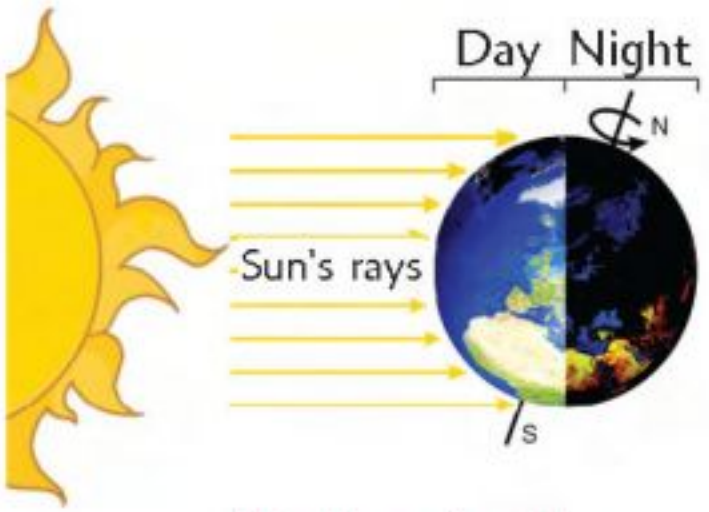
The earth spins on its axis all the time. It also goes around the sun on a fixed path. So, the earth has two types of movements: (i) Rotation and (ii) Revolution.

Rotation

The earth spins on its own imaginary line (axis) like a spinning top. This axis joins the North and South poles. The spinning of the earth on its own axis is called **rotation**.

The part of earth facing the sun has day. The other part that is away from the sun has night.

Hence, rotation of the earth causes day and night.



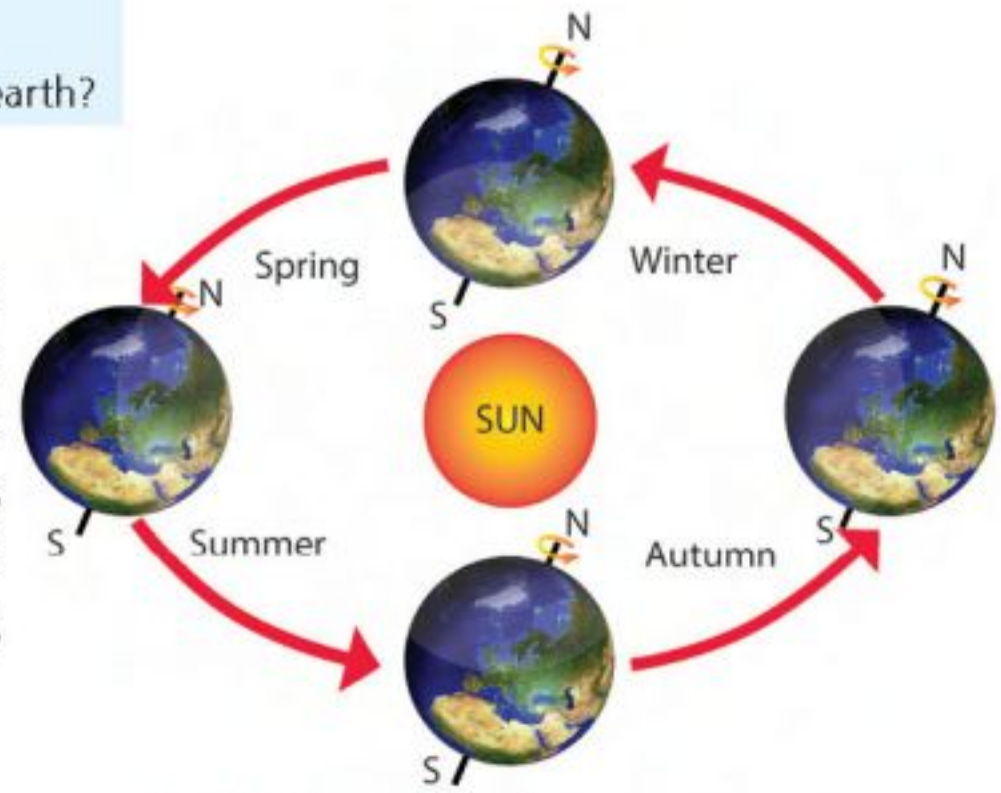
Rotation of earth causes day and night

CONCEPTUAL CANVASS

1. Name the eight planets of the solar system.
2. What is atmosphere?
3. What are the two types of movement of the earth?

Revolution

The earth, while rotating on its axis, also goes around the sun. This movement of earth around the sun is called **revolution**. The earth revolves around the sun on a fixed path called **orbit**. The earth's axis is tilted. This causes changes in **seasons**.



Revolution of earth causes seasons

Natural satellites

Some heavenly bodies revolve around some planets. These are called **satellites**. The moon revolves around the earth. It is a natural satellite of the earth.

The moon

Our earth has one moon. But there are some planets that have more than one moon. Mercury and Venus have no moon at all.

The moon revolves around the earth. It takes 29.5 days to complete one revolution. The moon not only revolves around the earth, but also rotates on

its own axis. It also takes 29.5 days for one rotation. The moon is about 3,84,400 km away from the earth. There is no air on the moon.

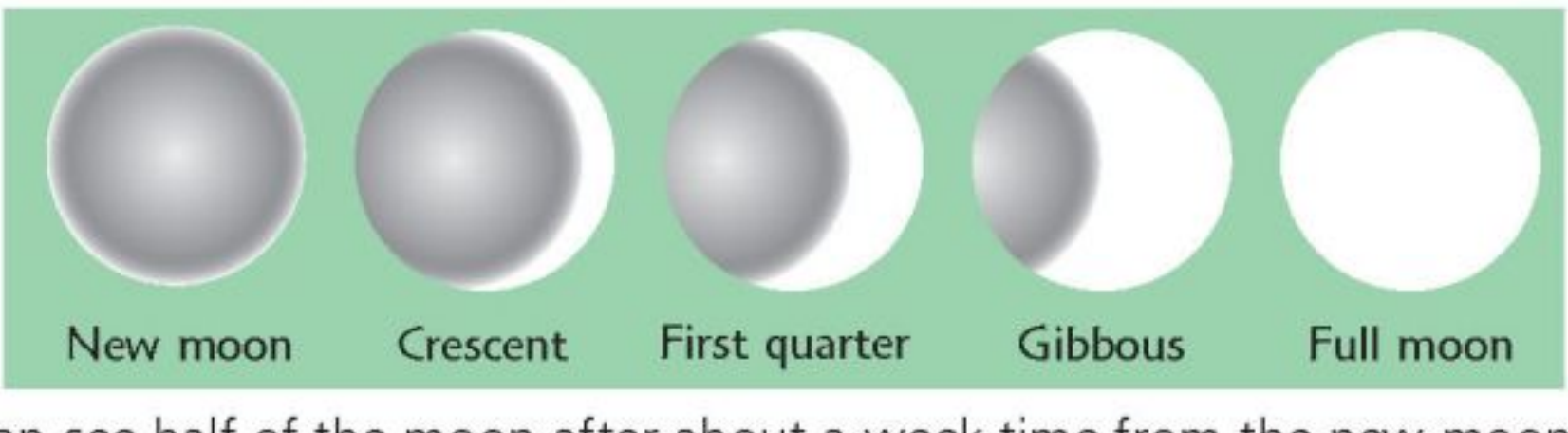
Phases of the moon

The moon does not have its own light. It only reflects the light of the sun that falls on it. We can see that part of the moon which reflects light.

So the shape of the moon appears to change every night.

When the moon comes between the earth and the sun, we cannot see it. This is called the **new moon**.

After two or three days, the new moon looks like a sickle. This is called **crescent moon**.



We can see half of the moon after about a week time from the new moon. This is called the **first quarter**.

In the next 2 to 3 days we can see more than half of the moon. This is called **gibbous moon**.

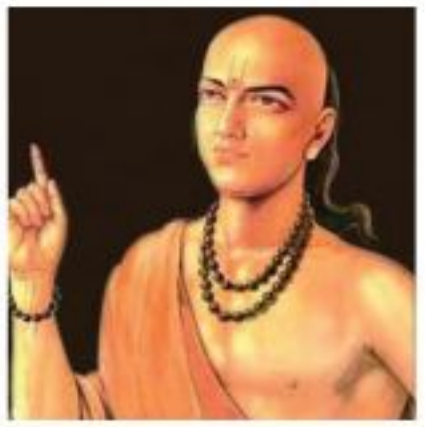
After two weeks, we can see the full moon. The earth gets bright, soothing, moonlight during the **full moon night**.

These are called **phases of the moon**.

Astronomers and their tools

Astronomers are the people who study about heavenly bodies such as the stars, the planets and the moons. Aryabhatta, Varahamihir and Bhaskara are famous Indian astronomers. Astronomers primarily use an instrument called **telescope**. A telescope helps to see distant bodies.

Telescope



Aryabhatta

FUN to Learn

The dark spots we see on the moon that create the image of the man in the moon are actually craters. Craters are filled with basalt, which is a very dense material.

CONCEPTUAL CANVASS

1. What causes day and night on the earth?
2. What is revolution?
3. How many moons does Mercury have?
4. Name two famous Indian astronomers.

Now I Know...

1. A star is a huge round ball of fire with its own heat and light.
2. The sun and eight major planets form the solar system. These eight major planets are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.
3. Rotation of earth causes day and night.
4. Seasons happen because the earth's axis is tilted.

WORD BEE

Find bold words from the lesson, read them aloud and write them below.

_____ _____ _____ _____

_____ _____ _____ _____

_____ _____ _____ _____

_____ _____ _____ _____

EXERCISES

A. Tick (✔) the correct option.

1. The sun is a huge ball of
   (a) air (b) fire (c) sand (d) hot water
2. The revolution of earth around the sun causes
   (a) rain (b) day and night (c) change of season (d) heat
3. Various patterns made by the stars are called
   (a) constellations (b) comets (c) solar systems (d) eclipses
4. Some heavenly bodies that revolve around planets are
   (a) meteorites (b) spacecrafts (c) astronauts (d) satellites
5. The sun with its eight planets together is called
   (a) constellation (b) solar system (c) milky way (d) shooting stars

B. Fill in the blanks with the words given in the brackets.

1. The earth revolves around the _____. (sun/moon)
2. _____ is the largest planet in the solar system. (Jupiter/Mars)
3. The moon takes _____ days to rotate on its own axis. (27.3/29.5)
4. The revolution of the earth causes _____. (day and night/changes in season)
5. Astronomers use _____ to see distant bodies. (periscope/telescope)

C. Write 'T' for true and 'F' for false in the boxes given against the statements.

1. Day and night occur due to rotation of the earth on its own axis.
2. One complete rotation of the earth around the sun takes 300 days.
3. Jupiter has no moon.
4. Astronomers use a telescope to watch heavenly bodies.
5. The sun is so large that 13,00,000 earths can fit into it.

D. Match the following.

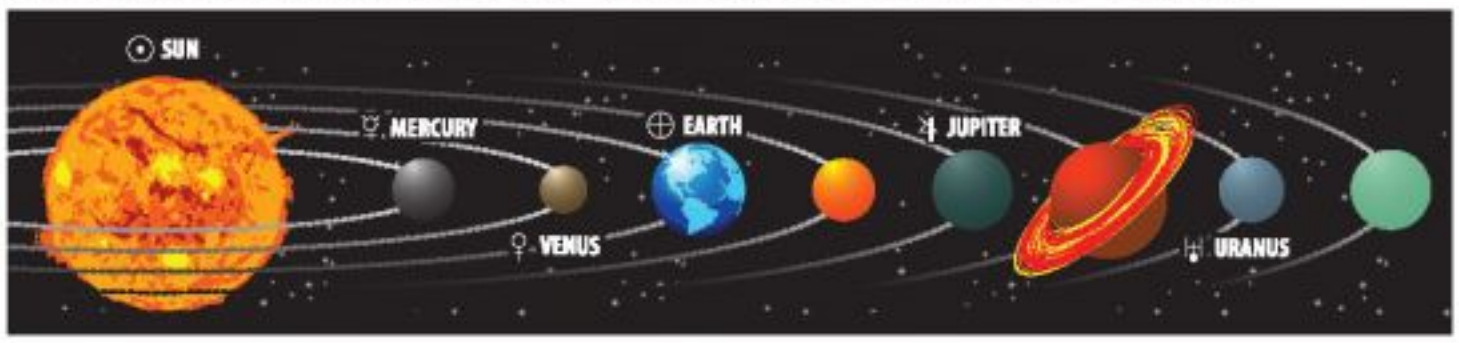
1. Sun	(a) Day and night
2. Rotation	(b) Closest star to the earth
3. Constellation	(c) Natural satellite of the earth
4. Moon	(d) Changes in seasons
5. Revolution	(e) Ursa Major

E. Answer the following questions in short.

1. What is a star?
2. Which star lies above the North Pole?
3. What is a constellation?
4. Who is an astronomer? Which device do astronomers use to see the heavenly bodies in the sky?
5. What are satellites? Name the natural satellite of the earth.

F. Answer the following questions in detail.

1. What are the various phases of the moon? Draw a well-labelled diagram to show various phases of the moon.
2. (i) What is a solar system?
   (ii) How many planets are there in the solar system?
   (iii) Observe the diagram and fill in the names of the missing planets.



ACTIVITY

1. Make a model of the Solar system.
2. Take a big thermocol sheet. Cover it with a black chart paper.
3. Draw the orbits with the sun in the centre.
4. Take a cork ball. Cover it with an orange glazed paper. Fix it in the centre as the sun.
5. Take eight balls of different sizes. Cover them with different coloured glazed papers.
6. Fix them one by one on the orbits circling the sun.
7. Write the name of each on a small piece of paper and paste it beside the respective planets.
8. Submit it to your teacher as a science project.

HOTS QUESTIONS

1. Earlier there were nine planets in the solar system. Now it has only eight planets. Which planet is excluded from the solar system and why?
2. Why can't we see the moon in the sky during the day?

LIFE SKILLS

1. The moon can even pull the earth's water towards itself. Go to a beach with your elders or teacher. Try to observe the rise and fall in the level of water in the sea at particular times.
2. Try to find out the constellations in the winter night sky. You can easily see the Orion. It looks like a hunting man. This constellation has brighter stars. The middle stars look like the hunter's belt.

SUBJECT LINK

If you get a chance to meet an alien from outer space, what will be your first five questions to it?

FUN TIME

Head, Heart and Hand

1. Constellations in night sky can be made with black chart, white chart, glitter, scissors and glue.
2. Choose any five constellations. Draw and paste them on the black chart paper. Then sprinkle silver dust on black chart to give a sparkling effect.
3. Join the points of stars of constellation with white pencil to make them prominent.

13 Space Exploration

Let's Learn More About

- Going into space
- Step on the moon

There is a vast and limitless area around our earth. This is called **space**. Space begins beyond the layers of air (atmosphere). Many heavenly bodies such as stars, planets and satellites lie in this space. There is no air in space.

Space

A batsman hitting the ball

When a cricketer hits a ball, it goes up in the air, and falls back on the ground. The ball does not go into space. This is because the earth pulls the ball towards itself. The force that brings the ball down is called **force of gravity**. The earth attracts everything on it with this force.

Going into space

A **spacecraft** is used for travelling into space. It carries the astronauts to space.

A **rocket** puts the spacecraft into space.

A rocket is a special powerful device which travels with great speed.

Rocket

Spacecraft

FUN to Learn

The first manned spacecraft was VOSTOK 1 in which Russian astronaut Yuri Gagarin travelled to space in 1961.

Astronauts wear special suits that contain a device for the supply of air. These special suits also protect them from harmful rays.

Astronauts conduct experiments in space. They try to gather more information about the heavenly bodies that exist in space. **Kalpana Chawla** and **Sunita Williams** are two Indian women astronauts whom India is proud of.

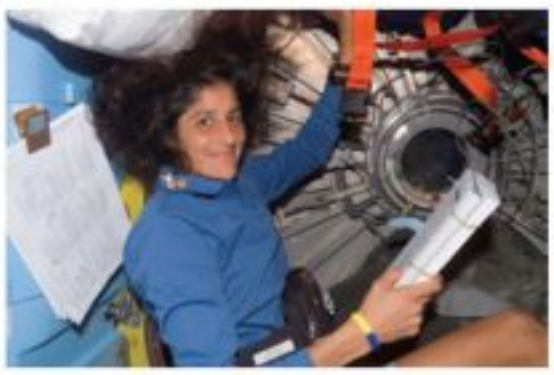
Spacesuit

Kalpana Chawla

Kalpana Chawla was the first Indian woman to go into space. She went into space twice. She went into space for the first time in 1997. She again went there in a space shuttle called **Columbia** for the second time in January 2003.

Unfortunately, this time the space shuttle crashed on its return journey on 1st February 2003 and she died. India will remember this brave heart forever.

Kalpana Chawla



Sunita Williams

Sunita Williams

Sunita Williams was the second woman astronaut of Indian origin who went into space in 2007 and came back successfully after staying there for 195 days.

India has sent many artificial satellites into space. They are **Bhaskara**, **Apollo**, **Rohini** and **INSAT**.

Bhaskara

Apollo

Rohini

INSAT

Some Indian artificial satellites

CONCEPTUAL CANVASS

1. Can we breathe or hear in space? Why not?
2. Name the space shuttle in which Kalpana Chawla travelled into space for the second time.
3. Name any two Indian artificial satellites.

FUN to Learn

Aryabhata is known as the father of astronomy. He first stated that the earth is round.

Step on the moon

Neil Armstrong was the first man who landed on the moon on 20th July 1969. The other two astronauts who travelled to the moon with him were **Edwin Aldrin** and **Michael Collins**. They travelled in a spacecraft called **Apollo 11**. The first sentence Neil Armstrong said after landing on the moon was "One small step for man, but a giant leap for mankind".

Rakesh Sharma was the first Indian astronaut to go into space. He went into space in a Russian spacecraft in the year 1984.

Neil Armstrong, Edwin Aldrin and Michael Collins

Rakesh Sharma— The first Indian astronaut to go into space

The surface of the moon is uneven.

It has many big and small holes called **craters**. There is no air on the moon. The gravitational pull of the moon is six times lesser than that of the earth. So astronauts feel weightless on the moon. If a man weighs 60 kg on earth, his weight on the moon is 10 kg.

Craters on the moon

Now I Know...

1. The vast, limitless area around our earth beyond the atmosphere is called space.
2. There is no air in space.
3. The earth pulls everything towards it with a force. This is called force of gravity.
4. A spacecraft is a special vehicle, which carries astronauts to space.
5. The surface of the moon is uneven. There are many small and big holes on it called craters.
6. The moon's force of gravity is six times lesser than that of the earth. So people feel weightlessness on the moon.

WORD BEE

Find bold words from the lesson, read them aloud and write them below.

EXERCISES

A. Tick (✔) the correct option.

1. Space contains
   (a) stars (b) planets (c) satellites (d) all heavenly bodies
2. Because of this force, the earth pulls everything towards itself.
   (a) Magnetic force (b) Force of gravity
   (c) Muscular force (d) None of these
3. The vehicle that carries astronauts into space is
   (a) spacecraft (b) aeroplane (c) helicopter (d) train
4. The first Indian woman astronaut who went into space was
   (a) Kalpana Chawla (b) Sunita Williams (c) both (d) none of these
5. The Indian artificial satellites are
   (a) Bhaskara (b) Apollo (c) INSAT (d) all of these

B. Fill in the blanks with the words given in the brackets.

1. The first maned spacecraft to go into space was _____. (Apollo 11/Vostok 1)
2. The Indian woman astronaut who stayed in space for 195 days is _____.
   (Kalpana Chawla/Sunita Williams)
3. There is no _____ in space. (air/food)
4. Michael Collins and _____ travelled with Neil Armstrong to the moon.
   (Rakesh Sharma/Edwin Aldrin)
5. The surface of the moon has small and big _____. (craters/rivers)

C. Write 'T' for true and 'F' for false in the boxes given against the statements.

1. A rocket carries the spacecraft into space and places it on the earth's orbit.
2. A ripe mango falls on the ground because of the gravitational force of the earth.
3. If your weight on earth is 35 kg, your weight on moon will be 7 kg.
4. Bhaskara and INSAT are Russian artificial satellites.
5. Astronauts wear a special spacesuit to travel to space.

D. Answer the following questions in one word or a sentence.

1. Name the first man who landed on the moon.
2. What is force of gravity?
3. Who was the first man to go into space?
4. What are craters?

E. Answer the following questions in short.

1. What do astronauts do in space?
2. When and how did Kalpana Chawla die?
3. Why is there no life on the moon?
4. What is space? What are the other objects that lie in space?

F. Picture based questions.

1. (a) Identify the object in picture 1
   (b) Which country does it belong to?
   (c) Write name of this satellite.

(1)

2. (a) Identify the astronaut in picture 2.
   (b) Which country does she belong to?
   (c) Write two lines about her.

(2)

ACTIVITY

Collect the pictures of astronauts from science journals, newspapers or the Internet. Paste the pictures on your scrapbook. Write their names and two lines about them.

HOTS QUESTIONS

1. Priyanka asked her teacher, "What are unidentified flying objects or UFOs? She read in the comic books about UFOs.
2. After visiting a planetarium Priyanka asked her teacher, "Why do all the planets look different? Are they made of different substances?"

LIFE SKILLS

1. Visit a planetarium in your town. Write about your visit.
2. Organise a "**night sky watch**" project in your school. For this, you have to request your teacher to contact the planetarium staff in your city or any such organisation who can help you with the project. You'll notice a world of amazing things. For example, Saturn, with its bright rings around really looks amazing!

SUBJECT LINK

Draw a picture of alien and write five descriptive lines about it.

FUN TIME

Head, Heart and Hand

1. Make your UFO. Take 2 disposable round plates and 2 disposable bowls.
2. Stick the disposable bowls on bottom of each plate and then paste the upper ends of both the plates with glue.
3. Now cover the whole structure with coloured paper bits and mark outlines with bold marker.
4. Your UFO is ready to display.

14 Soil

Children, tell me how many of you have planted a sapling?

Ma'am, I have grown plants in clay pots. My mom brought some seeds of marigold and poppy.

Ma'am I have planted many saplings in our garden with my dad.

Very good! What materials are needed for growing seeds in a pot?

Soil, water, sunlight and seeds.

Good ! Let's now discuss more about soil, okay?

Ma'am, soil makes the outermost layer of our planet. We have learnt it in the discovery channel.

Kids, have you ever made toys, dolls, vegetables, fruits with clay?

Yes ma'am, we have made many of those in clay modelling class.

So, now you know the importance of soil. Can anyone tell me how important is soil for our planet?

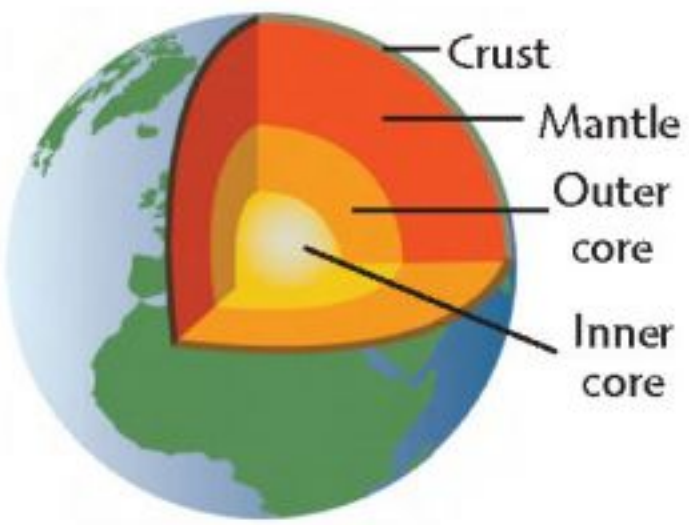
Let's Learn More About

- Soil
- Formation of soil
- What soil contains
- Types of soil
- Uses of soil

The earth is made up of many layers. The outermost hard rocky layer of the earth is called **crust**.

The earth's crust is made up of different kinds of rocks. The soil lies on the outer part of the earth's crust.

Plants grow on the soil. Roots grow under the soil and absorb water and minerals for the plants.



Earth crust

Formation of soil

Long long ago, the earth's surface was very hard and rocky.

Rocks that are present on earth break down into smaller pieces by the action of heat of the sun, rain, wind and frost. This is called **weathering**.

Action of heat of the sun on rocks

When sunlight falls on rocks during the day, the rocks get a little bigger. At night when the weather is cooler, the rocks get a little smaller. This constant heating and cooling makes a crack on the surface of the rocks.

Action of rain on rocks

During rain, water gets into the cracks. This water freezes in cold weather and expands. It makes the crack bigger. Sometimes it breaks a rock into small pieces. Rain also carries away the small pieces of rocks to different places.

Action of wind on rocks

Strong wind can also wear away the surface of the rocks. It carries away the broken pieces from one place to another. The smaller pieces of rocks rub against each other during movement.

These particles when get mixed with dead plants, animals, minerals, air and water, form soil. The formation of soil takes millions of years but it is a continuous process.

ACTIVITY 1

Collect samples of soil from your school garden, lake side, farm, road side and a construction site. Keep these samples in separate plastic packets and label them.

Observe them using a hand lens.
Write your observation as follows:

Soil samples	Colour of the particles	Size of particles	Presence of other materials
Garden soil			
Road side soil			
Lake side soil			
Farm soil			

The colour of the soil is different at different places.

Soil may be light brown or dark brown.

Soil may be red in colour.

Some soil may be black. This is all because of the colour of the minerals present in the soil. Cotton plant grows well in black soil.

What soil contains

Soil is a mixture of many things.

1. Soil contains air

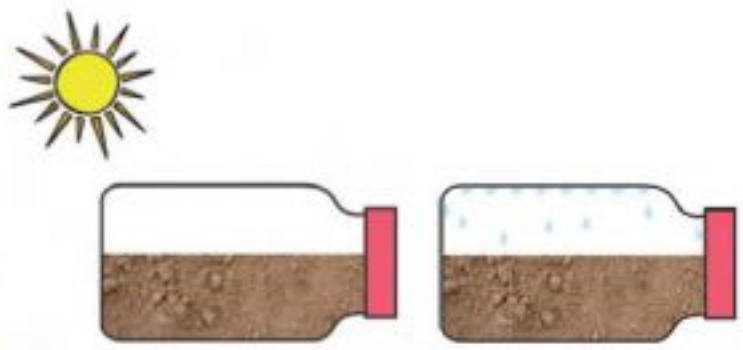
ACTIVITY 2

1. Take some garden soil in a clean glass jar.
2. Pour water in the soil and observe carefully.
3. You will see some bubbles forming on the surface of water.
4. It is because air trapped in the soil comes out in the form of bubbles.
5. It shows that soil contains air.

2. Soil contains water

ACTIVITY 3

1. Take some soil in a clean transparent jam jar.
2. Close it with the lid.
3. Keep the jar with the soil out in the sun.
4. After an hour, check the jar.
5. You will find droplets of water on the side of the jar. It shows that soil contains water.



CONCEPTUAL CANVASS

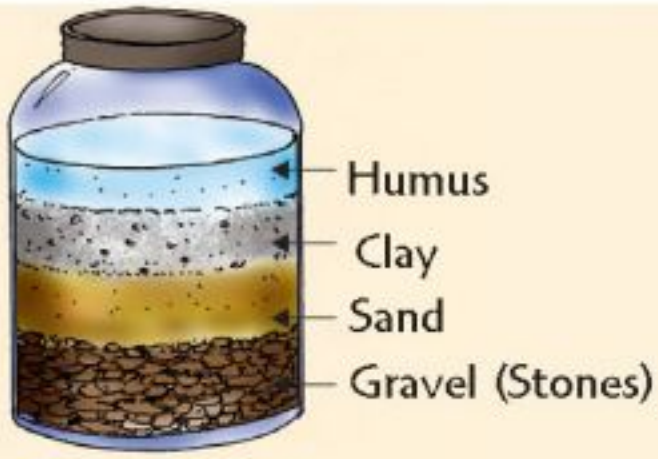
1. What is soil?
2. What is soil made up of?

FUN to Learn

It can take a minimum of 500 years to make one inch of topsoil.

3. **Soil contains fine clay, sand, gravel and stones. It also contains dead plants and animal remains in the form of humus.**

ACTIVITY 4



1. Collect some soil from the garden.
2. Take a wide mouthed transparent bottle.
3. Put water in the bottle.
4. Add the soil sample to it.
5. Stir it well with a spoon.
6. Now keep the bottle on the table undisturbed.
7. What do you observe?
8. After sometime, you will find layers of soil.
9. The lowermost layer at the bottom contains pieces of stones called gravel. Gravels are big stone pieces.
10. Above the gravels, there is a layer of sand. Sand particles are smaller in size than gravels.
11. Above the sand, there is a layer of clay. The clay particles are very small.
12. The topmost layer of water contains dry leaves, small sticks and dead insects floating on it. This is called **humus**. Humus provides nutrients to plants.

Types of soil

There are three types of soil:

1. Sandy soil 2. Clayey soil 3. Loamy soil

Sandy soil

The soil rich in sand is called **sandy soil**. Sand particles are large in size. So sandy soil cannot hold much water. Sandy soil is found in deserts and seashores. Very few plants grow in it. Plants like cactus, prickly pear and acacia (*babul*) grow in sandy soil.

Sandy soil

Clayey soil

Clayey soil is rich in fine clay particles. This kind of soil is found in lakes or river banks. The clay particles are so fine that they stick together firmly. This soil does not allow air and water to pass through them easily. It can hold a lot of water. It is not good for plants. Potters make clay pots and toys with this soil. Paddy crop (rice) grows well in clayey soil.

Clayey soil

Loamy soil

Loam is the mixture of both sand and clay. Plants grow well in loam because loam can hold both air and water. It contains humus and is dark brown in colour. Plants absorb nutrients from this soil easily.

Loamy soil

CONCEPTUAL CANVASS

1. Name a crop that grows well in clayey soil.
2. What are the different colours of soil?
3. Name two plants that grow in sandy soil.
4. Which soil is best for the growth of plants?

FUN to Learn

One cup of soil may hold as many bacteria as there are people on earth.

Uses of soil

- Plants grow on soil. The roots of plants help to fix the plants firmly to the soil.
- Soil provides water and minerals to the plants. Humus is very fertile. Plants grow well in fertile soil.
- Many living organisms live in soil. Earthworms, insects, ants, beetles and snails live in soil. Rats, snakes, frogs make holes (burrows) in the soil.

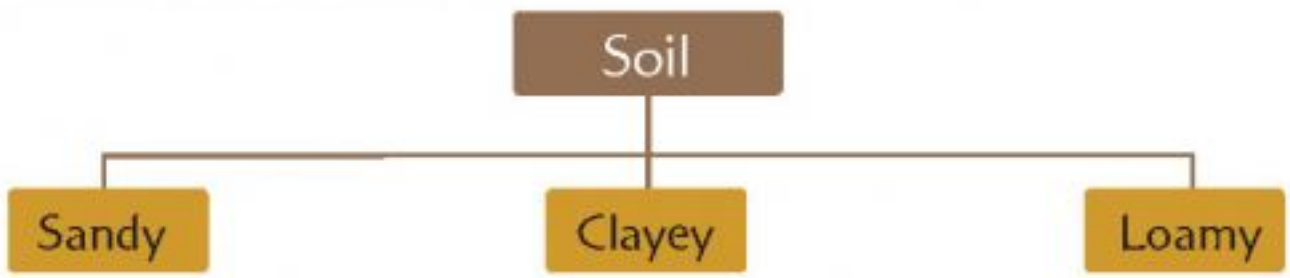
Earthworm in soil

Ant hole

Rat hole

Now I Know...

1. Soil is a mixture of particles of rock, sand, clay, dry leaves, animal dung, dead plants, animals, bacteria, minerals, air and water.
2. Humus is the uppermost layer of soil. It provides nutrients for plant growth.
3. Weathering is the breaking of rocks into pieces by action of heat, rain, wind and frost.
4. Soil contains air and water.
5.



WORD BEE

Re-read the lesson, write below the new words and read them aloud.

EXERCISES

A. Tick (✔) the correct option.

1. The outermost hard, rocky layer of the earth is
   (a) humus (b) earth crust (c) soil (d) mantle
2. Plants grow well in
   (a) clayey soil (b) sandy soil (c) loamy soil (d) none of these
3. Soil is a mixture of
   (a) sand (b) clay (c) rocks (d) all of these
4. Soil is formed by the action of
   (a) heat (b) rain (c) wind (d) all of these
5. This soil is used for making pots and toys.
   (a) Sandy (b) Clayey (c) Loamy (d) None of these

B. Fill in the blanks with the words given in the brackets.

1. Sandy soil is found in _____ . (deserts/mountains)
2. Roots absorb _____ and _____ from the soil. (water, minerals/food, air)
3. _____ live in the soil and make it fertile. (Earthworms/Foxes)
4. _____ are the larger pieces of stone in the soil. (Sand/Gravels)
5. The uppermost fertile layer of soil is _____ . (humus/sand)

C. Match the following.

1. Sandy soil	(a) Mixture of sand and clay
2. Clayey soil	(b) Cannot hold water
3. Loamy soil	(c) Paddy crop
4. Humus	(d) Rocks get bigger
5. Heat of the sun	(e) Makes soil fertile

D. Answer the following questions in one word or a sentence.

1. What is weathering?
2. What does soil contain?
3. Name an animal that makes burrows in the soil.
4. Which soil is not good for plants?

E. Answer the following questions in short.

1. What are the different kinds of soil?
2. Which soil is sticky and can hold the maximum amount of water? Write one use of it.
3. What makes soil fertile? What is the topmost fertile layer of soil known as?
4. By the action of what do rocks break into pieces to form soil?

F. Answer the following questions in detail.

1. How is soil formed? Write the steps with suitable diagrams.
2. How will you show that soil contains air?
3. Which soil is best for making pots? Discuss why.

ACTIVITY

1. Visit a potter's place. Ask him to show how he makes pots on the potter's wheel.
2. You can request him to give you a chance to make clay pots. It will be fun.
3. Collect some clay from the potter or from a pond/river bank with the help of your elders. Make toys like dolls, animals, birds, fish and elephants. Dry them in the sun and colour them. You can also use plasticine to make your toys. It will help to increase your imagination and skills.

HOTS QUESTIONS

1. Is the whole of the earth covered with soil? Find the answers from books, journals and the Internet.
2. What will happen if you use sandy soil to make pots? Why?

LIFE SKILLS

1. Make manures to enrich your garden/pot soil.
2. Dig a shallow pit on the ground, may be 2' x 2'. Keep the soil aside.
3. Collect the kitchen garbage in two different bins. Collect biodegradable wastes such as vegetable peel, fruits, food remains, cotton fibres, paper, jute, etc., in one bin and non-biodegradable wastes such as glass, plastics, polybags, metal cans in another bin. Give the non-biodegradable waste to *Kabadi Walas* or rag pickers.
4. Throw all the biodegradable wastes in the pit you have dug in the garden and cover it with some soil. Sprinkle some water.
5. Do it for one month. Then dig the pit again to see and collect the manure.

SUBJECT LINK

Mahesh is a young potter who makes earthen pots with clayey soil. He is a famous artist as each of his pot bears a beautiful pattern of art. Each day he sells around 50-80 pieces. Today he sold 40 small pots for ₹100 each and 15 large pots for ₹150 each. While placing the pots for display 4 small pots and 5 large pots fell and broke. Tell how much he earned and how much he lost from the pots?

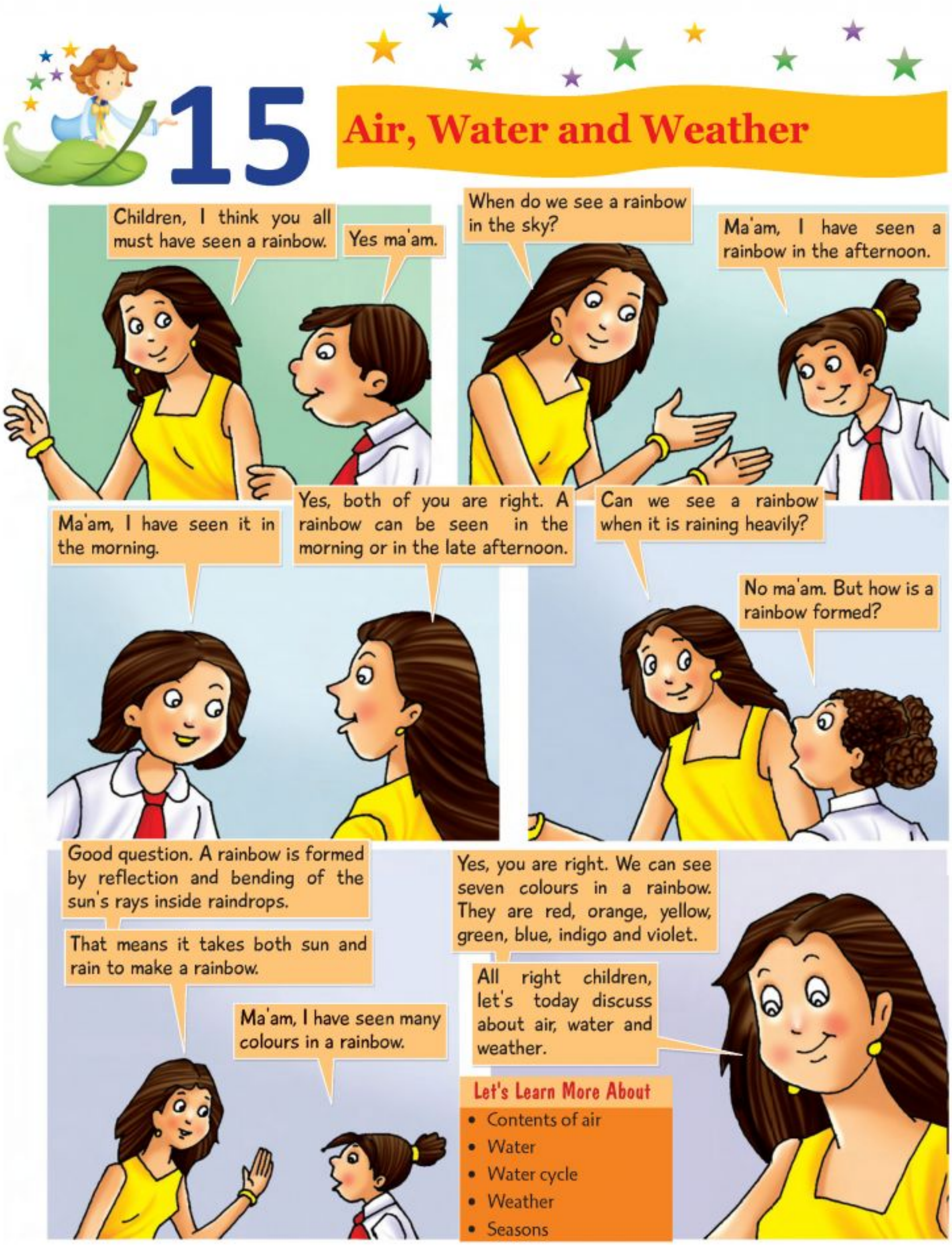
FUN TIME

Head, Heart and Hand

Make a sand-bar.

1. Collect sand of different colours from different surroundings, glitter, a glass cylinder, pebbles, plastic sheet to cover glass cylinder.
2. Fill the glass cylinder (or any other transparent glass) with different layers of sand of different colours and pebbles and add glitter on top of every layer.
3. Your beautiful sand-bar with different soil samples is ready to display.

15 Air, Water and Weather



Let's Learn More About

- Contents of air
- Water
- Water cycle
- Weather
- Seasons

In the previous class, you have studied about the air and its uses.

Air is a mixture of many gases. It contains nitrogen, oxygen, carbon dioxide and many other gases.

Contents of air

Green plants absorb carbon dioxide from the air for making their food and release oxygen.

All animals including human beings breathe in oxygen and breathe out carbon dioxide.

Air also contains dust particles, water vapour, smoke and germs.

We cannot see air but we can feel it.

ACTIVITY 1

1. Take a balloon filled with air.
2. Puncture the balloon and bring it towards your face.
3. Air from the balloon will gush out with great force and touch your face.
4. You can feel the air on your face.

Air contains water vapour

Air contains water in the form of water vapour.

ACTIVITY 2

1. Take some ice cubes in a glass tumbler.
2. Keep it on the table and observe it.
3. After sometime, you will find water droplets on the outer wall of the glass tumbler.
4. From where have these water droplets come?
5. The water vapour present in the air gets deposited on the outer wall of the tumbler.

Air contains dust particles

Close the doors and windows of a room.

Let a ray of sunlight enter into the room.

Observe the light.

You will see many dust particles are present in the streak of light. It shows air contains dust particles.

Dust particles in air

ACTIVITY 3

1. Take a clean dry white handkerchief.
2. Hang it from the window of a moving car or a train with a thread when you go for a journey.
3. After your journey, take out the handkerchief and observe.
4. How did your white handkerchief got dirty?
5. Because air contains a lot of dust, fibres and other particles that stuck on to your handkerchief.

Air contains germs

When any sick person sneezes, a lot of germs come out and remain in the air. Germs from the garbage bins, open drains, hospitals and dead animals may pollute the air. So, we should always keep our environment clean. These germs can stick to our body. So we should always wash our hands before and after taking meals. We should take a shower daily.

CONCEPTUAL CANVASS

1. What is air?
2. Which gas do plants absorb from air for making their food?
3. What happens when a sick person sneezes without covering his mouth?

Water

Water is another precious gift of nature.

All living things need water to live on.

Forms of water

Water has three forms. They are solid, liquid and gas.
The water in the oceans, lakes, ponds, wells is in the form of liquid.

River

Water evaporates from clothes

The water vapour present in the air is in the form of gas.

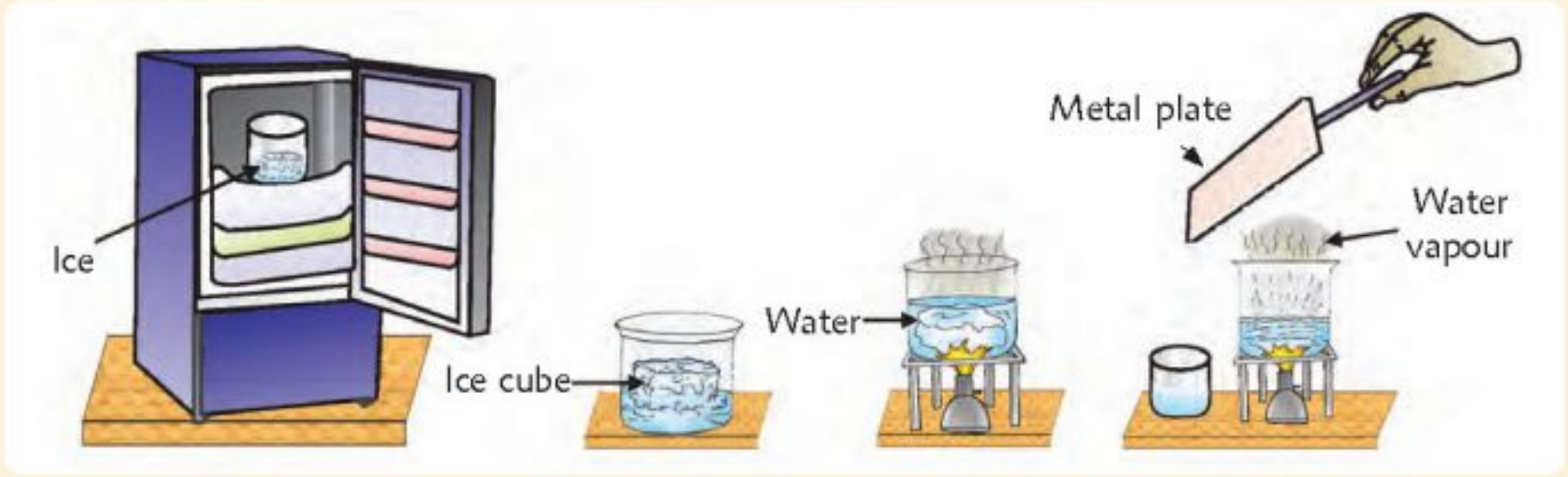
The ice cubes, ice on the ice-capped mountains are in the form of solid.

Ice-capped mountain

ACTIVITY 4

1. Put some water in a glass beaker. Keep it in a freezer for a day. Take it out from the freezer. What happens to the water in the beaker?
   You will see the water in the beaker has changed into solid ice.

2. Now keep the beaker with ice on the table for sometime. What happens to the ice in the beaker? After some time you will see the ice in the beaker has melted and changed into water.
3. With the help of an elder heat the water for some time. What happens to the water in the beaker? After some time you will see that water in the beaker has changed into vapour or steam.
4. Now hold a metal plate against the steam. What happens to the steam?
5. The steam gets changed again into water.



Ice in freezer | Ice cube melts and changes into water | Water evaporates on heating | Water vapour deposits on metal plate and changes into water on cooling

It is clear from the above activity that water exists in three forms—ice (solid), water (liquid) and water vapour (gas). It changes its form on heating or cooling.

Water cycle

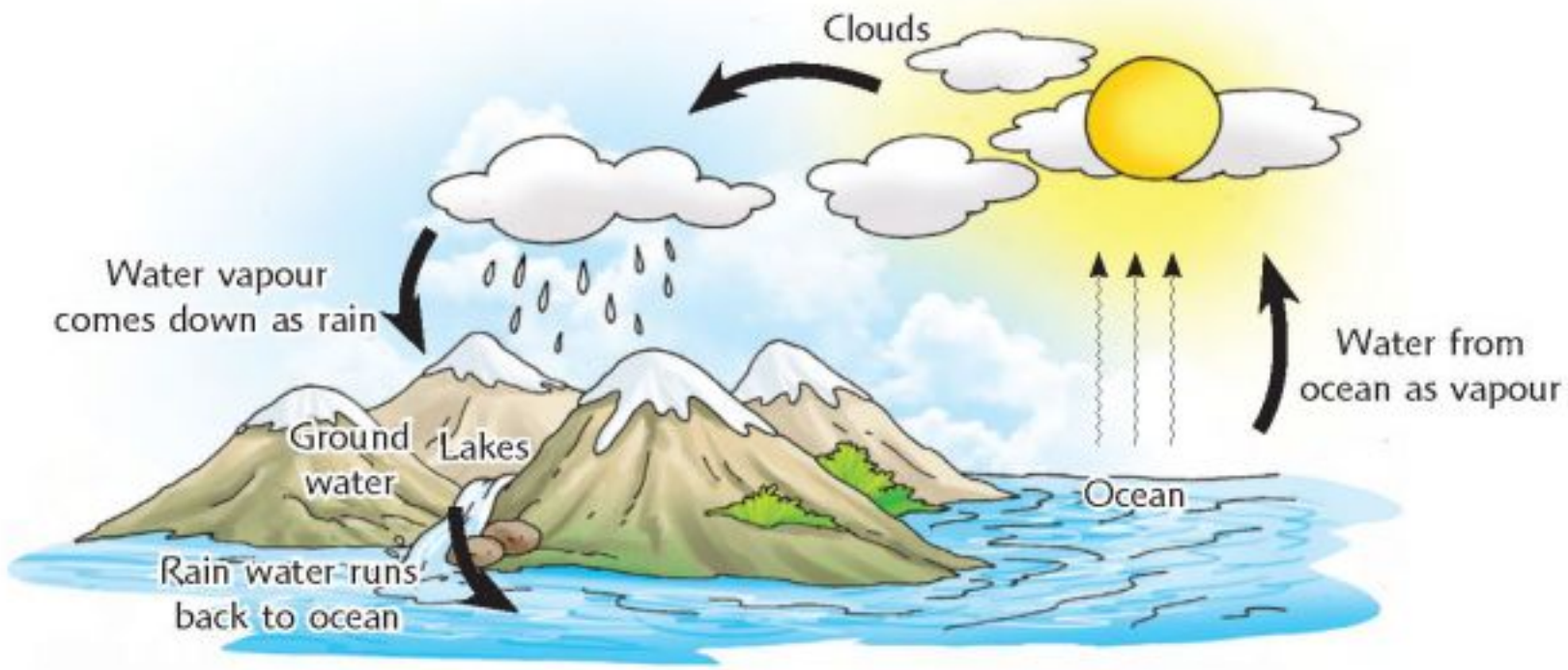
You know that almost three-fourths part of the earth is water and rest is land.

This water is present in the oceans, rivers, lakes, ponds and wells.

By the heat of the sun water gets heated up and changes into **water vapour**. This is called **evaporation**.

Water vapour goes up in the sky. It comes in contact with cool air and changes into tiny **water droplets**. This is called **condensation**.

When these tiny droplets along with dust particles cool down, they further form **clouds**. When the water droplets in the clouds further cool down, they form bigger water droplets. These water droplets come down as **rain** on the land and water bodies. Eventually, the rain water from the lands and river reaches to the ocean. So, the cycle is complete. This is called **water cycle**.



Water cycle

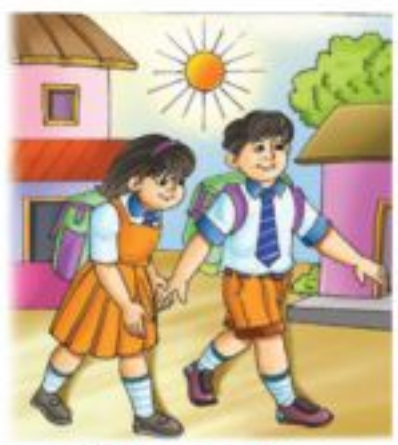
Weather

You must have heard people saying "Oops! It's very hot today!" or "Oooh its freezing cold today". Some days in a year are hot and some days are very cold. Some days are windy and some days are rainy. This is all because of the weather.

Weather is the condition of the air around us at a particular place in a particular time. The sun, wind, clouds and rain affect the weather.

The sun

In the morning and in the evening the weather is cool. It is because the sun rays are slanting. At noon the sun rays fall directly on the earth and it is hot at noon.



Sunny day

A windy day

The wind

Moving air is known as wind. The cool gentle wind is called **breeze**. It is very pleasant when cool breeze blows.

Sometimes a strong wind blows. It is called **storm**. It uproots the trees and blows away the huts. A storm carries a lot of dust and affects us badly.

The clouds

Sometimes the sky is covered with clouds. Clouds do not allow the sun's ray to fall on earth. So it is cool on a cloudy day. Cloudy nights are warmer. Can you say why?

A cloudy day

It is because at night the clouds do not allow the heat to escape into the sky. Hence, nights are warmer on a cloudy day.

The rains

Rain after a long summer brings happiness for everybody. Because rains bring down the temperature and the weather becomes cool. Farmers become happy when it rains at the right time.

A rainy day

Seasons

Weather remains same for a few months at a certain place. It changes after two to three months. This changing of weather brings season. In India, there are five seasons. They are summer, monsoon (rainy season), autumn, winter and spring.

Summer season

Days and nights are hot in summer season.

Children should not go out to play in the sun.

People should drink plenty of water.

People use umbrella and caps to protect them from the sun rays.

Summer season

Rainy season

Monsoon (Rainy season)

It rains during the monsoon.

People use umbrella, raincoat, rubber shoes and gumboots in the rainy season.

Farmers yield a good crop when it rains in monsoon.

Autumn season

Autumn season comes after the rainy season. Leaves of plants fall during the autumn.

Autumn season

Winter season

Winter season

In winter, days and nights are very cold. It is the coolest season. People wear woollen clothes, use blankets, quills and fire places.

Spring season

In spring season, plants bear flowers. Flowers bloom everywhere and the earth looks beautiful.

Spring season

CONCEPTUAL CANVASS

1. What is weather?
2. What are the things that affect weather?
3. How many seasons are there in India?

Now I Know...

1. Air is a mixture of gases such as oxygen, nitrogen, carbon dioxide and many other gases. It also contains dust particles, water vapour, smoke, germs, etc.
2. All living organisms including plants, animals and humans need water for their lives.
3. Three-fourths of earth's surface is covered with water and are present in the oceans, rivers, ponds, lakes, etc.
4. There are three forms of water. They are solid (ice/snow), liquid (water) and gas (water vapour).
5. There are five seasons in India. They are summer, monsoon (rainy season), autumn, winter and spring.

WORD BEE

Find bold words from the lesson, read them aloud and write them below.

EXERCISES

A. Tick (✔) the correct option.

1. Air is a mixture of gases like

   (a) nitrogen (b) oxygen (c) carbon dioxide (d) all of these

2. Which organisms need water for their lives?

   (a) Plants (b) Animals and microbes

   (c) Humans (d) All of these

3. Various forms of water are
   (a) ice (solid) (b) water (liquid)
   (c) water vapour (gas) (d) all of these
4. Weather of a place depends on
   (a) sun (b) wind (c) rain and clouds (d) all of these
5. It rains throughout the season in
   (a) summer (b) winter (c) monsoon (d) autumn

B. Write 'T' for true and 'F' for false in the boxes given against the statements.

1. In summer season we wear woollen clothes.
2. We should go out on a stormy weather.
3. Air does not contain any germ.
4. Weather affects our lives.
5. Mornings and evenings are cool because of the slanting rays of the sun.

C. Match the following.

1. Autumn season (a) 
2. Spring season (b) 
3. Rainy season (c) 
4. Winter season (d) 
5. Summer season (e) 

D. Answer the following questions in one word or a sentence.

1. On heating water changes into what?
2. What does air contain?
3. Which gas from air do we breathe in?
4. What is wind?

E. Oral questions.

1. Which is the hottest season?
2. Why are morning and evening cooler than the noon?
3. What is condensation?
4. Give any two uses of water.

F. Answer the following questions in short.

1. What are the three forms of water? What are the two processes that help water to change into various forms?
2. Why are the nights warmer in a cloudy day?
3. What is evaporation?
4. What is water cycle?
5. How are clouds formed?

ACTIVITY

1. Take a steel plate.
2. Clean and dry it.
3. Spread a tea spoonfull of vaseline on it.
4. Leave the plate out in the sun for 2 hours.
5. After two hours, pick up the plate and observe carefully using a magnifying glass.
6. What do you observe?
7. You may find dust particles, fibres, pieces of straw, hay, hair and feather. The plate has become dirty with all these things. What does it prove?

HOTS QUESTIONS

1. Why does a biker use a mask on his mouth and nose when he rides a motor bike?
2. What happens when it rains heavily for months at a place specially in the rainy season?
3. What happens to the ceiling fans or table fans if they are not cleaned regularly? Why does it happen?

LIFE SKILLS

1. Take out the newspaper of last 15 days.
2. Cut out the weather reports from the paper.
3. Paste them on your scrapbook.
4. Underline the maximum and minimum temperatures.

SUBJECT LINK

Which season do you like most? Write 10 sentences on what you love to do in your favourite season.

FUN TIME

Head, Heart and Hand

Do you like to have a fun with water? Well, follow the steps:

1. Take a long thread and an ice cube.
2. Place one end of the thread on the ice cube.
3. Pour a spoonfull of salt over the thread and the ice cube.
4. Wait for 2 to 3 minutes.
5. Now lift up the ice cube holding the other end of the thread. Wow! Its hanging!

PRACTICE PAPER-1

(Based on Chapters 1 to 8)

A. Tick (✔) the correct option.

1. Plants breathe through tiny holes on their leaves called
   (a) lung (b) stomata (c) gill (d) nose
2. Radish is a
   (a) stem (b) leaf (c) flower (d) root
3. This is the tallest animal in the world.
   (a) Giraffe (b) Zebra (c) Whale (d) Camel
4. This animal is a carnivore.
   (a) Tiger (b) Rat (c) Elephant (d) Cow
5. A group of tissues performing particular functions is called an
   (a) organ (b) organ system (c) both (a) and (b) (d) none of these

B. Fill in the blanks with the words given in the brackets.

1. Living things _____ move, grow, breathe and reproduce. (can/cannot)
2. The main stem of a tree is called the _____. (root/trunk)
3. Plant gives us _____ gas to breathe in. (oxygen/carbon dioxide)
4. Bat and owl are _____ animals. (pouched/nocturnal)
5. Mosquitoes suck their food through a long tube called _____. (proboscis/tongue)
6. _____ has curved beak which helps it to crack nuts and hard fruits. (Duck/Parrot)
7. Babies are born via the _____ system. (circulatory/reproductive)
8. We should always walk on the _____. (footpath/middle of the road)
9. _____ are our green friends. (Plants/Animals)
10. Cat is an example of _____. (carnivore/omnivore)

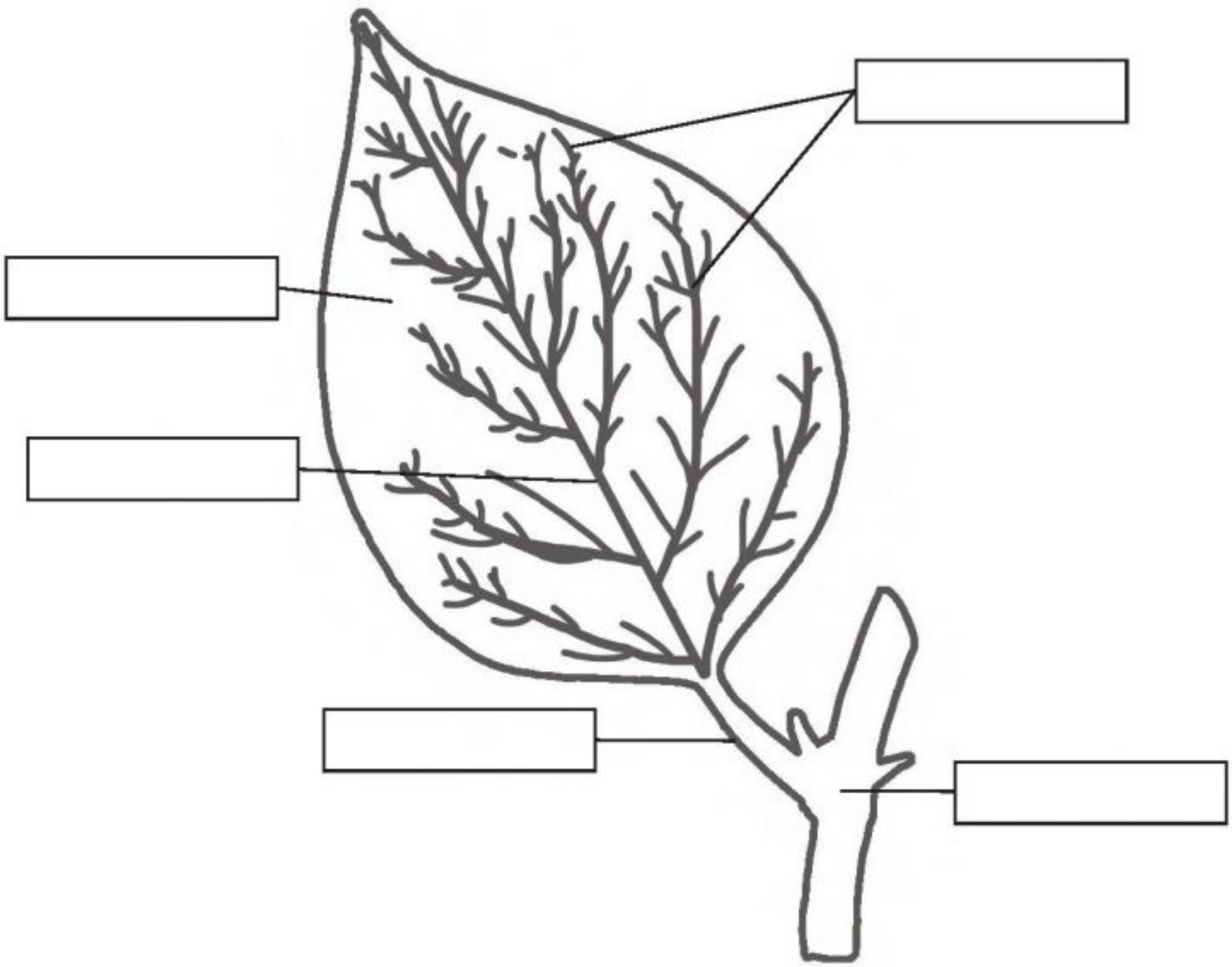
C. Match the following.

1. Leaves	(a) Taproot
2. Radish	(b) Digestive system
3. Butterfly	(c) Pouched animal
4. Stomach	(d) Proboscis
5. Kangaroo	(e) Stomata

D. Answer the following questions in one word or a sentence.

1. Name breathing organ of a grasshopper.
2. Which part of the plant protects the seed?
3. Name one animal that lives in the desert.
4. What kind of teeth does a tiger have?
5. Which organ system gives support to our body?

E. Colour and label different parts of the following picture.



PRACTICE PAPER -2

(Based on Chapters 9 to 15)

A. Tick (✔) the correct option.

1. A house protects us from
   (a) heat (b) cold (c) wild animals (d) all of these
2. Metre stick is equal to
   (a) one metre (b) one kilometre (c) one centimeter (d) all of these
3. When the moon comes between the sun and the earth, it is called
   (a) solar eclipse (b) lunar eclipse (c) storm (d) none of these
4. Rotation of earth causes
   (a) day and night (b) season (c) eclipse (d) none of these
5. Because of this force, the earth pulls everything towards itself.
   (a) Magnetic force (b) Force of gravity (c) Mechanical force (d) All of these
6. Soil is formed by the action of
   (a) heat (b) rain (c) wind (d) all of these

B. Fill in the blanks with the words given in the brackets.

1. Caravan and Igloo are _____ houses. (permanent/temporary)
2. When you get fever, the doctor measures the body temperature by_____. (calorimeter/clinical thermometer)
3. _____ needs a medium to travel. (Light/Sound)
4. The moon takes _____ days to rotate on its axis. (29.5/29.3)
5. The uppermost fertile layer of the soil is _____. (sand/humus)
6. Litre is commonly used for measuring _____. (mass/capacity)
7. There is no _____ in space. (soil/air)
8. Cyclic movement of water in nature is called _____. (water cycle/life cycle)
9. _____ of a place depends on the sun, wind, cloud and rain. (Weather/Soil)
10. A push or a pull applied on an object is called _____. (energy/force)

C. Match the following.

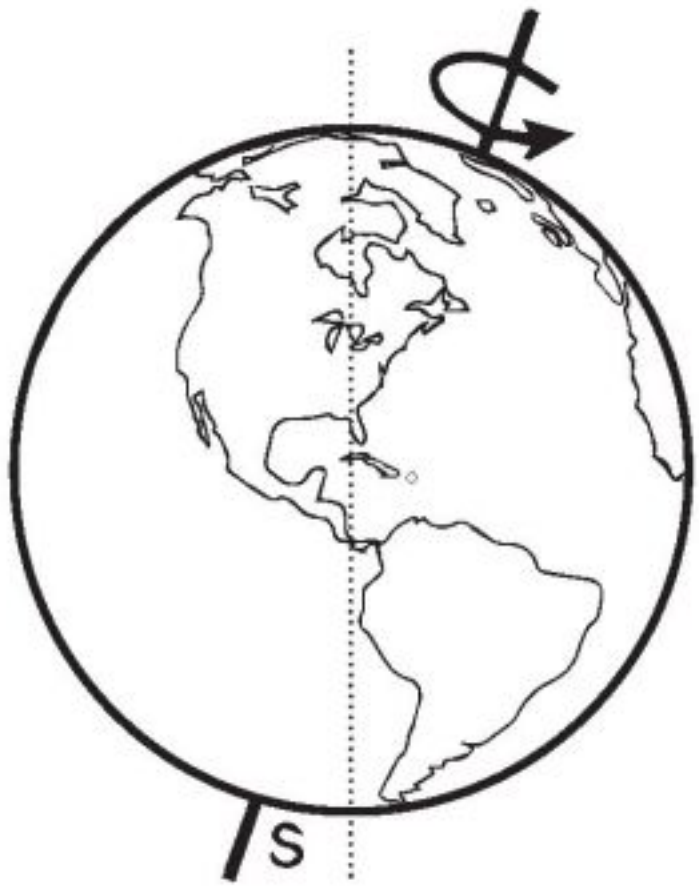
1. Caravan	(a) Bursting of crackers
2. Measuring cylinders	(b) *Dhruv Tara*
3. Unpleasant sound	(c) Contains humus
4. Pole star	(d) Liquid
5. Loamy soil	(e) House on wheels

D. Answer the following questions in one word or a sentence.

1. Why should the houses have a proper drainage system?
2. Degree Fahrenheit is the unit of what?

3. What is the speed of light in vacuum?
4. How many days does the moon take to rotate on its own axis?
5. How many seasons are there in India?

E. Colour the earth. Use yellow colour on the side that has day and black on the side that has night.



ABOUT THE BOOK

Interactive Science is a set of eight books for students of classes 1 to 8. The series is written according to the new NCERT syllabus, and conforms to the vision of the latest National Curriculum Framework.

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ABOUT THE AUTHOR

Jhara Roy was Headmistress in Delhi Public School, Gurgaon, Haryana. She has more than 15 years of teaching experience. Now, she is engaged in developing Science books for both primary and upper primary classes.

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