

## 1

## MY BODY

Our body works like a machine with the help of various organs present in it. **Organs** are special structures present in our body that perform specific functions. Heart, eyes and stomach are some of the many organs present in our body. Our body consists of many systems. A **system** is a group of organs that work together for a particular function. For example we studied, in Class-IV, that the mouth, the food pipe, the stomach and the intestines form the digestive system. Similarly, the nose, wind pipe and lungs help us in breathing.

**In this chapter, we shall study about the breathing system, the skeletal system and the sensory organs present in our body.**

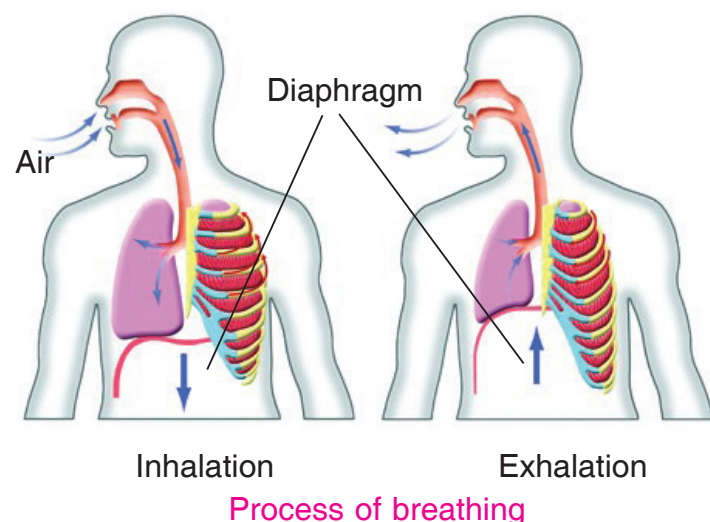
## THE BREATHING SYSTEM

All living things take in oxygen and give out carbon dioxide. This process is called **breathing**. The process of breathing takes place continuously, without any rest, in all living beings. If this process stops for more than two minutes, the living being can die.

**Which parts of your body are involved when you breathe?**

**Let us find out.**

The air, that we breathe in, or inhale, enters our body through the nasal openings of the nose. The nose is connected to two balloon like structures, inside the body, by a tube called the **wind pipe**. The two balloon like structures are called **lungs**. In the lungs, oxygen is taken up by the blood and carbon dioxide is unloaded. This carbon dioxide is then driven out of the body, or exhaled, through the nose. The oxygen



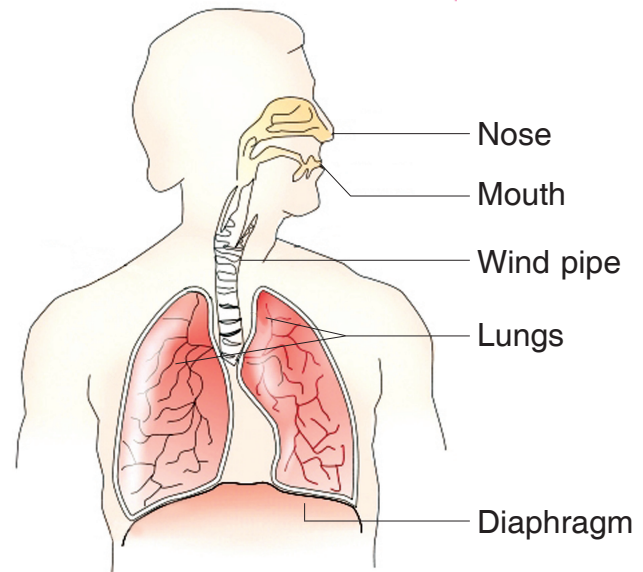
rich blood, from the lungs, is circulated to all parts of our body. Blood also collects carbon dioxide from all parts of the body and brings it to the lungs.

We, thus, understand that during the breathing process, oxygen is consumed by the body. This helps different organs to get energy to perform different body functions. Also, carbon dioxide is driven out of the body as a waste product. Our breathing system is always at work because we have to keep breathing all the time.

Physical exercises, like running, walking and playing, help to keep our body and our breathing system healthy.

### Do You Know?

The right lung is slightly larger than the left.



Human breathing system

## THE SKELETAL SYSTEM

Skeletal system makes the framework of the body. It gives shape and support to the body. The skeletal framework also protects the inner delicate organs.

The skeleton of an adult human being is made up of 206 bones of different shapes and sizes.

Bones are hard and strong structures. They are made up of calcium, phosphorus and some other minerals. Bones are living entities. They have channels that contain blood vessels. They also have nerves that are necessary to keep them alive. That is why we feel pain when any of our bones gets hurt.

### Do You Know?

A child is born, with more than 300 bones. As child grows, some of these bones get fused together.

### Activity:

Take a measuring tape. Measure the length of the part of your leg between the knee and the feet. Do the same measurement for your parent. Is the length of this leg part same?

Bones increase in length and size up to a certain age.

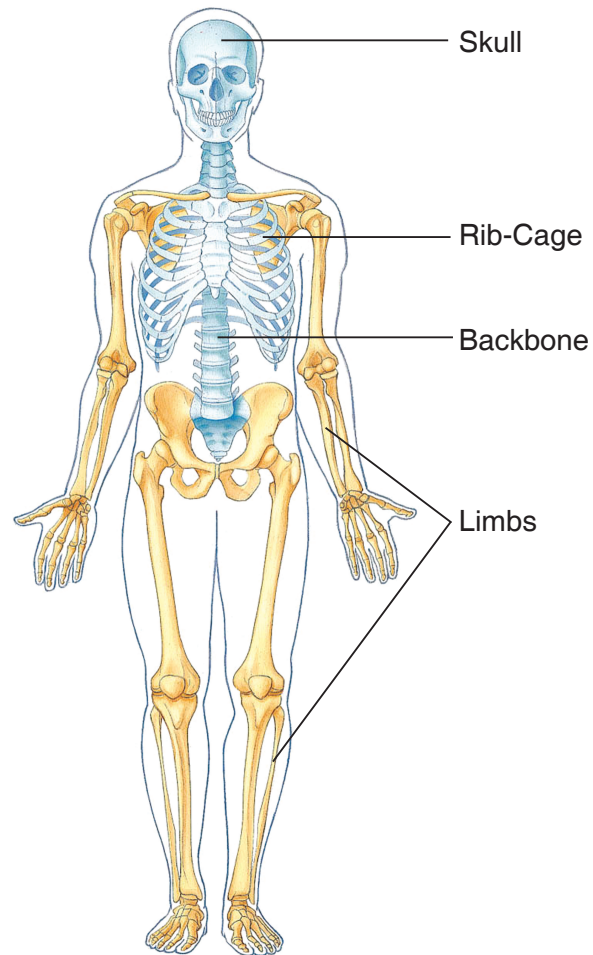
The long bones, like the thigh bone and the arm bone, are hollow from inside. This hollow space is filled with cells and soft materials known as the **bone marrow**. Blood cells are manufactured inside this bone marrow. Therefore, bone marrow is known as the **factory for making blood cells**.

**Let us study about our skeletal system in some more detail.**

The main parts of the skeletal system are:

1. The Skull
2. The Backbone
3. The Rib-cage
4. The Limbs

**1. The Skull:** It is made up of eight flat bones. They are closely fused together. The skull is very important because it protects the most important and delicate organ of the human body, that is, the brain.



Skeleton



side view



front view

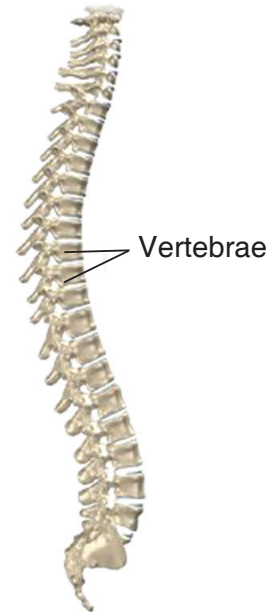
Skull

There are two jaws—upper and lower. The lower jaw is movable. The movement of lower jaw helps us to eat, talk or laugh.

**2. The Backbone:** The backbone is connected to the skull. It is made up of thirty-three small bones called the **vertebrae**. These small bones, taken together make a strong **vertebral column**. It protects the spinal cord. These small bones give flexibility to our back. (What would happen if our backbone was made of just one straight bone?)

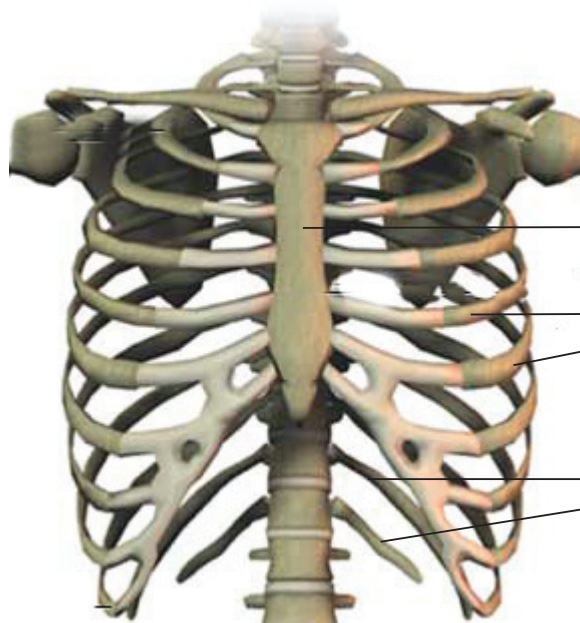
### Do You Know?

Humans and giraffes have the same number of bones in their neck, i.e. seven. Giraffe's neck vertebrae are however, much much longer!



Backbone  
(vertebral column)

**3. The Rib-Cage:** There are twelve pairs of ribs, forming a cage, around delicate organs like the heart and the lungs. These are curved bones joined to the backbone and the breast bone. The last two pairs of ribs are called **floating ribs**. This is because they are connected to the backbone only and not to the breast bone.



Rib-Cage

**4. The Limbs:** The fore limbs, or the arms, are joined to the spine by the shoulder girdles and collar bone.

The upper arm has only one bone but the lower arm has two bones. The hand has many small bones in the palm and fingers.

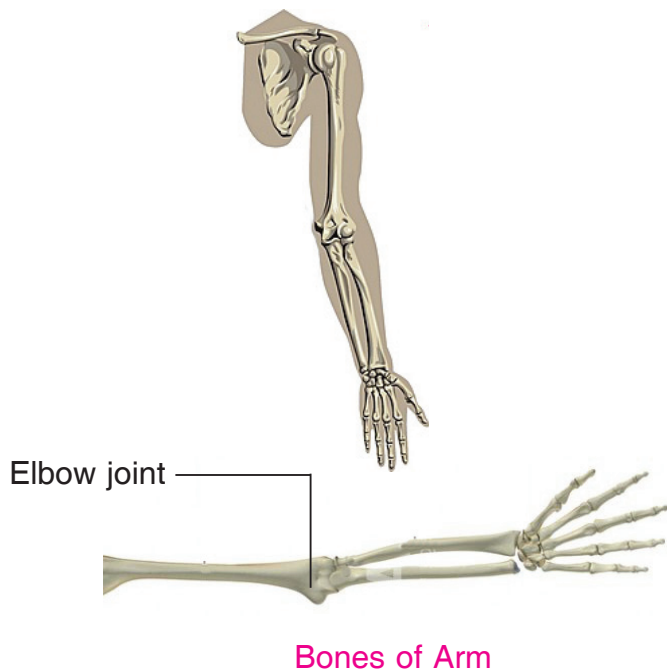
The hind limbs, i.e. the legs, bear the weight of the whole body. The upper part of the hind limbs is made up of the longest bone in our body. This bone is called



**femur.** The femur, or thigh bone, fits into the hip girdle. The femur is connected to the lower two bones of the leg at the knee. There are many small bones in the ankle and toe region.

### Do You Know?

The smallest bone in our body is the **stirrup** bone (stapes) in the ear which measures just 1/4 of a centimetre.



## THE JOINTS

Our bones do not simply work on their own. Carefully observe a skeleton. You will notice that at many different places, two bones are joined. The bones are held together to form **joints**. The end of each bone is covered by a tough, smooth shiny substance called **cartilage**. The cartilage-coated bone-ends are kept apart by a thin film of slippery fluid that works like the oil in a machine. Coating of cartilage and the slippery fluid are important so that the bones do not scratch and bump against each other when we move. The bones are held together by strong stretchy band-like tissues called **ligaments**.

### Do You Know?

We have over 230 movable and semi-movable joints in our body.

Our body has several joints. All joints show movement except the skull. The bones of the skull are fused and interlocked and thus, show no movement.

## Kinds of Joints

The joints allow movement of bones in different ways.

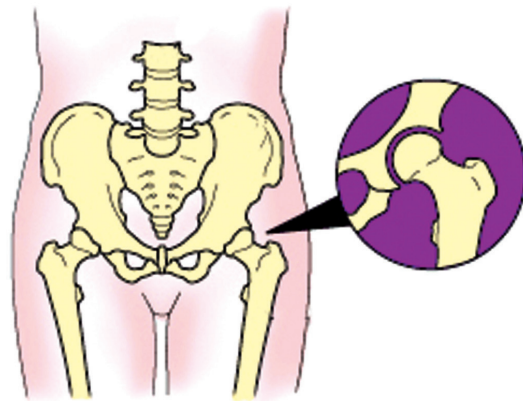
There are four types of joints present in our body which show different types of movement. The four types of joints are **hinge joint**, **ball and socket joint**, **pivot joint** and **gliding joint**.

**Let us study about each one of them separately.**

1. **The Hinge Joint:** It works like the hinge of a door. The bones, connected by this joint, move in one plane only. The elbow, knee, toe and finger joints are hinge joints.



Hinge joint in elbow



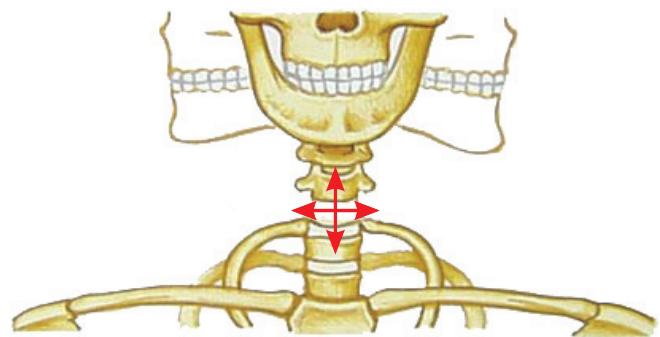
Ball and Socket joint in hip girdle

2. **The Ball and Socket Joint:** In this joint, one bone which has a ball-like end, fits into the hollow socket of another bone. The hip and shoulder joints are examples of this type of joint.

### Do You Know?

**Arthritis** is a disease that causes joint pain, swelling and stiffness.

3. **The Pivot Joint:** This type of joint is found between the skull and the first two vertebrae of the spine. Move your skull to find out the movement of this joint. It moves up and down (when we signal 'yes'), and sideways (when we signal 'no').



Pivot joint

4. **Gliding Joint:** This kind of joint is present in wrist, ankle and between any two vertebrae of the spine. The flexibility of the backbone is because of this type of joint. We are able to bend forward or backward, or sideways, owing to the presence of the gliding joint in the vertebrae.



Vertebrae showing gliding joint

### Activity:

Lets play a game. Let one student come in front of the class and move one of the body part (say, the shoulder). The other students would have to name the joint involved in that movement.

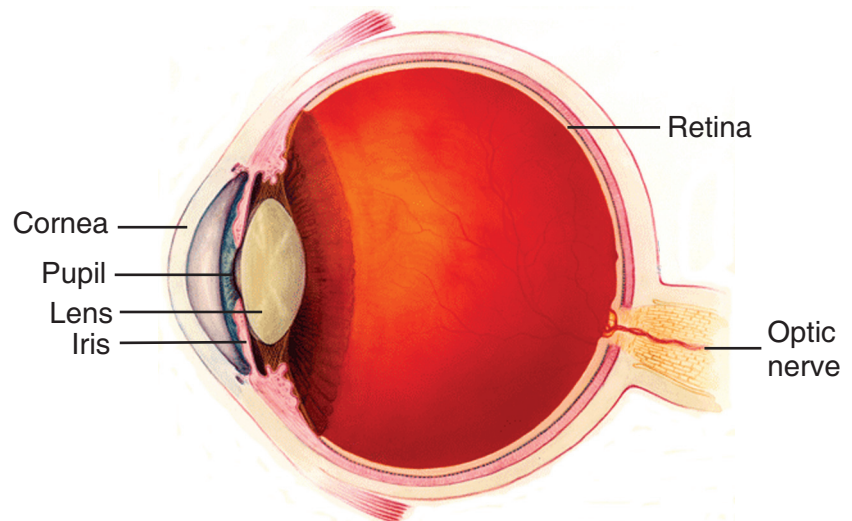
## SENSE ORGANS

We know that human beings can smell, see, hear, taste and feel because of five sensory organs. These sense organs (nose, eyes, ears, tongue and skin) collect information and send it to the brain for processing. If any one of them is not working properly, we would not be able to either smell, see, hear, taste or feel, depending on the sense organ involved.

**We now discuss these sense organs in some detail.**

### Eyes

Each eyeball is placed in a bony socket in the skull. They are protected by eyelids and eyelashes. These also protect our eyes from dust and dirt.



Inner view of eye (in section)

The dark structure, in the front of the eyeball, is called the **iris**. The small round black spot, in its centre, is called the **pupil**. The pupil allows light to enter the eye. The retina, at the back of the eyeball, is the screen on which all images get formed. The eye is connected to the brain by a nerve called the **optic nerve**.

### Do You Know?

The two eyes of a chameleon can move independently. Therefore, it can see in two different directions at the same time.

### Activity:

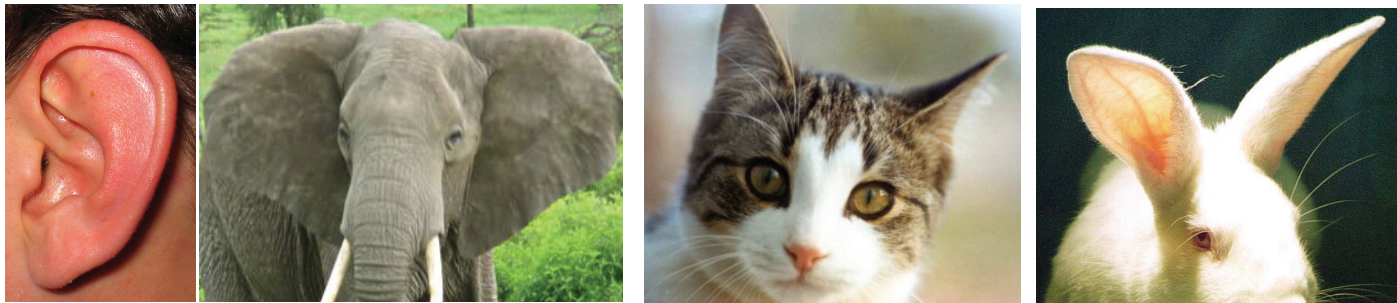
Go out and stand outside for 10-15 minutes on a bright and sunny day. (Take special care not to look towards the sun directly). Now return to your room. Can you immediately see the things clearly? Why is it so?

## Nose

There are **nerve endings** present in the nose which carry message about any chemical substance (odour/fragrance) that enters the nose. This enables us to smell different substances.

## Ears

Human ear is divided into three parts—the outer ear, middle ear and the inner ear. The portion of the ear, that is visible to us, is known as the **external ear**. External ear may vary in shape and size in different animals. The outer ear directs the sound (waves) to the inner ear. The **middle ear** has an ear drum, and three small bones, which convey the vibrations from the ear drum to the inner ear. The **inner ear** helps us to hear and maintain the balance of our body.



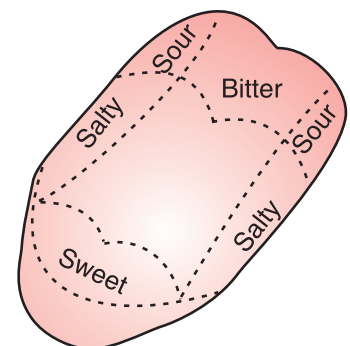
External ear of various animals

## Tongue

We know that different parts of the tongue have **taste buds** which are sensitive to four different tastes—sweet, sour, salty and bitter.

### Do You Know?

Human tongue has 9,000 taste buds, a pig has 15,000 of them while a rabbit has 17,000 taste buds.



Taste buds on the tongue



## Skin

The skin forms a natural protective covering of the entire body. It helps us to feel pain, touch, pressure, hotness and coldness. There are **sensory structures** in the skin which help us to feel these sensations.

### Do You Know?

Skin is the largest sense organ of our body.

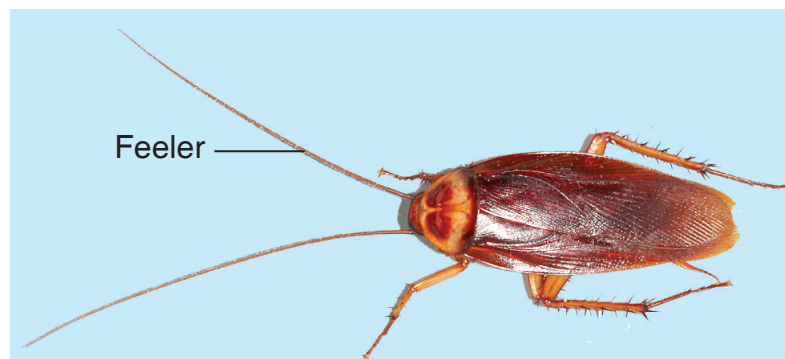
## SENSE ORGANS IN DIFFERENT ANIMALS

Let us now discuss how different animals use different organs to sense different things.

**Insects:** Insects, such as cockroach, housefly and butterfly have **feelers** on their bodies. These insects smell and taste with the help of these feelers. The housefly tastes with its legs.

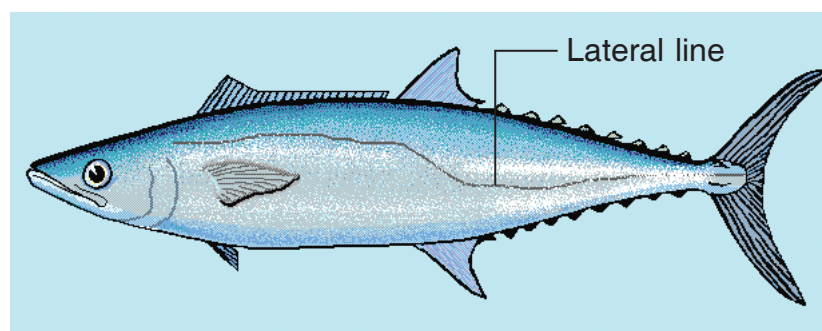
### Do You Know?

Insects, like house cricket, can 'hear' through their legs.



Cockroach

**Water Animals:** Fish can feel the waves produced in water by other living animals. They feel these waves through their **lateral line**. This helps them to detect their prey or know about the enemy present around them.



Lateral line on a fish

**Birds:** Birds have sense organs (eyes, ears, etc.) which enable them to see, to feel, to smell, to hear and to taste. Besides these responses, birds also make different sounds to inform other birds about different situations. They make a typical sound when there is an enemy around. Similarly, they make a particular sound when they see the availability of food. Birds also group together and make sounds for setting out in search of food or to call all members for taking rest after day's work. They fly in groups often making interesting shapes in the sky.

**Reptiles:** Some reptiles, like snakes, have a long tongue which helps them to feel and smell. A snake senses the availability of food through its tongue only. The snake feels different kinds of vibrations on the earth through its skin. This helps it to detect the presence of an enemy, a danger or a prey.



Snake

**Mammals:** All mammals have sense organs, but some mammals have a special power either to smell, to hear or to see. Dogs have a highly-developed sense of smell. Bats have a special power to hear high-pitched sounds. Due to this ability, bats can detect their prey easily even in the dark. This is the reason why bats hunt at night. They detect their prey with the help of high pitched 'sounds' known as **ultrasonics**.

## Keywords

- ❖ **bone marrow** cells and soft material in the hollow space of long bones.
- ❖ **cartilage** a tough, smooth elastic structure that cushions bones at their joint.
- ❖ **exhalation** the process of breathing air out from the lungs.
- ❖ **inhalation** the process of taking air into the lungs.
- ❖ **joint** a place where two bones meet.
- ❖ **ligament** a strong stretchy band like tissue which attaches bones together at joints.
- ❖ **pupil** a hole that allows light to enter the eyes.
- ❖ **ultrasonics** these are sounds (waves) that humans cannot hear.
- ❖ **vertebrae** small bones that join together to make backbone.

## Something to Know

### A. Fill in the blanks.

1. Wind pipe connects nose to the \_\_\_\_\_ in mammals.
2. Of the two jaws, only the \_\_\_\_\_ jaw moves.
3. The backbone protects the \_\_\_\_\_.
4. Fish can feel waves with the help of their \_\_\_\_\_.
5. A snake uses its \_\_\_\_\_ to touch and smell objects.
6. Eye is connected to the brain by the \_\_\_\_\_ nerve.

### B. Match the following:

- |          |                          |
|----------|--------------------------|
| 1. elbow | a. longest bone          |
| 2. wrist | b. eight flat bones      |
| 3. hip   | c. hinge joint           |
| 4. femur | d. ball and socket joint |
| 5. skull | e. gliding joint         |

### C. Tick (✓) the correct option.

1. The joint in the shoulder is an example of a—
 

(a) hinge joint	(b) ball and socket joint
(c) pivot joint	(d) gliding joint
2. The framework of bones, that protects our heart and lungs, is known as the—
 

(a) spinal cord	(b) skull	(c) rib cage	(d) pivot joint
-----------------	-----------	--------------	-----------------
3. Light enters the eyes through the—
 

(a) pupil	(b) cornea	(c) retina	(d) iris
-----------	------------	------------	----------
4. The part of the ear which helps in maintaining balance of our body is—
 

(a) external ear	(b) ear drum	(c) middle ear	(d) inner ear
------------------	--------------	----------------	---------------

### D. Answer the following questions in brief.

1. What is breathing?

2. How are fore limbs connected to the spine?
3. State the importance of the rib-cage in our body.
4. Name the main parts of the skeletal system.
5. State the role of inner ear in the process of hearing.
6. How does a snake detect the presence of an enemy or a prey?

**E. Answer the following questions.**

1. Why do bones have joints?
2. Why is our backbone made up of many small vertebrae instead of having one straight long bone?
3. Why is bone marrow known as the factory for making blood cells?
4. How does a ball and socket joint work?
5. Dogs and bats are also mammals like us. How does our sense of smell compare with that of a dog and our sense of hearing with that of a bat?
6. Do you breathe even when you are sleeping? Give reason for your answer.

## VALUE Based Question

The students of Class-V were asked to prepare posters for the coming parent-teacher meet. The teacher assigned different roles to different students. All of them did their work happily in a sincere and organised way. They all helped one another.





Their work was liked and praised by all the visitors. The teacher compared their work with the 'Breathing System' when she taught that topic in the class.

1. State the values displayed by the students.
2. Discuss how doing work in an organised and helpful way is useful for one and all.
3. Why did the teacher compare their work with the 'Breathing System'?

### Something to Do

1. Try to make riddles about the functions of sense organs. One example is given below:

*I am an organ that helps you to see,  
Coloured disc in white, can you recognise me!*

Answer: Eye

2. Find out how your external ear compares with that of the external ear of other mammals like cow, horse and elephant. What differences are there? Also find out about any other functions performed by the external ear of these animals.
3. There are many things in the house that have joints, e.g., door and scissors. Compare the joints of your body with different joints that you see in various appliances in your house. Record your results in the following table:

Name of the joint in our body	Joint in an appliance which is similar
Hinge joint	Hinge of the door
Ball and Socket joint	
Pivot joint	
Gliding joint	

## 2

## PLANTS

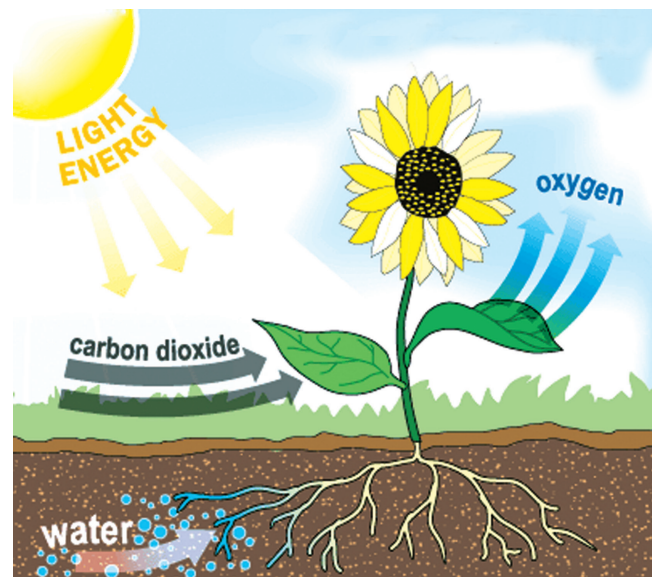
Plants need energy in much the same way as humans, animals and birds. They need energy to grow, to replace their worn out parts, to get rid of wastes, and to reproduce. Like all organisms, plants also get the energy, they need, from food. Plants are special because they synthesise or prepare their own food.

## HOW DO PLANTS PREPARE FOOD?

A plant makes its food in its green leaves. Thus, green leaves are the **food factories** of the plant. The process, by which green plants make their food, is called **photosynthesis**. **Photo** means 'light' and **synthesis** means 'putting together'.

Plants need raw materials like carbon dioxide and water. These are converted into food in the presence of sunlight and chlorophyll.

Carbon dioxide is taken from air through stomata. **Stomata** are the tiny pores present on the leaf surface. Water, required by the plant, is drawn from the soil through the roots. Sunlight is available during the day-time. **Chlorophyll**, which is essential for completing the process, is the green-coloured pigment present in the green leaves of plants.



Process of photosynthesis

Some plants need extra food in addition to what they prepare by photosynthesis. These are plants that grow in poor soil which lacks nitrogen salts. They get their extra nourishment from insects.

Plants, that trap and feed on insects, are called **insectivorous plants**. Venus flytrap and Pitcher plant are two examples of such plants. They trap insects in their sticky leaves which have special shapes. The insects get suffocated, when they are trapped in the leaf, and die. The bodies of these insects are then broken down, digested and consumed by the plant.



Venus flytrap



Pitcher plant

#### Insectivorous Plants

## **REPRODUCTION IN PLANTS**

All living things reproduce to maintain their race and number on earth. The process, by which a living thing produces more of its own kind, is called **reproduction**.

Plants also reproduce their own kind. They do so mainly in two ways:

1. Reproduction through seeds.
2. Reproduction through different parts of a plant, like underground stem, stem cutting, root and leaf.

**Let us study these two ways in some detail.**

### **1. Reproduction through Seeds**

The seeds of a plant usually develop inside the fruit. As the fruit ripens, the seeds become mature. These seeds get dispersed through various agents like air, water, insects and human beings. All the seeds, that drop on the soil, do not grow to form new plants. Many of them die due to unfavourable conditions. Only those seeds, which get favourable conditions, like appropriate air, water, soil and proper temperature, grow to form new plants.

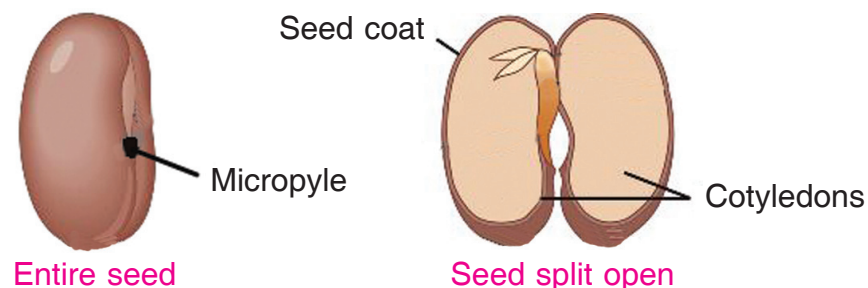
### Do You Know?

The Seychelles coconut, found only in the Seychelles Islands near Africa, produces the largest seeds amongst all plants. The fruit, of this palm tree, looks like two coconuts joined together. This is also called the “double coconut”.

Let us now study the structure of the seed.

### Structure of the Seed

Take some gram or bean seeds. Soak them for 10-12 hours in water. Now pick up one seed and observe its structure carefully. We will notice that it has a hole that allows water to enter its inside. This hole is known



Parts of a bean seed

as the **micropyle**. The seed is covered by an outer layer called the **seed coat**. Inside the seed coat, there are seed leaves, also called **cotyledons**. Some plants, like pea, gram and bean have two cotyledons whereas wheat, rice and maize have only one cotyledon. Inside the seed leaves, there is a **baby plant**. The baby plant has a tiny root and a tiny shoot. The cotyledons store food for the baby plant to grow.

### Growth of the Plant

The baby plant starts growing into a new plant when it gets appropriate amount of air and water, and the temperature, around it, is neither too hot nor too cold. To start with, the cotyledons provide food to the growing plant. Later on, the plant starts making its own food with the help of its leaves.

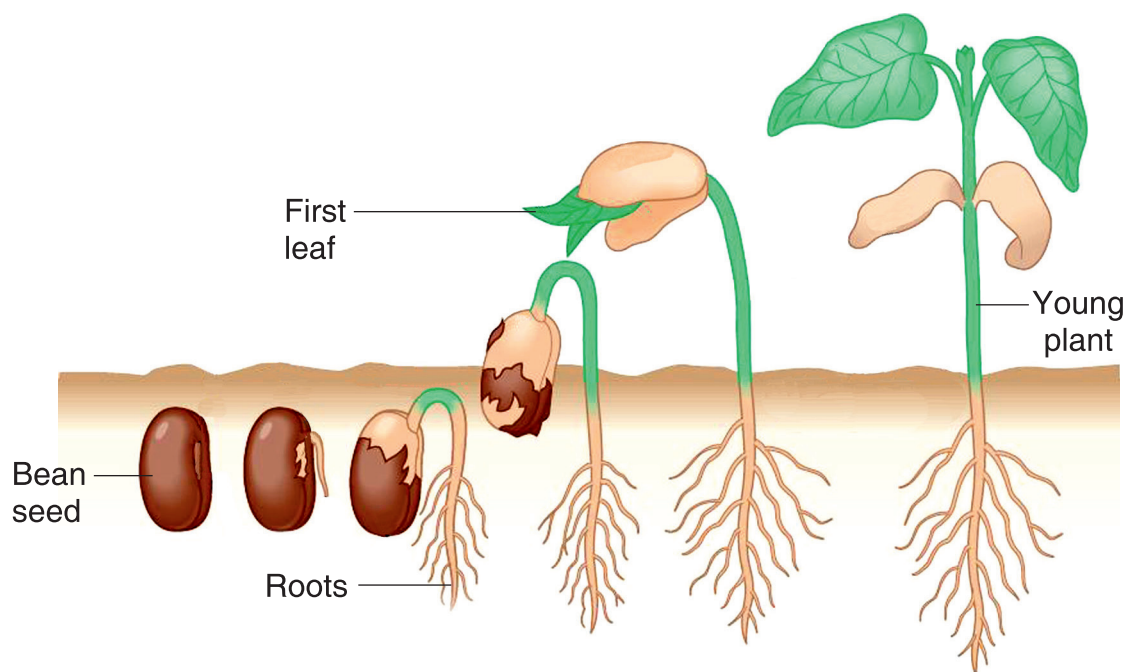
### Activity:

Soak some *moong dal* and wheat seeds in separate dishes for 10-12 hours. Observe and compare their structures. Report the differences in their structures, observed by you, to your teacher.

### Seed Germination

We know that a plant usually grows from a seed. The process, by which a seed grows and develops into a seedling, i.e. young plant, is called **seed germination**.






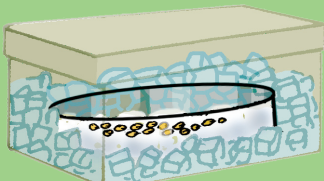


Stages of germination in a bean seed

Seeds need favourable conditions to grow and develop into a seedling. Let us do an activity to study the conditions that are necessary for germination of a seed.



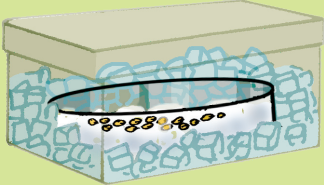
### Activity:

Take some seeds of gram, or *moong dal*. Put them separately in four glass dishes, labelled as A, B, C and D. Keep them for 4-5 days under the conditions as given below:

Dish	Conditions Present
A	 Keep seeds on moist cotton at room temperature.
B	 Keep seeds without water at room temperature.
C	 Keep seeds in a dish completely filled with water at room temperature.
D	 Keep the dish, having seeds, on moist cotton in an ice-box or a refrigerator.

After 4-5 days, we will observe that the seeds, present in the glass dishes B, C and D, have not germinated. The seeds of dish A show good germination. It is due to the fact that in dish A, there is appropriate amount of water, air and warmth needed for germination. In the other glass dishes, one, or other, of these favourable conditions, is missing.

On the basis of the above activity, complete the following:

Dishes	Conditions present	Condition missing
<b>B</b> 	<ul style="list-style-type: none"> <li>• Air</li> <li>• Warmth</li> </ul>	_____
<b>C</b> 	<ul style="list-style-type: none"> <li>• Water</li> <li>• Warmth</li> </ul>	_____
<b>D</b> 	<ul style="list-style-type: none"> <li>• Air</li> <li>• Water</li> </ul>	_____

We can, thus, conclude that appropriate amount of water, air and correct warmth are necessary for germination of seeds.

### Do You Know?

A healthy birch tree can produce up to one million seeds a year.

Is it possible to grow some plants without seeds? Let us find out.

## 2. Reproduction by Different Parts of the Plant

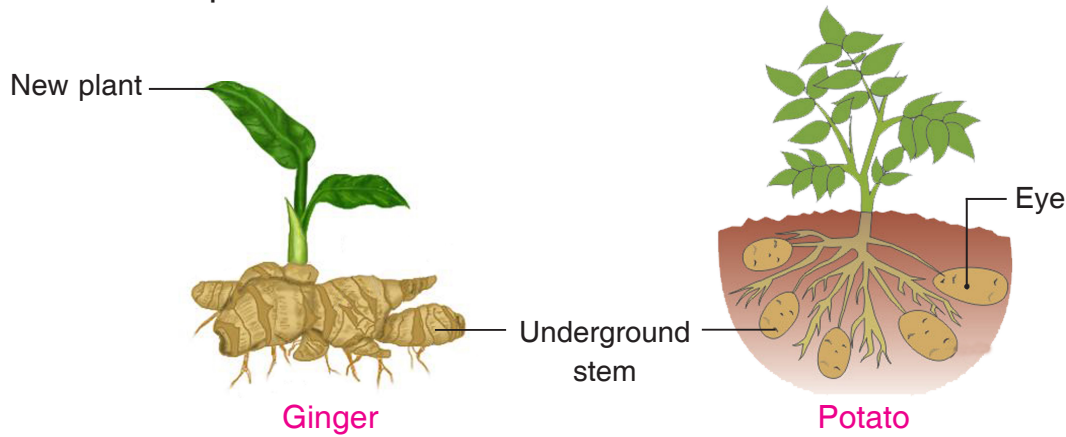
In many plants, reproduction takes place through other parts of the plant. A new plant can grow (i) from the underground stem, (ii) by stem cutting, (iii) from roots or (iv) from leaves of a plant. This type of reproduction, in which a new plant arises from some part of a plant, without the involvement of seeds, is called **vegetative reproduction**.

### Vegetative Reproduction

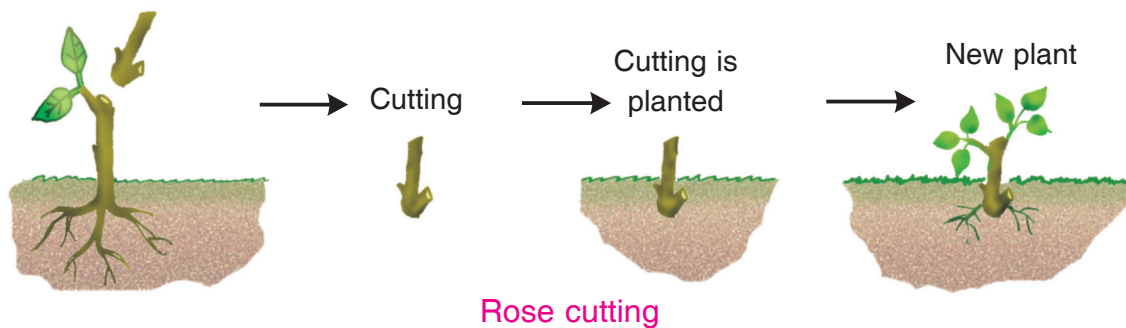
It is of great importance because it is an easier and faster method of increasing the number of the same plant. It also helps to grow plants, like banana, which bear no seeds.

Let us now study how the different parts, of a plant, are involved in the process of vegetative reproduction.

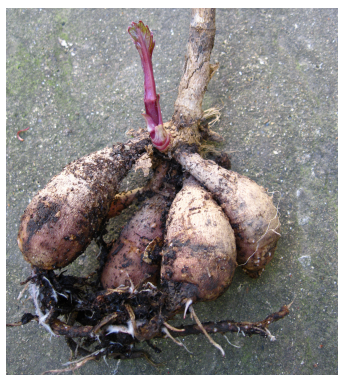
- (a) **Reproduction through underground stem:** In plants, like banana, ginger and potato, a new plant grows from the underground stem. In these plants, a part of the stem, present underground, grows and develops roots and shoots to make new plants.



- (b) **Reproduction by stem cutting:** New plant can also be grown by using the stem cutting of a grown up plant. Stem cuttings are used for growing plants like sugarcane, *bougainvillea*, rose and grapes.



- (c) **Reproduction through root:** When the fleshy roots of some plants, like *Dahlia* and *Asparagus*, are placed in water, very many roots appear at the lower end and shoots appear at the upper end. In sweet potato, new plants arise from its root itself.



Dahlia



Sweet potato

- (d) **Reproduction through leaf:** In plants like *Bryophyllum*, new young plants arise from the notches of the leaves where small buds are present. These small buds get detached from the leaf and develop into new plants.

New plant from the notches



*Bryophyllum*

We can, thus, say that different plants reproduce, either through seeds, or from some other part of the plant. They maintain their number and race through an appropriate method of reproduction.

## **SEED DISPERSAL**

We know that flowers produce fruits and most fruits bear seeds. However, all seeds, of a given plant, do not germinate near their mother plants. This is because they will then have to struggle to get sufficient air, water, sunlight and nutrients and many of them would die. Nature, therefore, enables the seeds to move over to other places. It does so through various agents, such as air, water, animals, birds, insects and human beings. They all help in the transfer of seeds to different places. The process of transfer of seeds, to different places, is called **seed dispersal**.

**We now discuss, in some detail, about the different methods of seed dispersal.**

### **Different Ways of Seed Dispersal**

**Human-made ways:** Humans select seeds of useful plants and sows them in the soil to get new plants. You must have seen farmers sowing seeds of different useful plants like wheat, maize and mustard.



**Natural ways:** Plants, especially those growing in forests, use lots of natural methods to scatter their seeds. These are given below:

1. **Dispersal by wind:** The seeds of madar (*aak*), thistle and dandelion get dispersed through wind. These seeds are very light, small and have hair on them. The hair enable them to fly with the wind and get dispersed.



Madar Seed



Dandelion



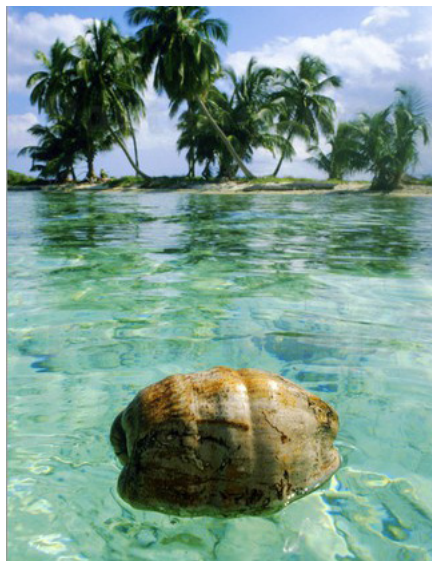
Cotton Seed



Hiptage Seed

#### Dispersal of seeds by wind

2. **Dispersal by water:** Plants, which are near water bodies (sea, river, lake), disperse their seeds through water. Coconut, water lily, *Hydrilla* and lotus are examples of plants which disperse their seeds through water. The seeds float on the water for some distance before being carried away. They sink into mud on the shore, or on the fringes, of the water body.



Coconut



Lotus

#### Dispersal of seeds by water

- 3. Dispersal by birds, insects and rodents:** Sparrows, ants, rats, squirrels, etc., carry fruits and grains to their burrows, nests and other places. They drop some grains, or seeds, on their way. These may grow into plants in the new environment.



Dispersal of grains/seeds by birds, insects and rodents

- 4. Dispersal by human and animals:** Fruits, which are fleshy and juicy, are eaten by humans, and other animals, and their seeds get thrown away. Seeds of watermelon, papaya, mango, pumpkin and gourd often get dispersed by this method. These seeds can grow into new plants under suitable, and favourable, conditions.

Many plants, like castor, burdock, cocklebur and mimosa, depend on animals, including humans, to carry their seeds away from their parent plants. Their fruits are thorny or have hooks on them. They get stuck to the clothes of humans, or skin and fur of animals. They get carried to different places where they fall down and grow into new plants.



Dispersal of seeds of fruits by humans and animals

- 5. Dispersal through cracking and bursting:** Some fruits crack and burst on ripening and scatter their seeds far away from the parent plant. These



may grow into new plants. Seeds of pea, ladyfinger, bean and balsam get dispersed by this method.



Dispersal of seeds by cracking and bursting

Now you know why, and how, plants grow at all places. The dispersal of seeds plays an important role in increasing the number of plants all over the earth.

### Do You Know?

The well known Indian Scientist, Prof. J.C. Bose, proved, through his experiments, that plants have life. He invented an instrument, called the **crescograph**, which could be used to measure the rate of growth of a plant.

## Keywords

- ❖ **chlorophyll** green pigment in leaves.
- ❖ **cotyledons** parts of the seed that contain food for the baby plant.
- ❖ **germination** the growing of baby plant from seed.
- ❖ **photosynthesis** process by which green plants make their own food.
- ❖ **seed coat** the thick outer covering of the seed, which protects the baby plant.
- ❖ **seed dispersal** the transfer of seeds to places away from the mother plant.
- ❖ **seedling** the small baby plant that grows out of seed.
- ❖ **vegetative reproduction** type of reproduction without seeds.

## Something to Know

### A. Fill in the blanks.

- \_\_\_\_\_ are known as food factories of the plant.
- Plants, like \_\_\_\_\_, reproduce through roots.
- \_\_\_\_\_ and \_\_\_\_\_ are the raw materials needed for photosynthesis.
- \_\_\_\_\_ is a small hole present on the seed.
- Movement of seeds, from one place to another, is called \_\_\_\_\_.

### B. Match the following:

- |  |                            |
|--|----------------------------|
| 1. type of reproduction without seeds  | a. chlorophyll             |
| 2. green pigment present in leaves     | b. banana                  |
| 3. a fruit that does not bear seeds    | c. <i>bryophyllum</i>      |
| 4. reproduction through leaves         | d. pea and ladyfinger      |
| 5. dispersal of seeds through cracking | e. vegetative reproduction |

### C. Tick (✓) the correct option.

- The small baby plant, coming out of a seed is known as the—  
(a) grain                      (b) stomata                      (c) root                      (d) seedling
- The process, by which a plant make its own food, is called—  
(a) photosynthesis    (b) germination    (c) reproduction    (d) dispersal
- Which of these plants has only one cotyledon?  
(a) gram                      (b) pea                      (c) wheat                      (d) bean
- For proper germination, a seed needs—  
(a) water only  
(b) just the right temperature  
(c) air only  
(d) water, air as well as the appropriate temperature

5. Lotus seeds are dispersed mainly through—

- (a) insects                      (b) birds                      (c) air                      (d) water

**D. Answer the following questions in brief.**

1. Name the pigment present in green leaves of a plant.
2. Why do some plants feed on insects?
3. Name the two methods of reproduction in plants.
4. State the conditions required for the proper germination of a seed.
5. Name two plants that reproduce through stem cuttings.

**E. Answer the following questions.**

1. Why do all seeds not germinate to form new plants?
2. Seeds do not germinate when they are kept in an ice-box or refrigerator. Why?
3. State the importance of vegetative reproduction in plants.
4. List any three natural ways of seed dispersal. Give one example for each of them.
5. How can one grow a rose plant without seeds?
6. State the function of following:  
(a) seed coat                      (b) cotyledons                      (c) micropyle
7. Write the ways of dispersal of seeds in the following plants.

Plants	Ways/Agents of Dispersal of seeds
Madar	
Lotus	
Castor	
Beans	
Mango	
Water lily	



## VALUE Based Question

Riya's neighbours went to Chennai for 20 days during summer vacation. They requested Riya's mother to take care of their plants in their absence.

Riya and her mother took this responsibility happily. They watered the plants regularly and shielded them from the heat of the sun during day time. When the neighbours returned home, they thanked Riya and her family for taking good care of their plants.

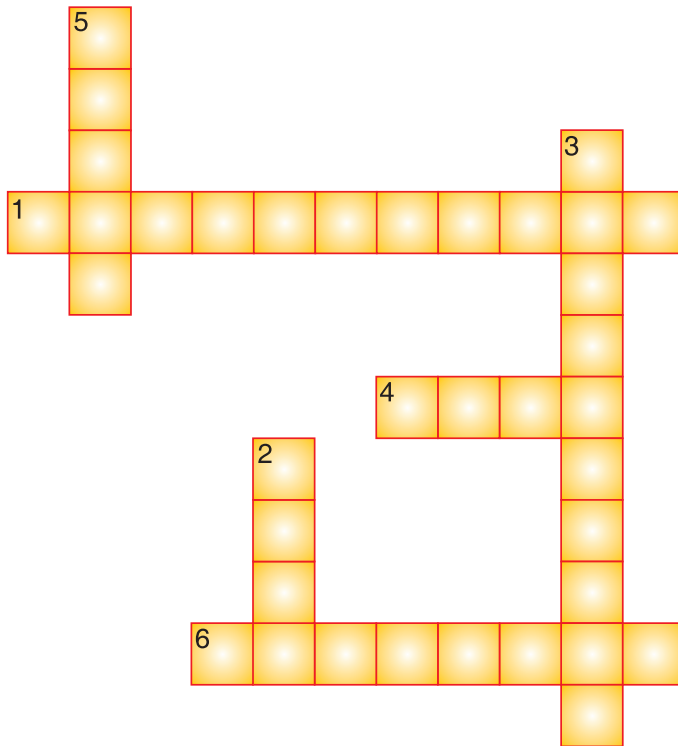


1. In what ways Riya and her mother took care of plants?
2. State the qualities of Riya that are depicted by this situation.
3. What could have happened if Riya and her mother had not taken care of their neighbour's plants?

### Something to Do

1. Have you ever thought of planting a sapling on your birthday or gifting saplings as return gift to your friends? Do such activities help to save environment? Discuss.
2. Draw well-labelled diagrams of five different seeds in your notebook.

3. Solve the crossword puzzle.



**Across** →

1. The process by which a seed produces a baby plant (11)
4. Important for plant growth (4)
6. A young plant (8)

**Down** ↓

2. A plant that grows from stem cuttings (4)
3. Store food for the baby plant (10)
5. Lotus seeds are dispersed by \_\_\_\_\_ (5)

4. Take some seeds of wheat and *moong dal*. Soak them in water overnight and put them in soil. Record your observations and compare the results with your classmates. Discuss the same with your teacher.

Record your observations with diagrams in the following manner.

### Germination of Seeds

Days	Observations	Diagrams of the seed/seedling/plant
Day 1		
Day 3		
Day 5		
Day 7		
Day 9		