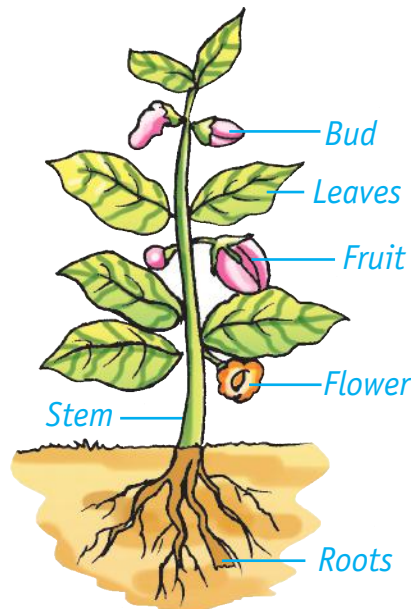
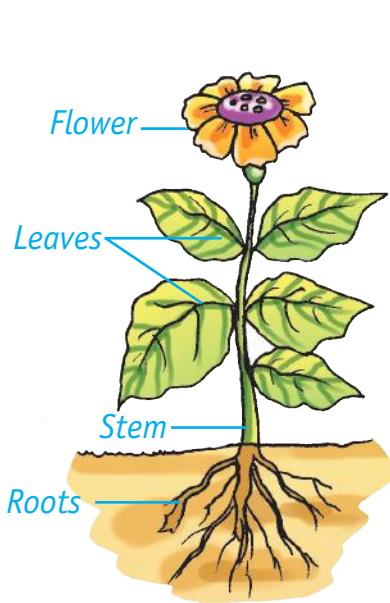


Plants : Functions Of Their Parts

1

When we see around us, we see different kinds of plants, grasses, trees, shrubs and bushes around us.

They are necessary for life in the world. Plants are the basic sources of food for all living things. Men and animals depend directly or indirectly on plants for their food.



PARTS OF A PLANT

Plants have roots, stems, leaves, flowers and fruits.

All plants have the similar parts.

Look at the following plants. Though they are different, they have similar parts.

Different parts of a plant perform different functions.

Root and Shoot System

The part of the plant under the ground is root system. The part of the plant above the ground is shoot system.

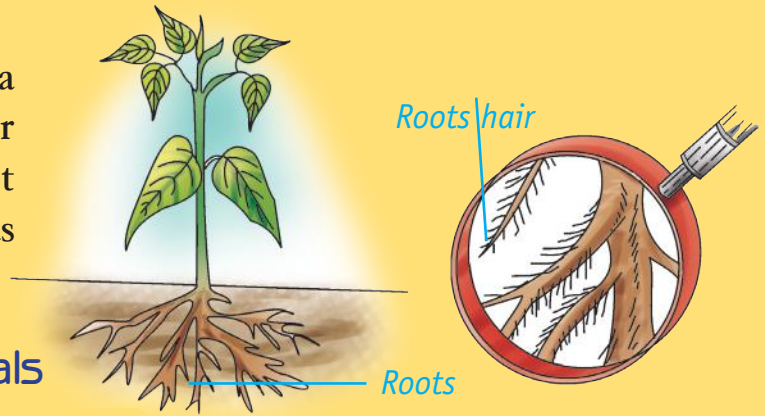
The shoot system has stem, leaves, flowers and fruits.

FUNCTIONS OF ROOT

1. Root holds the plant firmly in the ground

Activity 1

Look at the roots of a plant through a microscope. You shall find tiny root hair around branch roots; branch roots meet in the main root. This root system holds the plant firmly in the ground.



2. Roots Absorb Water and Minerals

Activity 2

Take two plants. Wash the roots carefully with water. Put them in two jars. Pour equal amount of water in the jars. Put some red colour in a jar. Only the roots should remain in water. Observe both the plants after two hours. You see that the plant in plain water has no colour. The plant in the coloured water has coloured stem and leaves. Roots have absorbed colour along with the water.



3. Roots Store Food

Some roots like radish and carrot store food. We eat those roots which store food as these have all the nutrition in them.

Do You Know ?

Some roots store food in them. They are usually large and swollen. The sweet potato, carrot radish, beet root and turnip plants store food in their roots. We use these roots as vegetable.



Radish



Carrot



Turnip



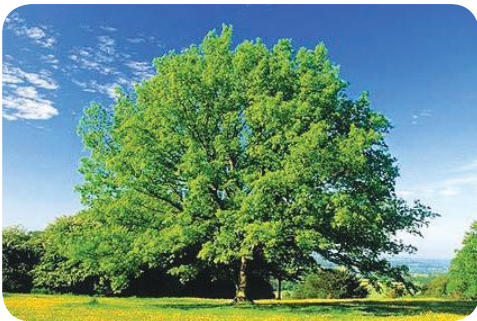
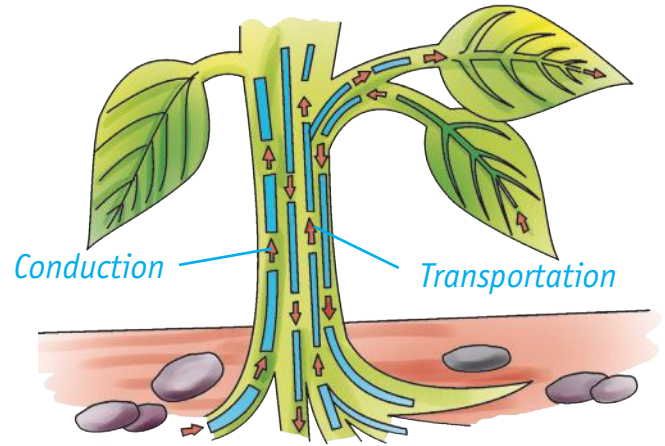
Beet root

FUNCTIONS OF STEM

Water and minerals absorbed by the roots travel to the leaves through the stem. Secondly, food made in the leaves reaches to other parts of the plant through the stem.

Functions of Stem

1. It bears and supports branches, leaves, buds, flowers, fruits and seeds.
2. Leaves and branches come out at definite parts of the stem called Nodes.
3. The stem carries water and minerals to leaves and other parts of the plant. This is called conduction.
4. The stem carries the prepared food from the leaves to different parts of the plant. This is called transportation.
5. In some plants, food is stored in the stem.



KINDS OF STEM

Different plants have different kinds of stems :

1. **Thick Strong Stem** : The stems of trees are woody. They have a covering of thick bark. They increase in thickness year by year. Some stems live for hundreds of years.
2. **Thin and Weak Stem** : The stem of a tomato plant is thin and weak. Such stems die at the end of the season.



The stem of a tomato plant



The weak stem



Tendrils

3. **Twining Stems** : The weak stem of morning glory twines around stick for support. Tendrils help to support the cucumber plant.
4. **Creeping Stems** : The stems of creeping plants creep on the ground. They cannot stand.

STORAGE OF FOOD

In some plants, such as ginger, potato and onion plants, food is stored in the stems. We eat these stems.



Ginger plant



Potato plant



Onion plant

Do You Know ?

Cactus plants do not have leaves. They have stems which are green in colour so their stems prepare the food.

FUNCTIONS OF LEAVES

Food-making

Leaves make food for the plant. Green leaves have a green substance called **chlorophyll**.

It is through this substance that green leaves make food for the plants. For this purpose, the plant draws water from the soil takes carbon-di-oxide from the atmosphere.

These are changed into food or sugar. Leaves get from the sun their energy for making food. Hence, leaves require water, carbon-di-oxide, chlorophyll and sunlight to make food. This process of making food by the sunlight is called **photosynthesis**.

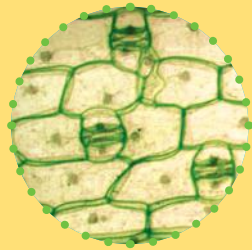


PARTS OF A LEAF

Activity 3



Leaf



Stomata

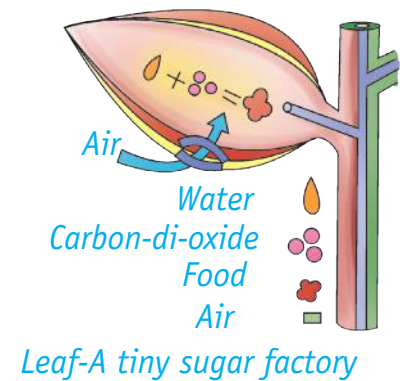


Microscope

Cut a thin slice of leaf. Put it on a slide. Look at it through a microscope. You will see that it is made up of many layers of cells. The cells of the upper and lower layers are not green. Other cells are green. For the green cells only two layers are closely packed. All the other cells are scattered. There are air spaces in between the cells. The lowest layer has some tiny openings called **Stomata**. The leaf takes in carbon-di-oxide through the stomata. During the process of making food, the plants give out oxygen through photosynthesis.

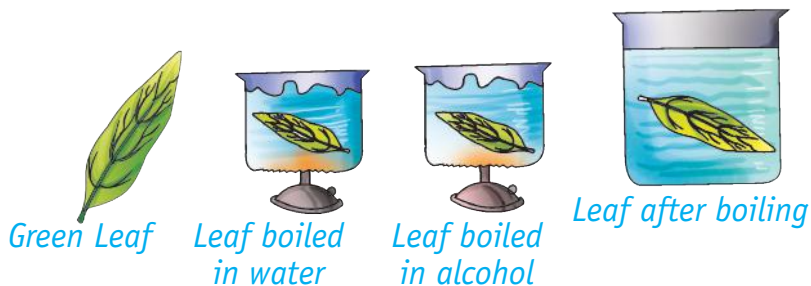
How do plants use their food?

The excess food (sugar) made in the plant changes into starch. It is stored in the leaf or carried to the different parts of the plant. We eat those parts of a plant where food is stored. The plant has surplus food which is stored in the stem, fruits, seeds, roots and leaves. Thus every leaf is a tiny sugar factory. We eat those parts of a plant where food is stored. Thus we eat not only fruits but also roots, stem and leaves of the plant. We eat leaves of spinach, stem of sugarcane, roots of carrot and radish and fruits of apple and mango.



Starch Test

Expose a leaf to sunlight for several hours. Boil the leaf first in water and then in alcohol.

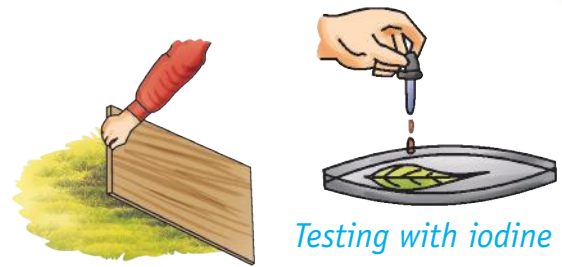


This bleaching process will remove chlorophyll from the leaf. Now wash the leaf in cold water. Place it in a white saucer. Pour a few drops of iodine solution on it. You will see that the colour of leaf turns into blue-black.

It proves that starch is present in the green leaves.

Why do plants need sunlight?

Plants need sunlight to make chlorophyll.

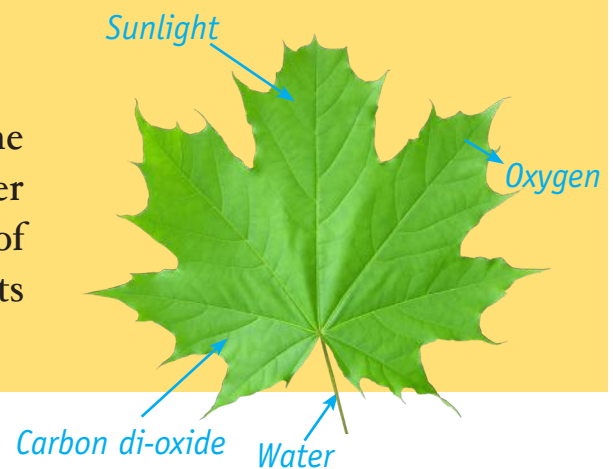


Do You Know ?

While using energy from sunlight plants turn carbon-dioxide into food in a process called photosynthesis.

Activity 4

Cover a part of a lawn with a board. Remove the board after four or five days. The green grass under the board turns yellow because in the absence of sunlight it cannot make chlorophyll. Leaves of plants remain green only in sunlight.

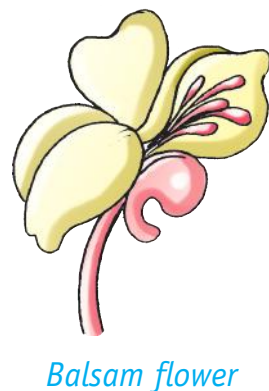
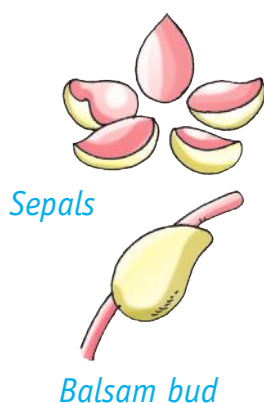
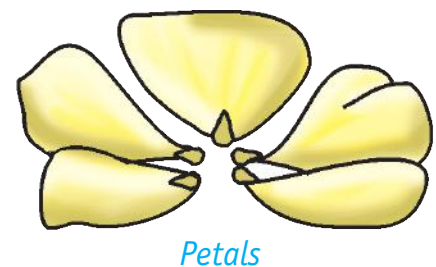


FUNCTIONS OF FLOWER

Flowers make seeds and fruits.

Parts of a Flower

1. **Petals** : The petals of a flower are brightly coloured. They are joined together to make a flower.
2. **Sepals** : Around the flower are small and green sepals. They are joined in a ring around the petals at the base of the flower.



3. **Bud** : Before a flower opens out, it is enclosed in sepals. This is called bud. The sepals protect the flower.
4. **Stamens** : Inside the group of petals are slender stalks called stamens.
5. **Pistil** : The stamens surround the pistil which is the central part of the flower.

Functions of a Flower

1. **Pollination** : Petals of a flower attract insects and bees for pollination.
2. **Fertilization** : Stamens are the male parts of a flower. Pistil is the female part. As insects and bees sit on stamens and pistil alternatively, fertilization occurs after pollination. Fruit is formed after fertilization.

Flowers become fruits by means of fertilization. Butterflies help in pollination.

When a flower is fertilized, the ovary grows into fruit and the egg cells become seeds.



FRUITS AND SEEDS

Some fruits have one, some two and some many seeds.



Plum seeds



Apple seeds



Papaya seeds

Activity 5



Take a tomato. Cut it into two halves. You will find many small round bodies inside the tomato. These are seeds.

Do You Know ?

The durian is a fruit from southeast asia that's well known from toxic smell.

Dispersal of Seeds

Fruits are eaten by men, animals and birds. This causes dispersal of seeds. Seeds and fruits are dispersed by wind and water as well. Seeds having hair and wings are carried away by wind. Lotus and coconut seeds float on water and get dispersed. Some seeds

have hooks and spines. They stick to men and animals and get dispersed. When men, animals and birds eat fruits, they drop the seeds far away from the parent plant.



Non-green Plants

Mushroom and moulds are non-green plants. In the absence of chlorophyll, they cannot make their food. They get their food from the decaying plants. Plants like cactus do not have leaves. Their soft green stems make their food. Croton plant has dark red leaves. Under the red colour is hidden the green colour of chlorophyll.

Test your Self

I. Make a list of food items you ate yesterday and classify them as given below :

In breakfast :

- a. Bread-wheat-plant b. Butter-milk-animals
c. Jam(mixed fruit)- fruits-plants

In Lunch :

- a. _____ b. _____ C. _____

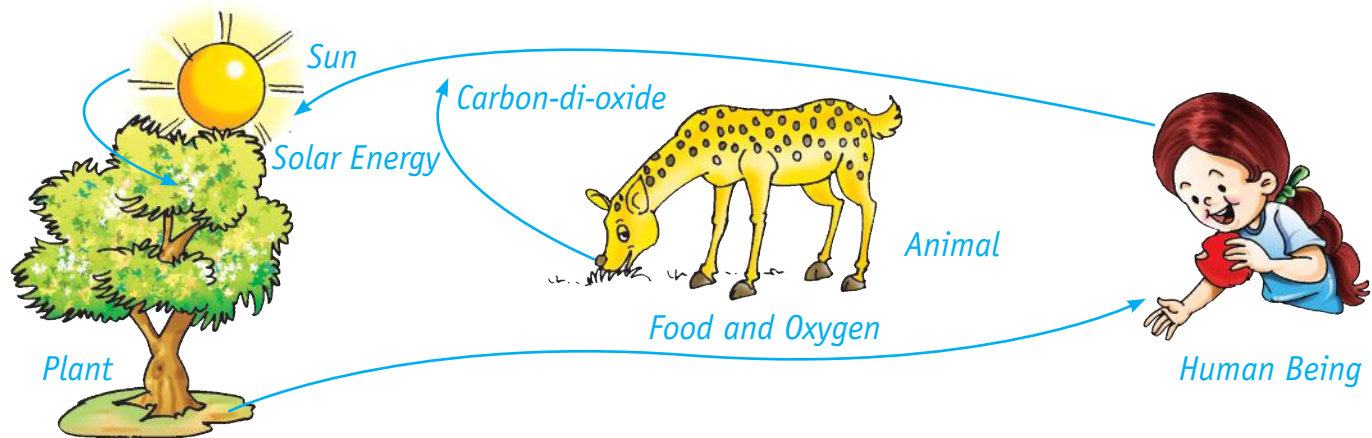
In Dinner :

- a. _____ b. _____ C. _____

ENERGY-FLOW IN LIVING THINGS

Plants make food with sunlight, water and carbon-di-oxide. This food is used by men and animals. By food they get energy to work and grow. Men and animals give out carbon-di-oxide. Carbon-di-oxide is absorbed by the plants. Plants, in their turn, give

out oxygen which is used by men and animals. Thus the cycle of using sun's energy goes on throughout all living things.



BALANCE IN NATURE

Therefore, a balance is required in the number of trees and plants on the one hand and animals and human beings on the other hand. Plant and animal life should be protected. There should be a check on human population growth. A balance in Nature has to be maintained.

Know the Keywords :

Chlorophyll	: Green pigment in leaves.
Photosynthesis	: The process by which green plants make food with the help of chlorophyll, water, sunlight and carbon-di-oxide.
Stomata	: Small pores on the surface of leaves.
Green plants	: Plants that have chlorophyll in their leaves.

Point to Remember

- Plants are necessary for life in world.
- Plants make their own food with the help of chlorophyll water, sunlight and carbon-di-oxide. This process is called photosynthesis.
- Plants produce their own food in green leaves.
- Leaves are known as the food factories of plants.
- The leaves contain a green pigment called chlorophyll.
- The food made in plant stored in the leaves, stems or roots.
- Plants maintain balance in nature.

EXERCISE TIME

A. Multiple choice questions (MCQs).

Tick (✓) the correct option :

- The leaves contain a green pigment called _____.
a. Chlorophyll b. Pollination c. Fertilization
- Plants produce their own food in _____.
a. Flowers b. Green leaves c. Roots
- The stem carries the prepared food from the leaves to different parts of the plant. This is called _____.
a. Transportation b. Conduction c. Fruits
- Petals of a flower attract insects and bees for :
a. Pollination b. Fertilization c. Conduction

B. Tick (✓) the correct and cross (X) the incorrect ones :

- Roots are green.
- Roots hair act like sponges.
- Leaves do not breathe oxygen.
- Sugar is stored only in fruits.
- Flowers are of no use of the plant.

C. Fill in the blanks :

- The root _____ absorb water and minerals from the soil.
- The _____ carry food from leaves to other parts of the plant.
- A plant cannot live without _____.
- Some stems act as _____ of food.
- Tiny openings in the leaf are called _____.

D. Explain the meaning of the following :

- Conduction
- Transportation
- Photosynthesis
- Pollination
- Fertilization

E. Answer the following questions :

1. From what does a plant prepare its food?
2. Why is leaf called a sugar factory?
3. How do seeds get dispersed?
4. How does a flower help a plant?
5. Why does green grass turn yellow when covered with a board?

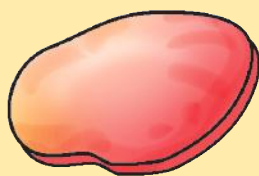
F. Name two of the following which store food and which are eaten :

1. Roots : a. _____
b. _____
2. Stems : a. _____
b. _____
3. Leaves : a. _____
b. _____
4. Fruits : a. _____
b. _____



Creative Work

- Add a drop of iodine solution to the following. Tick (✓) the ones that turn blue-black :



- Label the diagrams with the given words :
vein, sunlight, midrib, carbon-di-oxide, water, oxygen.

