Chapter

1 Parts of Plants

New topic alert!
How do you feel?


Excited


Nervous

Learning Objectives

1. Identify the parts of the root system and shoot system in a plant
2. Explain how each part of a plant helps it survive and grow
3. Describe the stages of seed germination

Focus on

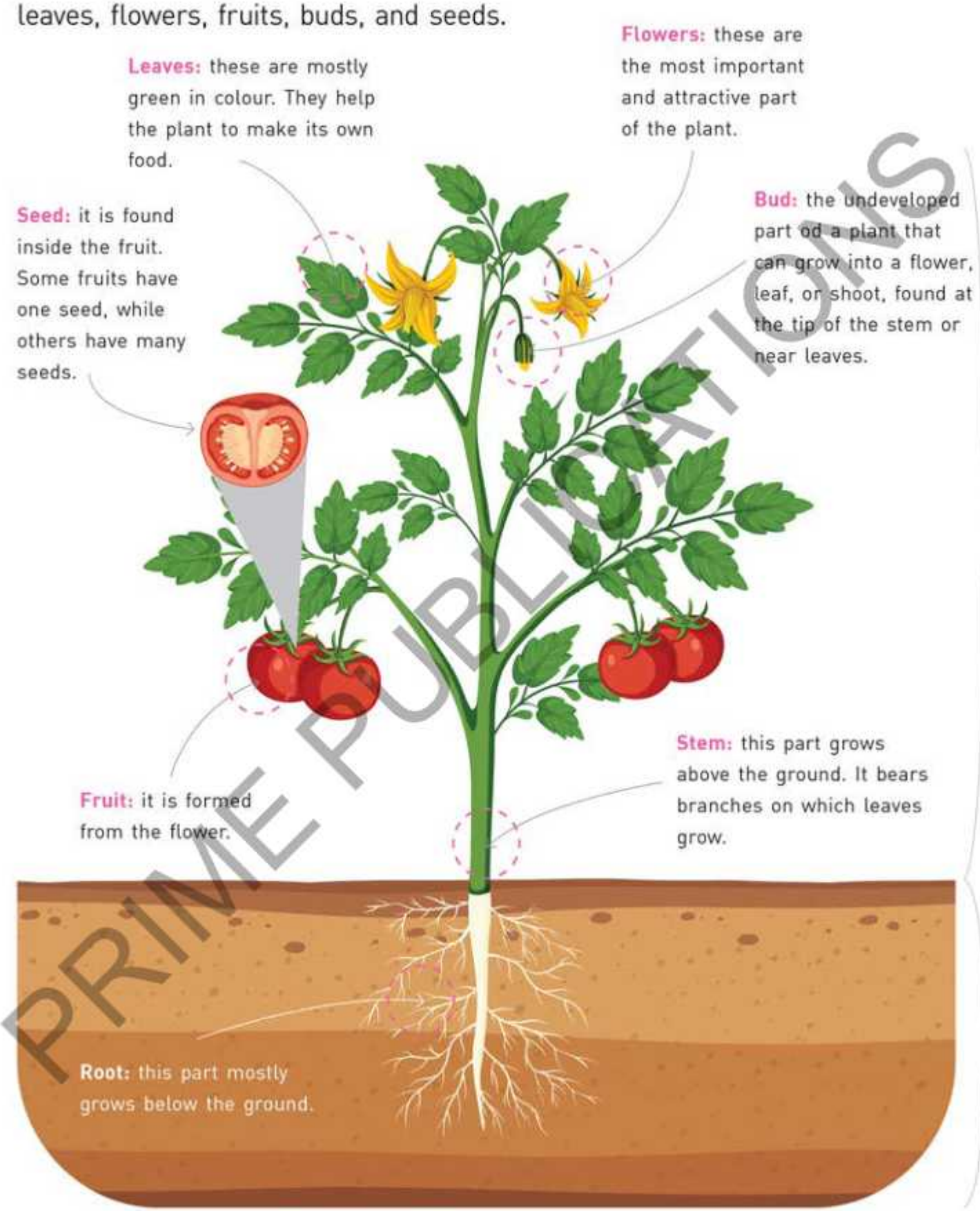
- Root system
- Shoot system
- Functions of different parts
- Germination of seed

Warm Up

Edison is showing a plant to his sister in the garden. They are talking about how the plant has grown bigger. We all need food to grow. Similarly, plants also need food to grow.

Where do you think plants get their food from?

A plant has two main systems: the root system and the shoot system. The root system consists of roots. The shoot system consists of a stem, branches, leaves, flowers, fruits, buds, and seeds.



Parts of a plant

Root System

The part of a plant that grows below the ground is called root.

There are two types of roots: tap root and fibrous root.

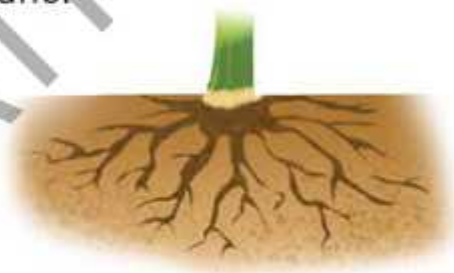
Tap Root

A tap root consists of a main thick root which grows from the end of the stem. Many small roots arise from the main root. Tap roots are found in plants such as banyan tree, mango tree, rose, and tomato.

Tap root

Fibrous Root

A fibrous root consists of many thin roots that arise from the end of the stem. Fibrous roots are found in plants such as grass, wheat, onion, and sugarcane.



Fibrous root

Shoot System

The main parts of the shoot system are the stem, leaf, flower, and fruit.

Stem

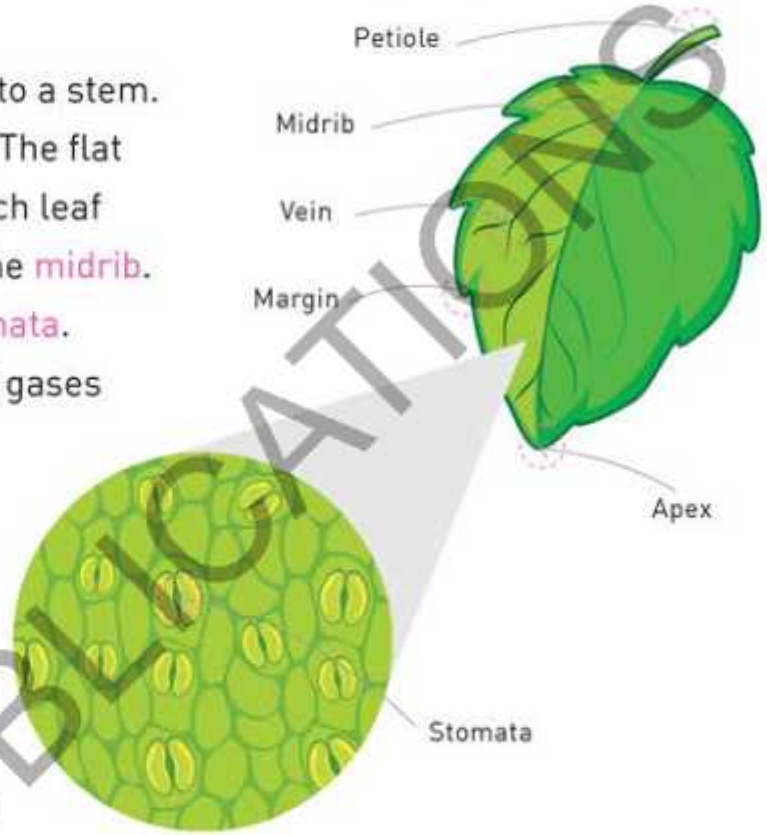
The stalk of a plant is called the stem. Strong stems grow upright, while weak stems grow along the ground or need support. A thick, strong, and woody stem is called a trunk, which is found in trees such as mango and banyan. Some stems, such as those in potatoes and ginger, grow below the ground and are called underground stems.

Figure 1.1 – Sequoia trees have very thick and tall stems.

Leaf

Leaves contain a green substance called chlorophyll, which helps them make food. They come in many shapes and colours. Most leaves are green, but some can be purple, red, orange, or yellow.

A leaf has a flat structure attached to a stem. The stalk of a leaf is called the petiole. The flat and broad part is called the lamina. Each leaf has side veins and a main vein called the midrib. Leaves also have tiny pores called stomata. These help plants with the exchange of gases and the release of excess water.



Nifty Insight

The leaves of the plants are flat and broad to absorb maximum energy from sunlight for making food.

Flower and Fruit

A flower is the attractive part of a plant. Flowers come in different colours, shapes, and smells. They grow from flowering buds. The flowers of most plants change into fruits.

A bud grows on the stem or branches.

The bud turns into a flower.

The flower fades away and a small green fruit appears.

The fruit grows bigger and ripens.

Figure 1.2 – The growth of a pomegranate

Fruits have seeds inside them. Some fruits have many seed, while others have only one seed. The seeds we eat, such as rice, wheat, corn, peas, lentils, and nuts, are called edible seeds. The seeds that we cannot eat are inedible seeds. Some seeds, such as mustard, cumin, and coriander, are used as spices.

Nifty Insight

Not all plants have flowers. Some plants, such as moss and ferns, do not grow flowers at all. Instead of seeds, these plants reproduce through tiny structures called spores.

Scan Me!

Figure 1.3 – Papaya has many seeds.

Figure 1.4 – Lychee has one seed in each fruit.

Remember and Recall

Draw lines to match each plant part with the correct answer.

1.	Root	•	• The part of a plant that has seeds inside.
2.	Stem	•	• A flat structure attached to a stem.
3.	Leaf	•	• The attractive part of a plant.
4.	Flower	•	• The part of a plant that grows underground.
5.	Fruit	•	• The stalk of a plant.

Functions of Different Parts

Each part of a plant has a different function that helps the plant grow and stay alive. Let's take a look at what each part does.

Parts of Plants	Functions
Root	• The roots hold the plant firmly to the ground. • The roots help the plant absorb water and nutrients from the soil. • Some roots such as carrots, turnips, and radishes, store the food made by the plant and are eaten as vegetables.
Stem	• The stem holds the plant upright and supports its branches. • The stem carries minerals and water from the roots to the leaves. It also transports food from the leaves to different parts of the plant. • Some stems store food, such as potatoes, celery, sugarcanes, and ginger.
Leaf	• The leaf is known as the kitchen of the plant because it makes food for the plant using air, water, and sunlight. This process is called photosynthesis. • The leaves also help with the exchange of gases and release excess water through tiny pores called stomata. • The leaves of some plants store food, such as spinach, cabbage, and lettuce.
Flower	• Fruit develops from flowers. • Some flowers store food and are eaten as vegetables, such as cauliflowers.
Fruit	• Fruits carry and protect the seeds inside them. • Many fruits are edible. However, some fruits cannot be eaten as they are poisonous.
Seed	• Seeds produce new plants, and most plants grow from seeds. • Many seeds are also eaten as food.

Germination of Seed

Plants mostly grow from seeds. A seed contains a tiny baby plant called an embryo and stored food. When a seed gets the right amount of light, warmth, air, and water, the embryo starts to grow into a young plant. This process is called germination.

Types of Germination

There are two types of seed germination: hypogeal and epigeal. In hypogeal germination, the seed stays under the soil, and only the stem grows up. In epigeal germination, the first leaves of the seed come above the soil as it grows.

Figure 1.5 – Epigeal germination

Figure 1.6 – Hypogeal germination

Stages of Seed Germination

The process of seed germination starts when the seed absorbs water and swells up. Then, a tiny root called the radicle grows downward into the soil to take in water and nutrients. After that, a small green shoot called the plumule grows upward towards the sunlight. Finally, the first leaves appear, allowing the plant to make its own food through photosynthesis.

Try and Learn

Let's grow a plant from a seed.

You need : some bean seeds, A small pot with soil, and water.

Step :

1. Soak the bean seeds overnight in water.
2. The next day, prepare a small pot filled with soil.
3. Plant 6–7 soaked seeds in the soil, spaced about 10–12 cm apart.
4. Water the seeds every day. This helps them absorb nutrients and soften.
5. After 3–5 days, you will see tiny plants starting to grow.

1. Why do we soak the bean seeds in water overnight before planting them?

2. Why is it important to water the seeds every day?

Teacher's Corner

Encourage students to identify the different parts of a plant on their own. Help them understand that plants make their own food, and any extra food is stored in different parts, such as the root, stem, fruit, and seed. Give students different seeds and let them sprout in wet cotton so they can observe how plants grow.

Key Terms

Chlorophyll	:	the green pigment found in the leaf
Edible	:	things that can be eaten
Germination	:	the process of a seed growing into a new plant
Photosynthesis	:	the process of making food by the leaf
Stomata	:	tiny pores on leaves that help with air exchange and water release

Points to Reflect

- The root and the shoot are the two main parts of a plant.
- The root holds the plant in the ground and helps it absorb water and nutrients from the soil.
- The shoot includes the stem, leaf, flower, and fruit.
- The stem holds the plant upright and support its branches.
- Flower produce fruits and fruit protect the seeds inside them.
- When a seed gets the right amount of light, warmth, air, and water, the embryo starts to grow into a young plant. This process is called germination.

Assess Yourself

A. Cross (X) the correct answer.

1. Which of the following is an example of a tap root plant?

a. Onion
b. Mango tree
c. Grass
d. Rice

2. A potato is a _____.

a. leaf
b. root
c. stem
d. fruit

3. Which flower is eaten as a vegetable?

a. Lily
b. Marigold
c. Hibiscus
d. Cauliflower

4. What helps leaves make food?

a. Stomata
b. Petiole
c. Chlorophyll
d. Trunk

5. Which part of the plant develops into a fruit?

a. 
b. 
c. 
d. 

B. Think and name the following.

1. Two fruits that have many inedible seeds.

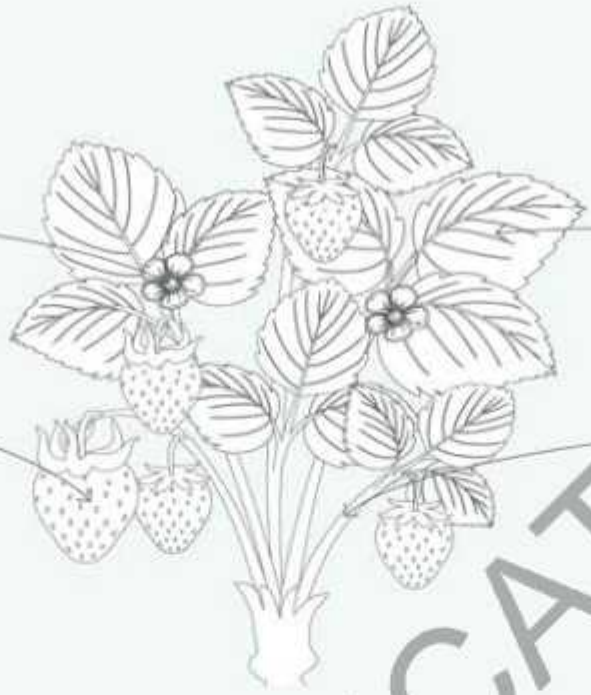
_____

2. Two seeds that we use as spices.

_____

C. Label and colour the picture.

Art Integration



1. _____

2. _____

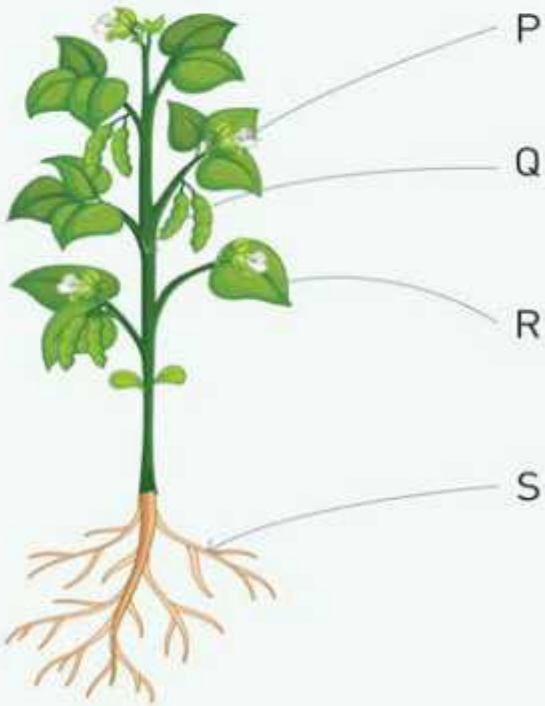
3. _____

4. _____

D. Different parts of a plant are labelled as P, Q, R, and S as shown in the figure. Draw lines to match the labelled parts with their examples.

Critical Thinking

1.	P •	• Radish and sweet potato
2.	Q •	• Spinach and cabbage
3.	R •	• Broccoli and cauliflower
4.	S •	• Asparagus and celery



E. **Answer the following questions.**

1. What are the different types of roots?

2. What is the main function of leaves in a plant?

3. What does a seed need to grow into a new plant?

Life Skills and Subject Integration

F. **Fill in the missing letters below.**

Integrated to English

1. CH __ OROP __ Y __ L
2. ST __ M __ TA
3. L __ M __ N __

G. **Plants give us many things.**
Tick [✓] the things you should do to take care of plants.

1. Water them daily. ☐
2. Pull them out. ☐
3. Keep them in sunlight. ☐
4. Pluck leaves and flowers. ☐

Think Green

Plants are important to us. There would be no life without them. They provide food for all living things, either directly or indirectly. Most importantly, they give us oxygen to breathe. Therefore, we should plant trees and take good care of them.

Figure 1.7 – Green forests keep the air clean and fresh.