



Key Facts

The two main functions of **roots** covered in this module are to **absorb** water and **dissolved nutrients** and to **secure** the plant in the ground. **Branching** of roots and the presence of root hairs increases the surface area for absorption, and anchors the plant in the soil. Roots can also act as a store of food and some roots have a role in plant reproduction (see Year 5).

The root is the first part of the plant to grow when a seed **germinates**. The **stem**, also known as the trunk in trees, supports the parts of the plant which are above ground and enables water and **nutrients** and other substances to travel throughout the plant.

The main function of the leaves is to make food for the plant by the process of **photosynthesis**. Most leaves have a large surface area and are arranged in a way that provides maximum exposure to light and air. Plants which are adapted for very hot, dry conditions, such as cacti, often have small leaves and photosynthesis occurs in their stems.

The function of the flower is **sexual reproduction**. Flowers may have only male parts, only female parts, or both. These are used for **pollination**. After the stigma receives the pollen a seed will grow. In many plants a fruit develops around the seed.

The main stages of the life cycle of a flowering plant are:

Germination: the seed first grows a root and then a shoot to become a seedling

Growth: the plant increases in size, number of leaves and so on until it is a mature plant and flowering occurs

Pollination is followed by seed formation (see above)

Seed dispersal:

the seeds are distributed away from the parent plant to avoid competition for light, space and water. The main methods of seed dispersal are:

Wind: seeds are light and blow away from the parent plant or have wing-like structures to allow them to drift as they fall from the plant

Animal: fruits are eaten and seeds dispersed in animal droppings; fruits and nuts are carried away and may be dropped or stored; seeds are adapted to cling to animal fur and be carried away

Water: method of dispersal for water plants; land plants may produce seeds which float and can be carried away by water

Self-dispersal: this may simply be by gravity with the fruit falling from the plant; it may then be further dispersed by animals, wind or water. More elaborate examples include seed heads adapted to sprinkle seeds around the plant ('pepperpots') and fruits such as pods exploding, catapulting the seeds away from the parent plant.

Science

Year 3

Summer 1

Plants



Vocabulary

Word	Definition
root	The part of a plant that has no leaves or buds and usually spreads underground, anchoring the plant and absorbing water and nutrients from the soil.
stem	The main stalk of a plant that bears buds and shoots and holds up the plant. Tree stems are also known as the 'trunk.'
germination	When the seed first grows a root and then a shoot to become a seedling.
nutrients	a substance that provides nourishment essential for the maintenance of life and for growth
petals	Coloured parts of the flower adapted to attract insects for pollination
photosynthesis	The reaction between light, carbon dioxide and water, which plants use to make sugars for growth.
anchor	To hold something securely in place.
photosynthesis	A process by which green plants and other organisms turn carbon dioxide and water into carbohydrates and oxygen, using light energy trapped by chlorophyll.
seed dispersal	When plant seeds are transported to new sites for germination.
flower	A coloured, sometimes scented, part of a plant that attracts insects and contains its reproductive organs. Tree flowers are also known as 'blossom.'
leaves	A flat green part that grows in various shapes from the stems or branches of a plant or tree and whose main function is photosynthesis

Common misconceptions:

All structures that grow below the ground are roots. Actually, structures growing below the ground may be rhizomes (underground stems), bulbs or stem tubers, etc.

- All roots grow below ground. Some plants have aerial roots

- Plants 'suck up' or 'drink' water. The water is absorbed.

- All leaves are green. Leaves which do not appear green in colour because they contain other pigments also contain chlorophyll.

- Children may not recognise that the word fruit is used differently in botany and in the kitchen. Scientifically, pods, nuts and savoury seed-containing vegetables such as tomatoes and cucumbers are all fruits.

Knowledge and Understanding:

Many plants, but not all, have **roots, stems/trunks, leaves and flowers/blossom.**

The two main functions of **roots** covered in this module are to absorb water and dissolved **nutrients** and to **anchor** the plant in the ground. The root is the first part of the plant to grow when a seed **germinates**.

The **stem**, also known as the trunk in trees, supports the parts of the plant which are above ground and enables water and nutrients and other substances to be transported throughout the plant. The stem holds the leaves and flowers up in the air to enhance **photosynthesis, pollination and seed dispersal**.

The main function of the **leaves** is to make food for the plant by the process of photosynthesis. The leaves use sunlight and water to produce the plant's food.

Some plants produce flowers which enable the plant to **reproduce**. **Pollen**, which is produced by the male part of the flower, is transferred to the female part of other flowers (pollination). This forms seeds, sometimes contained in berries or fruits which are then dispersed in different ways.

Different plants require different conditions for germination and growth.

Key skills and concepts:

Children will be able to:

Ask and answer their own questions about plants through classifying, observing over time, conducting fair test investigations and using secondary sources. They will have opportunities to make and record detailed observations using labelled and annotated diagrams.

Identifying differences, similarities or changes related to simple scientific ideas and processes.

Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.

Key Questions

What is a plant?

What is the function of parts of the plant?

How can we dissect a plant?

How can we describe plant leaves?

What would happen if a plant lost its leaves?

Are all roots the same?

Where does the water go?

Why do plants need stems?

What do flowers have in common?

What is pollination?

What is the conclusion to our question if plants need leaves?

What do plants need to grow healthy?

How are seeds dispersed?

Where do new plants come from?

What are the parts of a plant and what does each part do?

