



**Driving Question:** How can we communicate clearly how to grow, and care for, plants?

**Power Skill: Communication** - I can listen to and incorporate feedback and ideas from others

### National Curriculum Learning Objectives

- Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers and explore the part that flowers play in the life cycle of flowering plants
- explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant
- Investigate the way in which water is transported within plants
- recognise that soils are made from rocks and organic matter

### Key Vocabulary

roots

stem

leaves

flowers

pollination

germination

## Key Learning

The parts of flowering plants and their functions:

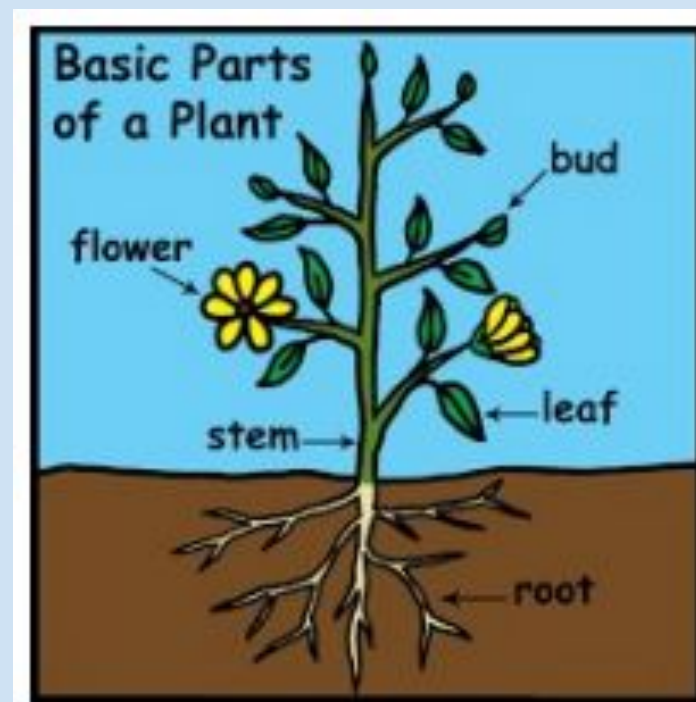
The roots: suck the water and nutrients up out of the soil and into the plant.

The stem: holds up other structures such as the leaves and flowers. Stems also carry water and minerals up from the roots to the leaves and take food back down to be stored and distributed to the plant.

The leaves: The leaves of a tree (or plant) are where photosynthesis happens. The leaves soak up/absorb heat and energy from the sun and carbon dioxide from the air to make glucose (sugar) to feed on so they can grow into strong, healthy plants.

The flower:

Flowers are the reproductive organs of the flowering plant. They are bright, colourful and full of sweet nectar to attract insects, which may be carrying pollen, to their plant. The flower contains all of the parts needed to pollinate and reproduce.



### Life Cycle of a Flowering Plant

#### Seed Dispersal

The fully formed seeds are moved away from the parent plant.

#### Germination

The seed starts to grow.

#### Growing and Flowering

The plant grows bigger and forms a flower.

#### Fertilisation and Seed Formation

The pollen joins with an ovule and a seed starts to form.

#### Pollination

Pollen from the anther lands on the stigma and travels down the style.

### Thinking Point

What would happen if a plant didn't have any roots/a stem/ leaves/ flowers?



### Explore and Investigate

#### How will plant growth differ in different conditions?

Keeping all other conditions the same and optimal, place one plant in a cold environment, one in a dark environment, remove the soil from one and do not water another. Monitor and record observations over a few weeks.

#### How is water transported in plants?

In two pots/vases, place a strong mixture of coloured water. In Pot A, place white carnations and in Pot B place celery (with leaves still on).

Leave the plants in a hot place (preferably outside) to aid transpiration/evaporation from the leaves. Observe the coloured water travelling up the xylem tubes in the stem and through the capillaries in to the leaves and petals. Take photographs, label and write explanation statements of the process of water transpiration and transportation.

### Resources:

Selection of the same flowering plants, carnations, celery, food dye, beakers

## Key Learning

### Requirements of life:

A plant must have the following things if it is to successfully grow into an adult plant:

#### Warmth:

A seed will not produce a plant at all if it is kept too cold. The seed needs warmth to germinate and start to grow into a healthy plant.

#### Light:

Light is used as energy for making food, a process called photosynthesis.

#### Air:

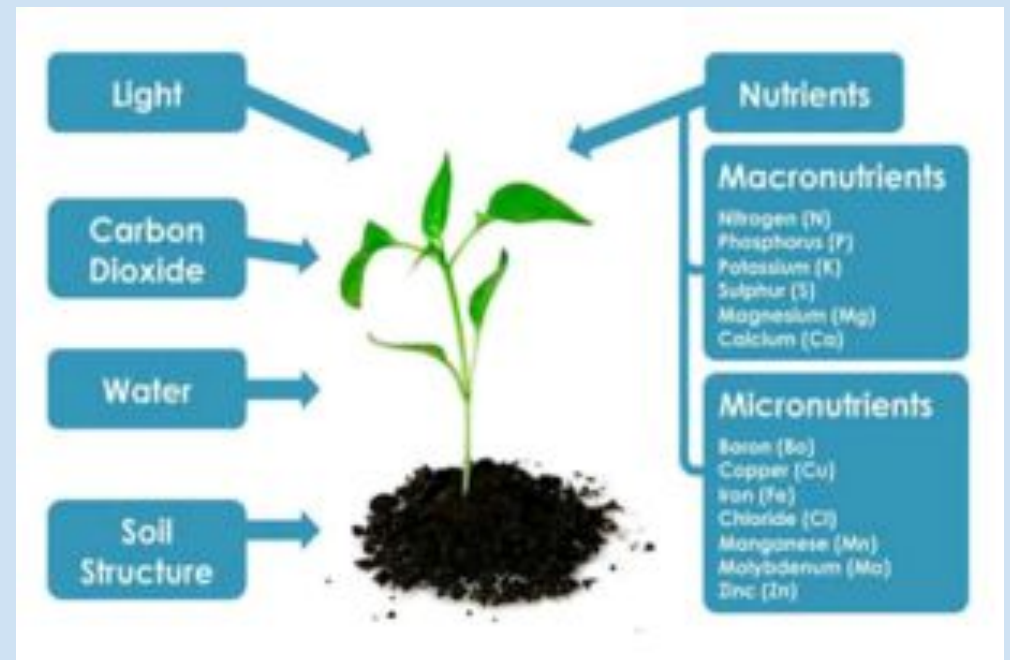
Plants take in carbon dioxide from the air for making food (photosynthesis).

#### Water and nutrients:

Like humans and animals, plants need both water and nutrients (food) to survive. Plants use water to carry moisture and nutrients back and forth between the roots and leaves.

#### Room to grow:

Both the roots and foliage (leaves) need room to grow. Without enough room, plants can become stunted or too small.



### Thinking Point

What do you think will happen if a plant was placed in a dark room or the soil was removed or it wasn't watered?



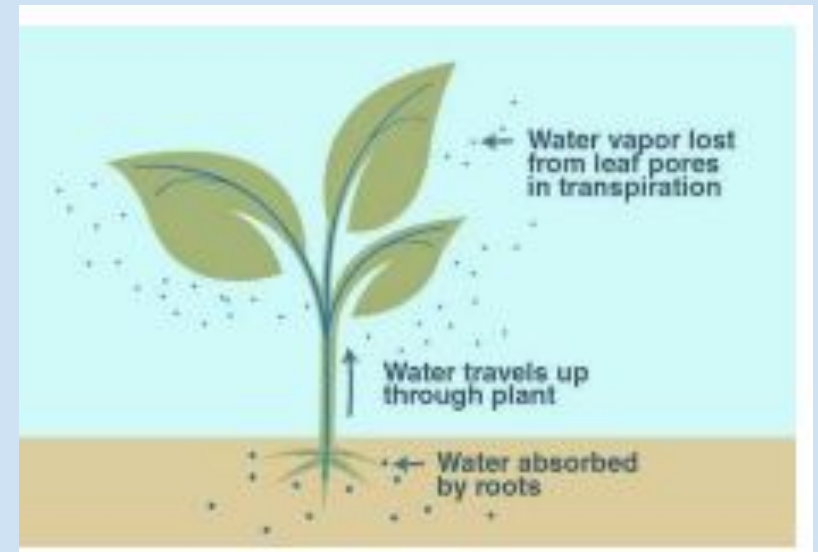
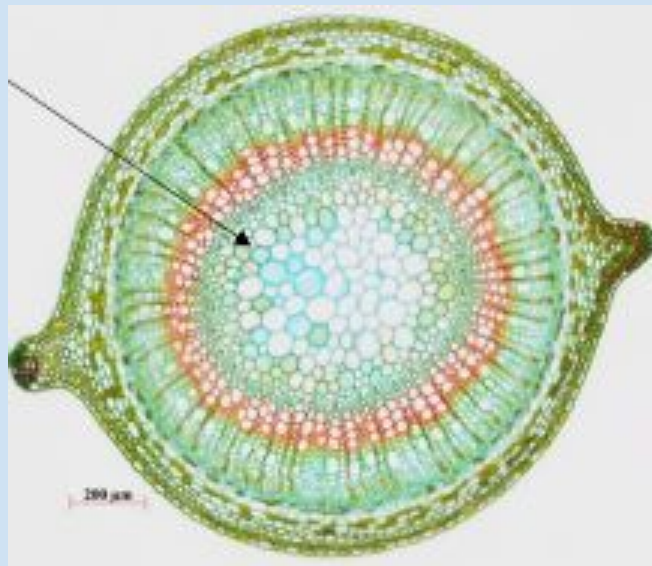
### Water transportation (movement of water):

Plants draw up water from the soil in their roots. This water moves from the roots, up the stem, to the leaves (transportation).

The stem is made of lots of tubes called xylem tubes. It is their job to transport water from the roots to the leaves and flowers.

This is repeated in a cycle to continuously deliver fresh water and nutrients from the soil to the leaves.

A cross-section of a stem showing the tubes that the water moves through.



### Thinking Point

How could you test to check whether the water really moves this way?

