



Year 3 - Plants Reading Booklet

1. Botany and Flowering Plants
2. Requirements for Life and Growth
3. Water Transportation in Plants
4. Pollination in Flowering Plants
5. Seed Dispersal
6. Assessment
7. Optional Lesson: George Washington Carver

Name: _____

Class: _____

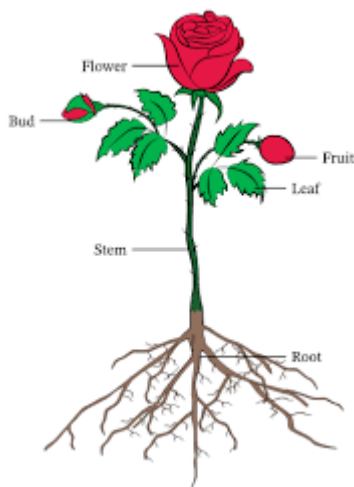
Lesson 1 - Flowering Plants

A **botanist** is a scientist who studies plant life. Botanists study the features of plants and their functions. People have been studying plants for many years. Hundreds of years ago, Joseph Banks travelled the world with an explorer, Captain Cook, and gathered thousands of **specimens** of plants to study. At the time, women were not allowed to join in with scientific discussions, but later women, such as Agnes Arber, did study botany and were recognised for their important work.

Flowering plants have roots, a stem, leaves and flowers.

- The roots of a plant take up **water** and **nutrients** from the **soil**. The roots also keep the plant steady and upright in the soil.
- The stem carries water and nutrients to different parts of the plant.
- The leaves use light from the sun, along with carbon dioxide from the air and water to make food for the plant. This process is called **photosynthesis**.
- Some plants have flowers. These are involved in **reproduction** and produce **seeds** from which new plants grow.

Useful links: <https://www.bbc.co.uk/bitesize/topics/zy66fg8/articles/zcjmp39>



Lesson 2 - Requirements of Life and Growth

In 2020, there was a report from the Royal Botanic Gardens, based in Kew in London, that identified there were over 350,000 species of plant, of which 325,000 are flowering plants. Botanists are discovering almost 2,000 new species of plant every year.

A healthy plant is usually upright with green leaves. Plants need air, light, warmth, water and nutrients to be healthy. If a plant doesn't have one of these requirements it could affect its growth or even die.

Each species of plant has its own preferences (like humans do). Some plants thrive in wet, warm conditions, others in dry, cooler conditions. A sunflower needs warmth,

sunlight and plenty of water to thrive. Sunflower roots grow deep into the ground to reach water. In contrast, cacti can survive in very dry conditions; their roots grow very near to the surface in order to catch precipitation before it evaporates.

Useful links:

<https://www.bbc.co.uk/bitesize/topics/zy66fg8/articles/zcmtk2p>

<https://www.bbc.co.uk/bitesize/topics/zy66fg8/articles/z98jpbk>



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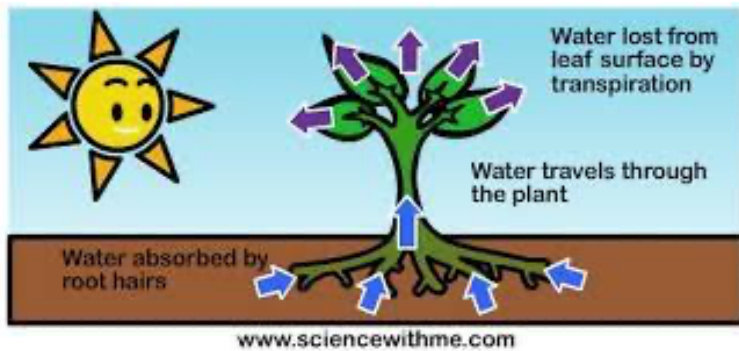
Lesson 3 - Water Transportation in Plants

Plants need water and nutrients to live and grow. The **roots**, **stem** and **leaves** of a plant are all important in the process of transporting water. Absorbing water from the **soil** is one way plants transport water, often roots have many hairs which also help to **absorb** water. Large and complex **root systems** help plants to absorb more water. Small plants wilt quicker than large plants, such as trees, in times where water is limited because they have larger root systems.

Water moves around plants via the stem. Some plants also absorb a small amount of water through their leaves, however the vast majority of the water a plant needs is absorbed by the roots. Rainwater can drip from leaves, shaped to catch water and travel down to the stem and roots, watering the plant.

Useful link:

<https://www.bbc.co.uk/teach/class-clips-video/science-ks1-ks2-ivys-plant-workshop-how-do-es-water-get-from-the-roots-to-the-leaves/zdtfjvh>



Lesson 4 - Pollination in a Flowering Plant

Many plants create seeds in order to reproduce. In order for seeds to be created, pollination must occur. Pollination is an important part in the life cycle of a plant. Pollination is the transfer of pollen grains from an anther to a stigma. Pollen is a powder made up of tiny grains that help a flower to make seeds.

Animals play an important part in pollination. Insects such as bees and butterflies eat and collect pollen as it is full of protein. When they do this, pollen sticks to their bodies and when they move around, they can transfer the pollen to the stigma.

One of the reasons flowers are brightly coloured is to attract insects so pollination can occur. We call insects that transfer pollen, pollinators. Sometimes the wind blows pollen and some lands in the right place on the stigma.

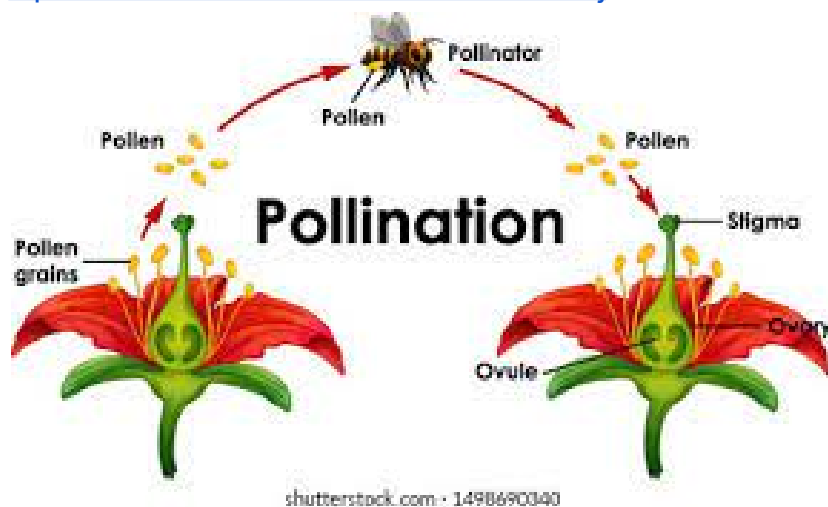
Flowering plants can only produce seeds if pollen is transferred into a plant of the same species. If the pollen is transferred to another plant or flower, fertilisation will not occur.

Useful links:

<https://www.bbc.co.uk/bitesize/topics/zxfrwmn/articles/zfn6t39>

<https://www.bbc.co.uk/bitesize/clips/zfx76sg>

<https://www.bbc.co.uk/teach/class-clips-video/science-ks1-ks2-ivys-plant-workshop-what-is-pollination-and-how-does-it-work/zv4df4j>



Lesson 5 - Seed Dispersal

Seeds contain the plant embryo and form as a result of pollination. The outer layer of a seed is a protective coating and inside with the embryo lies a food supply. After germination, the seed can grow into a plant. Germination is when the plant begins to come out from the seed, some seeds need warmth and light in order to germinate, some prefer darker areas.

Plants disperse their seeds in a number of ways:

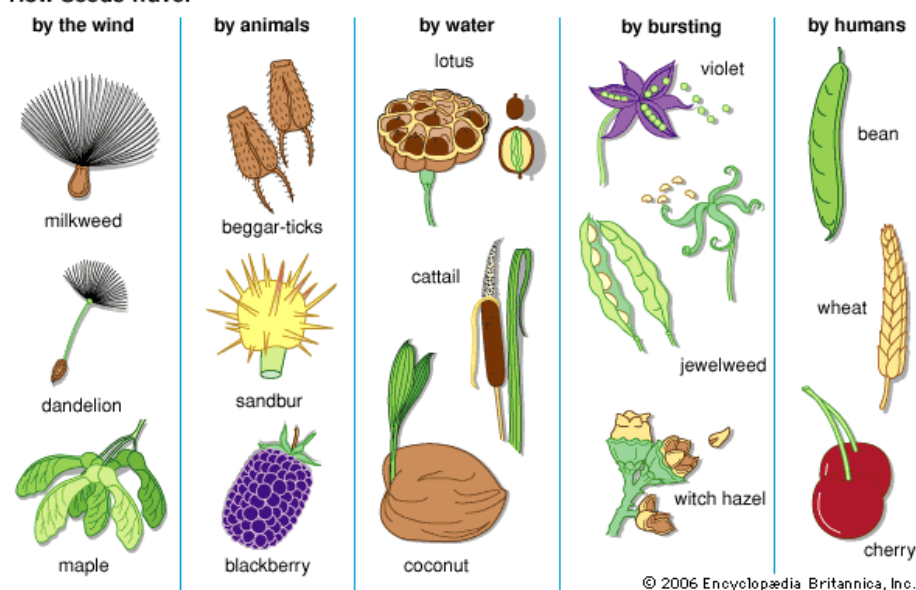
- Gravity: the seeds simply drop off the plant and land on the ground. This can sometimes cause problems as the new plants then compete with the older plants for light, water and space e.g. Apple tree.
- Wind: the seeds are carried by the wind. Some seeds have a 'parachute' which helps them to fly e.g. dandelion and sycamore.
- Animals: some seeds have little hooks which catch onto the fur of passing animals. Some seeds are eaten by animals but are not fully digested, they pass through the animal. Other seeds are carried away and buried by animals, such as acorns.
- Water: Plants growing near a river may use the flowing water to transport their seeds.
- Exploding: Some seed pods are designed to explode and project the seeds a good distance from the parent plant.

Useful links:

<https://www.bbc.co.uk/bitesize/topics/zxfrwmn/articles/z28dpbk>

<https://www.bbc.co.uk/bitesize/clips/znvfb9q>

How Seeds Travel





KEY
VOCABULARY

Plant

A **living thing that grows in the earth** and has roots, leaves and a stem e.g. grass, trees, bushes, flowering plants

Root

The **part of a plant that acts as an anchor**, fixing the plant into the ground. Roots also absorb water to help the plant to grow

Stem

The part of the plant that grows above the ground. The leaves and flowers grow from it. The stem is also used to **transport water around the plant**

Leaves

A plant's leaves **absorb sunlight and turn it into energy** that the plant uses to grow

Flowers

The part of a plant that **bears the seed**

Nutrients

Goodness required for life and growth. Plants absorb nutrients from the soil

Absorb

To **take in** or soak up

Pollination

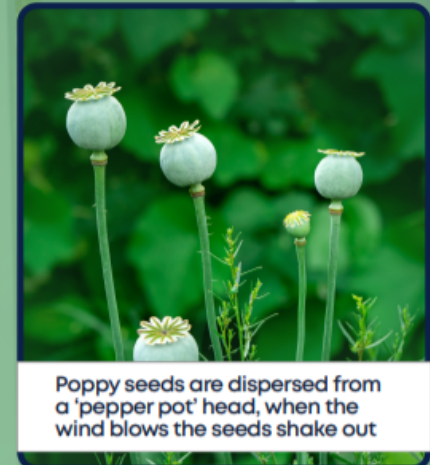
The **transfer of pollen** from one part of a plant to another

Dispersal

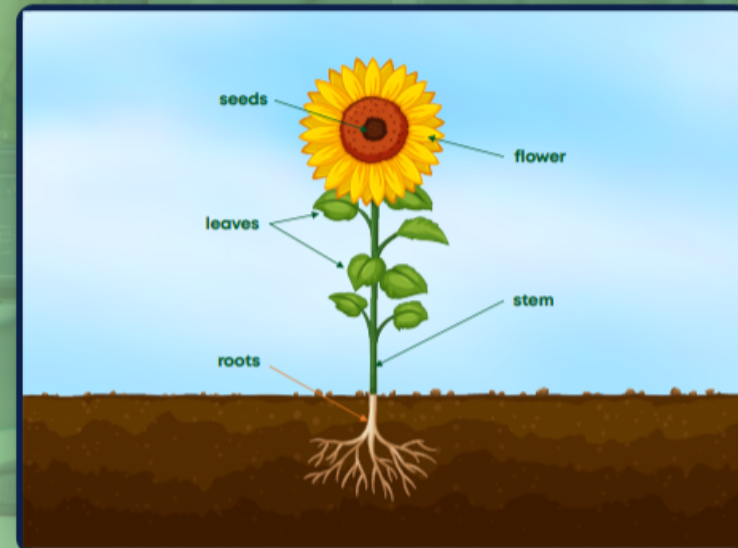
Spreading things out over an area, seeds do this to help to reproduce



Many flowers rely on animals to help with pollination by moving pollen from one flower to another



Poppy seeds are dispersed from a 'pepper pot' head, when the wind blows the seeds shake out



Joseph Banks

A botanist who travelled the world and gathered over 30,000 specimens of plants



George Washington Carver

A botanist known for his work on replenishing soil by planting peanuts and sweet potatoes



