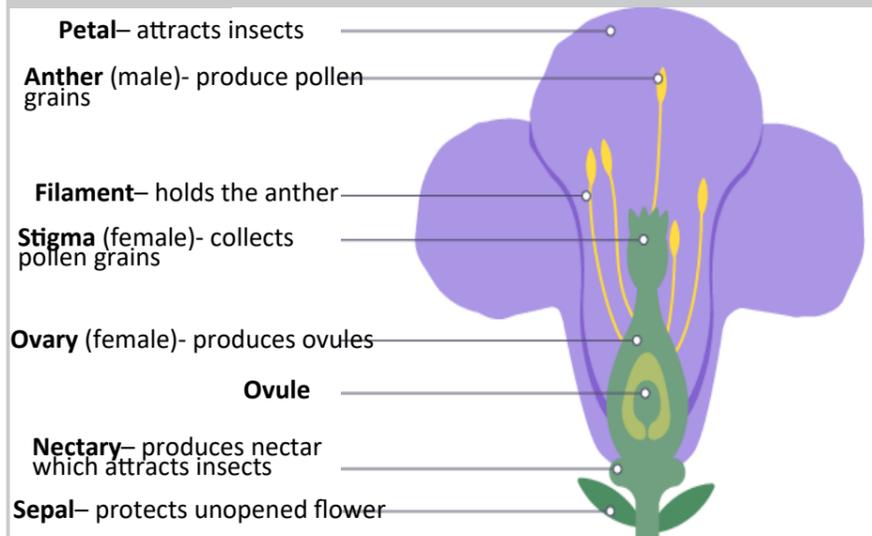


1. Biology



Pollination
Pollination is when **pollen grains** move from the **anther** of a flower to the **stigma** of another flower. This can happen by **wind or insects**. We depend on insects like honey bees to pollinate most of our crops which must happen before a fruit can form. Therefore, pollination is important in food production.

Seeds and Fruit
When a pollen grain lands on the stigma of a flower, a pollen tube grows until it meets an ovule in the ovary. The nucleus from the pollen grain passes down the pollen tube and fuses with the nucleus in the ovule. Fertilisation happens. The female parts of the flower develops into a fruit. The ovules become seeds.

Dispersal
Seeds must be dispersed (spread away from the parent plant) to reduce competition between new plants.

Method of Dispersal	How the seeds are dispersed
Wind	Seeds have lightweight parts, wings or parachutes, which allow them to be carried by the wind.
Animals (inside)	Brightly coloured and tasty fruits contain seeds with indigestible coats, so that the seeds pass through the animal's digestive system undamaged and get deposited in the soil.
Animals (outside)	Seeds have hooks that attach them to the fur of passing animals
Self-propelled	Seed pods bursts open when ripe, throwing the seeds away from the plant

3. Physics

Waves
A wave transfers energy **without** moving matter.
A transverse wave e.g. light wave

A longitudinal wave e.g. sound wave

Transverse waves can either oppose and cancel each other out, or add together and multiply the effect (**superposition**).

Wavelength	The distance between two crests/peaks or troughs of a wave, measured in metres
Frequency	The number of waves that pass a point in a second, measured in Hertz
Peak	The highest point of a wave
Trough	The lowest point of a wave
Amplitude	Half the height of a wave

Sound
Sound is a **longitudinal wave** that is detected by our ears. The property of the wave changes the sound we hear. The **auditory range** is the range of frequencies that an organism can hear.

2. Chemistry

The **pH** of a substance can be found using an **indicator**.

Universal indicator

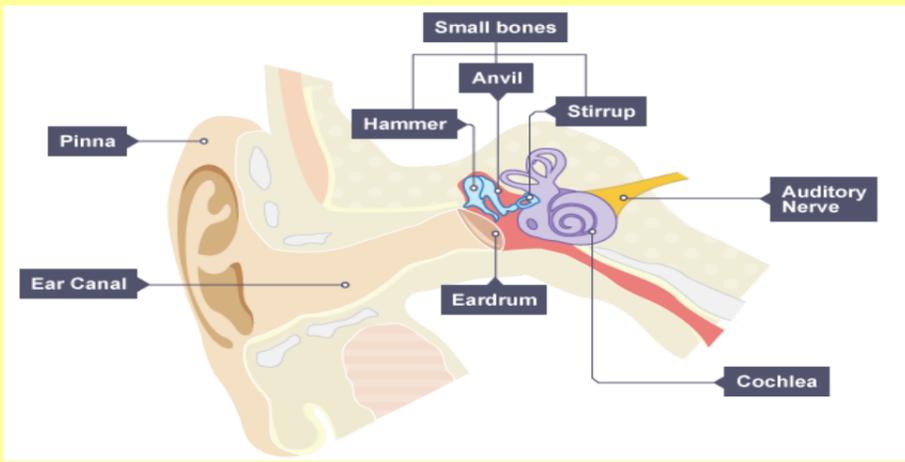
Litmus paper

	Red litmus	Blue litmus
ACIDIC SOLUTION	Stays red	Turns red
NEUTRAL SOLUTION	Stays red	Stays blue
ALKALINE SOLUTION	Turns blue	Stays blue

Acid reactions

acid + alkali → salt + water
 acid + metal → salt + hydrogen
 acid + metal carbonate → salt + water + carbon dioxide

To test the gas produced we can insert a **lit splint**. If a **squeaky pop** is heard the gas is **hydrogen**. We could also bubble the gas through **limewater**. If the limewater turns **cloudy** the gas is **carbon dioxide**.



- In the ear:**
- Eardrum vibrates.
 - Vibration passed through **small bones** and **cochlea**.
 - Signals sent from cochlea to **auditory nerve**.
 - Signals sent from auditory nerve to **brain**.
- In a microphone**
- Diaphragm** vibrates.
 - Vibrations converted to **electrical signals**.
 - Signals passed down a **wire** to a **speaker**.