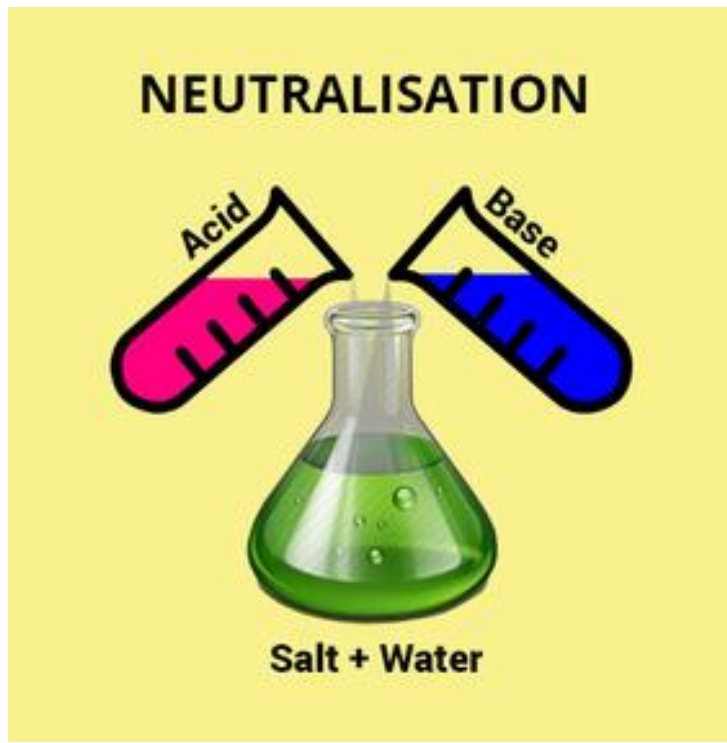


pH 0	Battery Acid
pH 1	Stomach Acid
pH 2	Lemon Juice, Vinegar
pH 3	Orange Juice, Soda, Some Dental Rinses
pH 4	Tomato Juice, Beer
pH 5	Black Coffee
pH 6	Saliva, Cow's Milk
pH 7	Pure Water
pH 8	Sea Water, pH-Neutralizing Dental Rinses
pH 9	Baking Soda
pH 10	Antacids
pH 11	Antacids, Dental Treatment Rinses
pH 12	Soapy Water

Acids and Alkalis



Some common **acids**:

Strong
 Hydrochloric acid
 Sulfuric acid
 Nitric acid

Weak
 Ethanoic acid
 Citric acid

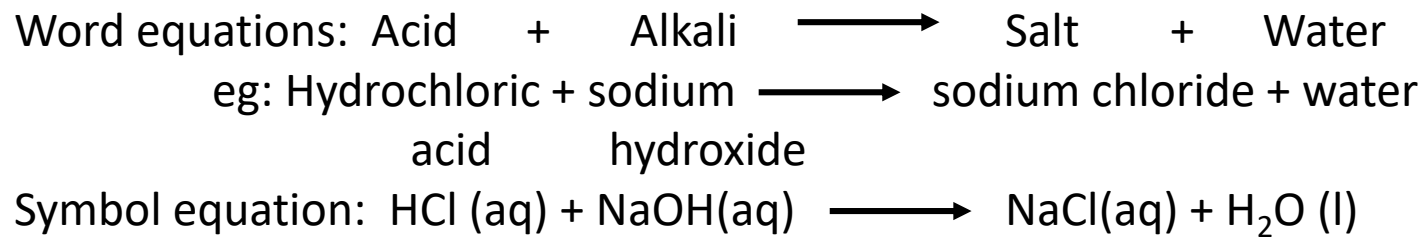
Some common **alkalis or bases**:

Sodium hydroxide
 Calcium carbonate
 Oven Cleaner
 Indigestion tablets
 Bicarbonate of soda

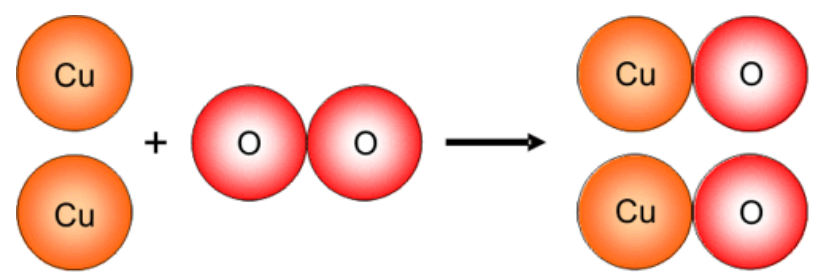
KEY WORDS

- **pH:** Scale of acidity and alkalinity from 0 to 14.
- **Indicators:** Substances used to identify whether unknown solutions are acidic or alkaline.
- **Base:** A substance that neutralises an acid - those that dissolve in water are called alkalis.
- **Concentration:** A measure of the number of particles in a given volume.
- **Neutralisation:** When an alkali or base is added to an acid (or vice-versa) until the pH changes to 7.
- **Neutral:** A solution with a pH of 7.
- **Corrosive:** A substance which can burn or destroy living material
- **Irritant:** A substance which can cause reddening or itching when it comes into contact with the skin

Representing neutralisation reactions



Metals are oxidised to form oxides



Copper + oxygen → copper oxide

Oxidation

- most reactive
- potassium
 - sodium
 - calcium
 - magnesium
 - aluminium
 - carbon
 - zinc
 - iron
 - tin
 - lead
 - hydrogen
 - copper
 - silver
 - gold
 - platinum
- least reactive

Key Words

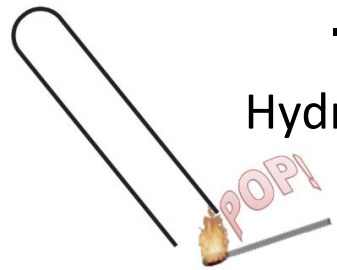
Metals: Shiny, good conductors of electricity and heat, malleable and ductile, and usually solid at room temperature.

Non-metals: Dull, poor conductors of electricity and heat, brittle and usually solid or gaseous at room temperature.

Displacement: Reaction where a more reactive metal takes the place of less reactive metal in a compound.

Oxidation: Reaction in which a substance combines with oxygen.

Reactivity: The tendency of a substance to undergo a chemical reaction.



Hydrogen test – lighted splint
Squeaky pop!

Metals and Non-metals

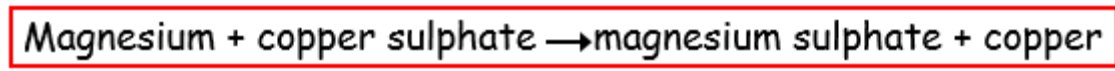
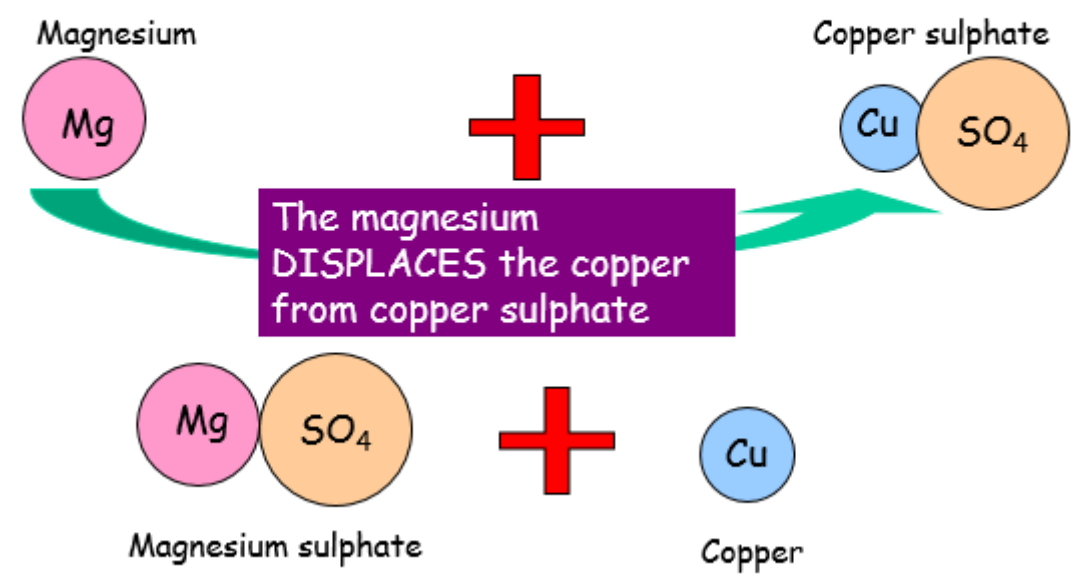
Metals react with acids to form salts:

metal	+	acid	→	a salt	+	hydrogen
magnesium	+	sulphuric acid	→	magnesium sulphate	+	hydrogen
iron	+	nitric acid	→	iron nitrate	+	hydrogen
calcium	+	sulphuric acid	→	calcium sulphate	+	hydrogen
Zinc	+	hydrochloric acid	→	zinc chloride	+	hydrogen

Displacement reactions

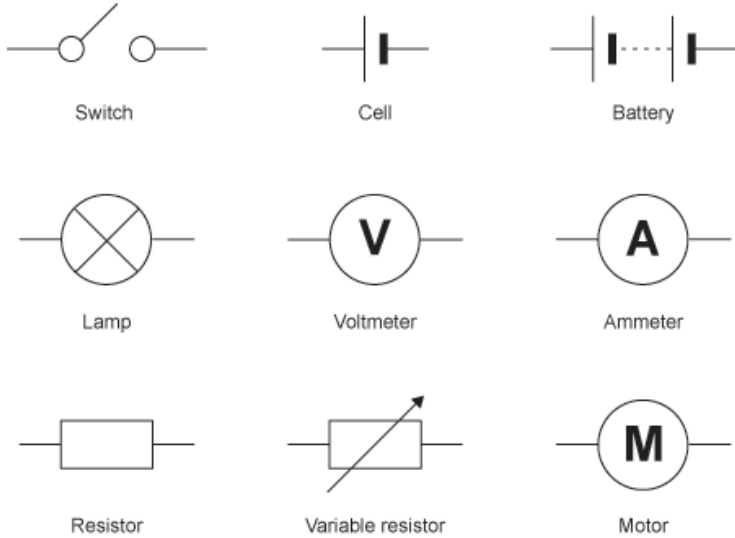
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A displacement reaction is one where a MORE REACTIVE metal will DISPLACE a LESS REACTIVE metal from a compound.



Voltage & Resistance and Current

Circuit symbols:

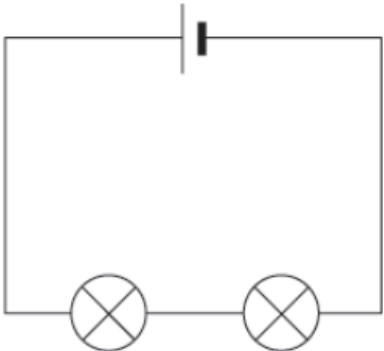


Keywords:

- **Potential difference (voltage):** The amount of energy shifted from the battery to the moving charge, or from the charge to circuit components, in volts (V).
- **Resistance:** A property of a component, making it difficult for charge to pass through, in ohms (Ω).
- **Current:** Flow of electric charge, in amperes (A).
- **Electrical conductor:** A material that allows current to flow through it easily, and has a low resistance.
- **Electrical insulator:** A material that does not allow current to flow easily, and has a high resistance.

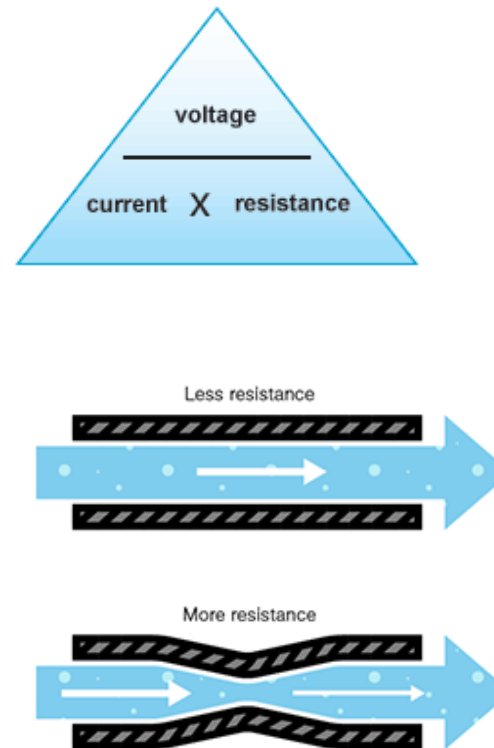
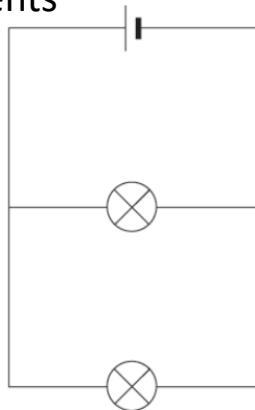
Series circuit: components on same loop

- Current constant all the way around



Parallel circuit: components on separate loops

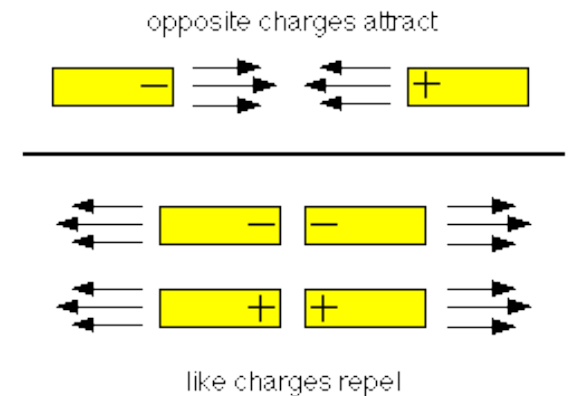
- Current split between the components



Electrons are tiny particles that carry a negative charge

If an object:

- Gains electrons it becomes **negatively charged**
- Loses electrons it becomes **positively charged**

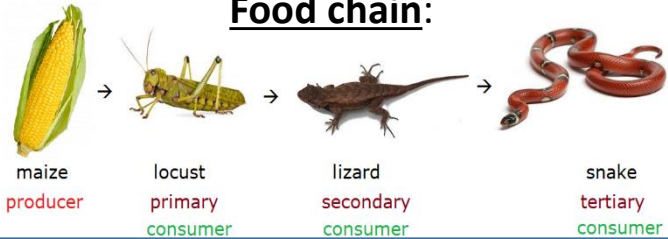


Interdependence

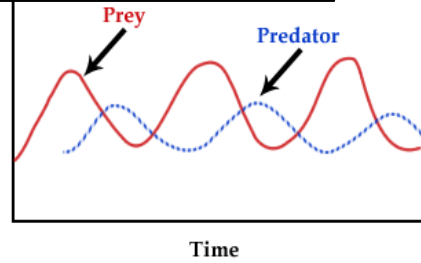
Keywords:

- **Ecosystem:** The living things in a given area and their non-living environment.
- **Environment:** The surrounding air, water and soil where an organism lives.
- **Population:** Group of the same species living in an area.
- **Producer:** Green plant or algae that makes its own food using sunlight.
- **Consumer:** Animal that eats other animals or plants.
- **Decomposer:** Organism that breaks down dead plant and animal material so nutrients can be recycled back to the soil or water.

Food chain:

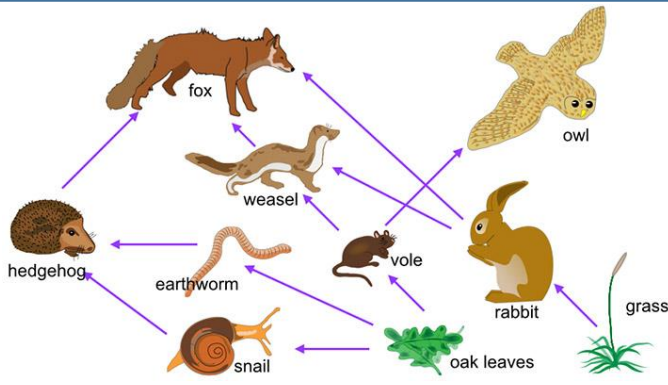


Predator is an animal that eats other animals
Prey is the animal that gets eaten by the predator.



Food Web:

Shows how food chains in an ecosystem are linked.



A change in one population can impact other populations.

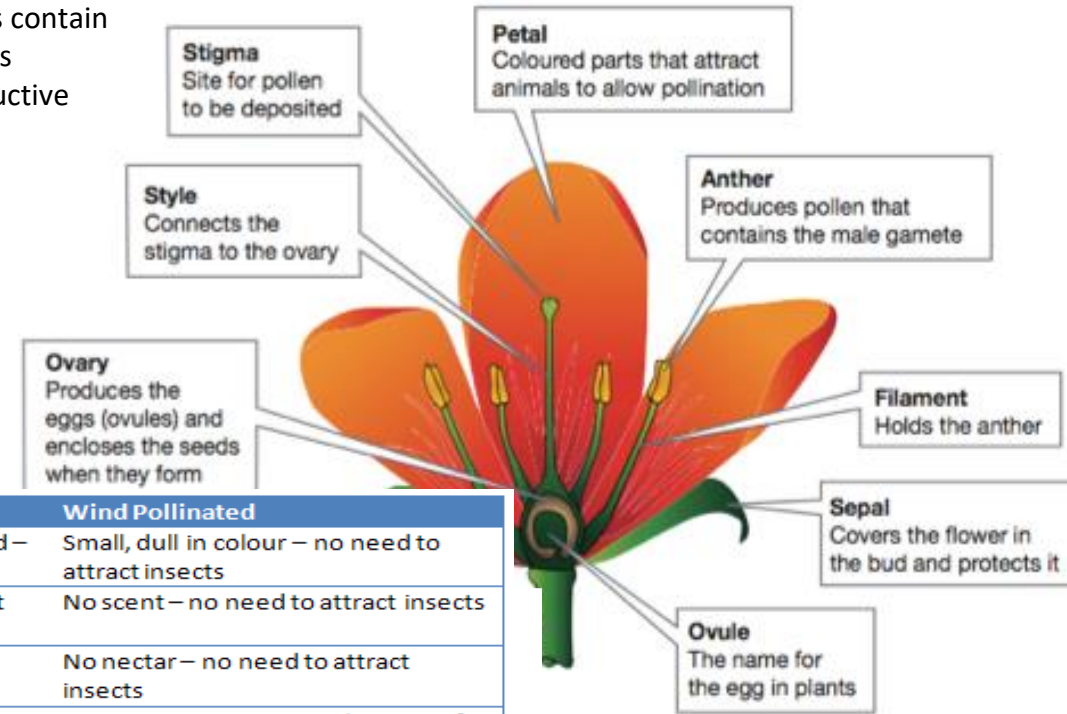
Insects are needed to pollinate some plant crops.

Plant reproduction

Keywords:

- **Pollination:** Transfer of pollen from the male part of the flower to the female part of the flower on the same or another plant.
- **Fertilisation:** Joining of a nucleus from a male and female sex cell.

Flowers contain a plant's reproductive organs:



	Insect Pollinated	Wind Pollinated
Petals	Large, brightly coloured – to attract insects	Small, dull in colour – no need to attract insects
Smell	Sweet smell – to attract insects	No scent – no need to attract insects
Nectar	Contains nectar – to attract insects	No nectar – no need to attract insects
Pollen quantity	Not much required – less wastage than with wind pollination	Huge quantities required – most of the pollen doesn't reach another flower
Pollen characteristic	Sticky or spiky – to stick to insects	Light, dry and smooth – so it doesn't clump together and can be blown by the wind
Anthers position	Firm and inside flower – to brush against insects	Loose and outside flower – to release pollen into the wind
Stigma position	Inside flower – so that insect brushes against it	Outside flower – to catch the drifting pollen
Stigma characteristic	Sticky – so that pollen from insect sticks to it	Stick but also feathery and / or net like – to catch drifting pollen

Different methods of seed dispersal:

- Wind
- Water
- Mechanical
- Animals