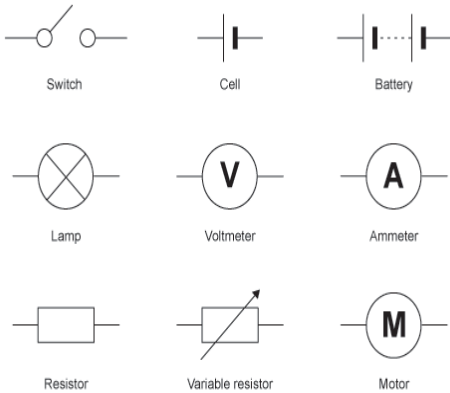


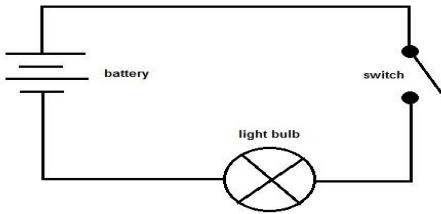
Knowledge Organiser – Electricity

Circuit Symbols:



Drawing a circuit:

Use a pencil and ruler to draw straight lines to represent the wires
 Use the correct circuit symbols to represent different components
 Ensure that the circuit is closed and has no gaps.



Conductors allow electric currents to pass.
 Metals are good conductors.

Insulators do not allow electricity to pass through. Air, plastic and wood are all good insulators.

When you complete a circuit, charge particles (electrons) or move in the metal wires.

Current is the rate of flow of charge (electrons) in the circuit.

Current is measured in Amps (A).

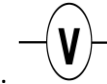
You can measure current using an ammeter:



Current is NOT used up in the circuit, it has the same value before and after each component in the circuit.

Potential difference (voltage) tells us how much energy is being transferred to the components by the charges in the circuit.

Potential difference is measured in volts (V) using a voltmeter.



You can measure the potential difference across a component by placing a voltmeter in parallel across the component.

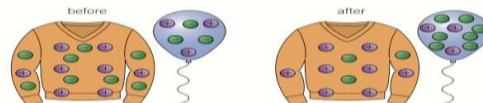
Resistance is a measure of how much a material tries to stop electricity passing through it.

Resistance is measured in Ohms (Ω).

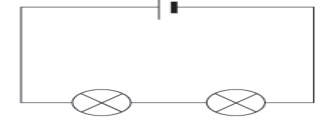
Measuring resistance

You can use an equation to calculate the resistance of a component.
 Here is the equation to calculate resistance:

$$\text{resistance } (\Omega) = \frac{\text{potential difference (V)}}{\text{current (A)}}$$



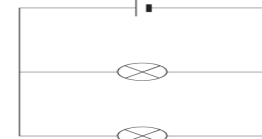
Series Circuit:



Current: Same everywhere

Voltage: Shared between components

Parallel Circuit:



Current: Shared between the branches

Voltage: Same on every branch

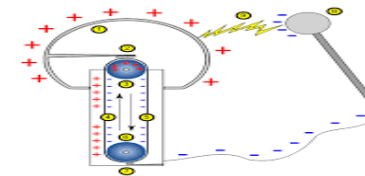
Electric Charge:

There are two types of electric charge: **positive** and **negative**.

Charges can either attract or repel.

Like charges repel, unlike charges attract

Van der graaff generator:



Static charge - When you rub a balloon on your jumper some of the electrons are transferred from the jumper to the balloon. The balloon has a negative charge (it has gained electrons from the jumper) and the jumper has a positive charge (it has lost electrons to the balloon).