

You need to recognise electrical components, know their symbols and explain the effect they have on a circuit.

In a circuit, remember that:

- **current** is the movement of charge through it
- **potential difference or voltage** is the energy change of a moving charge measured across one component

Also:

- Ammeters and voltmeters
- Series and parallel circuits



- Resistance tells us how hard it is for a current to flow through a component, for a given voltage across it.
- Resistors have a fixed value (measured in ohms, Ω) while some components change their resistance depending on conditions.

$$R=V/I \quad R=\text{resistance} \quad V=\text{voltage} \quad I=\text{current}$$

We use graphs of current (vertical) for different values of voltage (horizontal) and get different lines for different components. The steeper the line the *lower* the current. You need to know **resistor, diode, lamp**.

Mains electricity is an **alternating current** supply (which can be stepped up or down with transformers). 230V and 50Hz are used in the UK.

Electrical safety is really important. A main plug is wired with three connections (different colours) which must go in the right places.

Live and neutral are the wires normally carrying current, completing the circuit. If the current is too high (see below), the fuse on the live wire connection melts and breaks the circuit.

The earth wire connects a metal casing to the ground, draining current so we don't get a shock if the device has a loose wire inside.



We can work out the power (how fast energy is used) for a device if we know the voltage and current: **$P=IV$**

We can rearrange this to work out the current through it (in Amps, A), which then tells us which fuse will be a safe limit: **$I = P/V$**