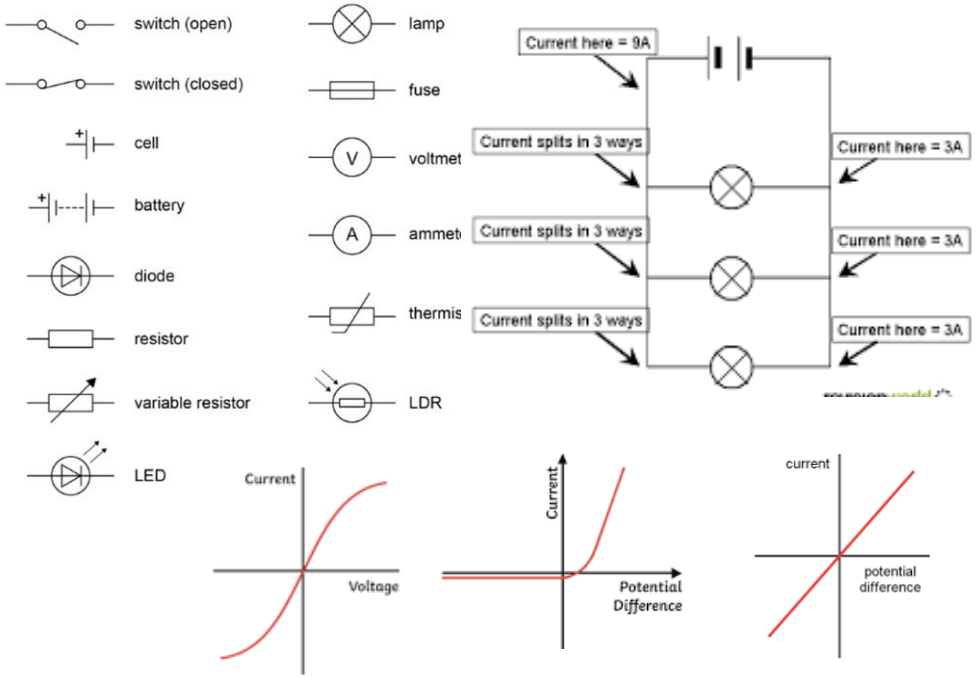
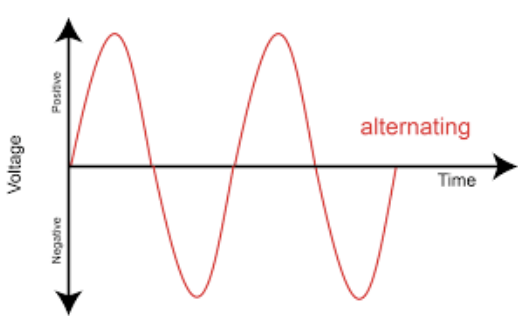
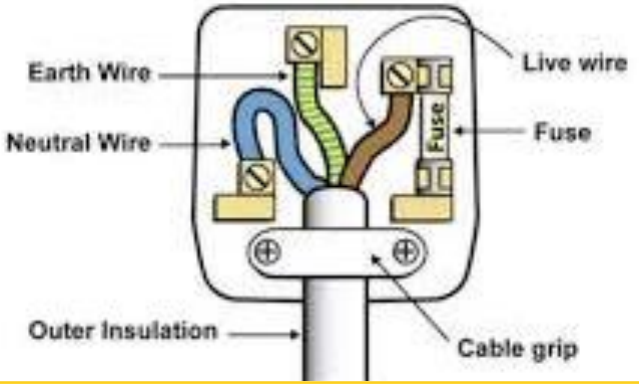
1	**Current** is the rate of flow of charge (electrons) in a circuit and is measured in **amperes (A)**
2	**Potential difference** is the energy transferred per unit of charge and is measured in **volts (V)**
3	**Resistance** is the ratio of potential difference applied to the electric current which flows through the component or circuit. It is measured in **Ohms (Ω)**
4	Components in an electrical circuit are represented by symbols
5	You can measure the current in a circuit by connecting an **ammeter** in series
6	You can measure the potential difference across a component in a circuit by connecting a **voltmeter** in parallel to the component
7	Potential difference (V) = current (A) x resistance (Ω) V = I x R
8	In a **series circuit** the components are all connected one after the other and there is only one path for the current to flow through
9	In a series circuit the current is the same everywhere in the circuit and the potential difference provided by the battery is split across the different components in the circuit
10	In a **parallel circuit** there is more than one path for the current to flow. It has more than one 'branch'
11	In a parallel circuit the potential difference is the same across all of the components and the current is split across the different branches at the junctions.
12	Moving charged particles form an electric current, electric charge is measured in coulombs (C)
13	One coulomb is the charge that passes a point in a circuit when there is a current of 1A for 1s.
14	Charge (C) = current (A) x time (s) Q = I x t
15	Energy transferred (J) = charge (C) x potential difference (V). E = Q x V



16	Filament bulb, dioide and fixed resistor produce distinctive voltage-current graphs shown above. Gradient of the line is resistance.
17	A **thermistor** is a resistor that will increase or decrease resistance in a circuit when it gets hotter
18	A **light dependent resistor (LDR)** is a resistor that will increase or decrease resistance in a circuit when light intensity changes.
19	A **diode** is a component that will only allow electricity to flow in one direction
20	When a current flows in a circuit energy is dissipated as a **thermal energy** transfer to the surrounding air
21	The thermal energy being transferred can be reduced by using wires with low resistance

1	In a wire, the resistance will increase as the length of the wire increases.
2	An increase in resistance will reduce the amount of current flowing in a circuit
3	If the wire in a circuit gets hotter, the resistance of the circuit will increase
4	Adding resistors in series increases the total resistance of the circuit
5	If you add resistors in parallel the total resistance of the circuit will be less than that of the individual resistors because there are more paths for the current to flow through
6	Energy transferred (J) = current (A) x Potential difference (V) x time (S) E = I x V x t
7	Electrical power (W) = current (A) x potential difference (V) P = I x V
8	Electrical power (W) = current ^{2} (A) x resistance (Ω) P = I^2 x R
9	A.C. stands for alternating current - where the current keeps changing direction.
11	In the UK mains electricity is A.C. with a frequency of 50Hz and a potential difference of 230V.
12	D.C. stands for direct current does not change direction
13	All devices that are battery operated use d.c.
14	In a plug the neutral wire is blue. It completes the circuit and has a potential difference of 0V
15	In a plug the live wire is brown. It connects the appliance to the generators at the power station and has a potential difference of 230V.
16	In a plug the earth wire is yellow and green.
17	The earth wire connects the metal parts of the appliance to a large metal spike or metal tubing that is pushed into the ground for safety and has a potential difference of 0V.





18	A fuse is a safety feature that contains a thin wire. The wire will melt, breaking the circuit if the current that passes through it is too high.
19	When the wire in a fuse has melted it will need to be replaced before the device can be used again.
20	Circuit breakers are connected to the electricity throughout the building, not just one device.
21	If there is a problem in the circuit the circuit breaker switches off the supply. It does this very quickly.
22	Once the fault has been fixed a circuit breaker can be switched back on again.