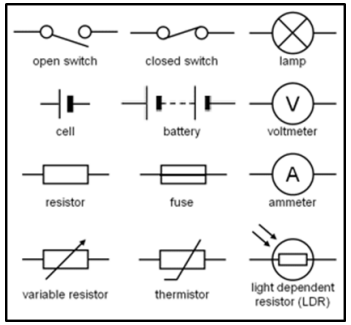
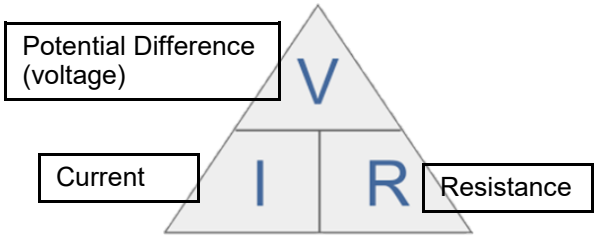
Year 8 Electricity and Electromagnetism Knowledge Organiser

1. Keywords

Ammeter	A device used to measure the electric charge
Ampere	Unit of current
Cell	A store of internal energy that can be transferred as an electric current in a circuit
Conductor	A material which allows a charge to move easily through it
Insulator	A material that does not allow charge or heat to pass through it easily
Ohms	The unit of electrical resistance
Resistance	The opposition in an electrical component to the movement of electrical charge through it. Measured in ohms
Electron	Sub atomic particle which flows in a circuit carrying a negative charge
Potential difference	The potential difference (or voltage) of a supply is a measure of the energy given to the charge carries in a circuit
Volt	Unit of voltage
Voltmeter	Device used to measure potential difference

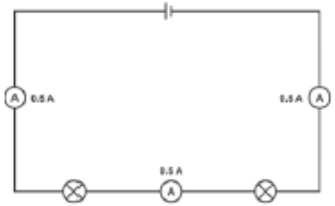




Series Circuit

In series circuits:

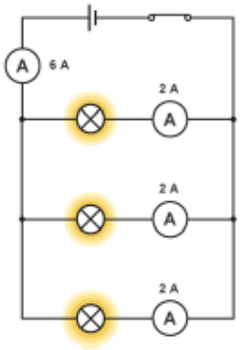
- You get several components one after another.
- If a component breaks, the circuit is broken and all the other components stop working.
- The current is the same everywhere in a series circuit no matter where you put the ammeter – it will give the same reading.



Parallel Circuit

In parallel circuits:

- Different components are connected on different braches.
- If a component breaks, the components on the different braches keep working.
- Unlike series, the lamps stay bright If you add more lamps in parallel.
- Current is shared between the components.



2	Series	Parallel
Components	connected on one loop	connected by separate loops
Current	same everywhere on circuit	shared evenly between loops
Voltage	Shared between components	Same everywhere

Static

Insulators are charged positively or negatively by transferring electrons	An electric field is the region where there are forces on charged particles or materials
Like charges repel Opposite charges attract	Electric fields affect other charged objects causing them to be attracted or repelled

Magnets and Electromagnets

Poles	The ends of the magnets (South/North)
Charge	Positive or negative (+ / -)

Magnetic field lines:
Lines with arrows that move from North to South.

Electromagnet:
A magnetic field caused by current flowing through a conductor.

To increase the strength of an electromagnet you can do the following:

1. Increase the turns of the coil
2. Increase the current
3. Use a soft iron core

Similarities between magnets and charges:

Poles/Charges	**Like/same**	**repel**	each other
	Opposites	**attract**	each other