

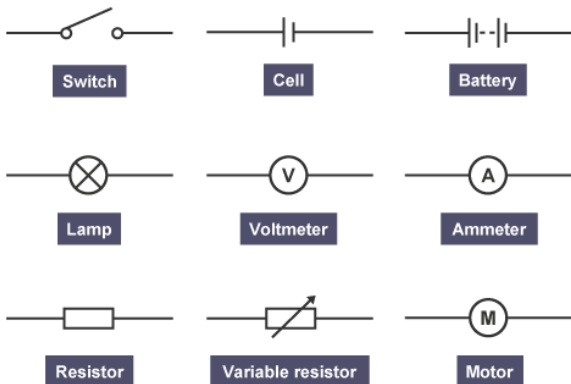
KNOWLEDGE ORGANISER

BIG IDEA: ELECTROMAGNETS

TOPIC: VOLTAGE AND RESISTANCE

Key Word	Definition
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).
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.

We use circuit symbols to draw diagrams of electrical circuits, with straight lines to show the wires. The diagram shows some common circuit symbols.



We can calculate resistance using the formula:

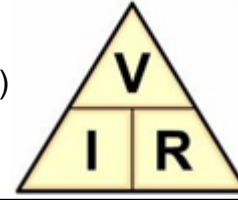
$$\text{Resistance } (\Omega) = \text{potential difference (V)} \div \text{current (A)}$$

Units

Potential difference = Volts (V)

Current = Amps (A)

Resistance = Ohms (Ω)

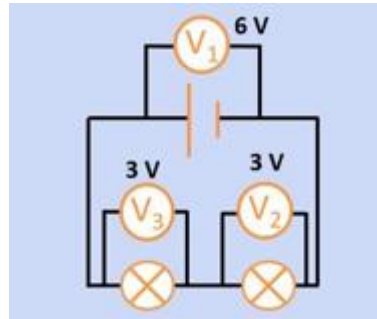


Resistance is a measure of how easy or difficult it is for charges to flow through components

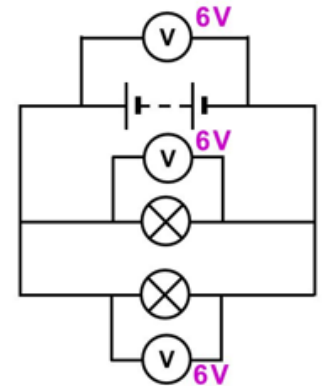
Components with resistance reduce the current flowing and transfer energy to the surroundings.

We can model voltage as an electrical push from the battery, or the amount of energy per unit of charge transferred through the electrical pathway.

In a series circuit, voltage is shared between each component.



In a parallel circuit, voltage is the same across each loop.



	Current	Potential difference
Unit	ampere, A	volt, V
Measuring device	Ammeter in series	Voltmeter in parallel
Circuit symbol of measuring device		