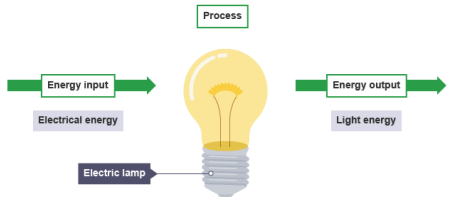
Helston Science Department

Electricity

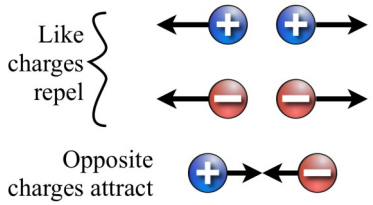


Topic outcome: Understand that the flow of charge can carry a potential difference to transfer energy. Circuit components are able to transform electrical energy into other useful forms of energy.

Charges

Electrons have...a negative charge and a negative charge and are able to move as they are relatively small.

Protons have...a positive charge and do not move as they are relatively large.



Current

Current is the...(rate of) flow of electrons / charge

Current is measured using an...ammeter

The units of current are...amps

(Symbol: A)

Potential Difference

Potential difference (p.d.) is the... measure of electrical energy between to parts of a circuit

P.d. is measured using a...voltmeter

The units of p.d. are...volts

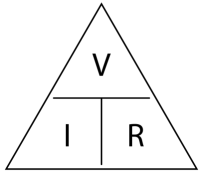
(Symbol: V)

Resistance

Resistance is...a measure of how difficult it is for electrons to pass through a component

As resistance increases, the current...decreases

Resistance can be calculated using:



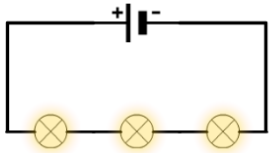
It is measured in...ohms

(Symbol: Ω)

Circuits

Series

Draw a series circuit with a cell and three bulbs:

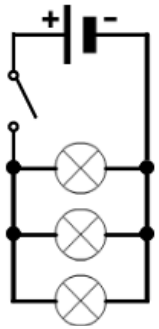


In a series circuit:

- current is...shared
- if a bulb breaks...they all go out

Parallel

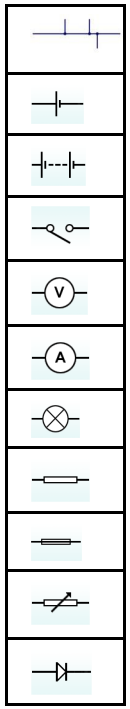
Draw a parallel circuit with a cell and three bulbs:



In a parallel circuit:

- current is...the same
- if a bulb breaks...the others stay lit

Circuit Symbols



Ammeter
Battery
Bulb
Cell
Diode
Fuse
Resistor
Switch
Variable resistor
Voltmeter
Wires

Faulty Circuits & Safety

A circuit will not work if...it is incomplete, there is a short circuit, there is a broken component (series), there is an insulator in the circuit, cells are facing opposite directions

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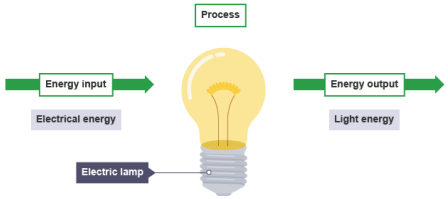
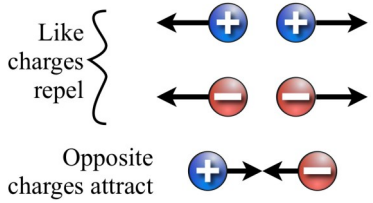


Topic outcome: Understand that the flow of charge can carry a potential difference to transfer energy. Circuit components are able to transform electrical energy into other useful forms of energy.

Charges

Electrons have…

Protons have…



Current

Current is the…

Current is measured using an…

The units of current are…

(Symbol:)

Potential Difference

Potential difference (p.d.) is the…

P.d. is measured using a…

The units of p.d. are…

(Symbol:)

Resistance

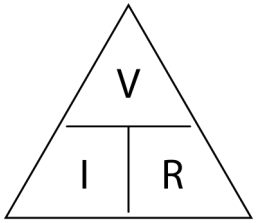
Resistance is…

As resistance increases, the current…

Resistance can be calculated using:

It is measured in…

(Symbol:)



Circuits

Series

Draw a series circuit with a cell and three bulbs:

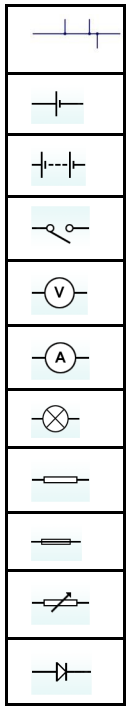
In a series circuit:
- current is…
- if a bulb breaks…

Parallel

Draw a parallel circuit with a cell and three bulbs:

In a parallel circuit:
- current is…
- if a bulb breaks…

Circuit Symbols



Ammeter
Battery
Bulb
Cell
Diode
Fuse
Resistor
Switch
Variable resistor
Voltmeter
Wires

Faulty Circuits & Safety

A circuit will not work if…