Y6 SCIENCE KNOWLEDGE ORGANISER: ELECTRICITY (1)

Prior learning (Year 4)

Most children will have learnt to:

-identify common appliances that run on electricity

-construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers

-Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery

-Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit

-recognise some common conductors and insulators, and associate metals with being good conductors.

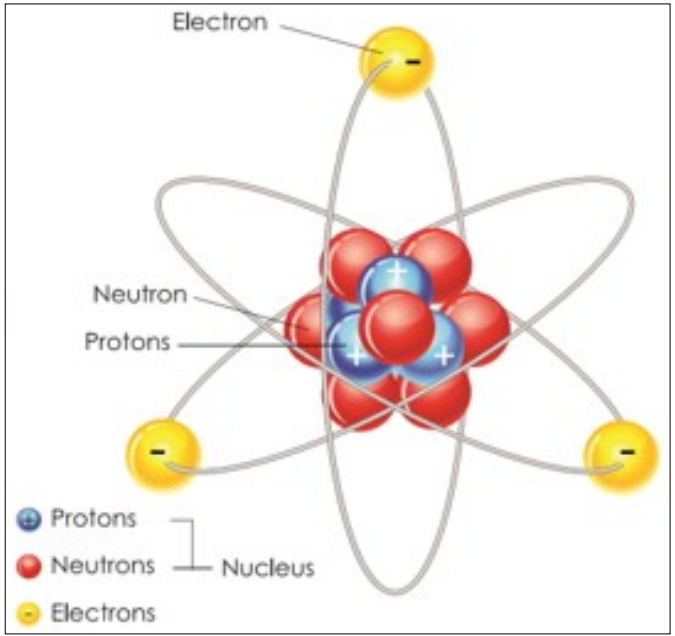
Atoms

The **atom** is the basic building block for all **matter** in the universe. **Atoms** are extremely small and are made up of a few even smaller particles. The basic particles that make up an **atom** are **electrons**, **protons**, and **neutrons**. **Atoms** fit together with other **atoms** to make up **matter**.

Matter

Matter is everything around you. Everything in the universe is made of very small parts of **matter**. You, and the things you see and touch every day, are made of **matter**. **Anything** that takes up space and has **mass** is matter. **Mass** is the amount of **matter** in an object.

The Structure of Atoms



Each **atom** has a **nucleus** containing **protons** and **neutrons**.

Protons (Positive Charge +) and **Neutrons** (no charge) are held together in the **nucleus** of **atoms**.

Each **atom** also contains **electrons** which **orbit** the **nucleus**.

Electrons (Negative Charge -) are free to move about around the nucleus.

Electrons repel each other (-) and (-).

When one **electron** moves or is moved, it **repels** another and this causes a **flow** of **electricity**.

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orbit	Complete curved loop round a central object
repel	To push away from something
flow	Move steadily and continuously
wire	**Metal** drawn out into a flexible thread.
conductor	Material that carries heat or electricity
conductive	Adjective meaning 'can conduct'
mains	The main cable(s) carrying electricity
volts	Measurement of electrical 'push' force
circuit	Electricity flowing in a complete path
series circuit	Electrical flow in a complete, closed path
component	A part or element of something

Electrical Safety

It is dangerous to play with plugs or leave liquids near electrical items

Never touch exposed wires

Never interfere with wall sockets, switches or plugs, and never touch switches with wet hands

Ensure plug sockets at home are not overloaded with devices

Look out for 'Danger: electricity' signs when out and about

Do not leave appliances and gadgets plugged in and turned on longer than is necessary

Read safety information on any new electrical devices

Y6 SCIENCE KNOWLEDGE ORGANISER: ELECTRICITY (2)

Electricity is a form of **energy.**

V

A

Voltage

The '**push**' that causes **electrons** to move in a **wire**.

Small battery - usually **1.5 volts**

Mains electricity - usually **240 volts**

Current

The **current** is the 'flow' of **electricity** through the **circuit**.

Current is measured in **amps** (A)

It flows from **positive** (+) to **negative** (-)

Positive (+) Terminal

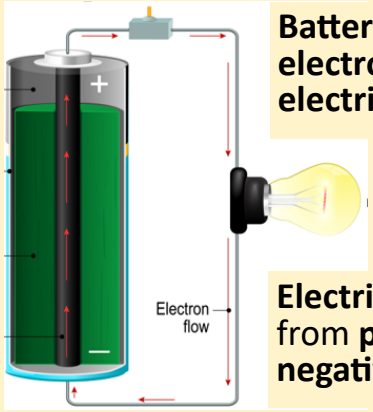
Negative (-) Terminal

A **cell** (**battery**) has two **terminals**.

Terminal = the end of a battery

This remote needs 3 volts of 'charge' to work

1.5 V + 1.5 V = 3 V

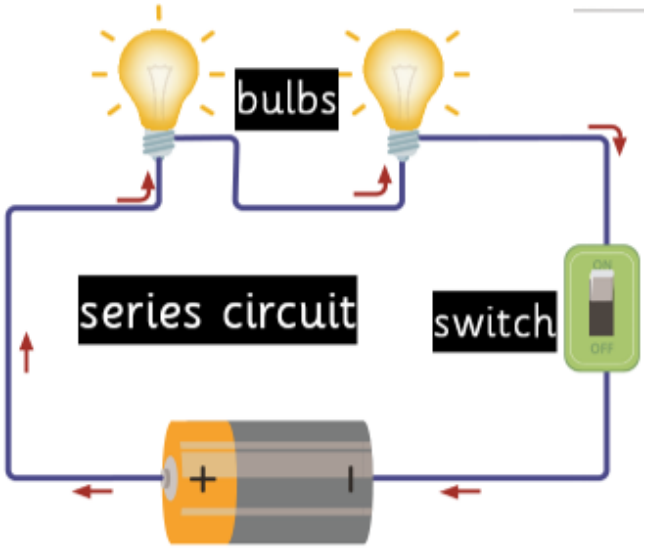


Batteries generate **electrons** that cause **electrical flow**.

Electricity flows from **positive** to **negative terminals**.

Circuits

Closed series circuit: the electric current follows one path:



Circuit Diagrams

Component	Symbol	Purpose
Cell (Battery)		Provides electrical energy
Wire		Allows current to travel
Bulb/light		Converts electrical energy into heat and light
Motor	M	Converts electrical energy into movement energy
Buzzer		Converts electrical energy into sound energy
Switch		Allows circuit to be opened or closed