Plymouth Science

Knowledge Organiser

Big question: How can we control electricity?

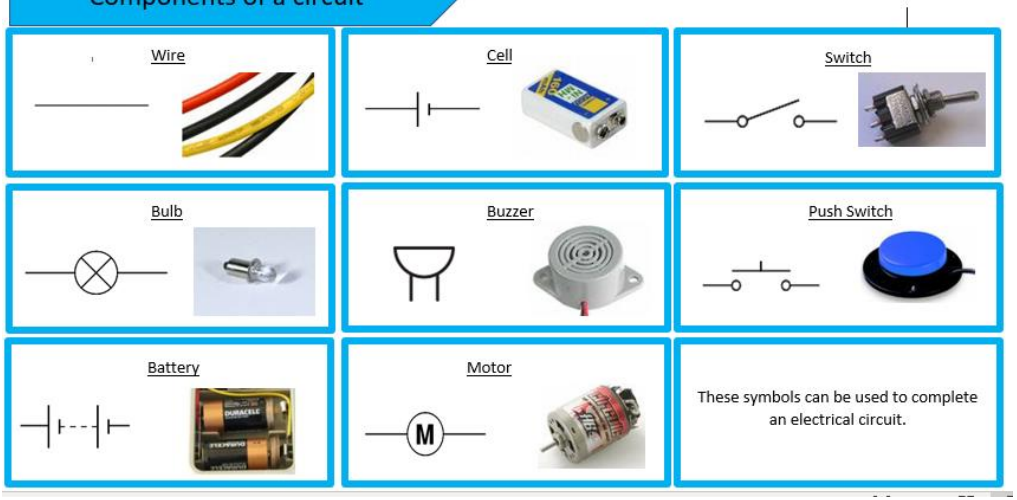
KEY VOCABULARY

Battery- a collection of cells which stores chemical energy. Bulb – the glass part of an electric lamp, which gives out light when electricity passes through it.
Buzzer –a basic audio device that generates a sound from an incoming electrical signal. Cell – a device, which converts chemical energy into electrical energy.
Charge – a basic property of electrons and other subatomic particles. Circuit- A path that an electrical current can flow around. Component – any part of an electrical circuit.
Conductor – a substance or material that an electric charge can pass through without difficulty. Electron – a particle that has a negative charge of electricity and travels around the nucleus of an atom.
Insulator – a substance or material that does not allow electricity to pass through.
Parallel Circuit – a way of connecting components on separate branches, so the current can take different routes around the circuit.
Resistance- the difficulty that the electric current has when flowing around a circuit. Series Circuit – A series circuit consists of a single pathway through which electricity can flow.
Switch – a component of a circuit that can connect or disconnect the path of the electrical flow through a circuit.
Voltage- The force that makes the electric current move through the wires. The greater the voltage the more current will flow.

Alessandro Volta.
1745-1827

Italian physicist, chemist and pioneer or electricity and power. He is credited as the inventor of the electric battery and discovered methane.

Components of a circuit



Websites for research and revision

BBC Bitesize Electricity

Build a virtual circuit

Renewable energy

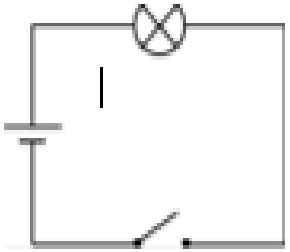
Thomas Edison

1847-1931

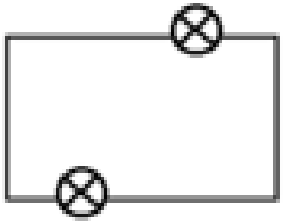
Lived in New Jersey in USA. Known as one of the greatest inventors in history. He invented the lightbulb, the phonograph (record and play sound) and an early video camera.

Electrical Conductors	Electrical Insulators
Copper	Rubber
Iron	Wood
Steel	Plastic
Silver	Paper
Gold	

Series Circuits



The light will not light until the switch is closed to complete the circuit.



This circuit will not work as there is no battery to provide energy.

Electrons flow through the circuit to make the circuit work.

Light is measured in Lux.

Voltage is measured in Volts. Using a volt metre.

The current is measured in amps using an ammeter.

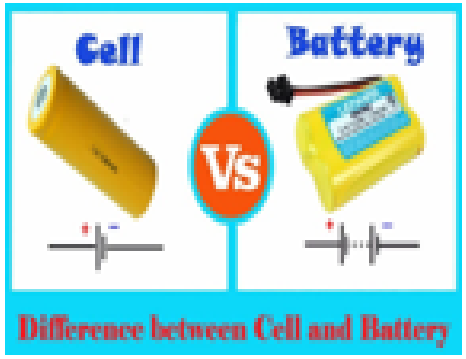
Watt is a unit of power. (Rate of which energy is consumed).

Common Electrical Hazards

1. Overloading a plug extension socket
2. Exposed wires.
3. Damaged wall sockets.
4. Wires left along the carpet for people to trip over.
5. Placing metal into electrical appliances or open sockets.
6. Electrical appliances and wires near water.

NOTE: Water can be an excellent electrical conductor so it can be very dangerous to have electrical devices near water.

What is a battery?



A cell is a single unit that stores energy. A battery is a collection of cells that store energy.

Batteries have voltage which is the amount of force that makes the electrical current move through the wires. The voltage can be found on the battery.

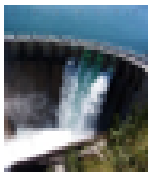
One end of a battery is an anode and the other a cathode. Electrolytes (liquid) are found in a battery which irons flow through.

Renewable Energy

Renewable energy is **useful energy that is collected from renewable resources, which are naturally replenished on a human timescale.**

Solar

Wind



Hydro

Biomass