Theale Primary School

Science

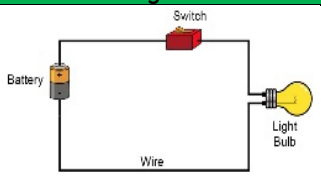
Topic: Electricity

Year: 4

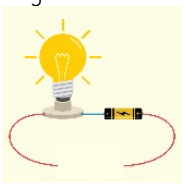
Key Knowledge	
Where does **electricity** come from?	• **Electricity** is **generated** using **energy** from natural **sources** such as the Sun, oil, water and wind. • These can also be called **fuel sources.**
Uses of **electricity**?	Common **appliances** that use **electricity**.
How should I use **electricity** safely?	• Don't overload sockets or extension plugs/cables (you could start a fire!). • Stand electrical objects on flat surfaces. • Avoid having cables where people walk. • Turn off and unplug electrical appliances. • Make sure cables are not caught or knotted on furniture or chair legs. • Keep water, juice, or any other types of liquid away from electronics. • Don't touch electrical devices with wet hands. • Don't use electrical devices in the bathroom.
How does a **circuit** work?	• A complete **circuit** is a loop that allows **electrical current** to flow through **wires**. • A **circuit** contains a **battery (cell)**, **wires** and a **device** that requires **electricity** to work (such as a **bulb**, **motor** or **buzzer**). • The **electrical current** flows through the wires from the **battery (cell)** to the **bulb, motor** or **buzzer**). • A **switch** can break or reconnect a **circuit**. • A **switch** controls the flow of the **electrical current** around the **circuit**. When the **switch** is off, the **current** cannot flow.
What are **electrical conductors** and **insulators**?	• When objects are placed in the **circuits**, they may or may not allow **electricity** to pass through. • Materials that allow **electricity** to pass through a create a complete **circuit** are called **electrical conductors**. • Materials that do not allow **electricity** to pass through and do not complete a **circuit** are called **electrical insulators**. • Metals are good conductors of electricity.

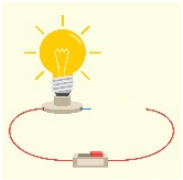
Investigate
• Make a variety of **circuits;** investigate which work and why.
• Draw **circuits** using pictorial representations (not symbols).
• Create **circuits** using **switches**.
• Investigate which materials are **electrical conductors** and which are **electrical insulators**.

Diagram



These are complete circuits - they have a battery (cell), a component (bulb) and a switch. When the switch is closed the light bulb will glow.





These circuits will not work because they are not complete – one has a break in the wire and the other has no battery.

Key Vocabulary	
appliance	A device or machine in your home that you use to do a job such as cleaning or cooking.
battery	A small device that creates electricity by a chemical reaction. Used to power torches.
bulb	The glass part of an electrical lamp, which gives out light when electricity passes through it.
buzzer	An electrical device that is used to make a buzzing sound.
cell	The scientific term for a single 'battery'.
circuit	The complete route that an electrical current flows through.
components	The parts that something is made of.
conductor	A substance that electricity can pass through.
current	A flow of electricity.
device	An object that has been invented for a particular purpose.
electricity	A form of energy that can be carried by wires and is used for heating and lighting.
energy	The power such as electricity that makes machines work or provide heat.
insulator	A substance that electricity cannot pass through
mains electricity	Electricity that flows from the power station to your home.
power	Power is energy, for example in the form of electricity, that is used to make machines work, such as lights and heating.
switch	A small control for an electrical device which you use to turn the device on or off.
wires	Long thin pieces of metal that can be used to carry electricity.