

Year 4

Unit: Electricity

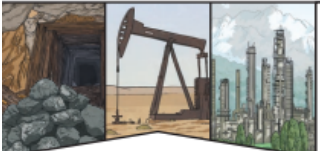
Intent:
Identify common appliances that run on electricity.
Construct a simple series circuit, identifying and naming its basic parts.
Recognise that a switch opens and closes a circuit and associate this with whether a lamp lights in a simple series circuit.
Recognise some common conductors and insulators, and associate metals with being good conductors.

Prior learning
EYFS – Explore how things work.

Later learning (not in Year 4)
Year 6 – Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in a circuit.
Year 6 – Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzer, and the on/off position of switches.
Year 6 – Use recognised symbols when representing a simple circuit in a diagram.

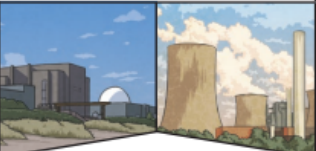
- Key Questions:**
- What is the definition of an appliance?
 - What part of an electric circuit connects the different components?
 - Name an electrical conductor.
 - Name an electrical insulator.
 - What should you do if you find some damaged or broken electrical equipment?

Lightning and static **electricity** are examples of **electricity** occurring naturally but for us to use **electricity** to power **appliances**, we need to make it.

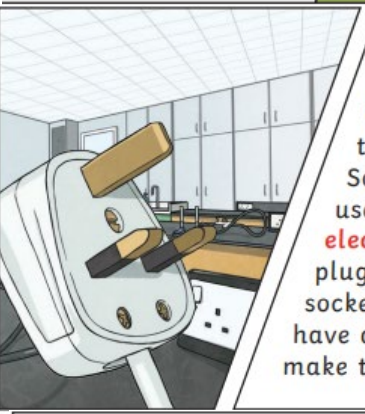


Coal, oil and natural gases are fossil fuels which, when burnt, produce heat which can be used to **generate electricity**.

Electricity can be **generated** from wind power used to turn windmills and hydroelectric power from water used in dams. The Sun's rays can be converted into **electricity** by solar panels.



Nuclear energy is created when atoms are split. This creates heat which can be used to **generate electricity**. Geothermal energy is heat from the Earth that is converted into **electricity**.



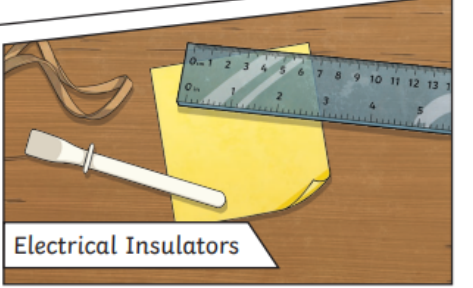
Many everyday **appliances** rely on **electricity** for them to work. Some appliances use mains **electricity** (are plugged into a socket) and others have a **battery** to make them work.



A conductor of **electricity** is a material that will allow **electricity** to flow through it. Metals are good conductors. Materials that are electrical insulators do not allow **electricity** to flow through them. Wood, plastic and glass are good insulators

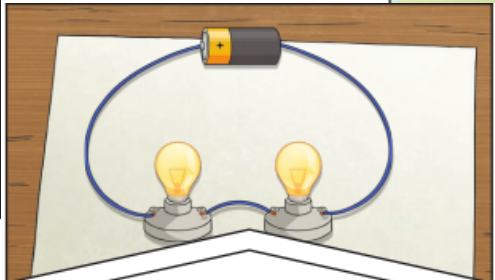


Electrical Conductors



Electrical Insulators

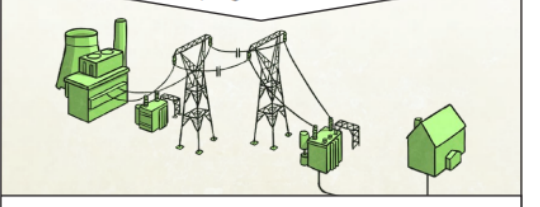
Switches can be used to open or close a **circuit**. When off, a switch 'breaks' the **circuit** to stop the flow of **electricity**. When on, a switch 'completes' the circuit and allows the **electricity** to flow.



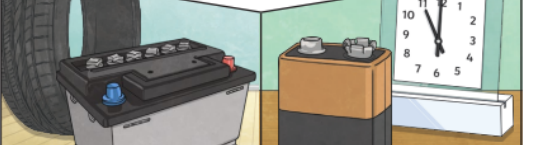
Electricity can only flow around a complete **circuit** that has no gaps. There must be wires connected to both the positive and negative end of the power supply/**battery**.

There are two types of electric current.

Mains electricity: power stations send an electric charge through wires to transformers and pylons. Then, underground wires carry the electricity into our homes via wires in the walls and out through plug sockets.



Battery electricity: **batteries** store chemicals which produce an electric current. Eventually, even rechargeable **batteries** will stop producing an electric current.



Vocabulary

Appliances	A piece of equipment or a device designed to perform a particular job, such as a washing machine or mobile phone.
Battery	A device that stores electrical energy as a chemical.
Circuit	A pathway that electricity can flow around. It includes wires and a power supply and may include bulbs, switches, or buzzers.
Conductor	A material that will allow electricity to pass through it.
Electricity	The flow of an electric current through a material, e.g. from a power source through wires to an appliance.
Generate	To make or produce.
Insulator	A material that will not allow electricity to pass through it.
Non-renewable	This source of energy will eventually run out and so will no longer be able to be used to make electricity. These include fossil fuels – coal, oil, and natural gas.
Renewable	A source of electricity that will not run out. These include solar, geothermal, hydro, and wind.