




Y4 Knowledge Organiser –Electricity

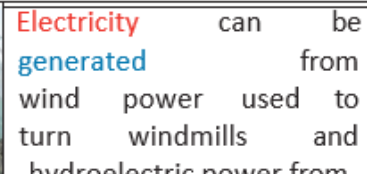
What should I Know by the end of the unit?

- 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.

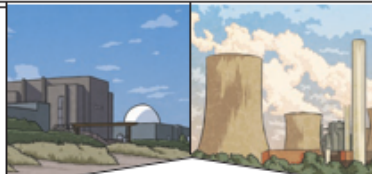
Key Knowledge

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**.

What should I already know how to do?

- Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. Recognise that they need light in order to see things and that dark is the absence of light.
- Notice that light is reflected from surfaces.
- Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.
- Recognise that shadows are formed when the light from a light source is blocked by a solid object.
- Find patterns in the way that the size of shadows change.

Key Vocabulary

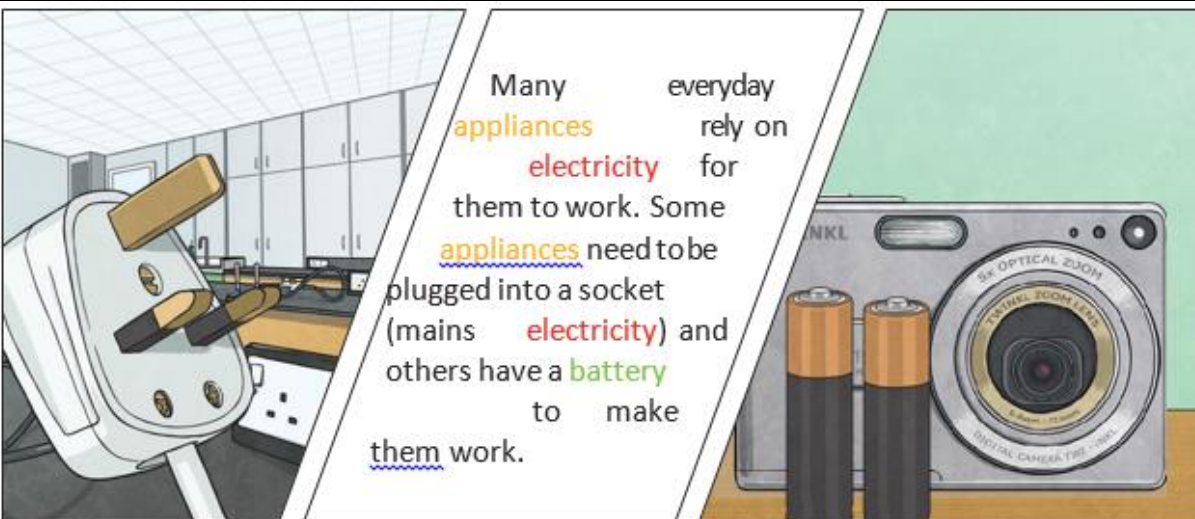
electricity	The flow of an electric current or charge through a material, e.g. from a power source through wires to an appliance.
generate	To make or produce.
renewable	A source of electricity that will not run out. These include solar, nuclear, geothermal, hydro and wind.



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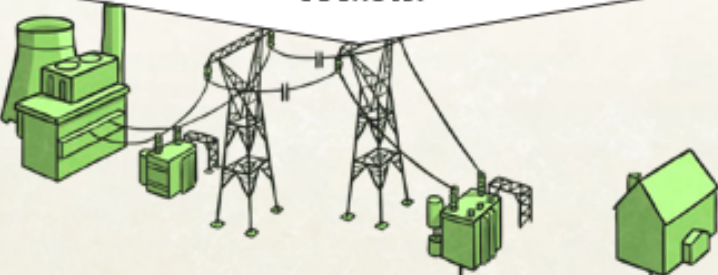
Key Vocabulary

appliances	A piece of equipment or 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.
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.


Key Vocabulary	
circuit	A pathway that electricity can flow around. It includes wires and a power supply and may include bulbs, switches or buzzers.
electrons	Small particles with an electric charge.

There are two types of electric current.

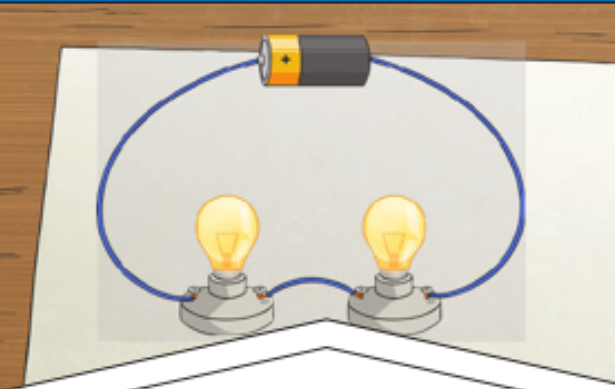
Mains **electricity**: power stations send an electric charge through wires to transformers and pylons. Then, underground wires carry the electricity into our homes via wires in the walls and out through plug sockets.



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



Key Knowledge




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**.

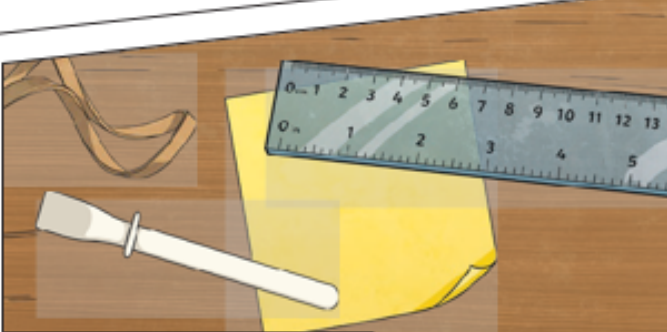
Switches can be used to open or close the **circuit**. When off, a switch 'breaks' the **circuit** to stop the flow of **electrons**. When the switch is on, the **circuit** is complete and the **electrons** are able to flow around the **circuit**.



A conductor of **electricity** is a material that is made up of free **electrons** which can be made to move in one direction, creating an electric current. Metals are good conductors. Electrical insulators have no free **electrons** and so no electric current can be made. Wood, plastic and glass are good insulators.



Electrical Conductors



Electrical Insulators

Pre and Post Assessment		
Question	Pre Assessment response	Post Assessment response
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