

## Key Vocabulary

Generate—to make or produce

Renewable –a source of electricity that will not run out like solar or wind.

Non-renewable—a source that will eventually run out like coal

Appliances—a piece of equipment designed for a specific job like a washing machine.

Battery—a device that stores electrical energy as chemical energy.

Circuit—a pathway that electricity can flow around

Switch—a device that can control the flow of electricity

Series—a circuit set out in a loop with only one path for the electricity.

Parallel—a circuit that has more than one path

Conductor—a material that does allow electricity to flow through it.

Insulator—a material that does not allow electricity to flow through it.

## Key Outcomes.

To be able 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



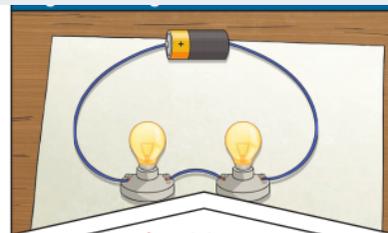
## Key Knowledge

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**.



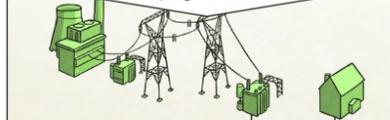
**Electricity** can only flow around a complete **circuit** that has no gaps. There must be wires connected to both the positive and negative end of the power supply/**battery**.

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**.

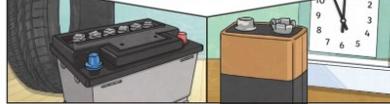


There are two types of electric current.

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.



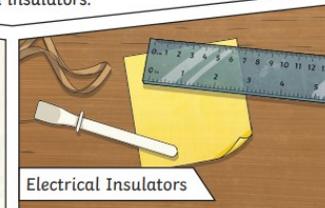
**Battery electricity**: **batteries** store chemicals which produce an electric current. Eventually, even rechargeable **batteries** will stop producing an electric current.



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

## Skills

Plan—Ask relevant questions

Set up simple practical enquiries

Observe—Make systematic and careful observations

Record—Gather, record, classify and present data

Record findings using scientific language, drawings and charts

Identify differences and similarities

Evaluate— use results to draw simple conclusions and make predictions.

## Key Questions

How can you get a bulb to light?

Can you make a bulb brighter?

Which materials conduct electricity?

How can you tell if a component in a circuit is not working?

## Common misconceptions.

electricity flows to bulbs, not through them

electricity flows out of both ends of a battery

electricity works by simply coming out of one end of a battery into the component.