



# SCIENCE KNOWLEDGE ORGANISER – YEAR FOUR

## ELECTRICITY

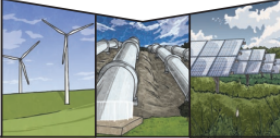
### FLASH BACKS TO REMEMBER

- Can you identify objects that work by electricity?
- Where does electricity come from?

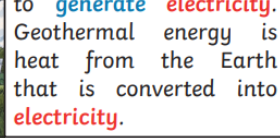
#### Key Knowledge

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

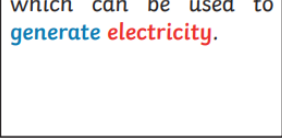
**Electricity** can be **generated** from wind power used to turn windmills and hydroelectric power from water used in dams. The Sun's rays can be converted into **electricity** by solar panels.



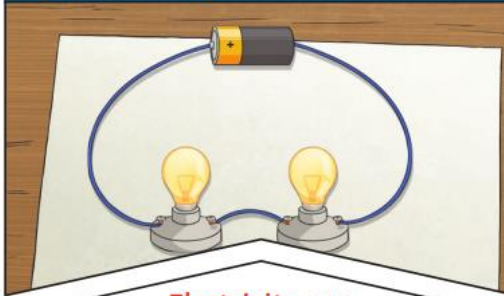
Nuclear energy is created when atoms are split. This creates heat which can be used to **generate electricity**. Geothermal energy is heat from the Earth that is converted into **electricity**.



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



#### 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**.

### KEY QUESTIONS TO LEARN

- Can you identify electrical and non-electrical appliances?
- Can you identify the components that make up a circuit?
- Can you explain how an energy ball works?
- Can you identify what electrical conductors and insulators are?
- Can you explain the role of a switch in a circuit?

### KEY VOCABULARY

**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.

**Renewable** -A source of electricity that will not run out. These include solar, geothermal, hydro and wind.

**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.

**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.

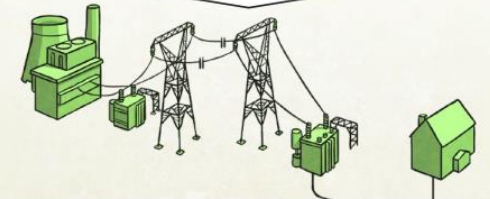
**Circuit**- A pathway that electricity can flow around. It includes wires and a power supply and may include bulbs, switches or buzzers.

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.

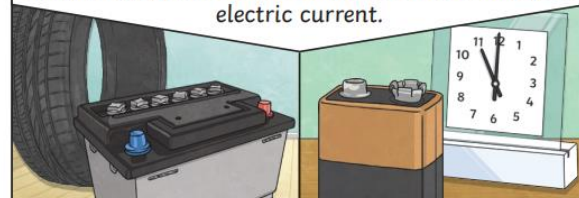


There are two types of electric current.

**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.



What makes a circuit?

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

