



# Electricity (Physics) Science Knowledge Organiser

## What I should already know

**Electricity** is a form of **energy** that can be carried by wires and is used for heating and lighting, and to provide **power** for **devices**.

**Sources** of light and sound may need **electricity** to work.

## How is electricity made?

Electricity can be made using a simple **generator**. We could make one in school using a **magnet** and a **coil of wire**. If we turn a magnet around inside a coil of wire, it creates **electricity** in the wire. Doing this only makes a **small amount** of electricity so we need large generators to make enough for everyone. These generators are usually in **power stations**. There are **different types** of power stations.

## 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 an **appliance** 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. This isn't the same as an incomplete **circuit**.

## What are electrical conductors and insulators?

- When objects are placed in the **circuits**, they may or may not allow **electricity** to pass through.
- Objects that are made from materials that allow **electricity** to pass through a create a complete **circuit** are called **electrical conductors**.
- Objects that are made from materials that do not allow **electricity** to pass through and do not complete a **circuit** are called **electrical insulators**.

## Key Vocabulary

<b>appliances</b>	a device or machine in your home that you use to do a job such as cleaning or cooking.
<b>battery</b>	a collection of cells that converts chemical energy into electrical energy
<b>bulb</b>	the glass part of an electric lamp, which gives out light when electricity passes through it.
<b>buzzer</b>	an electrical device that is used to make a buzzing sound.
<b>cell</b>	a single unit of device that converts chemical energy into electrical energy
<b>circuit</b>	a complete route which an electric current can flow around.
<b>component</b>	the parts that something is made of.
<b>conductor</b>	a substance that heat or electricity can pass through or along.
<b>current</b>	a flow of electricity through a wire or circuit.
<b>device</b>	an object that has been invented for a particular purpose.
<b>energy</b>	the power from sources such as electricity that makes machines work or provides heat
<b>fuel</b>	a substance such as coal, oil, or petrol that is burned to provide heat or power.
<b>insulator</b>	a non-conductor of electricity or heat.
<b>switch</b>	a small control for an electrical device which you use to turn the device on or off.

## Non-renewable Energy

Most of the electricity in the UK is made using **non-renewable** power stations. These power stations **burn oil, coal** or **gas** to create **steam** which turns the generator. Oil, coal and gas are **fossil fuels**. They are non-renewable which means that they will eventually run out one day. This is because they are naturally occurring and take thousands of years to make. Burning these fossil fuels can also damage **the environment** as they produce gases such as **carbon dioxide** and **methane**.

## Renewable Energy

We can also make electricity using renewable energy. Renewable energy sources like **the Sun, wind** and **sea** can be used over and over again and should not run out. We are beginning to use these sources more as they do not damage our environment.



## Scientific Symbols for different electrical components

battery or cell	bulb	wire	open switch (off)
close switch (on)	motor	buzzer	