

# Science- Electricity - Year 4 Summer Term

## Prior Learning: You should know...

That things are made from a variety of materials, all which have different properties.

## What is electricity?

Electricity is an energy. The electrical energy can be converted into other types of energy such as light, heat, movement or sound. Electricity is transported to different places such as homes and schools through wires and cables.



## What uses electricity?

We use electricity to power lots of things around our homes. It is used to power lights, mobile phones, TVs and radios. Some things are powered when they are plugged in- this is called mains electricity and is sent from a power station.



Appliances can also be powered by batteries as electrical energy is stored inside of them. This means the appliance does not need to be plugged in.



## Key Learning

Many household devices and appliances run on electricity. Some plug in to the mains and others run on batteries.

An electrical circuit consists of a cell or battery connected to a component using wires.

If there is a break in the circuit, a loose connection or a short circuit the component will not work.

A switch can be added to the circuit to turn the component on and off.

Metals are good conductors so they can be used as wires in a circuit. Non-metal solids are insulators except for graphite (pencil lead).

## Key Vocabulary

Complete circuit	A complete circuit is a complete loop with electricity flowing through: from the battery, to the component, and back to the battery again.
Component	A part of a circuit.
Conductor	A material which allows electricity to pass through it- allowing a circuit to continue.
Electrical appliance	A machine powered by electricity.
Electrical circuit	A circuit is a complete path around which electricity can flow. It must include a source of electricity, such as a battery.
Electricity	An energy which can be used to give power to other things.
Insulator	A material which does not allow electricity to pass through it- stopping a circuit.
Mains electricity	Electricity which comes from a power station, through wires, to plug sockets.

## How is electricity made?

Electricity has to be created. This is often done in places called power stations. In power stations, they create electricity by burning fossil and nuclear fuels. This is known as 'non-renewable' energy as fossil fuels will eventually run out.

Non-renewable electricity can also create greenhouse gases that cause climate change.

People are trying to use other ways of creating electricity, like using wind power or solar power. These are better for our environment and will never run out- this is why they are 'renewable'.

## Renewable:

Solar power



Wind power



Hydro-electric



## Non-Renewable:

Coal



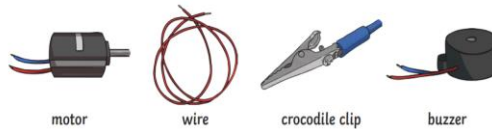
Gas



Nuclear power



## Types of component:



motor

wire

crocodile clip

buzzer

## Circuits:

Electricity can flow through the components in a complete electrical circuit.

A circuit always needs a power source, such as a battery, with wires connected to both the positive (+) and negative (-) ends.

A circuit can also contain other electrical components, such as bulbs, buzzers or motors, which allow electricity to pass through.

Electricity will only travel around a circuit that is complete. That means it has no gaps. You can use a switch in a circuit to create a gap in a circuit. This can be used to switch it on and off.



bulb



bulb holder

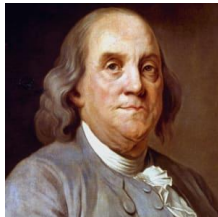


battery



cell

## Benjamin Franklin:



In 1752, Franklin conducted his famous kite experiment. In order to show that lightning was electricity, he flew a kite during a thunderstorm. He tied a metal key to the kite string to conduct the electricity.

## Can I answer?

- What is electricity?
- What uses electricity?
- How does an electrical appliance work?
- Why can only certain materials work in a circuit?
- How can we control a circuit?