

# Electricity- Year 4- Kapow unit- Electricity and circuits

## Previous learning

## Key scientists you could look at...

Ben Franklin

## Scientific skills

Working scientifically	Questioning and enquiry	Observing and measuring	Investigating	Recording	Grouping and classifying
To use practical scientific method, processes and skills	Ask relevant questions and use different types of scientific enquiry to answer them	Make systematic and careful observations, take accurate measurements using standard and non-standard units and a range of equipment, including thermometers and data loggers. Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them. Help make decisions about what observations and equipment they will need to use.	Set up simple practical experiments, comparative and fair tests. Recognise when a simple fair test is necessary and help to decide how to set it up. Be able to think of more than one variable factor.	Gather, record, classify and present data in a variety of ways to answer a question. Record simple findings using scientific vocabulary, drawings, labelled diagrams, keys, bar charts and tables. Report on findings including oral and written explanations, displays or presentation of results and conclusions. Use notes, simple tables and standard units to decide how to record and analyse data.	Identify differences, similarities and changes related to scientific ideas and processes. Talk about criteria for grouping, sorting and classifying and use simple keys. Compare and group according to behaviour or properties, based on testing.

## Key Vocabulary for Year 4

Cells	Insulator
Wires	Renewable
Bulbs	Non-renewable
Switches	
Buzzers	
Battery	
Circuit	
Series	
conductor	

## Previous vocabulary

## Useful links

<https://www.weareteachers.com/electricity-experiments/>

<https://www.science-sparks.com/easy-electricity-projects-for-kids/>

## Experiment and activity ideas

Building series circuits using equipment	Investigate static electricity	Create a potato clock	investigate conductors and insulators	Create your own torch
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## Knowledge- objectives

- Identify common appliances that run on electricity
- Construct a simple series 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.

## Resources in school

Wires, crocodile clips, bulbs, batteries, switches, bulb holders, buzzers, range of different materials

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**.

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.

Many everyday **appliances** rely on **electricity** for them to work. Some appliances use mains **electricity** (are plugged into a socket) and others have a **battery** to make them work.

**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 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.

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.

Electrical Conductors

Electrical Insulators