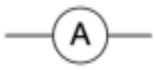
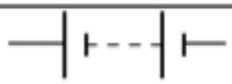
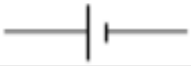
# Caroline Haslett Primary School - Science Topic: Electricity Year 6

## What should I 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.
- Where **electricity** cones from
- Which **appliances** need **electricity**
- What a **circuit** is, the **components** of a circuit and how it works.
- What **electrical conductors** and **insulators** are.
- What happens when a **switch** is added to a circuit.
- What **forces** and **resistance** are.

## Circuit Symbols

| Symbol | Component |
|---|---|
|  | **ammeter** |
|  | **battery** |
|  | **bulb** |
|  | **buzzer** |
|  | **cell** |
|  | **motor** |
|  | **resistor** |
|  | **switch** (open) |
|  | **switch** (closed) |

## Investigate!

- Match **circuit** symbols to their meanings and their words.
- Predict, then investigate what happens when more batteries are added to a circuit. Explain why this happens.
- Predict, then investigate what happens when more bulbs, motors are added to a circuit. Explain why this happens.
- Systematically identify the effect of changing one component at a time in a circuit.
- Use **circuit** symbols when representing a simple **circuit** in a diagram.
- Design and make a set of traffic lights, a burglar alarm or some other useful **circuit**.
- Investigate what happens when the **voltage** of the battery changes.
- Investigate what happens when the length of the wires changes.
- Investigate what happens when you add a **resistor** to a **circuit.**
- Use **ammeters** to measure the **current** in a **circuit.**

## Vocabulary

| | |
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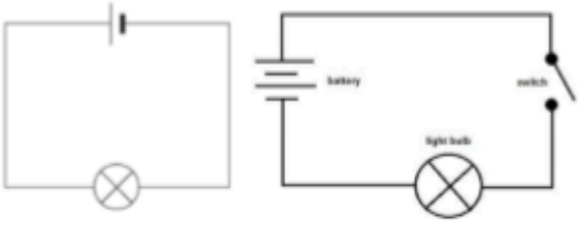
| ammeter | measures the **current** in a **circuit** |
| appliances | a **device** or machine in your home that you use to do a job such as cleaning or cooking. **Appliances** are often **electrical**. |
| battery | small **devices** that provide the **power** for **electrical** items such as torches |
| bulb | the glass part of an **electric** lamp, which gives out light when **electricity** passes through it. |
| buzzer | an **electrical device** that is used to make a buzzing sound |
| cell | a synonym for **battery** |
| circuit | a complete route which an **electric current** can flow around |
| component | the parts that something is made of |
| conductor | a substance that heat or **electricity** can pass through or along |
| current | a flow of **electricity** through a **wire** or **circuit** |
| device | an object that has been invented for a particular purpose |
| electricity | a form of **energy** that can be carried by **wires** and in used for heating and lighting, and to provide **power** for **devices** |
| energy | the **power** from **sources** such as **electricity** that makes machines work or provides heat |
| fuel | a substance such as coal, oil, or petrol that is burned to provide heat or **power** |
| generate | cause it to begin and develop |
| insulator | a non-**conductor** of **electricity** or heat |
| mains | where the supply of water, **electricity**, or gas enters a building |
| motor | a **device** that uses **electricity** or fuel to produce movement |
| power | **Power** is **energy**, especially **electricity**, that is obtained in large quantities from a fuel **source** and used to operate lights, heating, and machinery. |
| resistance | a force which slows down a moving object or vehicle |
| resistor | a part of an electric **circuit** that provides resistance to some of the **current** |
| source | where something comes from |
| switch | a small control for an **electrical device** which you use to turn the **device** on or off |
| voltage | the force of an electric current as measured in **volts** |
| wires | a long thin piece of metal that is used to fasten things or to carry **electric current** |

## Diagrams



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| **Working scientifically** | Questions can help us find out about the world and can be answered using a range of scientific enquiries, including fair tests, research and observation.<br>Ask and answer deeper and broader scientific questions about the local and wider world that build on and extend their own and others' experiences and knowledge.<br><br>A method is a set of clear instructions for how to carry out a scientific investigation, including what equipment to use and observations to make.<br>A variable is something that can be changed during a fair test.<br>A prediction is a statement about what might happen in an investigation based on some prior knowledge or understanding.<br>Plan and carry out a range of enquiries, including writing methods, identifying and controlling variables, deciding on equipment and data to collect and make predictions based on prior knowledge and understanding.<br><br>An observation involves looking closely at objects, materials and living things.<br>Accurate observations can be made repeatedly or at regular intervals to identify changes over time, identify processes and make comparisons.<br><br>Specialised equipment is used to take accurate measurements in standard units eg. data loggers plus sensors, such as light (lux), sound (dB) and temperature (°C); timers (seconds, minutes and hours); thermometers (°C) and measuring tapes (millimetres, centimetres, metres).<br>Take accurate, precise and repeated measurements in standard units, using a range of chosen equipment.<br>Independently decide which observations to make, when and for how long and make systematic and careful observations.<br>Use them to make comparisons, identify changes, classify and make links between cause and effect.<br><br>The results are information, such as measurements or observations, that have been collected during an investigation.<br>Data can be recorded and displayed in different ways, including tables, bar and line charts, scatter graphs, classification keys and labelled diagrams.<br>Choose an appropriate approach to recording accurate results, including scientific diagrams, labels, timelines, classification keys, tables, models and graphs (bar, line and scatter), linking to mathematical knowledge.<br>A conclusion is an explanation of what has been discovered, using correct, precise terminology and collected evidence.<br>Report on and validate their findings, answer questions and justify their methods, opinions and conclusions, and use their results to suggest improvements to their methodology/ predictions, separate facts from opinions, pose further questions and make predictions for what they might observe. |
| **Electricity** | Voltage is measured in volts (V) and is a measure of the difference in electrical energy between two parts of a circuit.<br>The bigger the voltage, the more electrons are pushed through the circuit.<br>The more voltage flowing through a lamp, buzzer or motor, the brighter the lamp, the louder the buzzer and the faster the motor.<br>Explain how the brightness of a lamp or volume of a buzzer is affected by the number and voltage of cells used in a circuit.<br><br>A circuit needs a power source, such as a battery or cell, with wires connected to both the positive and negative terminals.<br>Other components include lamps, buzzers or motors, that an electric current passes through and affects a response, such as lighting a lamp or turning a motor.<br>When a switch is open, it creates a gap and the current cannot travel around the circuit.<br>When a switch is closed, it completes the circuit and allows a current to flow all the way around it.<br>Compare and give reasons for variations in how components in electrical circuits function (brightness of lamps; volume of buzzers and function of on or off switches). |

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| | There are recognised symbols for different components of circuits.<br>Create circuits using a range of components and record diagrammatically using the recognised symbols for electrical components. |