



# Electricity

<u>EYFS</u>	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>
<p><u>Year 4</u></p> <p>Identify common appliances that run on electricity.  <b>Pupils will:</b>  <b>Compare battery operated and mains operated appliances.</b></p> <p>Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.  <b>Children need to know that each cell has a positive and negative terminal.</b></p> <p><b>Children should record their series circuits using commonly recognised symbols for cell, wire, lamp, bulb and switch.</b></p> <p>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.</p> <p><b>Practically investigate the above.</b></p>	<p><u>Year 5</u></p>	<p><u>Year 6</u></p> <p>Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.  <b>Pupils will:</b>  <b>Ensure that the children understand that voltage determines how much electricity passes through a device.</b></p> <p><b>Amps is a measure of the strength of the electricity within the battery.</b></p> <p>Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.</p> <p><b>Use log boxes to measure buzzers and the brightness of bulbs when investigating the above.</b></p>	<p><u>Year 7</u></p> <p>Electric current is measured in amperes, in circuits series circuits and parallel circuits.            Currents add where branches meet.  <b>Pupils will:</b>  <b>Construct series and parallel circuits.</b></p> <p>Potential differences measured in volts, battery and bulb ratings, resistances-measured in ohms as the ratio of potential (p.d) to current.  <b>Pupils will:</b>  <b>Measure current and potential difference within a circuit.</b></p> <p>Differences in resistance between conductivity and insulating components.</p>

<p>Look at diagrams of complete and incomplete circuits and say whether the bulb will light or not.</p> <p>Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.</p> <p>Investigate the use of switches and make it explicit that a switch Completes or breaks a circuit.</p> <p>Recognise some common conductors and insulators, and associate metals with being good conductors.</p> <p>Refer to this as electrical conduction. Add different materials to a circuit and record in tables, sorting circles which conduct and which do not.</p> <p>Use the above knowledge to discuss safety procedures regarding electricity.</p>			
<p><b><u>Scientist:</u></b> Thomas Edison</p>	<p><b><u>Scientist:</u></b></p>	<p><b><u>Scientist:</u></b></p>	<p><b><u>Scientist:</u></b></p>
<p><b><u>Enrichment:</u></b></p>	<p><b><u>Enrichment:</u></b></p>	<p><b><u>Enrichment:</u></b></p>	<p><b><u>Enrichment:</u></b></p>
<p><b><u>Potential Careers:</u></b> Electrician, homeowner, Electrical engineer, Power station worker, Cabler, Neuro surgeon, Mechanic, artist</p>			

**Common misconceptions**

- Different coloured wires affect how the circuit works.
- Wire is made of plastic.
- If a circuit is broken, energy goes off into the air.
- Electricity comes out of both sides of the battery and leads to both sides of the component.
- Current, voltage and electricity are all the same thing.
- Current gets less as it passes through components.
- Electricity is an object that can be seen.

Year groups	Vocabulary/Statements
Birth to 3	Repeat actions that have an effect.
Nursery	battery, plug, socket, electricity, wire, sound, light, move
Reception	
Year 1	
Year 2	
Year 3	
Year 4	electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol
Year 5	
Year 6	circuit diagram, circuit symbol, voltage
KS3	<ul style="list-style-type: none"><li>• Electric current, measured in amperes, in circuits, series and parallel circuits, currents add where branches meet and current as flow of charge</li><li>• Potential difference, measured in volts, battery and bulb ratings; resistance, measured in ohms, as the ratio of potential difference (p.d.) to current</li><li>• Differences in resistance between conducting and insulating components (quantitative).</li><li>• Static electricity</li></ul>