



Science Topic:	Electricity	Year 4	Term: Spring 1
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What should I already know and when did I learn this?

- I know about similarities and differences in relation to places, objects, materials and living things. I can talk about the features of my own immediate environment and how environments might vary from one another. I can make observations of animals and plants and explain why some things occur and talk about changes. (Early Learning Goal)

What will I know by the end of the unit?

- I can identify common appliances that run on electricity.
- I can construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.
- I can 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.
- I can recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.
- I can recognise some common conductors and insulators, and associate metals with being good conductors.

Key Vocabulary

Electricity	A form of energy created by charged particles.	Light bulb	Part of an electrical circuit that emits light.
Circuit	A completed loop that allows electricity to flow.	Switch	Part of an electrical circuit that turns a circuit on and off.
Mains	The electrical circuit that runs at 240 volts.	Buzzer	Part of an electrical circuit that makes a sound.
Components	The parts of an electrical circuit.	Symbol	A way of marking the components on a circuit design.
Battery	A group of more than one cell.	Open	A circuit that is broken so doesn't allow for electricity to flow through it.
Motor	Part of an electrical circuit.	Closed	A complete circuit that allows electricity to flow through it.
Cell	One unit of energy that powers the circuit.	Conductor	A material that allows electricity to pass through it.
Wire	Part of a circuit that connects the components.	Insulator	A material that doesn't allow electricity to pass through it.

Key Knowledge Electricity

Electricity is an energy. This energy can be used to power electrical items such as toasters, kettles, cookers, televisions and computer tablets. Electrical energy is caused by electrons (the particles in atoms) moving about to make a current. Electricity is created by generators which can be powered by gas, coal, oil, wind or solar. The electrical energy can be converted into other types of energy such as light, heat, movement or sound. Electricity is dangerous, so be careful when using electrical appliances.

Many of the items that we use every day run on electricity. Electricity can be supplied from the mains (these are plugged into power supplies) or from batteries.

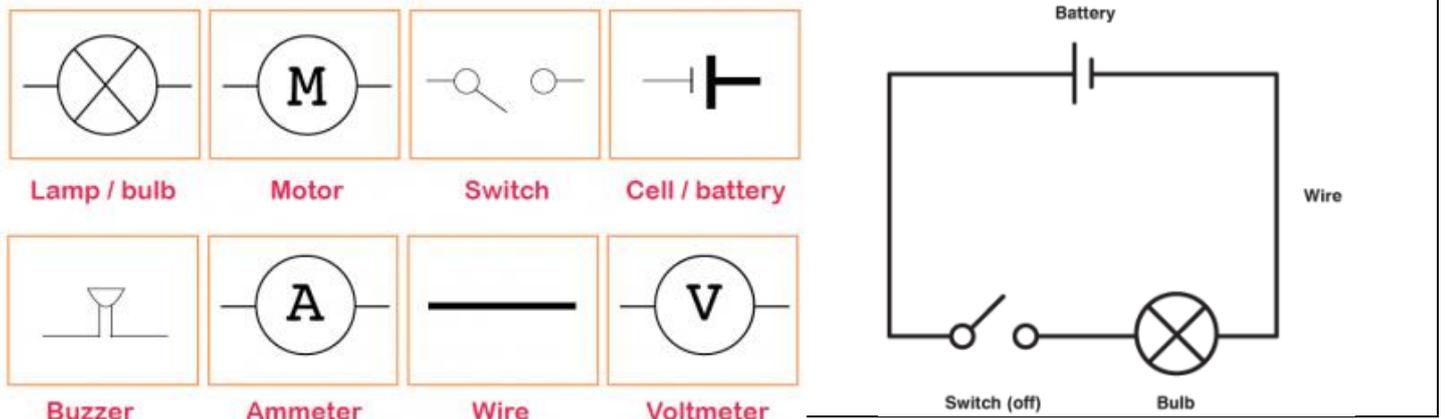


Key Knowledge Electrical Circuits

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.

Electrical circuit symbols



Key Knowledge Electrical Conductors

A conductor is a material that allows charges to flow easily throughout the material. Metals are often good conductors. Examples include: silver, gold, copper, steel and salt water.



silver

gold

copper

steel

sea water

An insulator is a material that does not allow charges to flow easily throughout the material. Examples include: glass, oil, dry wood.



rubber

glass

oil

diamond

dry wood

material that does not allow charges to flow easily throughout the material. Examples include: rubber, diamond and dry wood.

Investigate

- Control a circuit using a switch and describe how it works.
- Name some metals that are conductors and materials that are insulators.
- Communicate structures of circuits using drawings which show how the components are connected.
- Use classification evidence to identify that metals are good conductors and non-metals are insulators.
- Add a circuit with a switch to a DT project and demonstrate how it works.