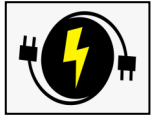


Knowledge Organiser - Year 4 - Science: Electricity



Electricity - a form of energy resulting from the existence of charged particles, such as electrons.

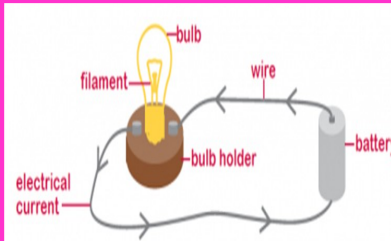
Key Vocabulary

Appliance	A household device that uses electricity – can be either mains or battery powered.
Battery or cell	A container where chemical energy is converted into electricity and used as a source of power.
Bulb	The glass part of an electric lamp, which gives out light when electricity passes through it.
Circuit	A complete and closed path around which a circulating electric current can flow.
Component	Any basic device or part of an electrical circuit.
Conductor	A material or device which allows heat or electricity to carry through.
Current	A flow of electricity which results from the ordered directional movement of electrically charged particles.
Insulator	A material which does not allow electricity to flow through it e.g. wood, plastic.
Mains electricity	Electricity supplied for use in homes and businesses. 230 volts comes out of the plug socket when an appliance is connected.
Motor	A machine powered by electricity that supplies motive power for a vehicle or other moveable device.
Rechargeable	A battery which is able to have its electrical energy restored by connection to a power supply.
Series Circuit	When all the components in a circuit are connected in a continuous loop.
Switch	A device for making and breaking the connection in an electric circuit.
Terminals	The parts of the battery that need to be connected in the circuit.
Voltage	An electrical force that makes electricity move through a wire, measured in volts.
Wires	Also known as leads. These are made of copper, covered in plastic insulator and connect the other components in the circuit together.

Working Scientifically

Pupils should be given a range of scientific experiences. They should start to make their own decisions about the most appropriate type of scientific enquiry they might use. They should begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them. They should help to make decisions about what observations to make and the type of simple equipment that might be used. They should learn how to use new equipment. They should collect data from their own observations and use simple tables to make decisions about how to record and analyse this data. With help, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions. With support, they should identify new questions arising from the data, making predictions for new values within or beyond the data they have collected, and finding ways of improving what they have already done.

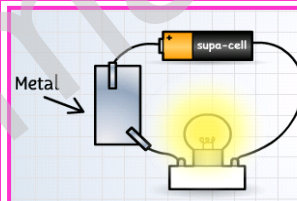
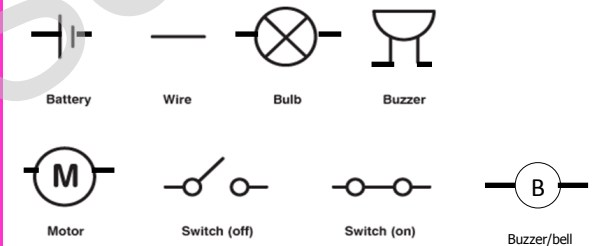
Key Question: What is electricity and how do we use it?



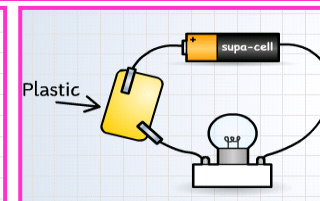
Appliances are powered by mains electricity or batteries. Plug sockets deliver 230 volts of power to your appliance whereas a standard battery only has the power of 1.5 volts per battery.



In this topic we are going to learn to use these circuit symbols which means scientists anywhere in the world would understand our circuit. If you use two batteries in a circuit, you would need to draw two of the symbols. A closed switch completes a circuit and allows the electricity to flow around the circuit. There are two different symbols for a buzzer.



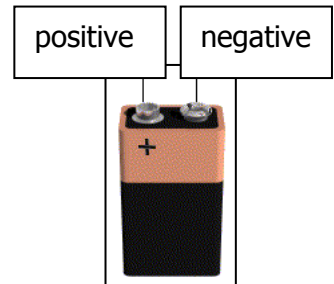
Metal is a good electrical conductor. It allows electricity to flow through it. Copper is an especially good conductor which is why electrical wires are made from copper.



Plastic does not conduct electricity. We use plastic as an electrical insulator to surround copper wires. This means you do not feel the heat from the wires if you touch them.



Even though they are different sizes, the batteries in the picture above are each 1.5 volt batteries. This means that they have the same power, but larger ones will last longer. Batteries have a positive and negative terminal which need to have wires connected to them to power a circuit. A battery like the one in the picture below has 9 volts of power.



Electricity generation, transmission, and distribution

