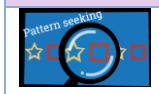
Year 4 Electricity – what is electricity and how does it power our world?

Key vocabulary	
Electricity	A form of energy. This energy can be used to power electrical items.
Mains electricity	To use this type of electricity, you need to plug the appliance into a socket.
Battery electricity	To use this type of electricity, you need to insert a battery into the appliance.
Appliance	A piece of equipment designed to perform a task. A washing machine performs the task of washing clothes.
Electrical circuit	A closed loop around which electricity can travel.
Electrical component	Different parts which make up electrical circuits. They all have different functions. Some common electrical component include switches, bulbs, buzzers, motors and cells.
Cell	A source of electrical energy.
Wire	Wires consist of two parts – a metal core and an outer coating. The inner core is made of metal, which conducts electricity. The outer core is made from an insulating material such as plastic.
Buzzer	Buzzers create a sound when electricity passes through them.
Motor	Motors convert electrical power into movement.
Bulb	Bulbs contain very thin pieces of wire called filaments. When electricity passes through the filament, energy is released in the form of light (and heat).
Switch	An electrical component that allows us to control an electrical circuit by turning it on and off.
Electrical conductor	Materials that allow electricity to flow through them easily. These materials are useful for making electrical circuits because they conduct electricity.
Electrical insulator	Materials that do not allow electricity to flow through them. They are poor conductors of electricity. They are useful because they stop electricity from flowing and help us to control where it flows.

Key Knowledge:

*Electricity is an energy. We get electricity from the mains or from batteries.
*Many appliances in our homes use mains electricity to work. Without it our lives would be darker, duller and colder. Televisions, computers, fridges, freezers, lights and heaters all use mains electricity.
*Smaller electrical appliances (e.g. clocks, radios, toys, torches, phones) often use batteries which store electricity. These appliances can be moved from place to place.
*Batteries eventually run down and need to be replaced or recharged. Batteries are sometimes called cells.
*Electricity can only flow around a complete circuit that has no gaps.
Electricity travels from the power source around a series of conductors back to the power source.
There must be wires connected to both the positive and negative end of the 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.
*Metals are good conductors.

Working scientifically	
	Which materials make effective switches? [comparative testing].
	I can identify what is needed to make a lamp light in a simple series circuit.
	I can identify materials that are good electrical conductors. Grouping appliances based on whether they are powered by electricity or not/ grouping appliances based on whether they are powered by mains or battery.

Where is electricity produced?

Gas power stations

Nuclear power stations

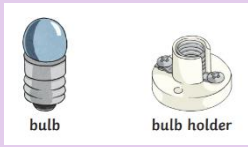
Wind turbines

Solar panels

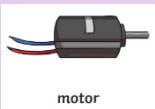
Hydroelectric power

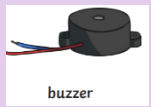
Electrical circuit components:

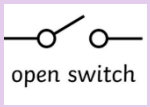
Simple circuits can be set up using components. Components are things that can go in the circuit. An electrical circuit needs…

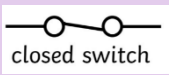


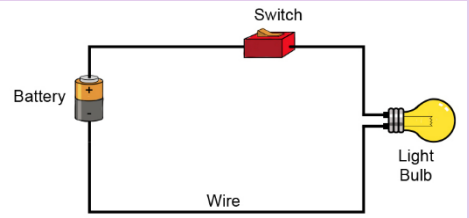
They may also have…











Many everyday appliances rely on electricity for them to work. Some run on mains electricity and some run on battery electricity to make them work.

Electrical conductors:

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.