Knowledge Organiser: Year 3/4 - **Electricity**

Careers connected to electricity: electrician, electrical engineer

Lesson Sequence

1. Understand electrical appliances and safety

2. Learn about electrical compounds in a series circuit

3. Investigate electrical circuits

4. Explore conductors and insulators

5. Learn about electrical switches

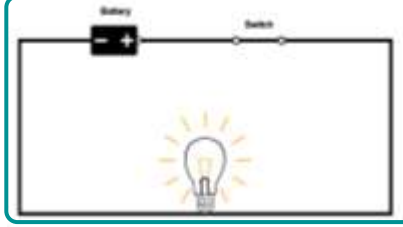
6. Investigate how electrical components can change within a circuit

Key Facts

1. A circuit contains a battery (cell), wires and a component that requires electricity to work (bulb, motor or buzzer).
2. Electrical current flows through the wires from the battery (cell) to the bulb, motor or buzzer.
3. A switch can break or reconnect a circuit.
4. A switch controls the flow of the electrical current around the circuit. When the switch is off, the current cannot flow. This is not the same as an incomplete circuit.

Conductors and Insulators

- Materials that allow electricity to pass through to create a complete circuit are called electrical conductors.
- Materials that do not allow electricity to pass through and do not complete a circuit are called electrical insulators.

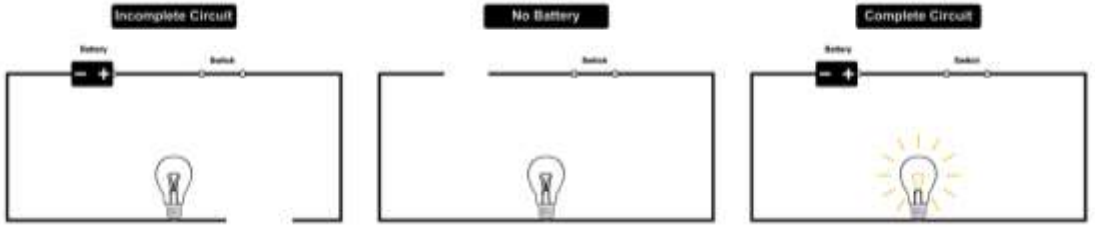


Simple Circuit

A **complete** circuit is a **loop** that allows electrical current to flow through wires.

Simple Electrical Circuit

These are complete circuits - they have a battery (cell) and a component (bulb). The wires are placed in the right places of the battery for the circuit to work.



These circuits will not work as they are incomplete.

Electrical Components

Rocket Words

	electricity	energy that powers electrical appliances
	batteries	containers made of cells in which chemical energy is converted into electricity
	circuit	a pathway that electricity flows around
	voltage	the measure of electrical power
	current	the flow of electricity
	bulb	the glass case that contains the filament of an electric lamp
	conductor	electrical conductors are materials which allow electricity to flow through them easily
	insulator	materials that do not let electricity pass through them easily
	switch	a device which builds and breaks the connection in an electric circuit
	control	manage the amount of something
	wind turbines	a device which produces electricity using the power of the wind
	hydropower	a process that produces electricity using the power of water

What I already know:

Year 2

- ❑ I can identify and compare the suitability of a variety of everyday materials for particular uses

What I will learn now:

Year 4

- ❑ **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 a lamp will light in a simple series circuit, based on whether 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 a lamp lights in a simple series circuit**
- ❑ **I can recognise some common conductors and insulators, and associate metals with being good conductor**

What I will learn next:

Year 6

- ❑ I can associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit
- ❑ I can compare and give reasons for variations in representing a simple circuit in a diagram how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches
- ❑ I can use recognised symbols when representing a simple circuit

Knowledge Organiser: Year 4 - **Electricity**

Before and After Test

Another name for a battery is:	before	after
circuit		
buzzer		
light		
cell		

How will you know if a material conducts electricity?	before	after
Electricity will flow freely, and the circuit will work		
Electricity will not flow, and the circuit will not work		
The battery will not work		

Which of these need electricity to work?	before	after
torch		
mobile phone		
games console		
car		

When more batteries are added to a complete circuit...	before	after
the light bulb does not go on		
the light bulb becomes brighter		
the circuit does not work		
the switch goes off		

A circuit will not work if....(tick three):	before	after
there is no battery		
the switch is off		
there is a break in the circuit		
there is no switch		

Objects that are made from materials that do not allow electricity to pass through are called:	before	after
conductors		
insulators		
batteries		

Why is it dangerous to use an electrical appliance near water?

	Before	After

Draw the electrical symbol for the components below.

		Before	After