

Science Knowledge Organiser

Electricity

Yr 4

Main Foci: Physics

What should I already know?

- **Electricity** is a form of **energy** that can be carried by wires and is used for heating and lighting, and to provide **power** for **devices**.
- **Sources** of light and sound may need **electricity** to work.

What will I know by the end of the unit?

- Where does **electricity** come from?
- **Electricity** is **generated** using **energy** from natural **sources** such as the Sun, oil, water and wind.
 - These can also be called **fuel sources**.

- Which **appliances** run on **electricity**?
- Some **appliances** use **batteries** and some use **mains electricity**.
 - **Batteries** come in different sizes depending on how much and for how long the **appliance** is used.
 - Common **appliances** that use **electricity**.
- 
toaster


lamp


kettle
- 
laptop


X-box


phone
- 
torch


headlights


television

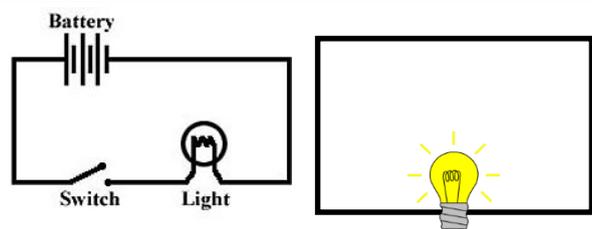
- How does a **circuit** work?
- A complete **circuit** is a loop that allows **electrical current** to flow through **wires**.
 - A **circuit** contains a **battery (cell)**, **wires** and an **appliance** that requires **electricity** to work (such as a **bulb**, **motor** or **buzzer**).
 - The **electrical current** flows through the wires from the **battery (cell)** to the **bulb**, **motor** or **buzzer**.
 - A **switch** can break or reconnect a **circuit**.
 - 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**.

- What are **electrical conductors** and **insulators**?
- When objects are placed in the **circuits**, they may or may not allow **electricity** to pass through.
 - Objects that are made from materials that allow **electricity** to pass through a create a complete **circuit** are called **electrical conductors**.
 - Objects that are made from materials that do not allow **electricity** to pass through and do not complete a **circuit** are called **electrical insulators**.

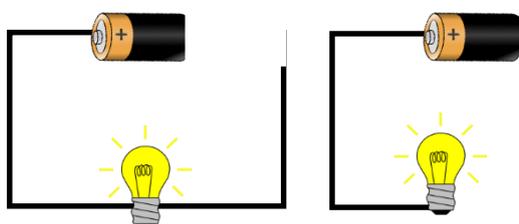
Vocabulary

appliances	a device or machine in your home that you use to do a job such as cleaning or cooking. Appliances are often electrical .
battery	small devices that provide the power for electrical items such as torches
bulb	the glass part of an electric lamp, which gives out light when electricity passes through it.
buzzer	an electrical device that is used to make a buzzing sound
cell	a synonym for battery
circuit	a complete route which an electric current can flow around
component	the parts that something is made of
conductor	a substance that heat or electricity can pass through or along
current	a flow of electricity through a wire or circuit
device	an object that has been invented for a particular purpose
electricity	a form of energy that can be carried by wires and is used for heating and lighting, and to provide power for devices
energy	the power from sources such as electricity that makes machines work or provides heat
fuel	a substance such as coal, oil, or petrol that is burned to provide heat or power
generate	cause it to begin and develop
insulator	a non- conductor of electricity or heat
mains	where the supply of water, electricity , or gas enters a building
motor	a device that uses electricity or fuel to produce movement
power	Power is energy , especially electricity , that is obtained in large quantities from a fuel source and used to operate lights, heating, and machinery
source	where something comes from
switch	a small control for an electrical device which you use to turn the device on or off
wires	a long thin piece of metal that is used to fasten things or to carry electric current

Diagrams



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.

Procedural Knowledge

- Research how to work safely with **electricity**.
- Make a variety of **circuits**, investigating which **circuits** work and why.
- Name the basic parts including **cells**, **batteries**, **wires**, **bulbs**, **switches**, **motors** and **buzzers**.
- Draw **circuits** using pictorial representations (not circuit symbols).
- Create **circuits** using **switches**.
- Investigate which materials are **electrical conductors** and **insulators**.

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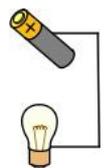
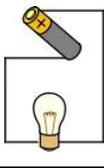
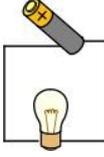
Main Foci: Physics

Question 1: Another name for a battery is:	Start of unit:	End of unit:
circuit		
light		
buzzer		
cell		

Question 2: Which of these need electricity to work?	Start of unit:	End of unit:
torch		
mobile phone		
games console		
car		

Question 3: How will you know if a material conducts electricity?	Start of unit:	End of unit:
Electricity will flow freely and the circuit will work		
Electricity will not flow and the circuit will not work		
The battery will not work		

Question 4: Which of these are conductors of electricity?	Start of unit:	End of unit:
plastic comb		
cardboard strip		
aluminium spoon		
copper coin		

Question 5: Which of these circuits will light?	Start of unit:	End of unit:
		
		
		

Question 6: Objects that are made from materials that do not allow electricity to pass through are called:	Start of unit:	End of unit:
conductors		
insulators		
batteries		

Question 7: Why is it dangerous to use an electrical appliance near water?	Start of unit:	End of unit:

Question 8: A circuit will not work if....(tick three):	Start of unit:	End of unit:
there is no battery		
the switch is off		
there is a break in the circuit		
there is no switch		

Question 9: When more batteries are added to a complete circuit...	Start of unit:	End of unit:
the light bulb does not go on		
the light bulb becomes brighter		
the circuit does not work		
the switch goes off		

Question 10: Why will this circuit not work?	Start of unit:	End of unit:
