Topic: Electricity | Year: 4 | Strand: 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**. 
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**.

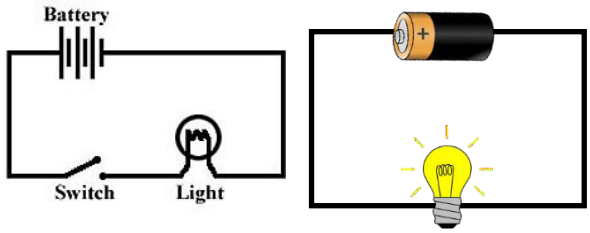
Investigate!

- 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**.

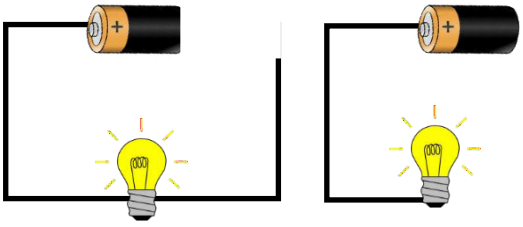
Vocabulary

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 in 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.

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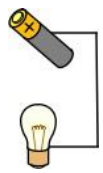
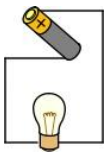
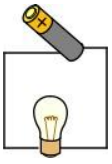
Question 1: Another name for a battery is:	Start of unit:	End of unit:
circuit		
light		
buzzer		
cell		

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		

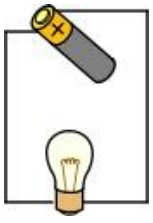
Question 5: Which of these circuits will light?	Start of unit:	End of unit:
		
		
		

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: