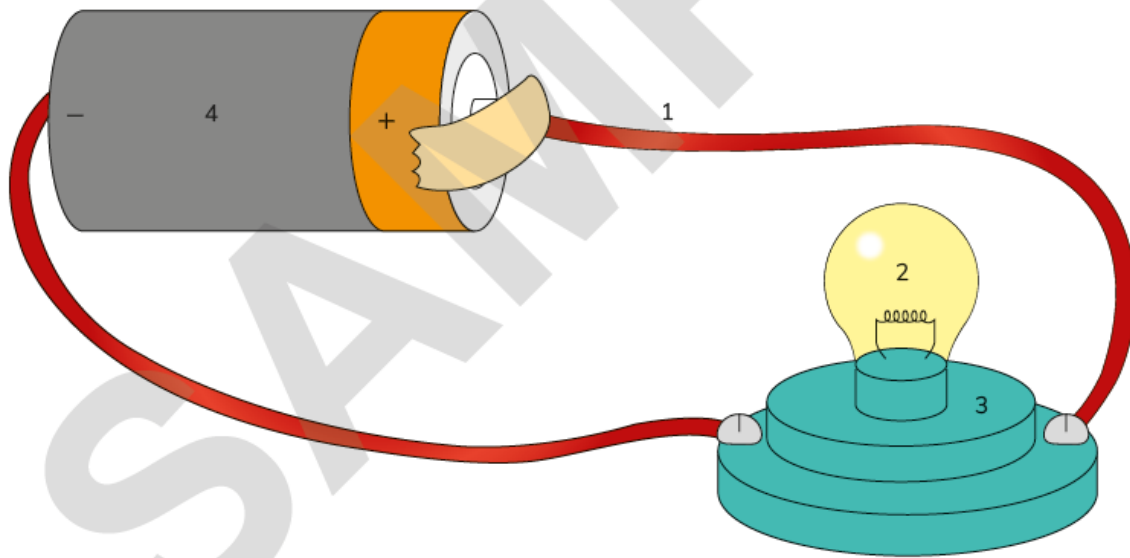


Summary notes

Unit 6 Electricity

6.1 Which materials conduct electricity?



The components of the circuit:

- 1- Wires
- 2- Lamp
- 3- Lamp holder
- 4- Cell / Battery

🌀 What's the function of component 4?

It acts as terminals for stored energy or electricity.

🌀 Why does the lamp light up in this circuit? Because the cell stores energy and pushes electricity to the circuit OR Because it's a complete / **closed** circuit.

Conductors and insulators

1- A material that allows electricity to pass through it is called a **conductor** (Metals like, Copper - Silver - Steel - Aluminum - Iron).

2- A material that does not allow electricity to pass through it is called an **insulator** (Non-metals like, Plastic - Glass - Wood - Cork - Paper).

6.2 Does water conduct electricity?

☞ If we put salt into water and stir it, what happens to the salt?
The salt disappears into the water – it dissolves.

☞ How can we test to see if a material conducts electricity or not?
Make a circuit with a lamp and put the object you want to test in the circuit and see if the lamp lights up or not.

Is water pure?

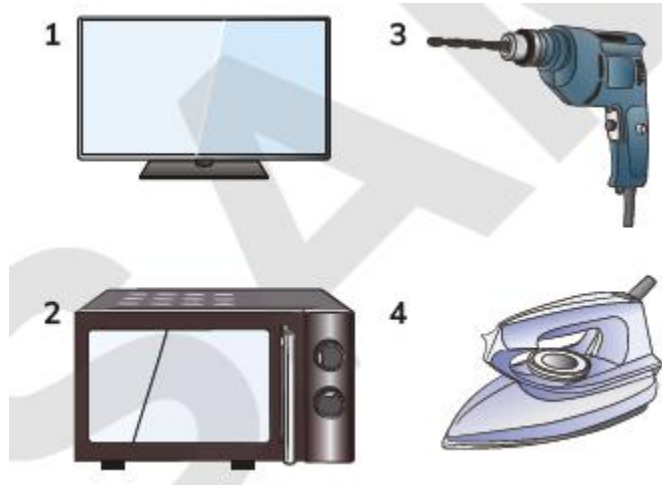
1- Water from a river or a tap water or sea water isn't pure water, it has salts dissolved in it.

2- **Distilled water is pure water.** Distilled water is water that has been boiled and the steam has been allowed to cool down to form a liquid again. This water contains no salts.

3- All living things contain water. This water has salts dissolved in it, so it's not pure.

☞ Why is it dangerous to swim in the sea when there is a thunderstorm with lightning?
Seawater is salty so it conducts electricity.

6.3 Using conductors and insulators in electrical appliances



Do these appliances use the same electricity as the circuit we made in class? It is the same except for the strength. The electricity we use for appliances is much stronger.

Conductors and insulators and mains electricity

1- A **volt** is a unit to measure the strength of electricity. Cells have 1.5 V or 3V.

2- We describe the strength of a supply of electricity as **voltage**.

Mains electricity

1- Appliances like microwave ovens, electric kettles and power drills use mains electricity.

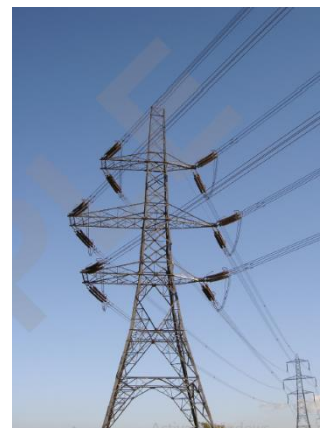
2- Mains electricity has a much higher voltage than cells. In some countries it is 110 V and in other countries it is over 200 V.

3- At these high voltages, safety is very important. The parts of an appliance that you touch must be made from insulating material. The parts inside the appliance are made from conducting material so that electricity can pass through.

4- Metal is used for the pins in a plug. The pins allow electricity to travel from the wall socket, through the plug, and into an appliance such as a kettle or television.

Pylon

- 1- Pylons carry electricity in **cables** (large wires)
- 2- The voltage of electricity carried by these cables is many thousands of Volts.



Electric shocks

- 1- If mains electricity flows through your body you will get an electric shock. You will be badly burnt, your heart could stop beating and you could die.
- 2- Damaged electrical wiring is 1 of the main causes of accidents with electricity.
- 3- Plastic insulation often wears off the copper wires. You can get a shock if you touch the wires.
- 4- Never pull a plug from the cord or cable, this damages the cord and the wires become bare.
- 5- Be careful not to plug too many electrical devices into the same socket. This can overload the socket and could give you a shock if you touch the socket or one of the plugs. It could also cause a fire.

6.4 Switches

☻ What happens when Sofi a turns the switch on?
The lamp comes on.

☻ What happens when Sofi a turns the switch off?
The lamp goes out.



Putting a switch in a circuit

The switch turns the electric current on or off.

☻ What's the difference between open and closed circuits?
Open: There's a break in a circuit. Non-working circuit, While closed: It's complete circuit. Working circuit.

6.5 Changing the number of components in a circuit

☪ Where is the electricity in the circuit?
In the wire.

☪ What pushes the electricity around the circuit?
The cell.

☪ What opens and closes the circuit?
The switch.

Cells and batteries

1- Each cell stores 1.5V of electricity, we call it cell.

2- When we have 2 or more of these cells, we call it battery.

☪ Changing the number of **lamps** or **batteries** in a circuit can make a lamp **brighter** or **dim** (Less bright).

☪ When we have 1 lamp and 2 batteries

The lamp is more bright.

☪ When we have 2 lamps and 1 cell

The lamps are less bright.

