

**A Electric charge**

**1 Static**

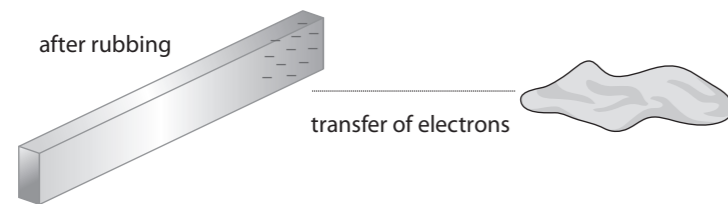
Insulating materials get charged up when they are rubbed. This is due to stationary charge. It is called static electricity.

A piece of polythene is rubbed with a cloth and gets charged. Another piece of polythene is rubbed with the cloth.

a Complete these sentences. Draw a **ring** around the correct **bold** words.

The two pieces of polythene will get **the same** / **different** charge. This means that they will **attract** / **repel** each other. The polythene was charged because of the movement of **electrons** / **ions**, which have a **positive** / **negative** charge.

b Look at the picture below. It shows that the polythene became negatively charged. There is a line that shows the transfer of electrons. Draw an arrow on one end of this line to show the direction in which the electrons moved.



c The cloth was **neutral**. After rubbing it is charged. **Ring** the correct charge.

**positive charge**      **negative charge**

d There is a force between charges. Draw a line to match the start of each sentence with its correct ending.

Like charges ...	... attract each other.
Opposite charges ...	... repel each other.

**2 Charge and discharge**

The dome of a Van de Graaff generator gets charged up when it is switched on. Yasmin is holding the dome and her hair stands on end.

a Explain why her hair stands on end.

b The teacher discharges the dome and Yasmin's hair falls back down. Rearrange the word below to describe Yasmin's charge once her hair has fallen back down.

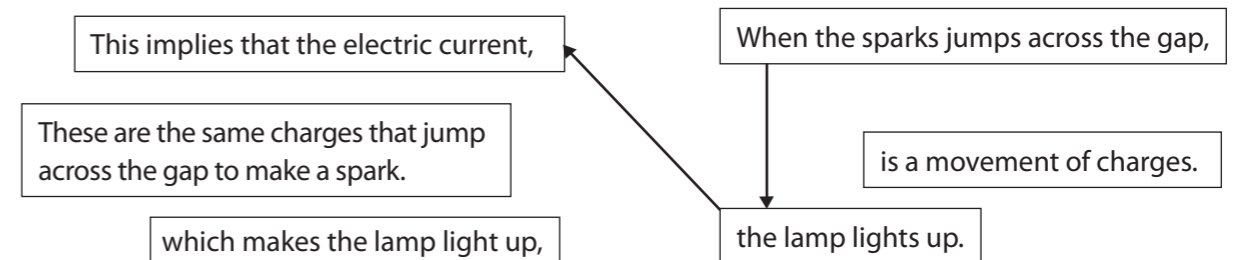
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**B Electric currents in circuits**

**1 Current in a series circuit**

a Physicists think that an electric current is the flow of charge – the same charge that causes static electricity. The statements below explain one piece of evidence for this belief but they are out of sequence.

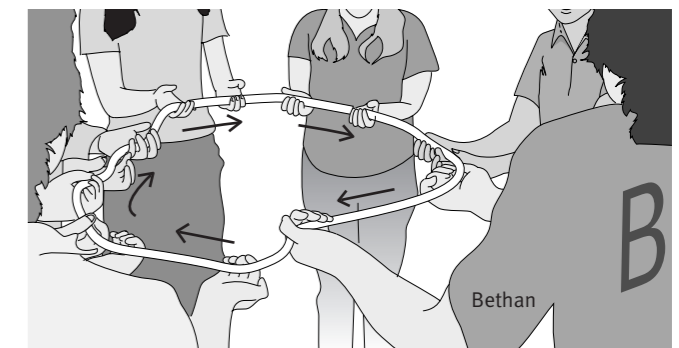
Use arrows to join up the statements in the correct order. The first two have been done for you.



b Write 'D' by a box that reports data. Write 'E' by the three boxes that, together, are an explanation.

**2 Rope model of an electric circuit**

The picture shows a model of an electric circuit. Bethan is the 'battery'. She pulls the loop of rope around in the direction shown by the arrows. The other pupils let it pass through their hands.



Join the boxes below to show how the model helps to explain an electrical circuit. The first one has been done for you.

Rope circuit	Electrical circuit
When Bethan first pulls the rope, it starts moving through everyone's hands at the same time.	Stored energy is transferred out of the battery.
Bethan gets tired after pulling the rope around.	Putting in an insulator stops the flow of charge.
The others feel their hands getting hot.	The current is not used up. It is the same everywhere.
If any one of the others grips the rope firmly, the rope stops moving.	Charge moves throughout the circuit as soon as it is connected up.
At any time, the amount of rope leaving each child's hand is the same as the amount going in.	The battery does work on all other components in the circuit.