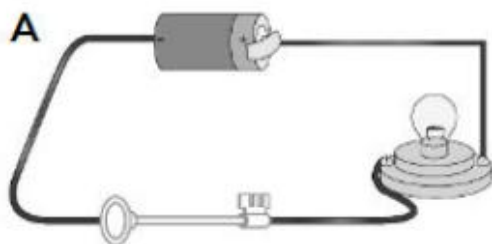


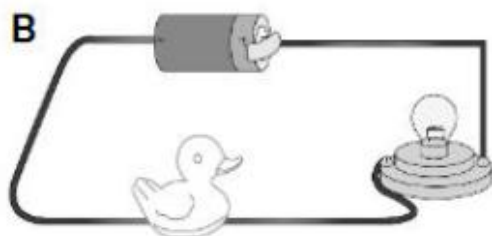
1 a Complete this sentence:

A material that allows electricity to pass through it is an electrical _____.

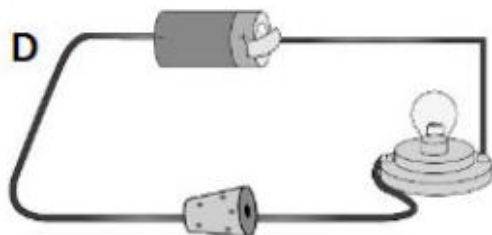
b Write a similar sentence to explain what an electrical insulator is.

3 a Predict whether the lamp will light up in each of the following circuits. Write 'Yes' or 'No' alongside each circuit.









b Which materials (A, B, C or D) are electrical conductors and which materials are electrical insulators?

- c Complete the sentence below to make your conclusion.

Materials made of _____, like the key, are electrical

_____.

Materials made of ceramic, plastic and cork are _____ of electricity.

- 4 Sofia and Zara have made a circuit to test whether different objects are electrical conductors or electrical insulators.

- a How can they test that their circuit works?

- b They tested these four objects:

coin chopstick glass plastic spoon

Predict which of the four objects will conduct electricity and which will not. Put a ✓ next to the objects that will conduct electricity, and a X next to the ones that will not conduct electricity.

- c How can Sofia and Zara test each object?

- d What do Sofia and Zara conclude about which materials are electrical conductors and which are electrical insulators?

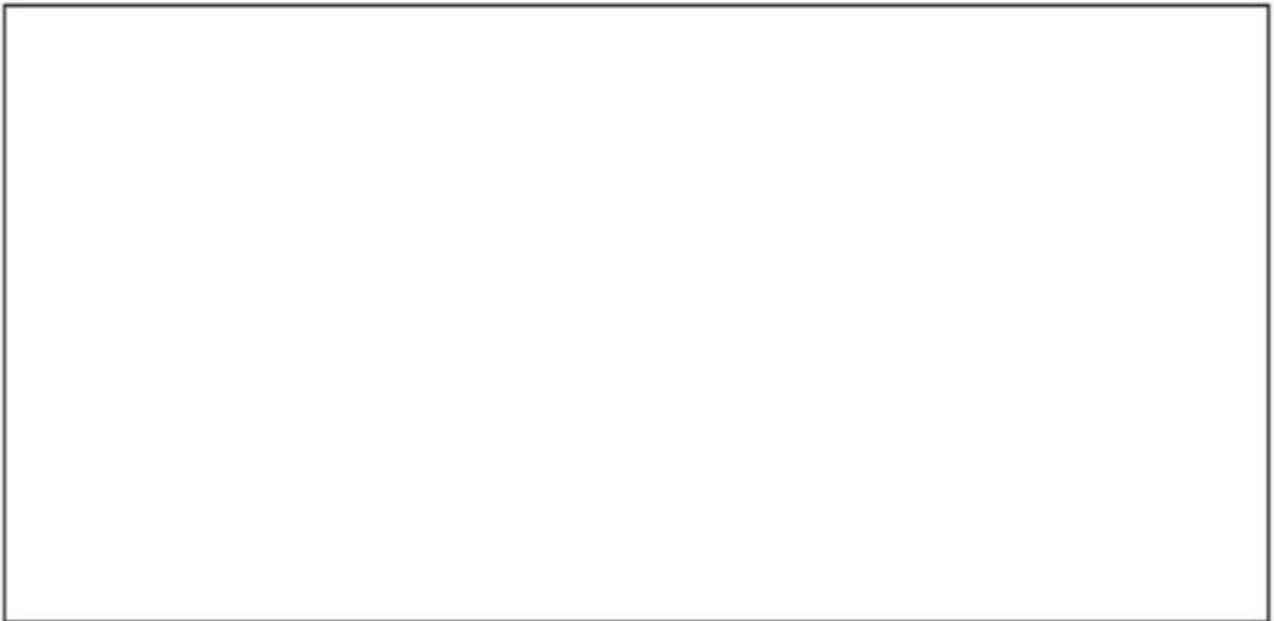
- 1 a What is pure water?

b How is tap water different to pure water?

c Why can plants, animals and humans conduct electricity?

- 2 In the space below, design and draw a poster to put up in a restaurant kitchen. The poster must warn workers never to use electric stoves and appliances with wet hands.

Make sure your poster is eye-catching and has a picture that will make your message clear.



- 3 Jawad has just completed a 20 km run. He is very hot and sweaty. The first thing he does when he gets home is turn on the electric fan. Jawad moves the fan and touches some bare connecting wire where the plastic insulation has worn away.



a What has happened to Jawad?

b List **three** factors that caused this to happen:

A

B

C

1



A



B



C

a Identify the electrical appliances A, B and C.

b What strength of electricity do these appliances use?

c You hold each of these appliances in your hand to use them.
What material is used for the part of the appliance you hold?

d Is this material an electrical conductor or an electrical insulator?

e Why does this make the appliance safe to use?

f Where are the electrical conductors in these appliances?

2 Here is a picture of a kitchen.



a Name the electrical appliance used in the picture.

b Identify **two** dangers in using this appliance. Use these words in your answer:

insulation

metal

conducts

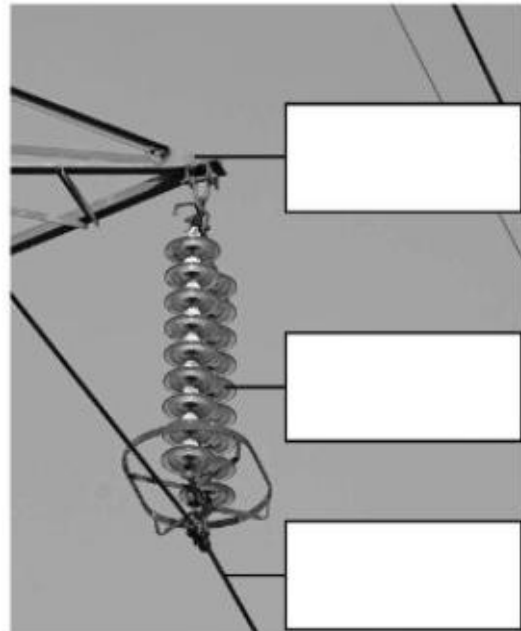
electric shock

salts

- 3 The electricity for electrical appliances at home comes from big cables outside. You may have seen these cables strung from big structures called pylons like the photograph below. The pylons are made of metal.

There are lots of cables carrying the electricity. It is important to keep the cables apart. To do this they use ceramic separators. Ceramic is clay.

You can see these on the second photograph.



On the second photograph label 'pylon', 'cable' and 'ceramic separator' next to the label lines.

- a Why are the cables made of metal?

- b What type of metal do you think the cables are made from?

- c Why are the separators made of ceramic?

- 4 Arun and Marcus are flying their remote control helicopter. The wind blows and the helicopter gets caught in the cables on a pylon.

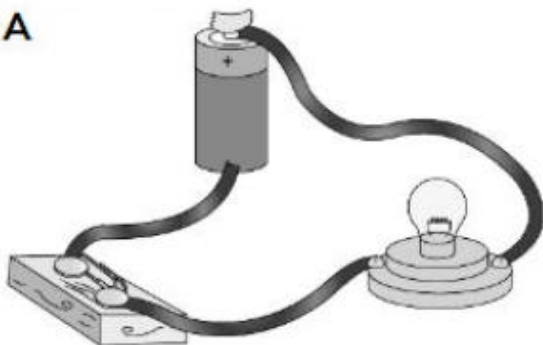
'Let's climb up the pylon and get it back', says Arun.

Do you think they should do this? Explain your answer.

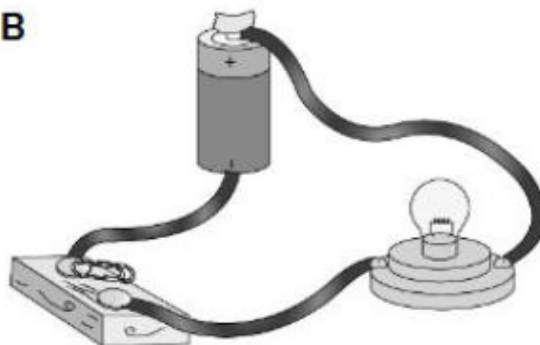
1 a What does a switch do in a circuit?

b Look at the pictures A and B.

A



B

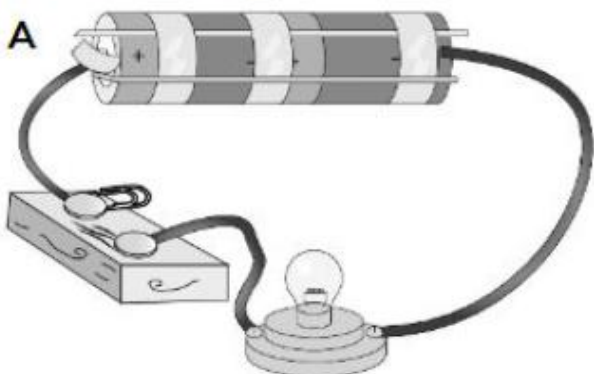


In which of the two circuits, A or B, should the lamp light up? Explain your answer.

c How can a switch cause a 'break in the circuit'?

2 Look at circuits A and B.

A



B



a Predict if electricity is flowing in circuit A.

b Explain your answer.

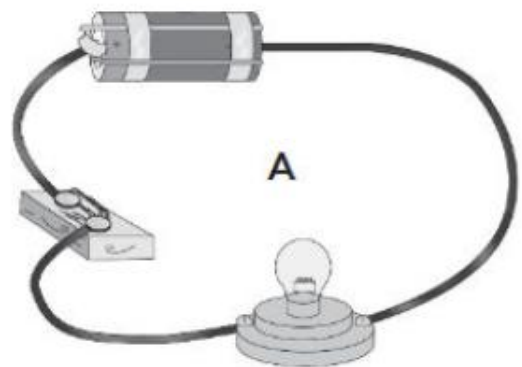
c What must you do to circuit A to make the lamp light up?

d Predict if electricity is flowing in circuit B.

e Explain your answer.

f What must you do to circuit B to turn off the iron?

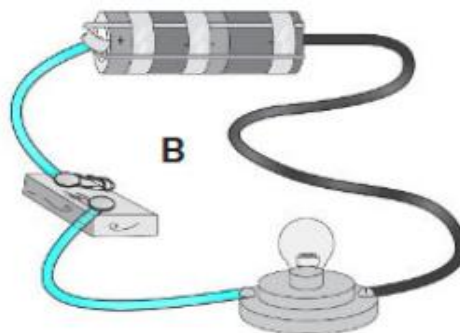
- 3 Zara and Marcus want to build a circuit with a lamp that shines brightly. They build circuit A.



a Name the components that they used to make their circuit.

b How do you know that the circuit is closed?

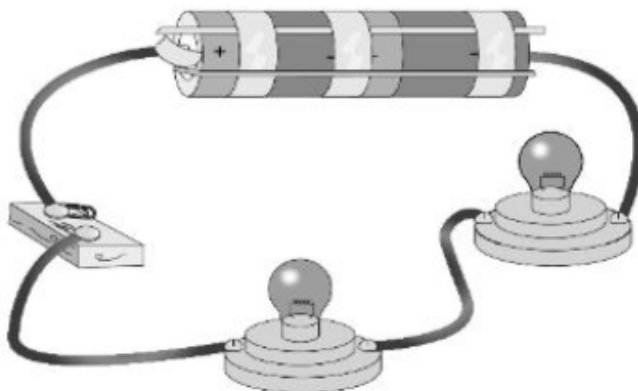
- 4 Look at circuit B. They added another cell to make the lamp brighter. But the lamp did not light up at all.



- a Why did the lamp not light up?

- b What change must Zara and Marcus make to circuit B to make the lamp light up?

1



- a List **five** components of the circuit.

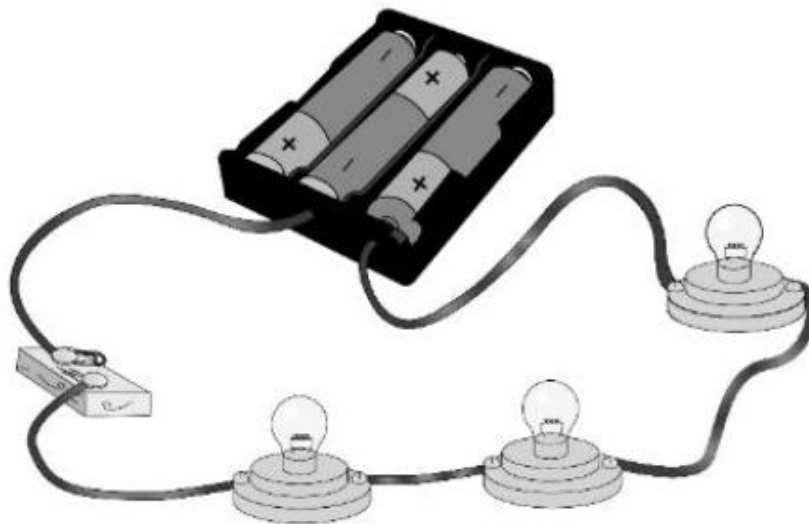
- b What must you do to the circuit before the lamps light up?

- c You add another lamp to the circuit.
Do the lamps glow more brightly or less brightly?

- d Explain your answer.

Practice

2



- a List the components in the circuit.

- b Will the lamps light up? Explain your answer.

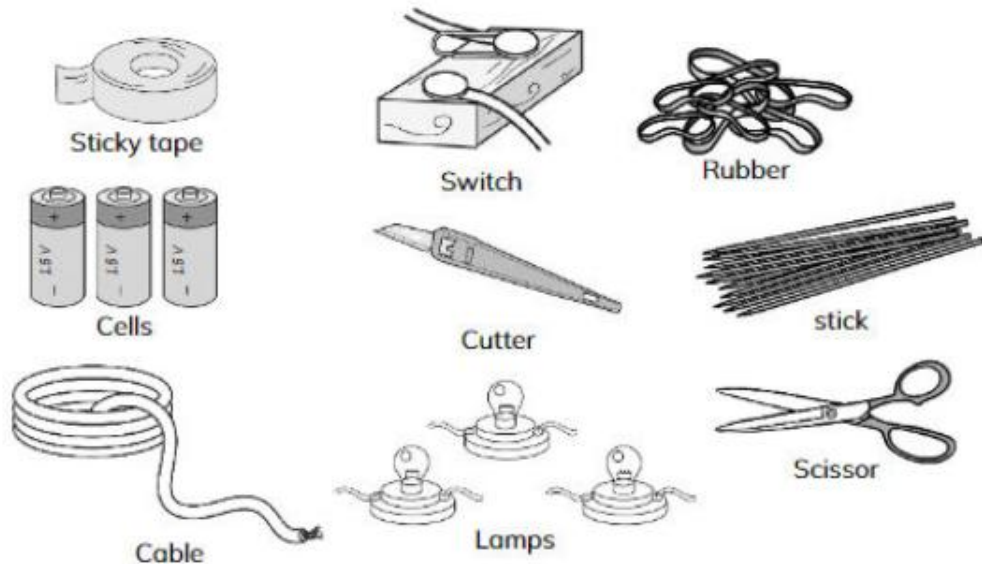
- c If you remove a lamp from the circuit, will the remaining lamps glow more brightly or less brightly?

- d If you add a lamp to the circuit, will the remaining lamps glow more brightly or less brightly?

- e If you remove a cell from the circuit, will the lamps glow more brightly or less brightly?

- f If you add a cell to the circuit, will the lamps glow more brightly or less brightly?

- 3 a In the picture, circle the components you need to make a circuit with a 3V battery, two lamps in lamp holders and a switch.



- b What can you do to make a 3 V battery using the things in the picture?

- c If you make the circuit, predict whether the lamps will come on.

- d Predict what will happen if you remove a lamp from the circuit.

e Explain why you think this will happen.

f Predict what would happen if you added a third lamp to your circuit.

g Explain why you think this will happen.
