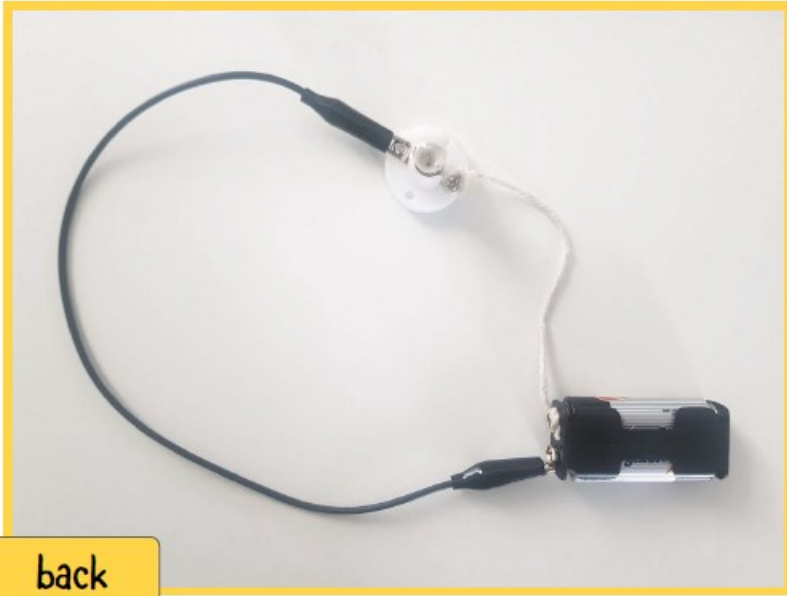




Circuits and Conductors

Learning Objective: To recognise common conductors and insulators.



I used a bit of string to complete this circuit, but it's not working. Do you know why?



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String does not conduct electricity. This means that it does not allow electricity to flow through it easily. It is an electrical insulator.



This is why it didn't work as a wire. The electricity couldn't flow through the string to complete the circuit.

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We can sort materials into two groups:

conductors

Materials that allow electricity to pass through them.

insulators

Materials that do not allow electricity to pass through them.

These properties can be important when choosing materials to make our devices.

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Let's look at the design of a plug. Which parts need to be electrical conductors? What are they made from?



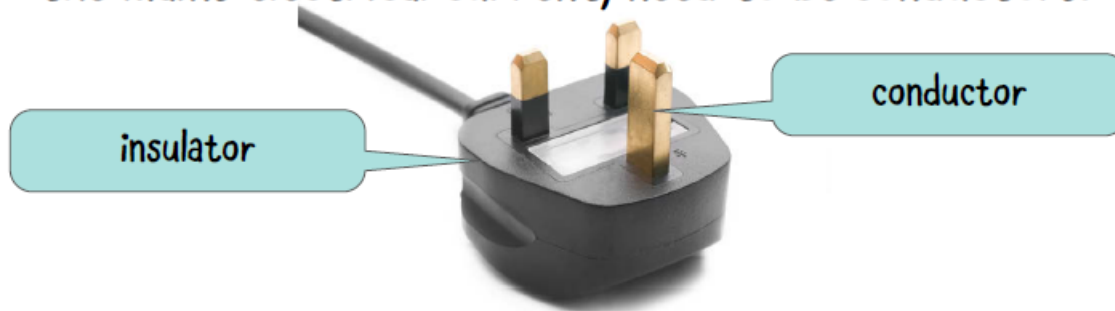
Which parts need to be electrical insulators?
Why do they need to be insulators?

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The pins, which are inserted into a socket to connect to the mains electrical current, need to be conductors.



The casing needs to be an electrical insulator so the electrical current is blocked and doesn't harm the person plugging in the device.

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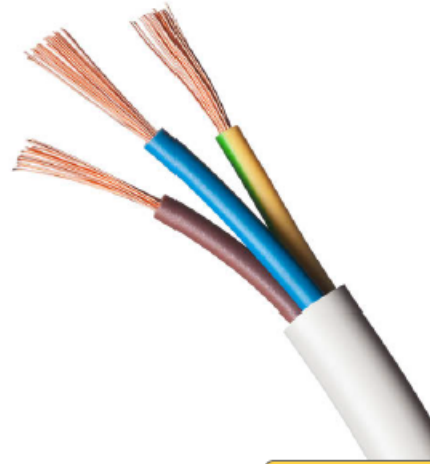
Think, pair, share...

What are wires made from?



Why do you think these materials have been chosen?

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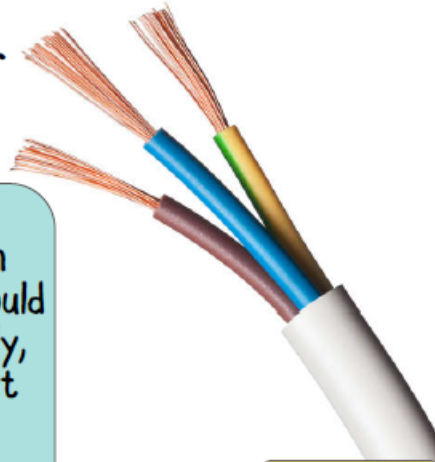
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Wires are usually made from a metal called copper, and are surrounded by a flexible plastic or rubber.



These materials were chosen carefully so that electricity could flow through the metal safely, but the rubber would protect anyone touching the wire.



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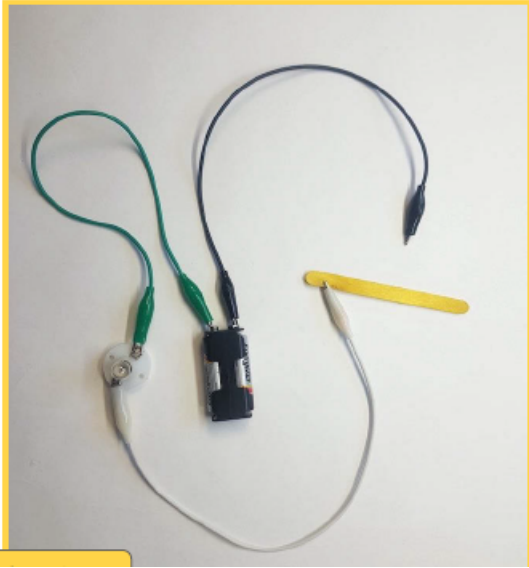
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Today we are going to be testing different materials to see if they make good electrical conductors or insulators. We need to see if electricity flows through them or not.



How could we do this?
What equipment could we set up to test this?



Here's a set-up we could use. We will connect the wires to the material we are testing to see if the electricity flows through it so the lightbulb can be lit.



An independent variable is the aspect we are changing each time. What are we changing in this experiment?



A dependent variable is the aspect we measure. What are we measuring and recording in this experiment?



