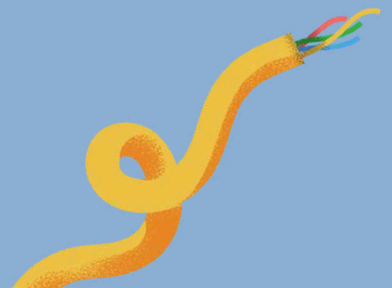
Circuits

The first steps of electronics



Today’s Focus

- Electric Circuit
- Components of an Electric Circuit
- What happens in a circuit?
- Conductors and semiconductors

By the end of this, you'll be able to...

Describe what an electric circuit is.

Name at least three (3) components of a circuit.

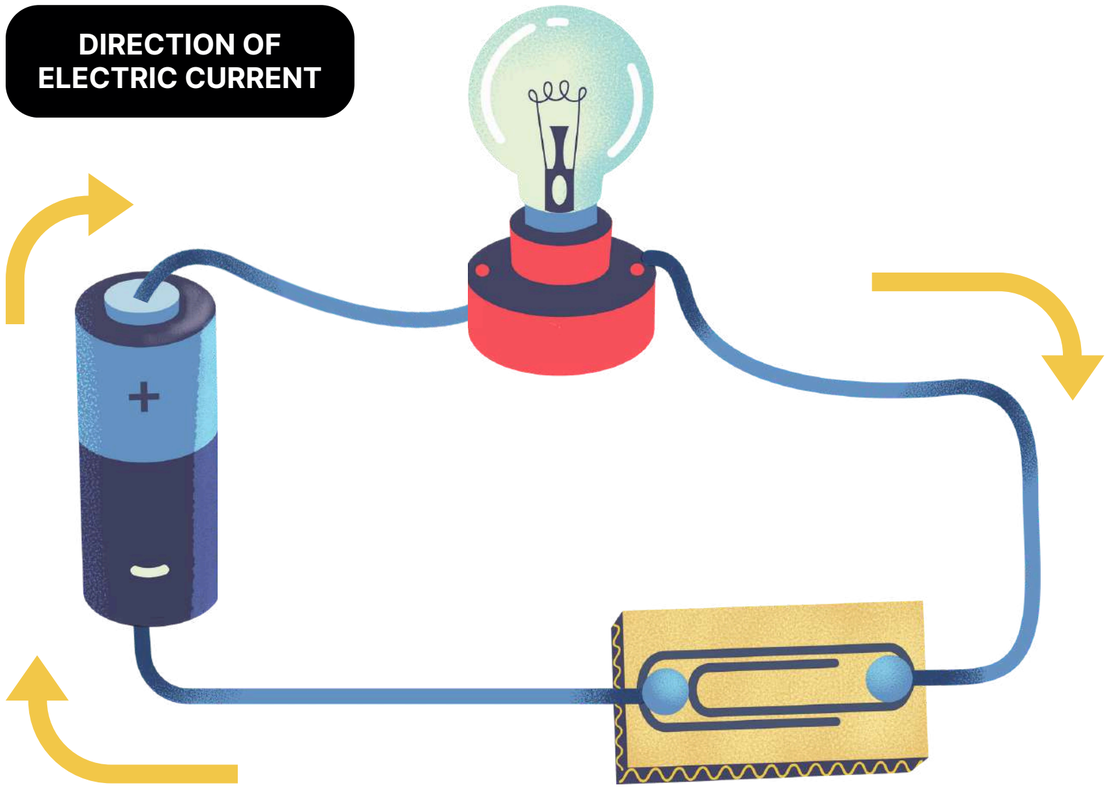
Explain what happens in an electric circuit.

Differentiate conductors from semiconductors.

What is an electric circuit?

It is a complete path through which electric current flows.

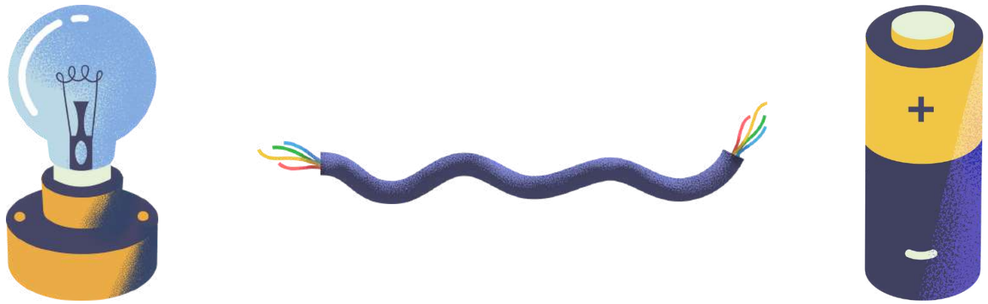
It should be constructed in an unbroken loop.



What makes an electric circuit complete?

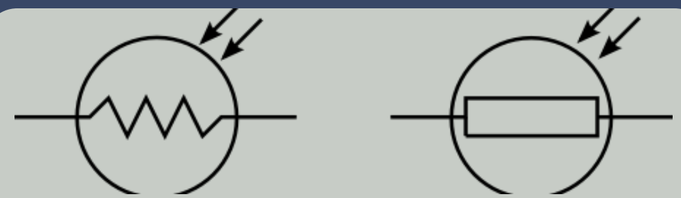
A simple circuit consists of a battery (or other source), a light bulb (or other load) and conducting wires.

COMPONENT

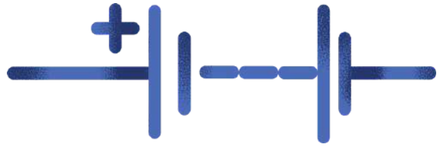


SYMBOL

Other Circuit Components



Photoresistor



battery

closed switch

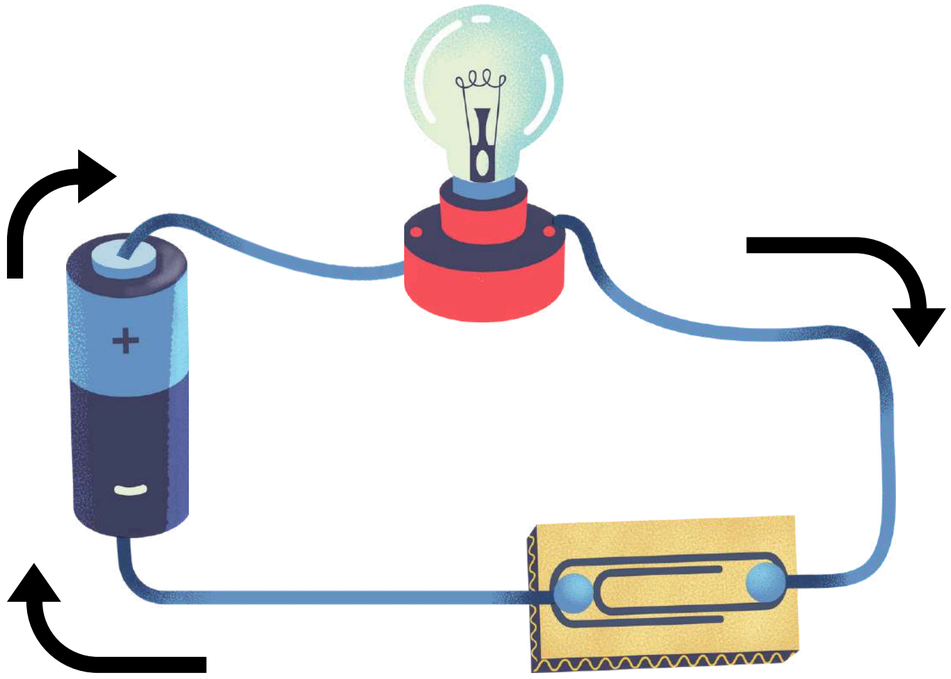
open switch

resistor

motor

fuse

What happens in a circuit?



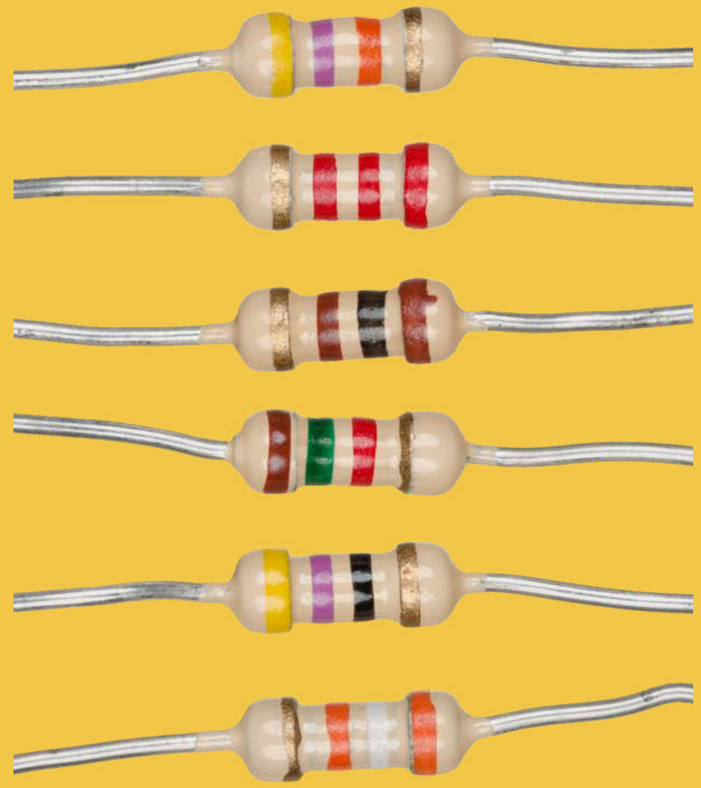
A dry cell provides the ‘push’ needed for electrons to flow in the loop.

These electrons are already present in the wires.

When these electrons pass through a load or a receiver, electrical energy can change into other forms, such as light, heat and sound.

Resistors

A resistor is a passive two-terminal electrical component that implements electrical resistance as a circuit element. In electronic circuits, resistors are used to reduce current flow, adjust signal levels, to divide voltages, bias active elements, and terminate transmission lines, among other uses.

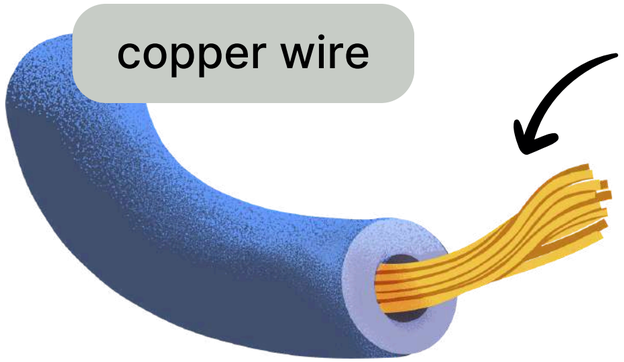


Conductors vs Semiconductors

Conductors

These materials allow charges to flow freely.

silver spoon

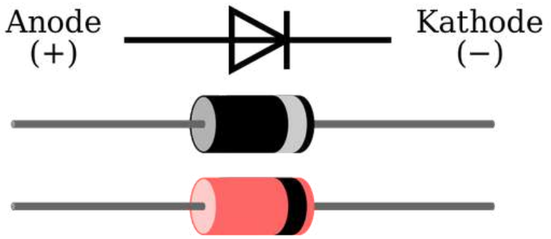


copper wire

Semiconductors

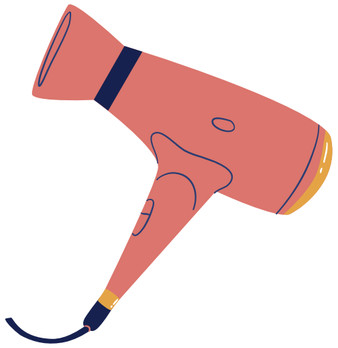
A material that conducts electricity more than an insulator but less than a pure conductor.

diode



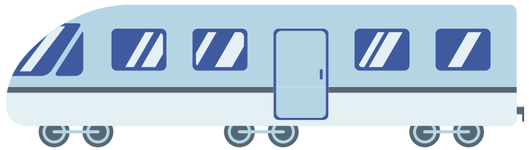
What can electric circuits do?

Electric circuits play a crucial role in our daily lives.

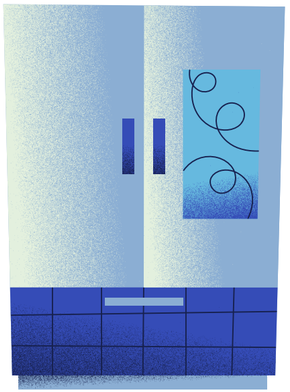


It allows specific devices to produce heat and sound.

It allows light bulbs to light up.



It helps trains move and makes travelling to work or school easier.



It enables the cooling system of a refrigerator to work.

Review

What is an electric circuit?

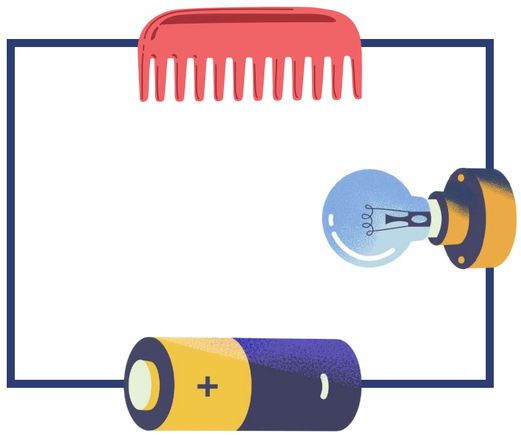
It is a complete path through which electric current flows.

Some of its components include wires, a bulb and a power source (cell or battery).

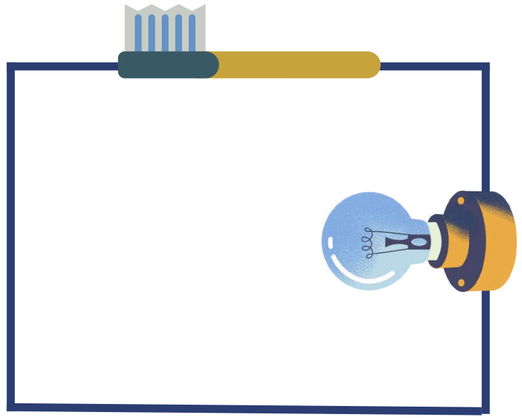
A complete circuit features an unbroken loop where charges can flow.

Circuit or Circus?

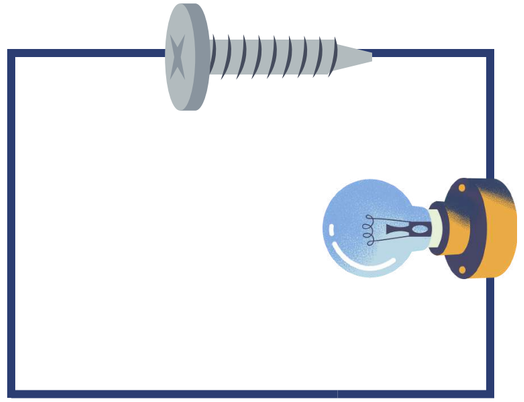
Which of these circuits would work?



A



B

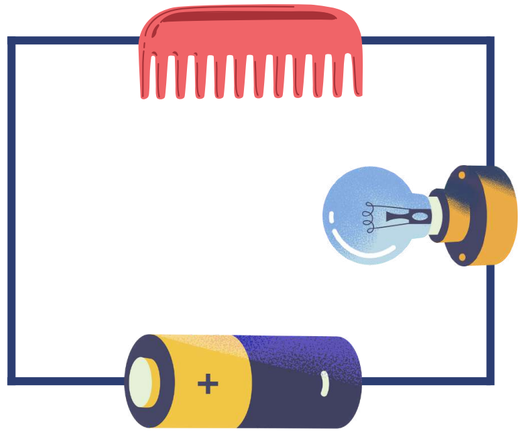


C

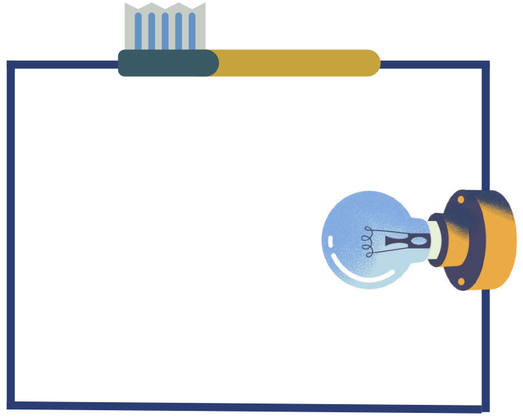
Circuit or Circus?

Which of these circuits would work?

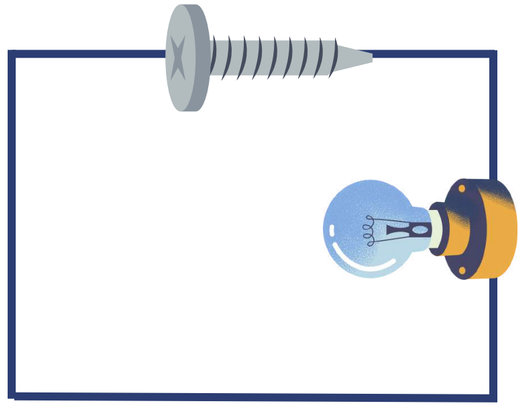
ANSWER KEY



A plastic comb is not a conductor of electricity.



A plastic toothbrush is not a conductor of electricity, and a power source is missing.



A metal screw is a conductor of electricity, but the power source is missing.

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