

Activity: Door Bell

On SCOPE's Home Science episode, you saw Julia make a door bell. Here's how she did it:



What you need:

Some stuff from the electronics store:

- Push button switch
- Buzzer
- Little light bulb
- 9 volt battery
- Battery holder
- Extra red and black wires about 1m long

Some other stuff from around the house (optional):

- Coloured pencils
- Small box (e.g. empty box of tea bags)

What to do:

1. Lay the battery holder, switch, light and buzzer out in a row, to make sure you attach them in the right order.
2. Take the red wire from the battery holder and attach it to one of the prongs on the switch.
3. Attach one wire from the light to the other prong of the switch.
4. Attach the other wire of the light to the black wire on the battery holder.
5. Attach the battery to the holder.

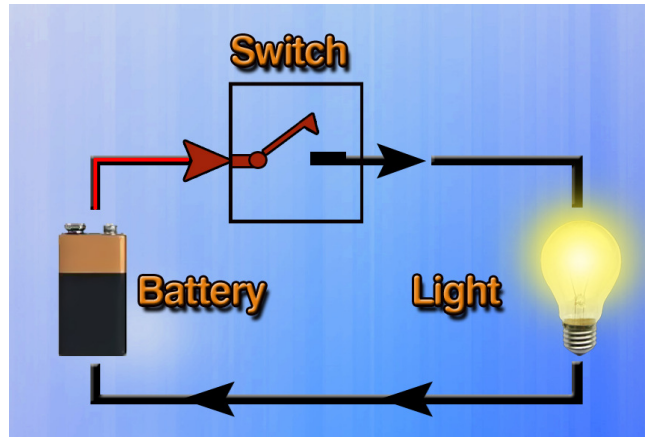
You have just made a basic electric circuit! Now to attach the buzzer

6. Detach the battery from the holder.
7. Extend the length of the wires on the buzzer by attaching a long black wire to the black wire of the buzzer, and attach a long red wire to the red wire of the buzzer.
8. Attach the long black wire to the connection between the black wire of the battery holder and one wire of the light.
9. Attach the long red wire to the prong of the switch where the light is attached.
10. Reattach the battery. When you press the push button switch, the buzzer should sound and the light should light up!
11. As a finishing touch, make a box for the switch to be mounted in, and so all your electronics can be hidden inside!
12. Now you can install the door bell by attaching the switch box outside your door and attaching the buzzer inside your room.

What's happening?

Electricity is the flow of electrons. In a basic electric circuit, the flow of electrons is from the negative terminal of the power source (the battery), through the various parts (the light and the buzzer) and back to the positive terminal of the power source. This is because electrons are negatively charged and they are attracted to the positive end of the battery. When the switch is on, it completes the circuit and allows the electrons to flow. When the switch is off, the circuit is broken, so there is no electricity for the light or the buzzer to work.

The first circuit you made was called a series circuit because there was only one path for the electricity to flow, ie: Battery → Switch → Light → Battery



After adding the buzzer, you created a parallel circuit, where there are two or more parallel paths for the electricity to flow. This ensures that the battery can power both the light and the buzzer. It also means that if the light blew out, the buzzer would still work because it is in a separate path to the light, with a direct connection to the battery.

