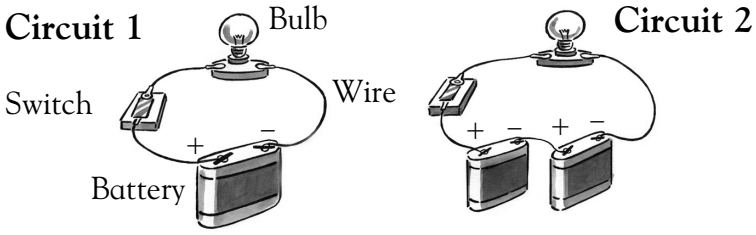
Battery fun

Background knowledge

Batteries are a source of electricity because they contain charged particles that can flow. The amount of energy provided by a battery depends on its *voltage* and is measured in units called *volts*. For example, a 1.5 volt (V) battery has less energy than a 6 V battery. If a lower voltage battery is used in a flashlight, the bulb will be less bright than in a flashlight using a battery with higher voltage. A battery has two ends called *poles*. One end is called the positive (+) pole and the other, the negative (–) pole. When wires connect the poles, an electric circuit is created. *Current electricity* is produced, which lights up the light bulb. This flowing electricity can be turned on or off by a *switch*. When more batteries are added to a circuit, the current is also increased. The circuit has more electrical power.

Science activity

The drawings below show two electric circuits.



What will happen to the flow of electricity when the switch is opened in circuit 1 and circuit 2?

.....

In which circuit is the bulb brighter when the switch is closed? Explain.

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.....

Science investigation

Take extra care - ask an adult to supervise you.

Roll a lemon to release its juices. Cut two slits in the lemon about 5 cm apart. Stick half of a shiny penny (the + pole) into one slit and half of a shiny dime (the – pole) in the other slit. Create a circuit. Use wires with alligator clips to connect the coins and bulb. If the bulb does not light up, add more lemons to the circuit. Why can a lemon light a bulb?

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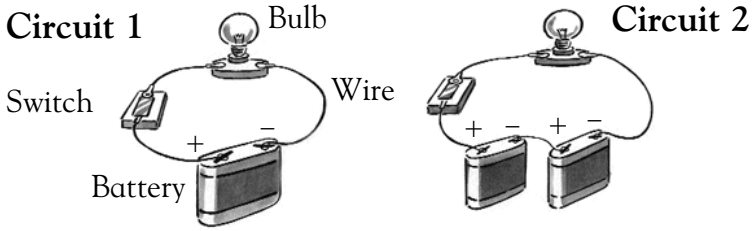

What will happen to the flow of electricity when the switch is opened in circuit 1 and circuit 2?

Electricity will not flow to the bulb, so it will not light up.

In which circuit is the bulb brighter when the switch is closed? Explain.

The light will be brighter in circuit 2 because the extra battery will increase the amount of electric current to the light bulb.

Science investigation

(!) Use a low voltage led light. Lemon juice contains charged particles, but is a much weaker acid than battery acid. Clean the coins with a metal cleaner so the zinc and copper are in direct contact with the lemon's acid.