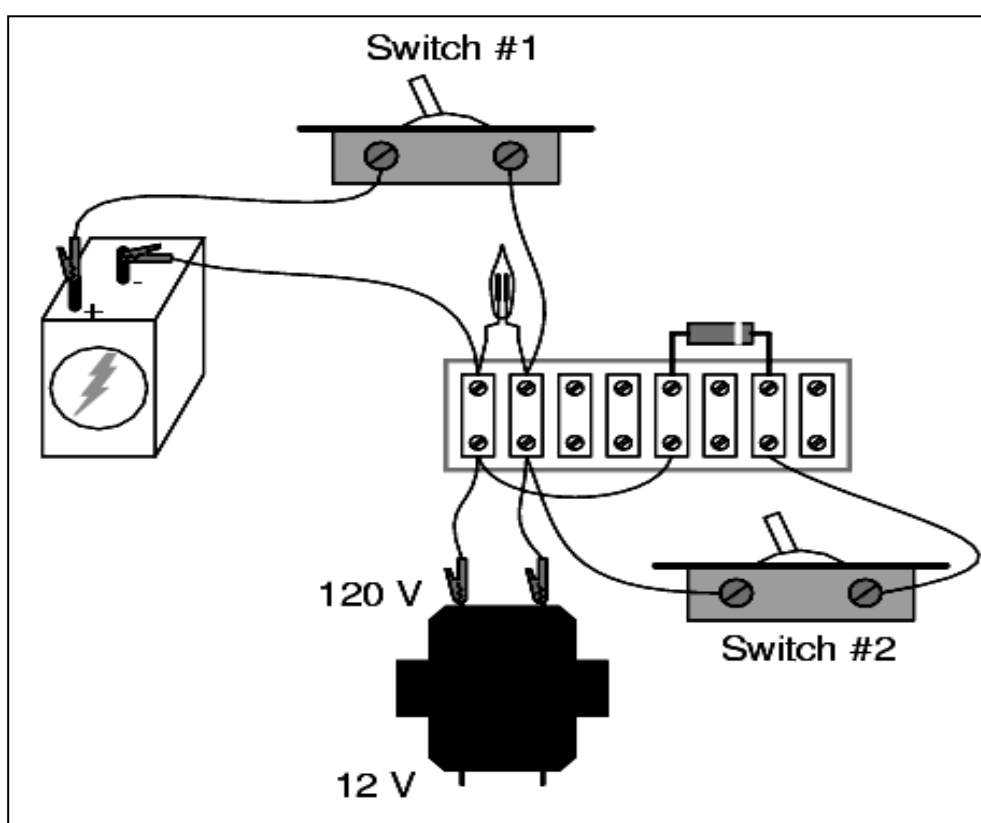


# Science and Health

## CONSTRUCTING A MODEL OF AN ELECTRIC CIRCUIT





## To the Learner

WELCOME!!!

There are different parts and devices needed to make a complete electric circuit. Electricity flows in a path called circuit. In this lesson, you experience constructing an electric circuit model.

- Construct a model of an electric circuit.



## Let's Learn This

The electricity from a battery flows in a closed or complete circuit. An electric circuit is an arrangement consisting of a conducting wire connected to a source of electrical energy and the load (the bulb) then back to the source. In the previous module, you noticed that the bulb did not light up until the other end of the wire was also connected to the negative end of the other. It means electricity cannot flow in an open circuit.



## Let's Try This

List down the parts of a simple electric circuit.

- 1.
- 2.
- 3.
- 4.



## Let's Study This

Electric current flows when the circuit is closed. In a closed circuit there is a complete path for the charges to move. The charge moves from a source to a device and then back to the source.

In the case of a simple circuit board, the battery is the source of electricity or charges moving through the wire. The device is connected to the bulb which becomes lighted when the charges pass through it. In some circuits, a switch is inserted along the path. The switch controls the flow of charges. When it is "ON" the path becomes completed and we have a closed circuit. When the switch is "OFF" there is a break in the path and this opens the circuit.



## Let's Do This

### ACTIVITY A

Constructing a model of an electric circuit.

#### ***You need:***

- 1 flashlight dry cell 1.5 v
- 1 flashlight bulb 1.5 v
- Two 25 cm. insulated wire with end scrapped.

#### ***What to do:***

##### **Part A.**

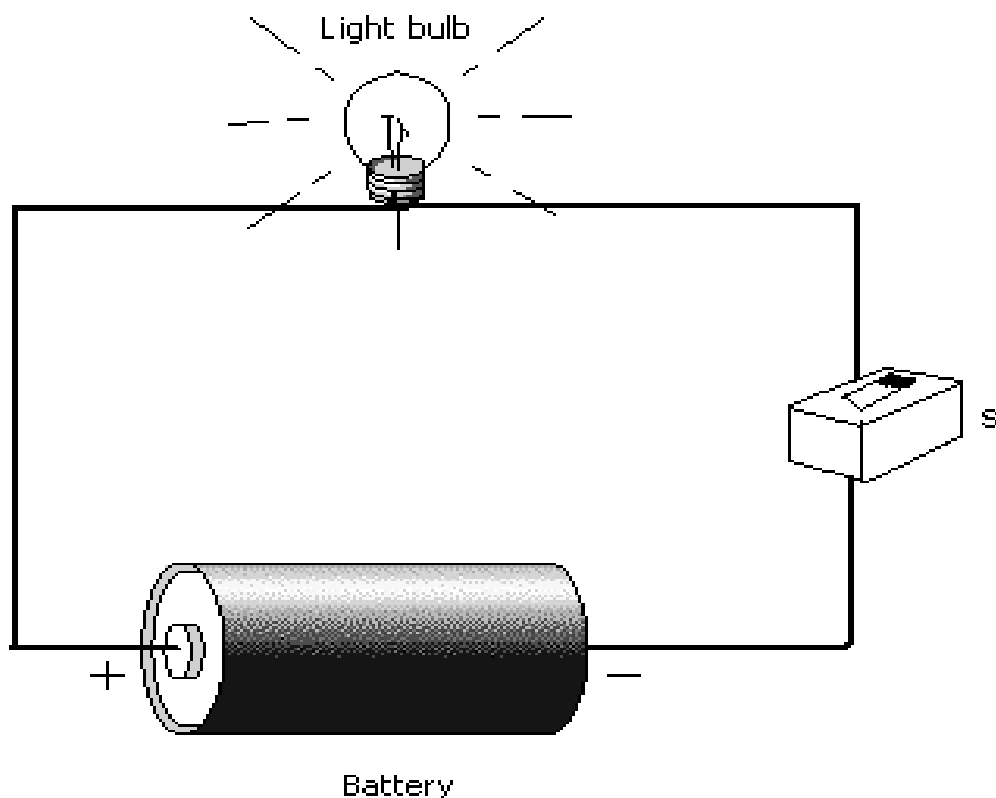
1. Arrange a circuit to light a bulb.
2. Draw the diagram of the circuit you have just constructed in box A and label.
3. Compare your circuit with your seatmate.
4. Use only one wire to light the bulb.
5. Do answer these...
  - a. What should the circuit be in order to light the bulb?
  - b. Why is it possible to light the bulb even though only one wire is used?
  - c. Differentiate open circuit from closed circuit.



## Let's Do More

#### ***What you need:***

- Battery*
- Switch*
- Bulb with socket*
- 3 pieces copper wirings*



*What to do:*

**Part B.**

1. Screw the bulb into a socket. Connect a copper wire to each of the socket terminals.
2. Connect a piece of copper wire to the switch. Connect the loose end of the wire to the negative end of the battery.  
(see the illustration setup)
3. Connect one end of the copper wire by winding it (which is attached to the socket) to the positive end of the battery. Connect the other end of the socket to the switch. Did the bulb light? Why?
4. Close the open parts of the switch. What happened to the bulb? Why?
5. Switch it off. What happened to the bulb?

*Answer briefly:*

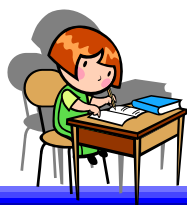
1. Describe the connections that made the bulb light up.
2. What components are needed to make an electric circuit that works?
3. How does a switch function?



### Let's Remember This

When the electrons flow from the source and back again the circuit, it is described as **CLOSED** or **COMPLETE**. Electricity reaches the bulb and due to its resistance, heat is produced that makes the bulb light.

The switch serves as the device to open a circuit. In this case, it is called an open circuit. The bulb does not light up because electricity does not reach it. The switch opens or closes an electric circuit.



### Let's Test Ourselves

A. Encircle the letter of the correct answer.

1. Which of these is a source of electrical energy?
  - a. Battery
  - b. light bulb
  - c. switch

2. Which of these controls the flow of electric current?
  - a. battery
  - b. switch
  - c. light bulb
3. When the switch is “ON” the electric circuit is...
  - a. open
  - b. closed
  - c. broken
4. How does the electric current move in a circuit?
  - a. From source to device and back to source.
  - b. From the source to the source and back to the device.
  - c. Both A and B.
5. Which of the circuits will current flow?
  - a. closed circuit
  - b. open circuit
  - short circuit

**B.** Construct a model of an electric circuit.

## **Science Fact File**

**There are different parts and devices needed to make a complete electric circuit. Electricity flows in a path called circuit.**



## Answer Key

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### Let's Try This (in any order)

1. switch
2. wire or conductor
3. electric device or load
4. dry cell or source

### Let's Test Ourselves

A.

1. a
2. b
3. b
4. a
5. a

B. Model of an electric circuit.