

# Exploring Circuit Building

Name: Key  
Date:  
Block:

## Question:

What are the parts that make up a simple circuit?

## Background:

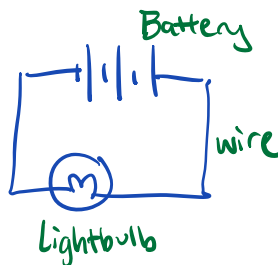
An electronic circuit is composed of individual electronic components that are connected together in order to allow current to flow. Within a circuit, each component plays an important role to allow the current to successfully flow through each pathway. If a part of the circuit is incorrectly placed, current will not be able to flow and a short circuit will result.

## Hypothesis:

**IF** we connect specific electrical components together in a closed circuit, **THEN** electrons will be able to flow through it.

## Procedure:

1. Type in the following URL: <https://phet.colorado.edu/en/simulation/circuit-construction-kit-dc>
2. Click the play button to begin the simulation.
3. Click the 'Lab' simulation.
4. Using the individual components on the left hand side of the simulation, create a functioning circuit. Draw and label each part of your circuit:



5. What are the three MINIMUM pieces that are required in order to create a circuit?
  - a. Wires
  - b. source (ex. battery)
  - c. Load (ex. lightbulb)
6. What happens to the circuit if everything but the wires and the battery is removed from the circuit?

A short circuit results

↳ the circuit is on fire and the current travelling through the circuit is very fast

7. Create a circuit that contains a battery, wires, a switch, and three lightbulbs.
8. What happens when you increase the voltage on the battery?

The current flows faster & the lightbulb gets brighter

9. Return the battery back to its original setting and then increase the resistance on each of the lightbulbs. What happens to the circuit when the resistance on the lightbulbs is increased?

The current flows slower & the lightbulb gets dimmer

10. Return the lightbulbs back to its original setting.

11. Use the ammeter on each part of the circuit.

a. What does the ammeter do?

Measures current

b. What unit does the ammeter measure values in?

Amps / Amperes

12. Use the voltmeter on each part of the circuit.

a. What does the voltmeter do?

Measures voltage

b. What unit does the voltmeter measure values in?

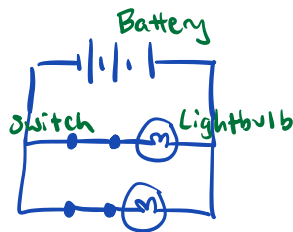
Volts

13. Build a circuit with a battery, wires, and one lightbulb.

14. Place some of the everyday objects (i.e., pencil, hand, coin, etc.) into your circuit and observe what happens to the circuit. What do these objects do to your circuit?

Some objects :  
 ... don't do anything to the circuit  
 ... slow down the current  
 ... stop the current

15. Build a circuit that contains two lightbulbs. This time, include switches that will only turn on one of the lightbulbs on at a time. Draw the circuit below:



16. What is different about this circuit and the one that you had originally built before?

This circuit has more than one pathway for the current to travel through