Science 9

Exploring Circuit Building

Name:
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 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.

    b.

    c.

6. What happens to the circuit if everything but the wires and the battery is removed from the circuit?

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?

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?

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? _____

    b. What unit does the ammeter measure values in? _____

12. Use the voltmeter on each part of the circuit.
    a. What does the voltmeter do? _____

    b. What unit does the voltmeter measure values in? _____

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?

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?