Scientists' Consensus Ideas
The Electric-Circuit Interaction

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Name Date Class

(Unit 1 Chapter 2, Activity 4)

Defining Characteristics of the Electric-Circuit Interaction

1. The electric-circuit interaction occurs when a source of electric current (like a cell) is connected in a complete loop with conducting wires to an electrical device (like a bulb). If a circuit loop is broken (for example, if a bulb is removed or a switch is opened), the electric-circuit interaction stops in that loop.

Which experiment(s) support(s) this idea? What is the evidence?

2. Evidence of the interaction is that there is electric current in the circuit loop (and the bulb glows). The amount of electric current can be measured with an ammeter.

What specific observation(s) did you make that provides this evidence? In which experiment was this observation(s) made?

3. Materials that allow electric current to flow in a circuit (and a bulb to glow) are called *conductors*. Materials that do not allow electric current to flow in a circuit are called *non-conductors*.

List examples of materials that are conductors and non-conductors.

4. Electric current arises from the flow of electric charges inside the conducting wires and other parts in a circuit. Scientists believe that only the negative charges (electrons) inside the conductors move. They are repelled from the negative end and are attracted to the positive end of a cell. Therefore, the negative charges move around the circuit from the negative end to the positive end of a cell.

Variables That Influence the Interaction

5. When the number of cells in a circuit loop increases, the electric current in the circuit loop increases.

Which experiment supports this idea? What is the evidence?

6. Electrical devices (e.g., light bulbs) can be hooked up to an electrical source in two different ways:

a) In a series (single-loop) circuit every device is connected in the same single loop with the source. Unscrewing a bulb (or other device) from anywhere in the loop affects all the other bulbs. They all go out.

b) In a parallel (multi-loop or separate-loop) circuit each device makes its own separate loop with the source. Unscrewing a bulb (or other device) from one loop does not affect what happens in any of the other loops.

Which experiment supports this idea? What is the evidence?