

## Careful, or You'll Get a Charge Out of This Lab

- Form groups as instructed.
- Plan on using the following equipment as a group:  
a battery, a light bulb,  
three pieces of insulated wire, a switch.

### Task 1:

- 1.1 Discuss how to connect some combination of the wires, battery, and light bulb to light the bulb.
- 1.2 Draw a diagram on your group answer sheet showing how you will connect your items.
- 1.3 Take the diagram to your teacher to be stamped or signed.
- 1.4 After receiving the stamp or signature, pick up your equipment and construct your proposed lighting arrangement.
- 1.5 Record what happens.
- 1.6 If the light does not light repeat steps 1.1-1.5.
- 1.7 Continue to try new arrangements until you light the light bulb.
- 1.8 Be sure to include a drawing of your successful wires/battery/light bulb connection on the group answer sheet.
- 1.9 After you light the bulb, get a colored pen or pencil from your teacher and draw arrows on your diagram to show the direction of current flow in your circuit.
- 1.10 Continue on to Task 2.
- 1.11 **Answer questions #A-C** on your group answer sheet.



### Task 2:

- 2.1 Copy the diagram of your successful attempt to light the bulb.
- 2.2 Discuss how to connect the switch to turn the bulb on and off.
- 2.3 Add the switch to your group diagram.
- 2.4 Take the diagram to your teacher to be stamped or signed.
- 2.5 After receiving the stamp or signature construct your proposed lighting arrangement which includes the switch.
- 2.6 Record what happens.
- 2.7 If the switch does not control the light repeat steps 2.1-2.6.
- 2.8 Continue to try new arrangements until you can successfully use the switch to control the lighting of the bulb.
- 2.9 Be sure to include a drawing of your successful wires/battery/light bulb/switch connection on the group answer sheet.
- 2.10 After you light the bulb, use the colored pen or pencil to draw arrows on this diagram to show the direction of current flow in your circuit.
- 2.11 **Answer questions #D-F** on your group answer sheet.

- If you finish these tasks before the end of the period, go see your teacher for more instructions.

### Questions:

- A. Explain how insulation helps current flow in a circuit.
- B. Why does the light bulb light when current arrives at the filament?
- C. What is the difference between the positive and negative poles of a battery?
- D. Explain how a switch functions in a circuit.
- E. What is the difference between an open and a closed circuit?
- F. Describe how a "short" affects an electrical circuit.