**Experiment 1 Answer Document – Circuit Board Equipment**

Purpose/Observation/Backgrond:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
  
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**Questions from the procedures**

1a) Sketch 1b) re-sketch

2. Reverse the two wires at the light. Does this have any effect on the operation?\_\_\_\_\_\_\_\_\_\_\_ Reverse the two wires at the cell. Does this have any effect on the operation?\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. Sketch

Is your original light the same brightness, or was it brighter or dimmer that it was during step 1 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Can you explain any differences in the brightness or the fact that it is the same?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
  
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5. Sketch

**Experiment 2: Answer Document - Lights in Circuits**

Purpose/Observation/Backgrond:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Questions from the procedures**

2. Sketch

Is your original light the same brightness, or was it brighter or dimmer than it was during step 1? Can you explain any differences in the brightness, or why the same?

3. If one of the light bulbs in unscrewed, does the other bulb go out or does it stay on? Why or why not?

4. Drawing of circuit. Is it series or parallel? What happens if you unscrew on of the bulbs. Explain

5. Draw the circuit. What happens if you unscrew on of the bulbs? Explain

6. Draw the circuit diagram. What happens if you unscrew on of the bulbs. Explain. Are there any generalizations you can state about different connections to a set of lights?

**Part B**

7. Note the brightness of the light

8. What is the effect of the brightness of the light?

9. What is the effect of the brightness of the light?

10. What is the effect of the brightness of the light?

Note -> Determine the nature of the connections between the D Cells you made in steps 8-10. Which of these was the most useful in making the light brighter?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Which was the least useful?\_\_\_\_\_\_\_\_\_\_\_. Can you determine the reason why each behaved as it did?

**Part C**

11. What is the effect of rotating the knob on the device that is identified as a “potentiometers”?

**Discussion Questions**

2. What are the apparent rules for the operation of lights in a series? In Parallel?

3. What are the apparent rules for the operation of batteries in series? In Paraellel?

4. What is the function of a potentiometer?

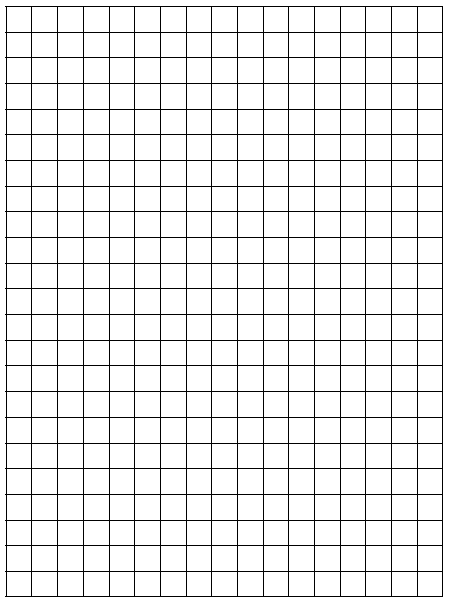
**Experiment 3 Answer Document – Ohm’s Law**

Purpose/Observation/Backgrond:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Table 3.1

|  |  |  |  |
| --- | --- | --- | --- |
| Resistance, ohms | Current, amps | Voltage, volt | Voltage/Resistance |
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|  |  |  |  |
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|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |



**Discussion**

From you graph, what is the mathematical relationship between current and resistance?

Ohm’s Law states that current is given by the ration voltage/resistance. Does your data concur this?

What are the possible sources of experiment error in this lab? Would you expect each to make your results larger or make them smaller?