**General Physics eJournal 3**

**Ohm’s Law**

**Instructions:**

Follow the Writeup and fill out the eJournal as you complete the lab activities. Submit your eJournal report by uploading the completed WORD or PDF document to our class Learninghub site. If the Learninghub site is down, email the completed report file directly to a lab TA.

**Preliminaries:**

* Title:
* Name(s):
* Date:
* Time In & Out:

**Plan:**

**Hypothesis**

Form a hypothesis regarding Ohm’s Law. Predict what a graph of I vs. 1/R will look like when the voltage is held constant and predict what the slope will be.

*Insert image of your graph*

Sketch the circuit you plan to use for this experiment and insert an image.

*Insert image of your circuit diagram sketch*

**Experiment Outline**

Briefly describe your plan for testing your hypothesis.

**Equipment List**

* List
* Equipment
* Here

**Action:**

Describe the techniques used to collect data by responding to the bullet point questions:

* How did you measure the resistance?
* How did you measure the battery voltage?
* How did you measure the current?
* Is the ammeter placed in series or parallel with the resistor, R?
* How did you change the resistance?

*Insert labeled image of your apparatus*

**Results:**

Record the measured resistances and currents. Calculate 1/R and record these values.

**Table I: Current and Resistance Measurements**

|  |  |  |
| --- | --- | --- |
| **Resistance, R (Ω)** | **1/R (1/Ω)** | **Current, I (A)** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Record the voltage of the battery.

Vbattery = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ V

**Analysis:**

Insert a plot of I (y-axis) vs. 1/R (x-axis), perform a linear fit, and record the slope.

*Insert graph of I vs 1/R*

Use a percent difference to compare the slope to the battery voltage.

**Table II: Slope and Battery Voltage Comparison**

|  |  |  |
| --- | --- | --- |
| **Vbattery (V)** | **Slope (V)** | **% Difference** |
|  |  |  |

**Conclusion:**

Interpret your results in light of your hypothetical predictions. Do the results support your hypothesis? How might you improve this experiment or explore it further? How could you modify the experiment to show that V ∝ I if the resistance is held constant?