Physics

Ohm's Law & PhET Makeup

Name _____

Date _____

Objective: Determine the mathematical relationship between…
1. **Current and Resistance**
2. **Current and Voltage**

Procedure – *This lab will be performed using PhET Circuit Construction Kit (DC only)*

- **Construct a simple circuit that contains 1 battery, 1 light bulb, and ammeter (use the wires to connect).**
- **Select voltmeter so that the meter appears on the screen**
- **Change the values for resistance (right click on the light bulb for an option to change resistance). Record the value of the resistance selected and also the current that is produced (as read on the ammeter). Record the data for 5 trials in the table below. *In this trial, the voltage at the battery should not be changed. Please write the value that it was kept at below the data table.***
- **Change the values for voltage (right click on the battery for an option to change voltage). Record the value of the voltage selected and also the current that is produced (as read on the ammeter). Record the data for 5 trials in the table below. *In this trial, the resistance at the light bulb should not be changed. Please write the value that it was kept at below the data table.***
- **Analyze the data to determine the relationships.**

Data

Resistane (Ω)	Current (A)	Voltage (V)	Current (A)

CONSTANT =   CONSTANT =

Calculations – *include one sample for anything calculated in the lab.*

Only if calculations were performed…

Graph – *Use logger pro (Excel will also work) to provide a sketch of the analyzed variables.*

Conclusions – *Always answer these questions for a "relationship" lab.*
- What are the relationships for current & voltage and current & resistance?

- What are the general equations of the resulting lines/curves?

- What are the translated equations?

- Look at the constants (m and A) from each translated equation separately. How does **m** relate to the variable held constant in that part of the experiment? How does **A** relate to the variable held constant in that part of the experiment?

- If you double the independent variable, specifically what happens to the dependent variable for each?