Name	Date	Class Hour:
Chapter 34: Electric Current: Virtual Lab- Ohm's Law		
<b>Purpose:</b> To investigate the relationship among current, voltage and re	sistance.	
Link: https://phet.colorado.edu/en/simulation/ohms-law		
Procedure:		
Part A:		
Voltage is set at $4.5 \text{ V}$ and Resistance is set at $500 \Omega$		
What's the equation for Ohm's Law?		
Look at the equation on the screen, how does the size of the	current (I) compare to the size	e of the Voltage and Resistance?

What is the current in (mA) originally set to?

## Part B: Data Collection: Constant Resistance, Changing Voltage

In the first experiment, you will change the voltage to see the effect it has on the current. The resistance will stay the same (500  $\Omega$ ).

Move the Voltage values to those listed in the **Data Table I** and record the current for each setting. Current is recorded in milliamps (mA).

What happened to the size of the current (I) in the equation as the voltage increased?

Data Table 1:					
Constant Resistance (500 $\Omega$ ), Changing Voltage					
Voltage (v) Current (mA)					
1.0					
3.0					
6.0					
7.5					
9.0					

Data Table 2: Constant Voltage (4.5 v), Changing Resistance					
100					
300					
500					
800					
1000					

## Part C: Data Collection: Constant Voltage, Changing Resistance

In the second experiment, you will change the resistance to see the effect it has on the current. The Voltage will stay the same (4.5 V).

Move the Resistance values to those listed in **Data Table 2** and record the current for each setting. Current is recorded in milliamps (mA).

What happened to the size of the current (I) in the equations as the resistance increased?

## **Analysis and Questions:**

- Make a graph of changing voltage v. current. Remember to use the rules for completing your graph. 1.
- What is the independent variable? \_\_\_\_\_ How was it measured (units)? \_\_\_\_\_ This will be 2. graphed on the \_\_\_\_\_ axis.
- What is the dependent variable? \_\_\_\_\_ How was it measured (units)? \_\_\_\_\_ 3.

- What effect does increasing the voltage have on the amount of 4. current through a circuit?
- 5. Is this a direct or inverse relationship?
- If the voltage is tripled, the amount of current will be 6.

- 7. Make a graph of changing resistance v. current.
- What is the independent variable? \_\_\_\_\_\_ How was it measured (units)? \_\_\_\_\_\_. This will 8. be graphed on the \_\_\_\_\_ axis.

What is the dependent variable? \_\_\_\_\_ How was it measured (units)? \_\_\_\_\_

- 9. What effect does increasing the resistance have on the amount of current through a circuit?
- 10. Is this a direct or inverse relationship? Explain.
- 11. If the resistance is tripled, the amount of current will be
- 12. Based on your results, how do you think the lab data supports Ohm's Law? (Hint: remember Ohm's Law discusses the relationship between current and voltage and the relationship between current and resistance)