

Prelab for Ohm's Law

Name _____ Section _____

1. What is Ohm's Law? Give formula (define terms) and a qualitative explanation.
2. An ideal voltmeter should have a resistance of _____
3. Considering your answer above explain and how a voltmeter is connected, why this is a desirable attribute for a voltmeters?
4. If I vs V is plotted and the result is a linear relationship, what value is obtained from the slope? Please note that we are using the relationship $I=V/R$ (i.e., voltage is the independent variable and current is dependent variable).

If you obtained a slope of 0.001 Ohms^{-1} what is the value of the resistor?

5. Go to the following webpage, and use the PhET simulation of DC circuit kits:

<https://phet.colorado.edu/en/simulation/circuit-construction-kit-dc-virtual-lab>

to build a simple circuit that has a battery and a resistor. Then connect the Voltmeter and Ammeter to the circuit to check if the Ohm's Law applies to your circuit. (You can click "Values" to display the resistance of the resistor).

Try with the simulation what would happen if you accidentally connect an Ammeter in parallel with the Battery. Describe what do you see.