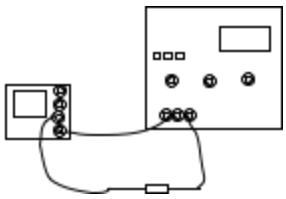
Ohm's Law Lab

Question: *How does the potential difference across a resistor affect the current through the resistor?*



Set-Up Reminders:

1. Do not turn on the power supply until the teacher has checked your circuit.
2. Do not turn the power supply off until the experiment is completed, simply dial the voltage down to zero between trials.

Data:

1. Be sure to record the colors on each resistor in your data, and the last color on the resistor should be brown.
2. Record the current across a resistor for V = 0, 2, 4, 6, 8, 10 volts for three trials and three different resistors, and then take the averages.
3. Plot the average current versus voltage and perform a linear fit.

Conclusions:

1. Write the equation relating I and V for each resistor.

2. Describe the relationship between current and voltage across a resistor.

3. The slope of your linear fit is conductance. Conductance is the reciprocal of the resistance. Determine R for each of the three resistors. (R is measured in ohms or Ω).

4. Rewrite your equation for current using the symbols (no numbers needed) R and V. Rearrange your equation to solve for R.

5. Write an operational definition of resistance.

6. Rearrange the equation to solve for V.

7. Identify each of the following relationships as inverse or direct:

    a. V and I
    b. V and R
    c. I and R