This lab will focus on Ohm's Law $V = IR$.

**Part I**

A voltage divider circuit is shown below.

- If $V_{in}$ is equal to 12 Volts, and we want $V_{out} = \_\_\_$, and a current through R2 of \_\_\_, what should R1 and R2 be?
- What is the power that is dropped across resistor R2? R1?
- If the resistors are rated for 1/4 W maximum, will they be OK to use?
- What would $V_{out}$ be if it were measured across R1?
- Get the appropriate resistors and build the circuit.
- Measure $V_{in}$, $V_{out}$ and $I$.

Are the values you obtain consistent with what you expect? Explain.

**Part II**

Put together the circuit shown below using the resistor that you find at your desk.

- Draw a picture of the resistor indicating the color code.
- Make an I vs. V graph using the variable voltage supply and using voltages from 0 to 10 volts. (make at least ten measurements, use excel and paste your graph into your notebook.)
- What does a curve fit tell you? Functional form? Slope? y-intercept?
- What is the resistance of the resistor as determined from your graph?
- Use the ohmmeter to measure the resistor.
- What is the percent difference between the two values?
- What is the maximum power dissipated in the resistor?

**Part III**

Repeat part II using a light bulb instead of a resistor. Discuss the shape of the curve.

What does resistance mean here? What is the meaning of the value of resistance you obtain with the ohmmeter?