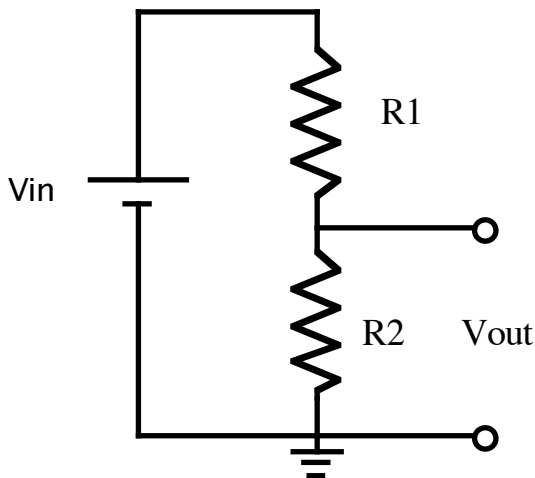


This lab will focus on Ohm's Law  $V = IR$ .

**Part I**

A voltage divider circuit is shown below.



- If  $V_{in}$  is equal to 12 Volts, and we want an output voltage of \_\_\_\_\_, and a current of \_\_\_\_\_, what should  $R_1$  and  $R_2$  be?
- What is the power that is dropped across resistor  $R_2$ ?  $R_1$ ?
- 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  $R_1$ ?
- Get the appropriate resistors and build the circuit.
- Measure  $V_{in}$ ,  $V_{out}$  and  $I$ .

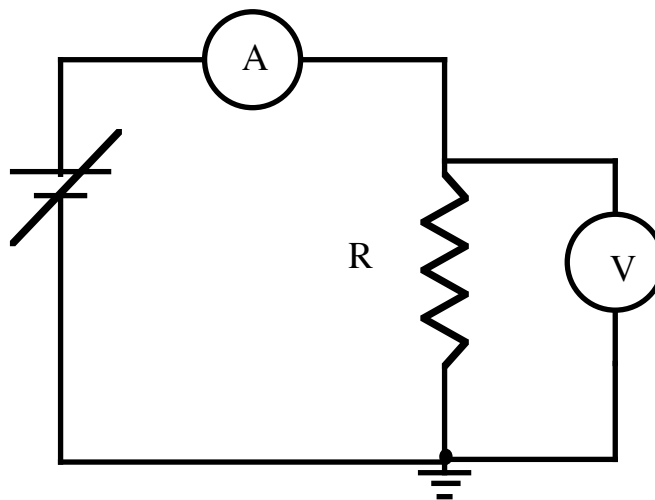
- Measure the voltage across  $R_1$  as well.
- Are the values you obtain consistent with what you expect?

**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?