Name_____
Lab Partner(s):_____
Date Performed:_____
Date Due: February 4, 2014
Physics 111 Laboratory
Experiment #3
Resistor Circuits

Attach your fully labeled and captioned data tables for each part along with any fully labeled and captioned graphical representations of your data that you may have created to the end of this handout.

Honor Code Statement:

1. Consider the simple circuit that you constructed out of one battery and one resistor. From your graphs of V vs. I for this simple circuit, what are the resistances of each resistor? How do they compare to the value given by the ohmmeter?

2. From your analysis of the simple circuit, what conclusions can you draw about the current through the resistor and the potential drop across the resistor for any given battery voltage? Is the ratio of $\frac{V}{I}$ constant? Is Ohm's law valid for the resistor?

3. From your graph of V_B, V_{R_1}, and V_{R_2} versus I for the simple series circuit for any given value of the current, what can you conclude?

4. From this same plot of V_B, V_{R_1}, and V_{R_2} versus I for the simple series circuit, what can you conclude about how resistors in series add together? What is the effective resistance of the circuit?

5. For the simple series circuit, are charge and energy conserved? Justify your answer with data from the experiment.

6. From your graph of V_B, V_{R_1}, and V_{R_2} versus I for the simple parallel circuit for any given value of the potential, what can you conclude?

7. From this same plot of V_B, V_{R_1}, and V_{R_2} versus I for the simple parallel circuit, what can you conclude about how resistors in parallel add together? What is the effective resistance of the circuit?

8. For the simple parallel circuit, are charge and energy conserved? Justify your answer with data from the experiment.

9. For the compound circuit containing resistors in series and parallel, what is the total current produced by the battery? Is it the same as the current you measured? Explain.

10. For the compound circuit containing resistors in series and parallel, what is the effective resistance of your circuit? What should it be theoretically? How well do your results agree with each other?

11. For the compound circuit, calculate the currents in each of the resistors and the potential drops across each resistor. Do your calculated values agree with the values you measured?

12. From the data and plots of V and V/I versus I for the light bulb, is the light bulb an Ohmic device? Can a unique resistance be assigned to the light bulb? Explain your answer.