Physics 12

**Circuit Analysis Lab**

**Name:**

**Date:**

**Purpose:** To completely analyze the currents and potential differences across all the resistors in a combination circuit of your own design.

**Materials:** Multimeter, 27 Ω, 47 Ω, 100 Ω resistors, wires, power supply.

**Procedure:**

1. Design a combination circuit of your choice made from the 3 resistors given.

2. Connect up the power supply and set the potential difference at a comfortable level (for the resistors that is) of about 4-5 V. Measure this accurately with the Voltmeter. Do not change this setting for the rest of the experiment.

3. Draw a schematic diagram of the combination circuit that you made in the space below:
4. Use your knowledge of circuits, Ohm's Law, Kirchhoff's Laws, & Resistance in series and parallel to determine the currents and voltage drops for all the resistors and of the power supply. Show all your calculations in the space below:

5. Use your multimeter to measure all the currents and voltage drops calculated above. Place your results in a data table that will allow both your calculated and measured results to be compared.

Data Table: Calculated vs Measured Results
Questions:

1. How did your calculated results compare to your measured results?

2. Examine the circuit shown below:

What would happen to the brightness of lamp #1 and lamp #2 if lamp #3 is removed from the circuit and the voltage of the power supply is not altered. Explain your answer in detail using the concepts of Ohm's Law & Kirchhoff's Laws and Equivalent Resistance.