

PHYSICS DEPARTMENT COPY

Experiment 14 DATA SHEET

Name: _____

Section: _____

Table 1: Unknown Resistances

Resistor Color	Measured Voltage	Measured Current	Calculated Resistance	Calculated Power Dissipated

Table 2: Series Circuits

Measured Voltage	Measured Current	Calculated Resistance	Graphical Resistance	Calculated Power Dissipated
0 V	0 A	0 ohms		0 Watts
Graphed	Graphed			

Current with resistor B removed: _____

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Questions

- 1) Which resistor dissipated the most power in Part A?

- 2) In a series circuit, the total resistance is equal to the sum of the two individual resistors. (Total Resistance = $R_1 + R_2$) With this in mind, does the value of the calculated resistance of the two resistors found in Part A agree with the series resistance in Part B? Explain.

- 3) Why was the current reading zero when you removed a resistor from the series circuit?

- 4) The black resistors are known to be 100 ohms. What is the percent error of your measurement in part A? Use a calculator or the Error Program.

- 5) The following sentence is taken directly from your text (**Conceptual Physics**- 10th Edition by Paul Hewitt): "*Power utilities do not sell electrons. They sell energy. You supply the electrons.*"

Another common misconception about energy and power is that the power companies sell power. This also is not true.

Explain the difference between **energy** and **power**.

What are SI the units of energy and power. Also give another common unit of power.

Although power companies sell energy, the rate that they charge you is typically given in units of cost (in cents) per kilowatt-hour (i.e., $\frac{\text{cents}}{\text{kilowatt} - \text{hour}}$). Find the cost in dollars of leaving a central air conditioning (CAC) unit on for a week. (Use 3000 watts power consumption rate for CAC and a "cost" of 5 cents per kilowatt-hour). Show work.