Report for Experiment 5

Name _____
Date _____
Class _____

ABSTRACT:

DATA:

Table 5–1

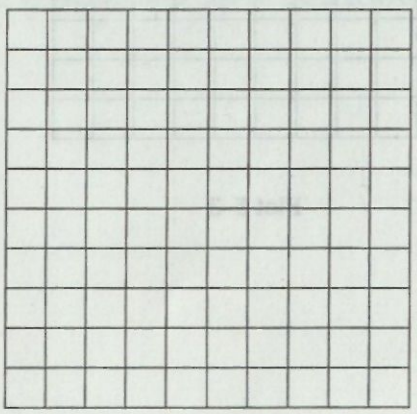
Component	Listed Value	Measured Value
R_1	2.7 kΩ	

Table 5–2

Measured value of		
Resistance	Voltage	Current
kΩ	V	mA
Computed Power		
$P = IV$	$P = I^2R$	$P = \frac{V^2}{R}$
mW	mW	mW

Table 5–3

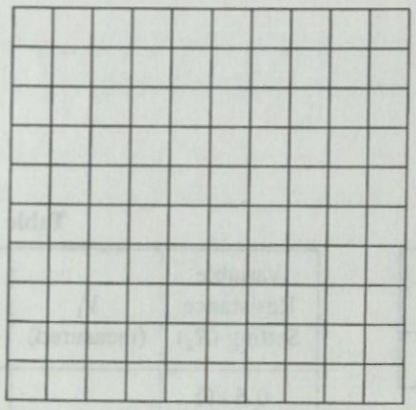
Variable Resistance Setting (R_2)	V_1 (measured)	V_2 (measured)	Power in R_2 $P_2 = \frac{V_2^2}{R_2}$
0.5 kΩ			
1.0 kΩ			
2.0 kΩ			
3.0 kΩ			
4.0 kΩ			
5.0 kΩ			
7.5 kΩ			
10.0 kΩ			



Plot 5–1

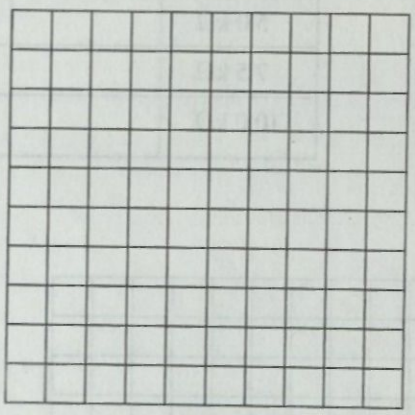
RESULTS AND CONCLUSION:

FURTHER INVESTIGATION RESULTS:



Plot 5–2

APPLICATION PROBLEM RESULTS:



Plot 5–3

EVALUATION AND REVIEW QUESTIONS:

1. In the first part of the experiment, you computed the power in a resistor using three different equations. Why might the results in each case be slightly different?

2. For the circuit in Figure 5–1, assume a student accidentally set the power supply to 24 V instead of 12 V.
   (a) How much power would be dissipated in the resistor? _____
   (b) Would a ¼ W resistor be adequate for this case? _____

3. For the circuit in Figure 5–2, what was happening to the *total power* in the circuit as the resistance of R_2 was increasing? Explain your answer.

4. A 1.5 kΩ resistor is found to have 22.5 V across it.
   (a) What is the current in the resistor? _____
   (b) What is the power dissipated in the resistor? _____
   (c) Could a ¼ W resistor be used in this application? Explain your answer.

5. What physical characteristic determines the power rating of a resistor?

6. What is the smallest value of resistance that can be used across 10 V if the power dissipated is not to exceed 0.5 W?