

Ohm's Law Activity

**Purpose:** To determine the relationship between the current and the potential difference.

A student investigating two resistors with different resistance values has collected the data shown below.

**Observations:**

Table 1: Resistor #1

Potential Difference V (V)	Current I (A)

Resistor #1 Value: \_\_\_\_\_  $\Omega$

Table 2: Resistor #2

Potential Difference V (V)	Current I (A)

Resistor #2 Value: \_\_\_\_\_  $\Omega$

**Analysis and Evaluation:** Answer the following questions on the graph paper provided.

1. On a single sheet of graph paper, plot two separate graphs of Potential Difference (y-axis) versus Current (x-axis) for each resistor on the same set of axis.
2. Draw a line of best fit on your graph for each resistor. You do not necessarily need to place the line through zero. Use different colours for each line and make a key.

3. Calculate the slope of the line of best fit.  $\text{slope} = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$  for each line.

Show your work here and include units for your answer:

Line 1:

Line 2:

4. Compare the value of the slope with the resistance values of the resistor, what do you notice?
5. Write out the formal definition of Ohm's Law. You may need to look this up or put it in your own words.
6. Plot the following data on the graph on the next page and determine the value of the resistor. Show your work here.

Potential Difference V (V)	Current I (A)
3	0.3
6	0.6
9	0.9
12	1.2
18	1.8
21	2.1
24	2.4
27	2.7
30	3.0