

## RESISTOR INVESTIGATION - OHM'S LAW

**Purpose:** to investigate the relationship between current and potential difference (voltage) through a resistor.

**Apparatus:**

- equipment to measure current and potential difference (voltage)
- one ceramic 5.1  $\Omega$  resistor
- power source and connecting wires

**Procedure:**

1. Fill in the table for current and potential difference (voltage). Each reading is to be taken after the teacher adjusts the potential difference (voltage) output on the power source.
2. Create a graph of "Potential difference (voltage) vs Current"

**Observations:**

	Potential difference (voltage) (V)	Current (A)
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

	Potential difference (voltage) (V)	Current (A)
11.		
12.		
13.		
14.		
15.		
16.		
17.		
18.		
19.		
20.		

**Conclusions:**

1. What happened to the current through the resistor as the potential difference (voltage) was increased? Why do you think that the increase in potential difference (voltage) made this possible?
2. What happens to the electrons potential difference (voltage) as the current flows through the resistor?
3. To what form is the electrical energy of the electrons converted to in the resistor?
4. Given that the formula for resistance is:

$$R = \frac{V}{I} \quad \text{where: } R = \text{resistance in ohms } (\Omega)$$

V = potential difference (voltage)  
in volts (V)

I = current in amperes (A)

Calculate the slope of the line on your graph to determine experimentally the resistance of the ceramic resistor used.

