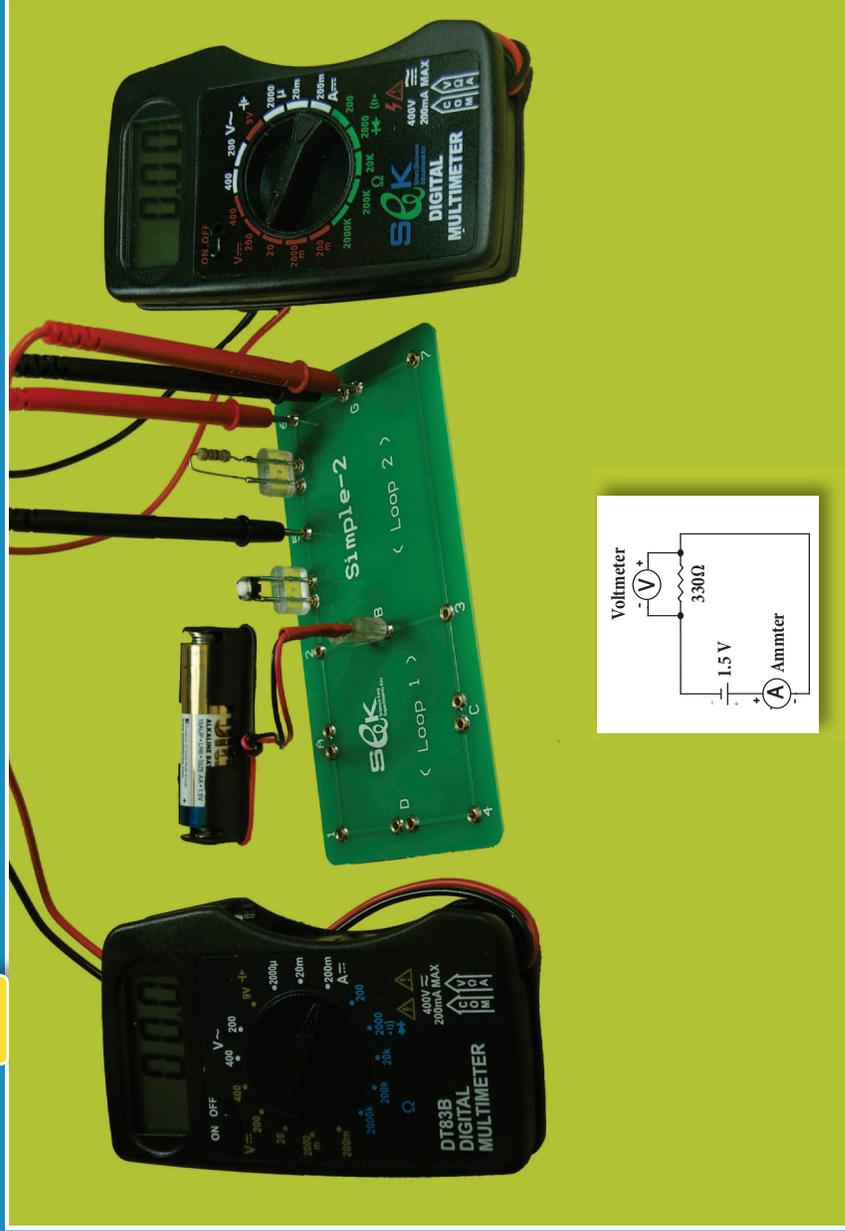


Experiment 17 Ohm's Law



Objectives

1. The student will investigate the relationship between the voltage across a resistor and the current passes through it (Verifying Ohm's Law).
2. The student will be able to find out and calculate the value of the resistor in the circuit from the graph of voltage versus current.

Apparatus

- Experiments Board (Simple-2)
- Two DMM's
- Jumpers
- 1xAA Battery Holder w/AA battery
- Resistor 330Ω
- 2xAA Battery Holder w/AA batteries
- Switch

Procedure & Conclusions

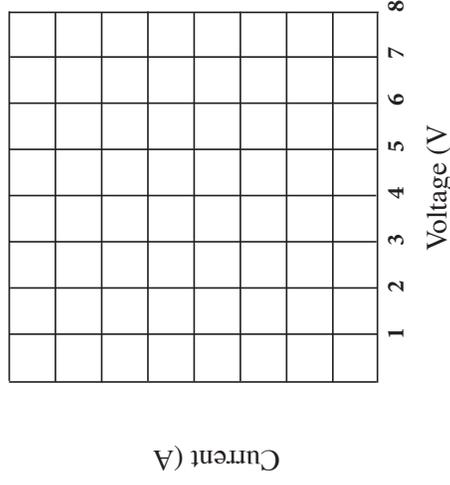
1. Build a simple circuit consists of a single battery 1.5V, Resistor 330Ω and a switch, as shown in the photo.
2. After ensuring that the power of the DMM is off, turn the selection dial of the first DMM to DCA mode (range 200mA), insert the DMM probes at the pair (G). Switch on the first DMM.
3. After ensuring that the power of the DMM is off, turn the selection dial of the second

- DMM to DCV mode (range 20 V), insert the DMM probes at the points (5) and (6) to measure the voltage across the resistor 330Ω. Switch on the second DMM.
- Press the switch button, watch the current reading (mA) from the first DMM, and the voltage reading (V) from the second DMM, record your results in the table below.
 - Connect the 2xAA battery holder at the pair (B) instead of the 1xAA battery holder in away that it's positive terminal is towards the point (3)
 - Repeat step 4
 - Connect the 1xAA battery holder at the pair (E) instead of the switch in away that it's positive terminal is towards the point (2), in this case the voltage supplied to the circuit is 4.5V
 - Repeat step 4

- Voltage vs Current Table:

Attempt	Voltage V	Current mA	Current A	V/I
1	1.5V			
2	3V			
3	4.5V			

- Plot IV graph by plotting the voltage (V) on the X-axis and the current (A) on the Y-axis



- From the graph we can see that there is a linear relationship between the voltage and current, we conclude that the voltage across a resistor is ... **directly / inversely** ... proportional to the current passes through the same resistor, this is called **Ohm's law**.
- The slope of the graph $(I/V) = \dots\dots\dots$
- The inverse of the slope $(V/I) = \dots\dots\dots$ notice that this value corresponds to the value of the resistor that is used in the experiment.

Discussion

- Discuss the difference between an ohmic resistor and a non-ohmic resistor.