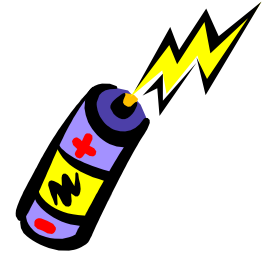


Ohm's Law

Objectives:

- construct a simple resistor circuit
- measure current through a resistor using an ammeter
- measure potential difference across a resistor using a voltmeter
- determine resistance and verify Ohm's Law (i.e., $R = V/I$ is constant)



Materials:

- D-cells and cell holders or variable power supply, multi-meters, wire, resistors, switch

Procedure:

- Draw both pictorial and schematic diagrams illustrating a circuit that includes the Ohm's Law materials.
- Connect the materials as shown in the diagrams.
- Record data from the multi-meters (used as a voltmeter and an ammeter) for six trials (using 1 - 6 cells in series or varying amounts of electric potential difference from the variable power supply) for each resistor.
- For each trial, divide "Potential Difference" by "Current" to obtain the "Resistance" for that trial ($R = V/I$). Average the trials for each resistor to obtain the "data table value" of resistance.
- Make a graph of "**Potential Difference vs. Current**" for each resistor. Include the origin (0,0) as a data point.
- Find the slope of the line that best fits your points. Enter this value as the "graph value" for the unknown resistance.
- Use the resistor color codes to determine the accepted resistance of each resistor.
- Compare your experimental value with the accepted value in a conclusion paragraph. Be sure to list sources of error in this activity.

Pictorial Diagram

Schematic Diagram

Resistor I **Color Bands - - -**

trial	I	II	III	IV	V	VI	VII
potential diff (V)	0						
current (Amps)	0						
resistance (Ω)	-						
Average Resistance (Ω) =							

Resistor II **Color Bands - - -**

trial	I	II	III	IV	V	VI	VII
potential diff (V)	0						
current (Amps)	0						
resistance (Ω)	-						
Average Resistance (Ω) =							

Resistor III **Color Bands - - -**

trial	I	II	III	IV	V	VI	VII
potential diff (V)	0						
current (Amps)	0						
resistance (Ω)	-						
Average Resistance (Ω) =							

Analysis of Results

resistor color code	accepted value, Ω	data table value, Ω	% error	graph value, Ω	% error

Conclusion: