

Ohm's Law

Aim

To verify the relationship $I = \frac{\Delta V}{R}$

Hypothesis

If the resistance in an electric circuit is kept constant, then the current will increase as the voltage is increased.

$I \propto \Delta V$ (I is directly proportional to ΔV).

Equipment

Power supply	Multimeter and probes
Alligator clips	Resistor(s)

Method

Part A: Resistance

1. Use the colour-codes chart to predict the resistance of the resistor.
2. Set the multimeter to the highest Ω setting, and connect to the resistor. Reduce the Ω setting until a useful measurement is obtained.
3. Record both the predicted and measured resistances.

Part B: Voltage

1. Make sure the power supply is off. Connect the resistor to the power supply, and connect the multimeter in *parallel*. Neither of the multimeter plugs should be in the "10A" socket.
2. Set the multimeter to the 20V setting. If there is a "Hold" button, make sure it is not depressed.
3. Set the power supply to 2V and turn it on.
4. Record the voltage, then turn off the power supply.
5. Repeat steps 3 and 4 for 4V, 6V, 8V, 10V, and 12V.

Part C: Current

1. Make sure the power supply is off. Connect the resistor and multimeter in *series* to the power supply. Neither of the multimeter plugs should be in the "10A" socket.
2. Set the multimeter to the 20mA setting.
3. Set the power supply to 2V and turn it on.
4. Record the current, then turn off the power supply.
5. Repeat steps 3 and 4 for 4V, 6V, 8V, 10V, and 12V.

Optionally, repeat Part C for another resistor.

Report

- Results
 - Table(s) of data
 - Graph of the values hypothesised to be proportional
- Calculations
 - Description of variables
 - Calculation of slope of line of best fit
- Discussion
 - Analysis of results with discussions of possible sources of error
 - Evaluation of the method and suggestions for improvements
- Conclusion