

Part A: Proportions

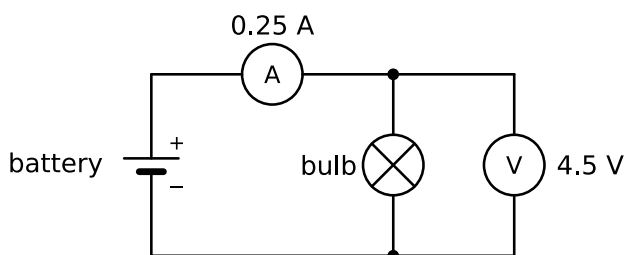
1. A $20. \Omega$ resistor connected to a 6.0 V battery carries a current of 0.30 A . Answer each part without a calculator first, then check with $V = IR$.
 - a. The 6.0 V battery is replaced with a 12 V battery. What is the new current? Is current directly or inversely proportional to voltage?
 - b. Back on the 6.0 V battery, the resistor is replaced with a $40. \Omega$ resistor. What is the new current? Is current directly or inversely proportional to resistance?

Part B: Solving with Ohm's Law

Show your knowns, equation, substitution, and answer with units.

2. A toy car's motor has a resistance of 8.0Ω and draws a current of 0.75 A . What voltage does its battery pack supply?

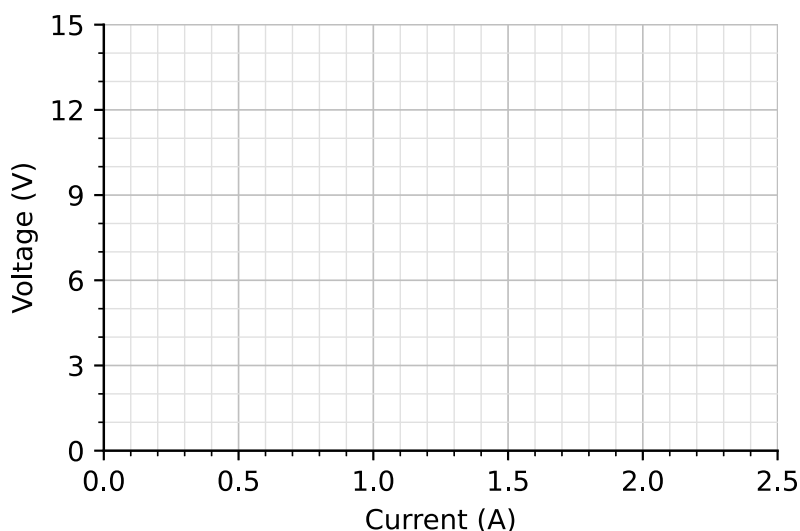
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3. Priya measures a bulb with the meters shown. What is the resistance of the bulb?



Part C: Graphs

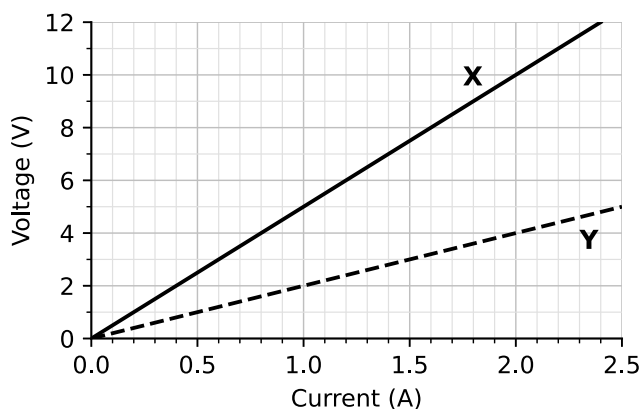
4. Marcus measures the voltage across a resistor and the current through it. Plot his data with current on the x-axis and draw a straight line of best fit.

Current (A)	Voltage (V)
0.00	0.0
0.50	3.1
1.00	5.9
1.50	9.0
2.00	12.1



- Find the slope of your line, with units. What does the slope tell you?
- Use the resistance to predict the current when the voltage is 15 V.

5. The graph shows voltage vs. current for two resistors, X (solid) and Y (dashed).



- Without calculating, which resistor has more resistance? How can you tell?
- Find the resistance of each resistor.
- What current flows through resistor Y when the voltage across it is 6.0 V?