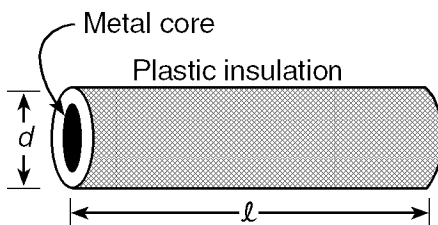


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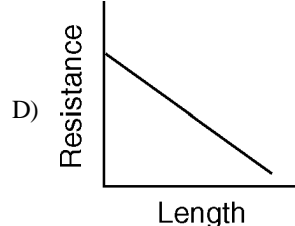
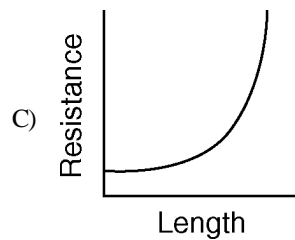
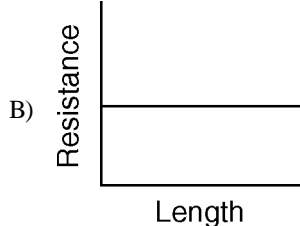
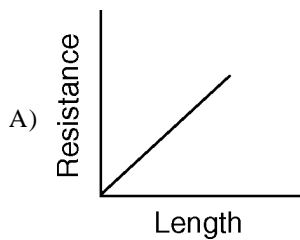
Resistivity and Ohm's Law Worksheet

- 1) What is the current in an electric circuit if 10. coulombs of charge are transferred through the circuit in 5.0 seconds?
- 2) During a thunderstorm, a lightning strike transfers 12 coulombs of charge in 2.0×10^{-3} second. What is the average current produced in this strike?
- 3) A wire carries a current of 2.0 amperes. How many electrons pass a given point in this wire in 1.0 second?
- 4) Plastic insulation surrounds a wire having diameter d and length ℓ as shown below.



- A decrease in the resistance of the wire would be produced by an increase in the
- A) length ℓ of the wire
 - B) diameter d of the wire
 - C) temperature of the wire
 - D) thickness of the plastic insulation
- 5) A current of 3.0 amperes is flowing in a circuit. How much charge passes a given point in the circuit in 30. seconds?
 - A) 90. C
 - B) 0.10 C
 - C) 10. C
 - D) 33 C
 - 6) A manufacturer recommends that the longer the extension cord used with an electric drill, the thicker (heavier gauge) the extension cord should be. This recommendation is made because the resistance of a wire varies
 - A) directly with length and inversely with cross-sectional area
 - B) inversely with length and directly with cross-sectional area
 - C) inversely with both length and cross-sectional area
 - D) directly with both length and cross-sectional area
 - 7) A complete circuit is left on for several minutes, causing the connecting copper wire to become hot. As the temperature of the wire increases, the electrical resistance of the wire
 - A) decreases
 - B) remains the same
 - C) increases
 - 8) A 0.500-meter length of wire with a cross-sectional area of 3.14×10^{-6} meters squared is found to have a resistance of 2.53×10^{-3} ohms. According to the resistivity chart, the wire could be made of
 - A) silver
 - B) aluminum
 - C) copper
 - D) nichrome
 - 9) Pieces of aluminum, copper, gold, and silver wire each have the same length and the same cross-sectional area. Which wire has the *lowest* resistance at 20°C ?
 - A) gold
 - B) aluminum
 - C) copper
 - D) silver

- 10) Which graph *best* represents the relationship between resistance and length of a copper wire of uniform cross-sectional area at constant temperature?



- 11) The table below lists various characteristics of two metallic wires, *A* and *B*.

Wire	Material	Temperature (°C)	Length (m)	Cross-Sectional Area (m ²)	Resistance (Ω)
<i>A</i>	silver	20.	0.10	0.010	<i>R</i>
<i>B</i>	silver	20.	0.20	0.020	???

If wire *A* has resistance *R*, then wire *B* has resistance

- A) *R* B) $4R$ C) $\frac{R}{2}$ D) $2R$
- 12) Several pieces of copper wire, all having the same length but different diameters, are kept at room temperature. Which graph *best* represents the resistance, *R*, of the wires as a function of their cross-sectional areas, *A*?

