Name: _____   Period: _____
Current, Ohm's Law and Resistivity
Show all equations and work with units.

1. 5.34×10^{20} electrons pass a point in a circuit in 2.5 seconds. What is the current at that point?

2. An automobile headlight with a resistance of 30Ω is placed across a 12V battery. What current is passing through the light bulb?

3.A transistor radio uses 2.0×10^{-4}A of current when it is operated by a 3.0V battery. What is the resistance of this circuit? If the resistance is doubled while the potential difference is held constant, how much current will pass through the circuit?

4. What is the effect on the current of doubling both the voltage and resistance in an electric circuit?

5. A resistor is placed in a circuit and the potential difference is adjusted to allow the flow of current. At a 1.5V setting 4.5×10-A of current will pass, while at a 3.0V setting 2.5×10^{-3}A of current passes. Does this resistor obey Ohm's Law? Why?

6. Determine the resistance of a nichrome wire of length .30m and a cross-sectional area of $4.3 \times 10^{-2}m^2$.

7. A copper wire with a length of 1.0m is placed in a circuit that passes 3.0A of current when connected to a 12V battery. What is the cross-sectional area of the wire?