Name: _____ Block: _____

Ohm's Law & Electric Power

1. An MP3 player uses a standard 1.5 V battery. How much resistance is in the circuit if it uses a current of 0.010 A?

$\boxed{150\,\Omega}$

2. What current flows through a hair dryer plugged into a 110 V circuit if it has a resistance of 25 Ω?

$\boxed{4.4\,\text{A}}$

3. A 12 V battery pushes charge through the headlight circuit, which has a resistance of 10. Ω. How much current passes through the circuit?

$\boxed{1.2\,\text{A}}$

4. An electric heater works by passing a current of 100. A though a coiled metal wire, making it red hot. If the resistance of the wire is 1.1 Ω, what voltage must be applied to it?

$\boxed{110\,\text{V}}$

5. A subwoofer needs a household voltage of 110 V to push a current of 5.5 A through its coil (circuit). What is the resistance of the coil?

$\boxed{20.\,\Omega}$

6. A light bulb has a resistance of 5.0 Ω and a maximum current of 10. A. How much voltage can be applied before the bulb will break?

$\boxed{50.\,\text{V}}$

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7. What is the power when a voltage of 120 V drives a 2.0 A current through a device?

240 W

8. What is the resistance of a 60. W light bulb connected to a 120 V circuit?

240 Ω

9. If a component in an electric circuit dissipates 6.0 W of power when it draws a current of 3.0 A, what is the resistance of the component?

0.67 Ω

10. Some children are afraid of the dark and ask their parents to leave the hall light on all night. Suppose the hall light in a child's house has two 60. W bulbs (120 W total), the voltage is 120 V, and the light is left on for 8.0 hours.

(a) How much current flows through the light fixture?

1.0 A

(b) How many kilowatt-hours of energy would be used in one night?

0.96 kW·h

(c) If the power company charges 8.0 cents per kilowatt-hour, how much does it cost to leave the light on overnight?

7.7 cents

(d) If the two 60 W bulbs are replaced by compact fluorescent bulbs that use 13 W each, how much money would the family save each night?

6 cents