![C:\Users\Nindi\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\3TYAM3AH\MC900183472[1].wmf]()Electrical Power and Energy

**ANSWERS**: 5.0 A 1.9 A 1.1 × 105 J 2.9 × 106 J 8.4 × 105J 0.11 W 40 V 4.0 A 30 W 53 V

1. A current of 5.0 A flows through a flashlight bulb when it is connected to 6.0 V. What is the power of this bulb?

2. A 600 W electric heater is connected to a 120 V source. What current flows through the heater?

3. A 2.5 A current flows through a 100 W lamp. What is the voltage across the lamp?

4. What is the current through a 6.0 W light bulb when it is connected to a 1.5 V battery?

5. (a) A 40 W light bulb is connected to a power supply and draws a current of 0.75 A. What is the voltage of the power supply?

(b) If the 40 W light bulb is replaced by a 100 W light bulb, how much current will flow through the 100 W bulb?

6. What is the power, in watts, of an unknown device if a current of 35 mA flows through the device when it is connected to 3.0 V?

7. How much energy, in joules, is consumed by a 120 W light bulb if it is left on for 15 min?

8. How much energy, in joules, is consumed by a 1400 W hair dryer if it is used for 10 min?

9. How much energy, in joules, is consumed by a 200 W stereo if it is left on for 4.0 h?

![C:\Users\Nindi\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\4REO0QLP\MC900354158[1].wmf]()Power Problems

**Calculate the answers to the questions below. Show all your work.**

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| 1. A portable hair dryer, plugged into a 110 V outlet, has a current of 10 A flowing through it. What is the power rating of the hair dryer?(1100 W) | 2. A current of 0.50 A flows through a light bulb connected to a 110 V outlet. How much power is “lost” by this bulb? (55 W) |
| 3. A toaster connected to a 110 V power source has 6.0 A of current flowing through it. How much power is dissipated as heat?(660 W) | 4. A light bulb draws 1.25 A of current from a 120 V gasoline-powered generator.(a) How much power does the generator produce? (150 W)(b) If the generator runs for 5.0 min, how much energy will the lamp convert into heat and light?(45 kJ) |