C:\Users\Nindi\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\3TYAM3AH\MC900183472[1].wmfElectrical 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].wmfPower 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) |