

DATE:

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CHAPTER 9

## Electrical Power and Energy

BLM 3-38

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continued

Goal • Calculate electrical power and energy.

What to Do

Answer the following questions. Show all your work.

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?

**Goal** • Practise calculating the cost of energy.

### What to Do

Answer the questions below. Show all your work.

<p>1. A meter reader determines that a business has used 3550 kW·h of energy in two months. If electricity costs 10¢ per kW·h, calculate the bill.</p>	<p>2. An electric heater draws 1100 W of power. Electricity costs 8¢ per kW·h. How much does it cost to operate the heater 3.0 h a day for 30 days?</p>
<p>3. A 730 W toaster and 1200 W electric frying pan are plugged into the same 100 V outlet. How much will it cost to operate the two appliances at 8¢ per kW·h if they are used for 20 h?</p>	<p>4. A toaster is used an average of 5.0 h a month. The toaster draws 8.0 A of current from a 110 V outlet. If electricity costs 8¢ per kW·h, how much will it cost to operate the toaster for one year?</p>