Name Period Date

Concept-Development Practice Page 34-2

Electric Power

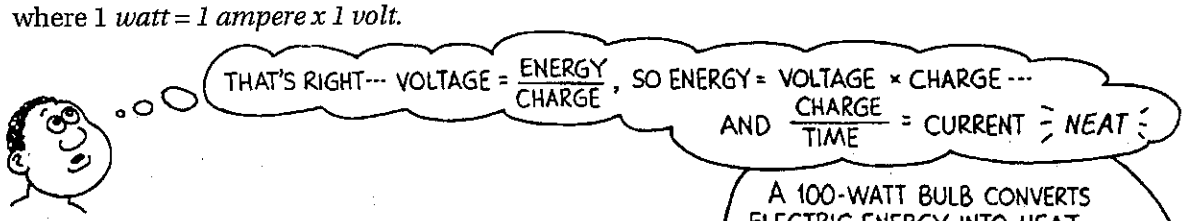
Recall that the rate energy is converted from one form to another is *power.*

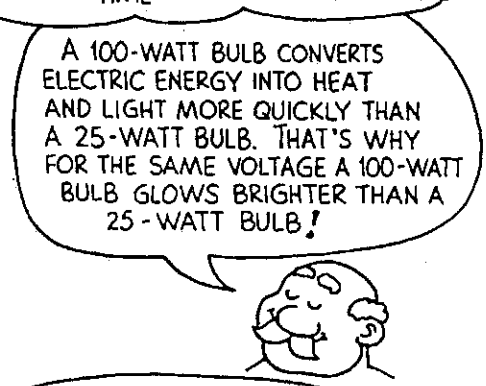
$$\text{power} = \frac{\text{energy converted}}{\text{time}} = \frac{\text{voltage} \times \text{charge}}{\text{time}} = \text{voltage} \times \frac{\text{charge}}{\text{time}} = \text{voltage} \times \text{current}$$

The unit of power is the *watt* (or *kilowatt*). So in units form,

Electric power (*watts*) = current (*amperes*) x voltage (*volts*),

where 1 *watt = 1 ampere x 1 volt.*





1. What is the power when a voltage of 120 V drives a 2-A current through a device?

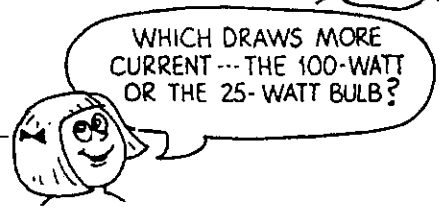
   _____

2. What is the current when a 60-W lamp is connected to 120 V?

   _____

3. How much current does a 100-W lamp draw when connected to 120 V?

   _____



4. If part of an electric circuit dissipates energy at 6 W when it draws a current of 3 A, what voltage is impressed across it?

   _____

5. The equation

$$\text{power} = \frac{\text{energy converted}}{\text{time}}$$

   rearranged gives

   energy converted = _____

6. Explain the difference between a kilowatt and a kilowatt-hour.

   _____

7. One deterrent to burglary is to leave your front porch light on all the time. If your fixture contains a 60-W bulb at 120 V, and your local power utility sells energy at 8 cents per kilowatt-hour, how much will it cost to leave the bulb on for the whole month? Show your work on the other side of this page.

Conceptual PHYSICS