## 17 REVIEW

**71.** **a.** 32 V
**b.** 0.16 V
**72.** 2.7 A
**73.** $1.0 \times 10^5$ W
**74.** 61.1 A
**75.** $3.2 \times 10^5$ J
**76.** $1.1 \times 10^3$ s (18 min)
**77.** 13.5 h

**71.** A person notices a mild shock if the current along a path through the thumb and index finger exceeds 80.0 μA. Determine the maximum allowable potential difference without shock across the thumb and index finger for the following:

**a.** a dry-skin resistance of $4.0 \times 10^5\ \Omega$
**b.** a wet-skin resistance of $2.0 \times 10^3\ \Omega$

**72.** A color television has a power rating of 325 W. How much current does this set draw from a potential difference of 120 V?

**73.** An X-ray tube used for cancer therapy operates at 4.0 MV with a beam current of 25 mA striking a metal target. Calculate the power of this beam.

**74.** The mass of a gold atom is $3.27 \times 10^{-25}$ kg. If 1.25 kg of gold is deposited on the negative electrode of an electrolytic cell in a period of 2.78 h, what is the current in the cell in this period? Assume that each gold ion carries one elementary unit of positive charge.

**75.** The power supplied to a typical black-and-white television is 90.0 W when the set is connected across a potential difference of 120 V. How much electrical energy does this set consume in 1.0 h?

**76.** A color television set draws about 2.5 A of current when connected to a potential difference of 120 V. How much time is required for it to consume the same energy that the black-and-white model described in item 75 consumes in 1.0 h?

**77.** The headlights on a car are rated at 80.0 W. If they are connected to a fully charged 90.0 A•h, 12.0 V battery, how long does it take the battery to completely discharge?

extension

***Graphing Calculator Practice***

Visit go.hrw.com for answers to this Graphing Calculator activity.

**Keyword HF6ELCXT**

## Graphing Calculator Practice

**Resistance and Current**

When you install a 100 W light bulb, what is the resistance of and current passing through this light bulb? The answer to this question and similar questions is found in two equations that you learned earlier in this chapter:

$$P = \frac{(\Delta V)^2}{R} \text{ and } P = I\Delta V$$

These equations describe the power dissipated by a resistor. In these equations, $P$ is the power in watts, $\Delta V$ is the potential difference in volts, $R$ is the resistance in ohms, and $I$ is the current in amperes.

In this graphing calculator activity, you will calculate a series of tables of resistance and current versus potential difference for various values of dissipated power. By analyzing these tables, you will better understand the relationships between power, potential difference, resistance, and current. (You will also be able to answer the question about the 100 W light bulb.)

Visit go.hrw.com and type in the keyword **HF6ELCX** to find this graphing calculator activity. Refer to **Appendix B** for instructions on downloading the program for this activity.