

Figure 3-13 Figure for Probs. 3-11 to 3-15.

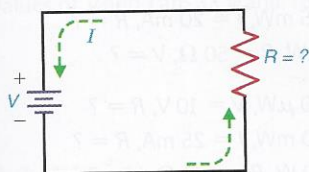
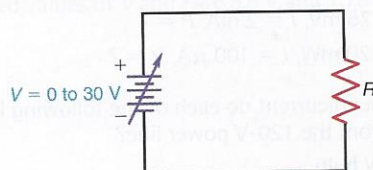


Figure 3-14 Circuit diagram for Prob. 3-21.



3-8 **MultiSim** a. $I = 0.05\text{ A}$, $R = 1200\ \Omega$, $V = ?$

b. $I = 0.2\text{ A}$, $R = 470\ \Omega$, $V = ?$

c. $I = 0.01\text{ A}$, $R = 15,000\ \Omega$, $V = ?$

d. $I = 0.006\text{ A}$, $R = 2200\ \Omega$, $V = ?$

3-9 How much voltage is developed across a $1000\text{-}\Omega$ resistor if it has a current of 0.01 A ?

3-10 A lightbulb drawing 1.25 A of current has a resistance of $96\ \Omega$. How much is the voltage across the lightbulb?

SECTION 3-3 THE RESISTANCE $R = V/I$

In Probs. 3-11 to 3-15, solve for the resistance, R , when V and I are known. As a visual aid, it may be helpful to insert the values of V and I into Fig. 3-13 when solving for R .

3-11 a. $V = 14\text{ V}$, $I = 2\text{ A}$, $R = ?$

b. $V = 25\text{ V}$, $I = 5\text{ A}$, $R = ?$

c. $V = 6\text{ V}$, $I = 1.5\text{ A}$, $R = ?$

d. $V = 24\text{ V}$, $I = 4\text{ A}$, $R = ?$

3-12 a. $V = 36\text{ V}$, $I = 9\text{ A}$, $R = ?$

b. $V = 45\text{ V}$, $I = 5\text{ A}$, $R = ?$

c. $V = 100\text{ V}$, $I = 2\text{ A}$, $R = ?$

d. $V = 240\text{ V}$, $I = 20\text{ A}$, $R = ?$

3-13 a. $V = 12\text{ V}$, $I = 0.002\text{ A}$, $R = ?$

b. $V = 16\text{ V}$, $I = 0.08\text{ A}$, $R = ?$

c. $V = 50\text{ V}$, $I = 0.02\text{ A}$, $R = ?$

d. $V = 45\text{ V}$, $I = 0.009\text{ A}$, $R = ?$

3-14 How much is the resistance of a motor if it draws 2 A of current from the 120-V power line?

3-15 If a CD player draws 1.6 A of current from a 13.6-Vdc source, how much is its resistance?

SECTION 3-5 MULTIPLE AND SUBMULTIPLE UNITS

In Probs. 3-16 to 3-20, solve for the unknowns listed. As a visual aid, it may be helpful to insert the known values of I , V , or R into Figs. 3-11, 3-12, or 3-13 when solving for the unknown quantity.

3-16 a. $V = 10\text{ V}$, $R = 100\text{ k}\Omega$, $I = ?$

b. $V = 15\text{ V}$, $R = 2\text{ k}\Omega$, $I = ?$

c. $I = 200\ \mu\text{A}$, $R = 3.3\text{ M}\Omega$, $V = ?$

d. $V = 5.4\text{ V}$, $I = 2\text{ mA}$, $R = ?$

3-17 a. $V = 120\text{ V}$, $R = 1.5\text{ k}\Omega$, $I = ?$

b. $I = 50\ \mu\text{A}$, $R = 390\text{ k}\Omega$, $V = ?$

c. $I = 2.5\text{ mA}$, $R = 1.2\text{ k}\Omega$, $V = ?$

d. $V = 99\text{ V}$, $I = 3\text{ mA}$, $R = ?$

3-18 a. $V = 24\text{ V}$, $I = 800\ \mu\text{A}$, $R = ?$

b. $V = 160\text{ mV}$, $I = 8\ \mu\text{A}$, $R = ?$

c. $V = 13.5\text{ V}$, $R = 300\ \Omega$, $I = ?$

d. $I = 30\text{ mA}$, $R = 1.8\text{ k}\Omega$, $V = ?$

3-19 How much is the current, I , in a $470\text{-k}\Omega$ resistor if its voltage is 23.5 V ?

3-20 How much voltage will be dropped across a $40\text{-k}\Omega$ resistance whose current is $250\ \mu\text{A}$?

SECTION 3-6 THE LINEAR PROPORTION BETWEEN V AND I

3-21 Refer to Fig. 3-14. Draw a graph of the I and V values if (a) $R = 2.5\ \Omega$; (b) $R = 5\ \Omega$; (c) $R = 10\ \Omega$. In each case, the voltage source is to be varied in 5-V steps from 0 to 30 V .

3-22 Refer to Fig. 3-15. Draw a graph of the I and R values when R is varied in $2\text{-}\Omega$ steps from 2 to $12\ \Omega$. (V is constant at 12 V .)

SECTION 3-7 ELECTRIC POWER

In Probs. 3-23 to 3-31, solve for the unknowns listed.

3-23 a. $V = 120\text{ V}$, $I = 12.5\text{ A}$, $P = ?$

b. $V = 120\text{ V}$, $I = 625\text{ mA}$, $P = ?$

c. $P = 1.2\text{ kW}$, $V = 120\text{ V}$, $I = ?$

d. $P = 100\text{ W}$, $I = 8.33\text{ A}$, $V = ?$

3-24 a. $V = 24\text{ V}$, $I = 25\text{ mA}$, $P = ?$

b. $P = 6\text{ W}$, $V = 12\text{ V}$, $I = ?$

c. $P = 10\text{ W}$, $I = 100\text{ mA}$, $V = ?$

d. $P = 50\text{ W}$, $V = 9\text{ V}$, $I = ?$

Figure 3-15 Circuit diagram for Prob. 3-22.

