ANSWERS TO RESPIRATION AND PHOTOSYNTHESIS PROBLEMS

1. b is true; a, c, and d are false, in each case because the energy released by the oxidation of glucose in respiration is partially saved in the synthesis of ATP and partially lost as heat.

2. a. 62%  b. 3.5%  c. 3.5%  d. 69%  e. 46%

3. Between -52 and -36 kcal

4. When the electrochemical gradient across the inner mitochondrial membrane is discharged, no ATP can be synthesized by mitochondrial ATP synthase.

5. 
6.  a. true  b. true  c. false  d. false  e. false (less)  f. false

7.  a. 10,000  b. none  c. none  d. 60,000  
    e. 480,000 (2 electrons per O, 4 electrons per O₂; 2 photons per electron; thus, 8 photons per O₂)
    f. Red and blue light are equally effective per photon absorbed by the chlorophyll.

8.  a. 60,000  b. 60,000  c. 360,000  d. none