- 1. Write the number of protons and neutrons for each nuclide:
  - (a) <sup>4</sup><sub>2</sub>He
  - (b)  $^{20}_{10}$ Ne
  - (c)  $^{234}_{92}$  U
  - (d) Cr-51
  - (e) Pb-214
  - (f) Po-210
- 2. Write a nuclear equation for the indicated decay of each nuclide:
  - (a) U-234 (alpha)
  - (b) Th-230 (alpha)
  - (c) Pb-214 (beta)
  - (d) N-13 (positron emission)
  - (e) Cr-51 (electron capture)

3. One of the nuclides in spent nuclear fuel is U-235, an alpha emitter with a half-life of 703 million years. How long will it take for the amount of U-235 to reach 10.0% of its initial amount?

4. A wooden boat discovered just south of the Great Pyramid in Egypt has a carbon-14/carbon-12 ratio that is 72.5% of that found in living organisms. How old is the boat?