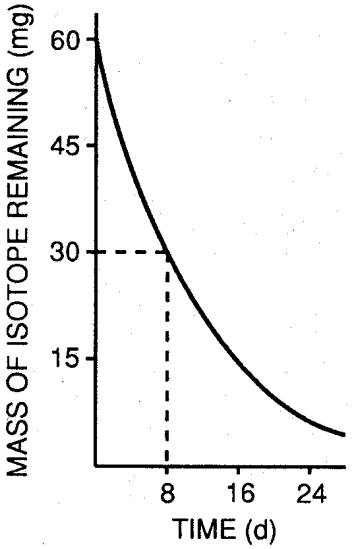
Regents Questions (14 points)

1. What is the number of hours required for potassium-42 to undergo 3 half-life periods?

   A) 6.2 hours B) 12.4 hours
   C) 24.8 hours D) 37.1 hours

2. The graph below represents the decay of a radioactive isotope.



   Based on Reference Table *N*, which radioisotope is best represented by the graph?

   A) ^{32}P B) ^{131}I
   C) ^{198}Au D) ^{222}Rn

3. If a radioactive substance has a half-life of 9 days what fraction of its original mass would remain after 27 days?

   A) $\frac{1}{8}$ B) $\frac{1}{4}$ C) $\frac{1}{2}$ D) $\frac{3}{4}$

4. If 80 milligrams of a radioactive element decays to 10 milligrams in 30 minutes, what is the element's half-life in minutes?

   A) 10 B) 20 C) 30 D) 40

5. Which nuclide has a half-life that is *less* than one minute?

   A) cesium-137 B) francium-220
   C) phosphorus-32 D) strontium-90

6. An original sample of the radioisotope fluorine-21 had a mass of 80.0 milligrams. Only 20.0 milligrams of this original sample remain unchanged after 8.32 seconds. What is the half-life of fluorine-21?

   A) 1.04s B) 2.08s
   C) 4.16s D) 8.3s

7. An original sample of K-40 has a mass of 25.00 grams. After 3.9×10^9 years, 3.125 grams of the original sample remains unchanged. What is the half-life of K-40?

   A) 1.3×10^9 y B) 2.6×10^9 y
   C) 3.9×10^9 y D) 1.2×10^9 y