

Name _____

Homework.

- _____ 1) As the temperature of a sample of a radioactive element decreases, the half-life of the element
- 1) decreases
 - 2) increases
 - 3) remains the same
- _____ 2) As a sample of the radioactive isotope ^{131}I decays, its half-life
- 1) decreases
 - 2) increases
 - 3) remains the same
- _____ 3) Which of the following 10-gram samples of radioisotope will decay to the greatest extent in 28 days?
- 1) $^{32}_{15}\text{P}$
 - 2) $^{85}_{36}\text{Kr}$
 - 3) $^{220}_{87}\text{Fr}$
 - 4) $^{131}_{53}\text{I}$
- _____ 4) Which sample will decay *least* over a period of 30 days?
- 1) 10 g of Au-198
 - 2) 10 g of I-131
 - 3) 10 g of P-32
 - 4) 10 g of Rn-222
- _____ 5) 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?
- 1) 1.04s
 - 2) 2.08s
 - 3) 4.16s
 - 4) 8.3s
- _____ 6) The half-life of ^{131}I is 8.021 days. What fraction of a sample of ^{131}I remains after 24.063 days?
- 1) 1/2
 - 2) 1/4
 - 3) 1/8
 - 4) 1/16
- _____ 7) What was the original mass of a radioactive sample that decayed to 25 grams in four half-life periods?
- 1) 50 g
 - 2) 100 g
 - 3) 200 g
 - 4) 400 g
- _____ 8) What is the total number of grams of a 32-gram sample of ^{32}P remaining after 71.4 days of decay?
- 1) 1.0 g
 - 2) 2.0 g
 - 3) 8.0 g
 - 4) 4.0 g
- _____ 9) What is the total number of years that must pass before only 25.00 grams of an original 100.0-gram sample of C-14 remains unchanged?
- 1) 2858 y
 - 2) 5715 y
 - 3) 11 430 y
 - 4) 17 145 y
- _____ 10) Exactly how much time must elapse before 16 grams of potassium-42 decays, leaving 2 grams of the original isotope?
- 1) 8×12.36 hours
 - 2) 2×12.36 hours
 - 3) 3×12.36 hours
 - 4) 4×12.36 hours
- _____ 11) If 8.0 grams of a sample of ^{60}Co existed in 1990, in which year will the remaining amount of ^{60}Co in the sample be 0.50 gram?
- 1) 1995
 - 2) 2000
 - 3) 2006
 - 4) 2011
- _____ 12) If $\frac{1}{8}$ of an original sample of krypton-74 remains unchanged after 34.5 minutes, what is the half-life of krypton-74?
- 1) 11.5 min
 - 2) 23.0 min
 - 3) 34.5 min
 - 4) 46.0 min