Rate of Nuclear Decay - Half Life
Homework Unit 13 - Topic 5

Example Problem:
How much ^{39}K will be left in a 320 g sample after 62 hours?
  • Look up the half life in Table N, the table of Selected Radioisotopes (12.4 hours)

Mass (g)	Time (hours)	Fraction	Half Lives
320	0	1	0
160	12.4	1/2	1
80	24.8	1/4	2
40	27.2	1/8	3
20	49.6	1/16	4
10	62	1/32	5

1. How much of a 100.0 g sample of ^{198}Au is left after 8.10 days if its half-life is 2.70 days?

2. A 50.0 g sample of ^{16}N decays to 12.5 g in 14.4 seconds. What is its half-life?

3. The half-life of ^{42}K is 12.4 hours. How much of a 750 g sample is left after 62.0 hours?

4. What is the half-life of ^{99}Tc if a 500 g sample decays to 62.5 g in 639,000 years?

5. The half life of ^{232}Th is 1.4 x 10^{10} years. If there are 25.0 g of the sample left after 2.8 x 10^{10} years, how many grams were in the original sample?

6. There are 5.0 g of ^{131}I left after 40.35 days. How many grams were in the original sample?

7. How long will it take for 500 g of ^{90}Sr to decay to 125 g?

8. How long will it take for a 28 g sample of ^{226}Ra to decay to 3.5 g?

9. How many half lives will it take for 50 g of ^{99}Tc to decay to 6.25 g?

10. How many grams of ^{16}N will be left from a 16 g sample after 21.6 seconds?