

Radiometric Dating Assignment

1. Suppose the radioactive isotope you are modeling has a half-life of 713 million years. How old is the sample if 1/32 of the original isotope remains?

2. Some fossils contain 1/8 of their original amount of carbon-14. How many half-lives have passed? How old are the bones? (Remember: C-14 has a half-life of 5730 years)

3. A 10 g sample of iodine-131 is giving off β radiation. The amount of iodine that remains is measured every day at 12:00 pm and recorded in the chart below:

Day	Amount Remaining (in g)
0	10
1	9.2
2	8.4
3	7.7
4	7.1
5	6.5
6	6.0
7	5.5
8	5.0
9	4.6
10	4.2
11	3.9
12	3.6

a) Plot the data on a graph where time is on the horizontal axis and amount remaining is on the vertical axis. Draw a smooth curve through the data points.

b) Locate the spot on the graph where the original amount has dropped to half its original value. At what time is this? This is the half-life of the substance.

c) How long does it take for the amount remaining to drop to 30% of its original value?