Name:_____ Period:_____

Radioactive Dating

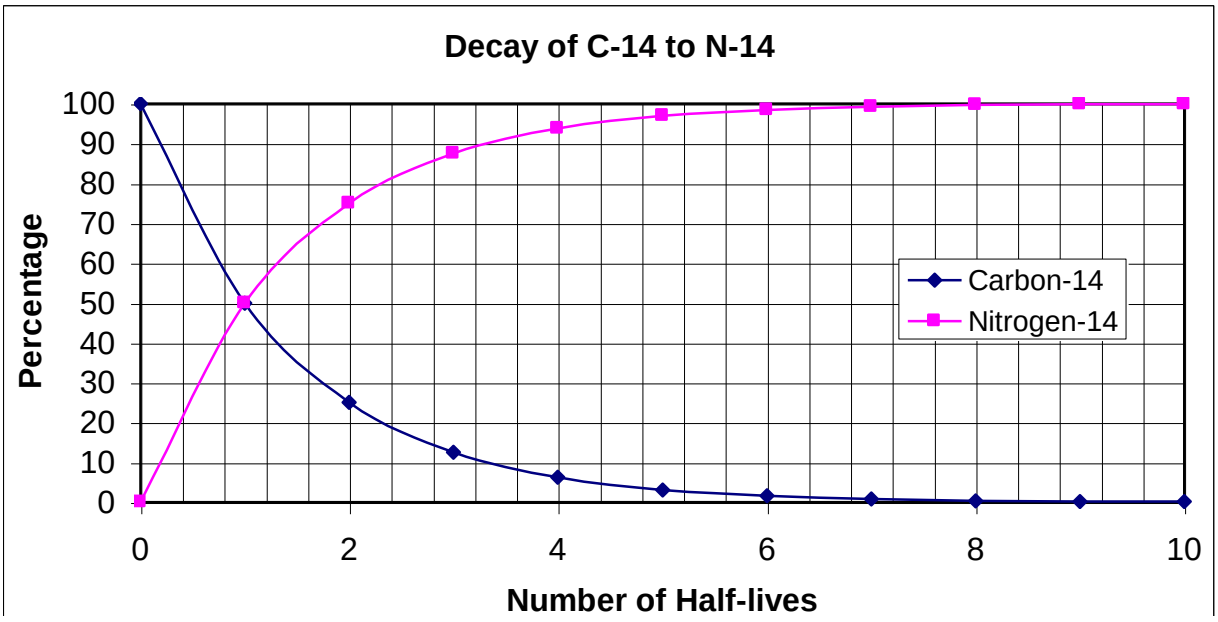
Using regular (non-scientific) numbers, write the half-life of each of the following materials (from your *Handy Dandy Earth Science Reference Tables*):

1. Carbon^{14}
2. Potassium^{40}
3. Uranium^{238}
4. Rubidium^{87}

How to calculate age of an item using radioactive isotopes:

a. Add the amount of parent material with the daughter product- this will equal the total amount of material that you started with.
b. Find the percentage of parent material compared to the total material (parent ÷ total x 100).
c. Find the number of half-lives by looking up the percentage on the decay chart below.

0	1	2	3	4	5	6	7	8	9	10
100	50	25	12.5	6.25	3.125	1.5625	0.781	0.39	0.195	0.098
0	50	75	87.5	93.75	96.875	98.4375	99.2185	99.6085	99.8035	99.9



5. If a sample contains 50g of Carbon^{14} and 50g of Nitrogen^{14}, how many half-lives has it undergone?

Over→

6. If a sample contains 25g of Carbon^{14} and 75g of Nitrogen^{14}, how many half-lives has it undergone?

7. If a sample contains 25g of Carbon^{14} and 175g of Nitrogen^{14}, how many half-lives has it undergone?

8. How old is a bone in which the Carbon^{14} in it has undergone 3 half-lives?

9. What percent of Carbon^{14} is left after 5 half-lives?

10. What happens to the amount of Nitrogen^{14} as the Carbon^{14} decays?

11. If a 20g of Carbon^{14} has a half-life of 5,700 years, what would be the half-life of a 40g sample?