Radioactive Decay Practice
Unit 10 – Geological History

Name: _____
Date: _____ Period: _____

W.S. – Radioactive Decay Practice

Pre-Questions: Answer the following questions using the **Radioactive Decay Data** chart located on page one of your *Handy Dandy Earth Science Reference Table*.

1. What are the four **radioactive isotopes** listed in the reference table?

   a._____ c. _____

   b. _____ d. _____

2. What is the decay product (daughter or **disintegration**) of the following radioactive isotopes?

   a. Carbon-14 (^{14}C) → _____

   b. Potasium-40 (^{40}K) → _____

   c. Uranium-238 (^{238}U) → _____

   d. Rubidium-87 (^{87}Rb) → _____

3. What is the half-life (in years) of the following radioactive isotopes (**NOT in scientific notation**)?

   a. Carbon-14 _____ c. Uranium-238 _____

   b. Potasium-40 _____ d. Rubidium-87 _____

Discussion Questions:

1. What happens to the amount of Nitrogen-14 as the Carbon-14 decays? _____
2. How old is a bone in which the Carbon-14 in it has undergone 3 half-lives? _____
3. What happens to the amount of unstable isotopes disintegrates into the stabile isotope? _____
4. If a sample contains 25g of Carbon-14 and 175g of Nitrogen-14, how many half-lives has it undergone?
5. What percent of Carbon-14 is left after 5 half-lives?
6. If a 20g of Carbon-14 has a half-life of 5,700 years, what would be the half-life of a 40g sample? Why?
7. Which radioactive isotope would be best used in dating the following items?

   a. A buried tree stump: _____
   b. The oldest know rocks on Earth: _____

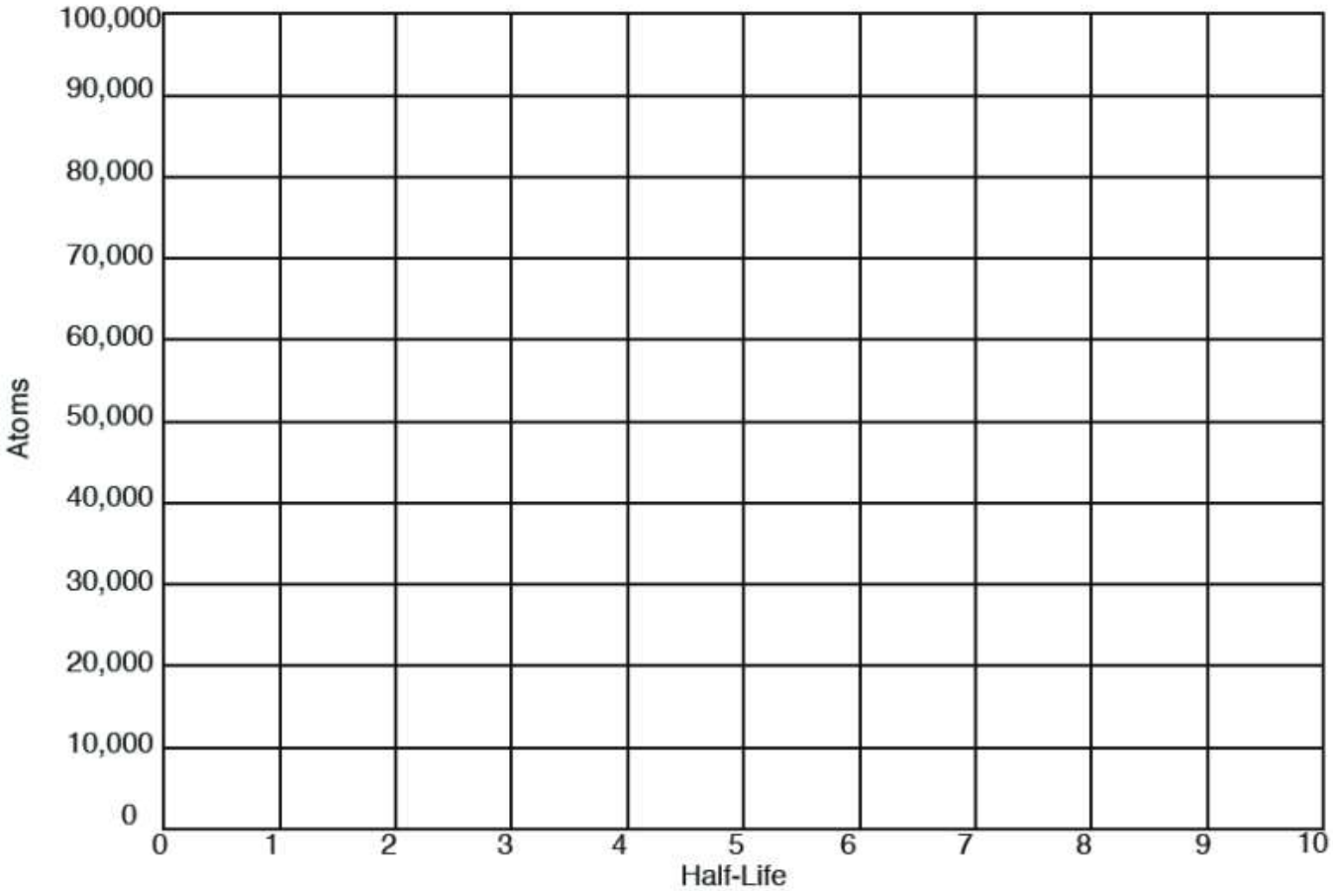
8. Why would Carbon dating not be a useful way to date *Coelophysis* fossils? Use your ESRT!

Procedure:

1. Complete the following table which shows the process of decay of Carbon-14.
2. Plot the number of half-life vs ^{14}C and ^{14}N (Make sure to have a difference symbol for ^{14}C and ^{14}N)

Half-Life	Years	Atoms of ^{14}C	Atoms of ^{14}N
0	0	100,000	0
1	1	50,000	50,000
2			
3			
4			
5			
6			
7			
8			

Number of Half-Life vs. ^{14}C and ^{14}N



Key: ^{14}C ^{14}N