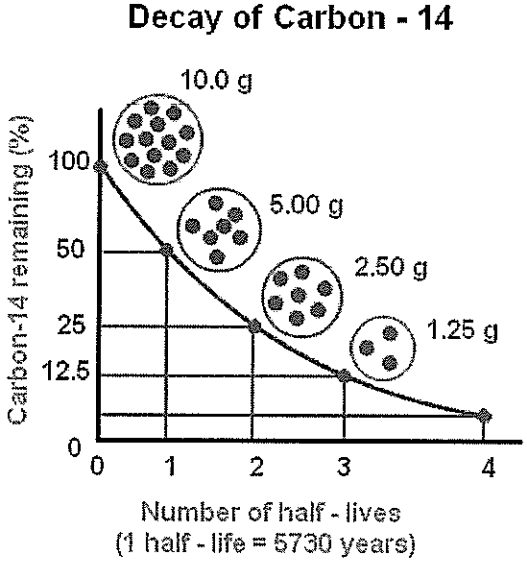
Half-Life Data Worksheet

Name:_____P.__Date:_____PG#___

Follow the directions and answer the questions.

The image to the right shows the *decay* of Carbon-14 into non-radioactive Nitrogen over 4 half-lives (22,920 years).



Hypothesize what half-life is based on the picture:

_____

_____

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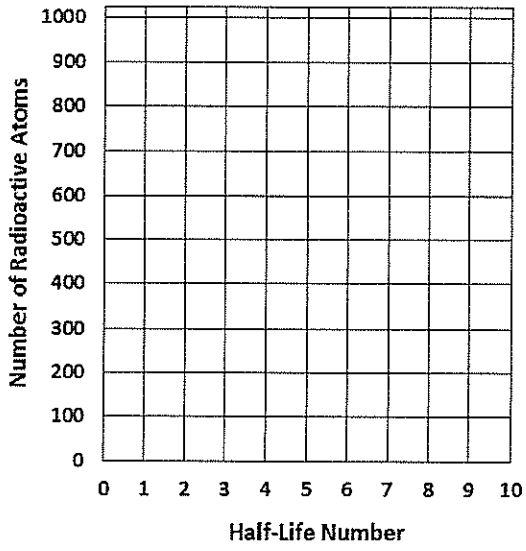
Observe the half-life demonstration as directed by your teacher.

Calculate the number of radioactive atoms remaining after each half-life. Write the number of atoms in the "Number of Radioactive Atoms" column. Plot the number of radioactive atoms on the graph provided. Note that the number of unstable (radioactive) atoms decreases as they are being transformed into stable atoms.

Half-Life Number	Number of Radioactive Atoms
0	1024
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	



Can we accurately date radioactive specimens past when there is only 1 atom left? Why or why not?

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_____

Questions: Show your work, such as a table, then summarize your answer in a complete sentence.

1. If you had a sample of 4,000 radioactive atoms, how many atoms would remain after 5 half-lives? _____

Half-Life Number	Number of Radioactive Atoms left
0	4000
1	
2	
3	
4	
5	

1. If you had a sample of 210 atoms, and you started (it died) with a sample of 3,360 atoms, how many half-lives have elapsed? _____

Half-Life Number	Number of Radioactive Atoms left

2. If the half-life of the sample from question 2 is 30 minutes long, how many hours did it take to decay from 3,360 atoms to 210 atoms?
___ half lives passed x _____ _____ (length of 1 half-life) = _____ minutes = _____ hours

3. Can you determine the age of something (like how long ago a fossil died/was formed) by examining its half-life? Explain.

_____

_____

_____

_____

4. In what other ways besides determining something's age might it be useful to know a sample's half-life? Think about other ways we take advantage of radioactivity in modern life. You might need to look this up if you can't think of anything- but there are SO many uses!

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