Name:_____Date:_____Class:_____Assi.#_

Half-life Worksheet

1. What is *radioactivity*?

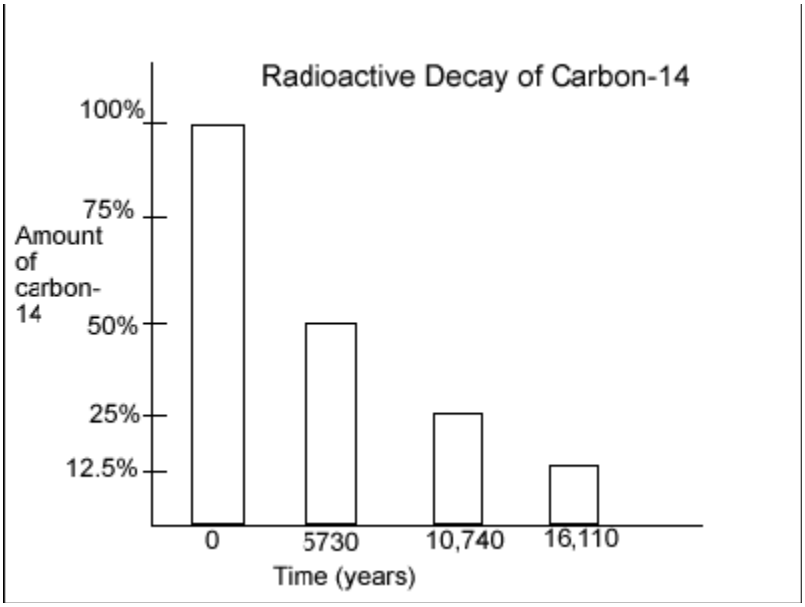
2. What is *nuclear radiation*?

3. What is *half-life*?

4. If we start with 400 atoms of a radioactive substance, how many would remain after one halflife?_____
   after two half-lives? _____ after three half-lives? _____ after four halflives?_____
5. If we start with 48 atoms of a radioactive substance, how many would remain after one halflife?_____
   after two half-lives? _____ after three half-lives? _____ after four halflives?_____
6. If we start with 16 grams of a radioactive substance, how much will remain after three half-lives?_____
7. If we start with 120 atoms of a radioactive substance, how many will remain after three half-lives?_____
8. Which type of nuclear radiation (beta particles, gamma rays, or alpha particles) can be blocked by…

a) a piece of paper _____
c) a piece of lead _____
d) a large block of lead _____

Use the following graph to answer questions9-12…



9. How long is a half-life for carbon-14?

_____

10. If only 25% of the carbon-14 remains, how old is the material containing the carbon-14?

_____

11. If a sample originally had 120 atoms of carbon-14, how many atoms will remain after 16,110 years? _____

12. If a sample known to be about 10,740 years old has 400 carbon-14 atoms, how many atoms were in the sample when the organism died? _____

Use the following chart to answer questions 13-16…

Radioactive Substance	Approximate half-life
Radon-222	4 days
Iodine-131	8 days
Radium-226	1600 years
Carbon-14	5,730 years
Plutonium-239	24,120 years
Uranium-238	4,470,000,000

13. If we start with 8000 atoms of radium-226, how much would remain after 3,200 years?

_____

14. If we start with 20 atoms of plutonium-239, how many would remain after 48,240 years?

_____

15. If we start with 60 atoms of uranium-238, how many remain after 4,470,000,000 years?

_____

16. If we start with 24 atoms of iodine-131, how many remain after 32 days? _____