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**Radioactivity and Half-Lives Review Worksheet**

1. What is a half-life?
2. If we start with 400 atoms of a radioactive substance, how many would remain after one half-

life? \_\_\_\_\_\_\_ After 2 half-lives? \_\_\_\_\_\_\_ After 3 half-lives? \_\_\_\_\_\_\_ After 4 half-lives? \_\_\_\_\_\_\_

1. If we start with 16 grams of a substance, how much will remain after 3 half-lives?
2. A sample of carbon-14 has been decaying for 22,920 years and is now 35.0 grams. What was the size of the original sample? (The half-life of carbon-14 is 5,730 years)
3. How old is a skeleton sample if the current amount of carbon in the bones is 3.125%? (Assume you started with 100%)
4. If you started with 120 grams of a radioactive substance, and now you have 15 grams, how many half-lives have passed?
5. The half-life of isotope X is 2.0 years. How many years would it take for a 4.0 mg sample of isotope X to decay and have only 0.50 mg of it remain?
6. The half-life of Po-218 is three minutes. How much of a 200 atom sample will remain after 15 minutes?
7. The half-life of Au-198 is 2.69 days. How long does it take a 180g sample to decay to 1/8 its original mass?
8. What is the half-life of a radioactive sample if 100.0 grams of it decays to 12.5 grams in 24.3 hours?
9. How long will it take a sample of 131I to decay to 12.5% assuming its half-life is 8.07 days?
10. Sodium-25 was to be used in an experiment, but it took 3.0 minutes to get the sodium from the reactor to the laboratory. If 5.0 mg of sodium-25 was removed from the reactor, how many mg of sodium-25 were placed in the reaction vessel 3.0 minutes later if the half-life of sodium-25 is 60 seconds?



1. Actinium-226 have a half-life of 29 hours. If 10.0 **g** of actinium-226 disintegrates over a period of 145 hours, how many **mg** of actinium-226 will remain? *\*\*You need to do dimensional analysis to solve this one! \*\**