

**Half-life Worksheet****Ch.25: Nuclear Changes****Integrated Science**

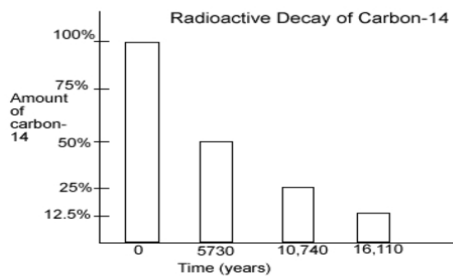
Name \_\_\_\_\_

Date: \_\_\_\_\_

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 half-life? \_\_\_\_\_ after two half-lives? \_\_\_\_\_ after three half-lives? \_\_\_\_\_ after four half-lives? \_\_\_\_\_
5. If we start with 48 atoms of a radioactive substance, how many would remain after one half-life? \_\_\_\_\_ after two half-lives? \_\_\_\_\_ after three half-lives? \_\_\_\_\_ after four half-lives? \_\_\_\_\_
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? \_\_\_\_\_

---

Use the following graph to answer questions 8-11...



8. How long is a half-life for carbon-14? \_\_\_\_\_
  9. If only 25% of the carbon-14 remains, how old is the material containing the carbon-14? \_\_\_\_\_
  10. If a sample originally had 120 atoms of carbon-14, how many atoms will remain after 16,110 years? \_\_\_\_\_
  11. 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? \_\_\_\_\_
- 
12. Which type of nuclear radiation (beta particles, gamma rays, or alpha particles) can be blocked by...
    - a) a piece of paper \_\_\_\_\_