Half Life Worksheet

Name _______________________
Date ___________________ Per ___

1. What is half-life?

2. If we start with 400 atoms of a radioactive substance, how many would remain after:
   One half-life? ______ two half-lives? _______ three half-lives? _______ four half-lives? ______

3. If we start with 48 atoms of a radioactive substance, how many would remain after:
   One half-life? ______ two half-lives? _______ three half-lives? _______ four half-lives? ______

4. If we start with 16 grams of a radioactive substance, how much will remain after three half-lives? ______

5. If we start with 120 atoms of a radioactive substance, how many will remain after three half-lives? ______

6. Which type of nuclear radiation (beta particles, gamma rays, or alpha particles) can be blocked by…
   a) a piece of paper ____________
   b) a piece of lead ____________
   c) a large block of lead ____________

Use the following graph to answer questions 7-10.

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

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

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

10. 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 11-14.

<table>
<thead>
<tr>
<th>Radioactive Substance</th>
<th>Approximate half-life</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radon-222</td>
<td>4 days</td>
</tr>
<tr>
<td>Iodine-131</td>
<td>8 days</td>
</tr>
<tr>
<td>Radium-226</td>
<td>1600 years</td>
</tr>
<tr>
<td>Carbon-14</td>
<td>5,730 years</td>
</tr>
<tr>
<td>Plutonium-239</td>
<td>24,120 years</td>
</tr>
<tr>
<td>Uranium-238</td>
<td>4,470,000,000 years</td>
</tr>
</tbody>
</table>

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

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

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

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