PHYSICS IN MOTION
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Unit 7D
Half Life
Practice Problems

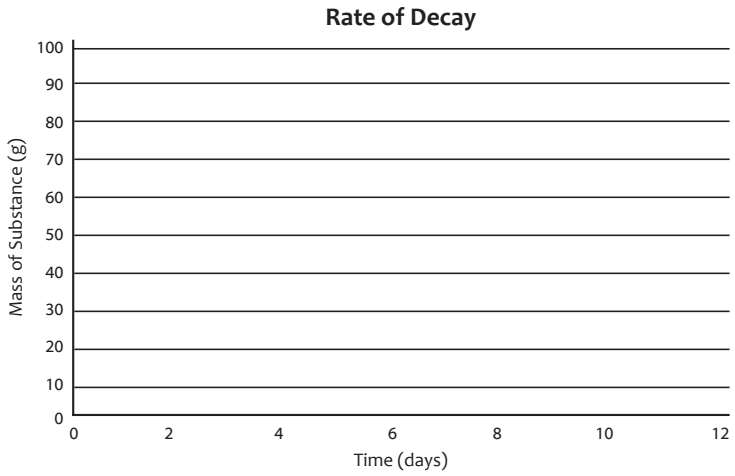
Name:

Date:

Work each of the following problems. SHOW ALL WORK.

1. **If a radioactive sample has a half-life of one month, how much of the original sample will be left at the end of the second month and the third month?**

2. **Using the graph below, determine the half-life of the substance.**



3. **A radioactive substance, fermium-253, has a half-life of three days. How long will it take for this isotope to decay to one-eighth of its original amount?**

questions continued on next page

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I. Fill in the blanks

4. Seaborgium-266 has a half-life of 30 seconds. If there are initially 30 grams in a sample of seaborgium-266, how many grams will remain after two minutes have elapsed?

5. The isotope nickel-63 has a half-life of 100 years. If a tested sample has five grams of nickel-63 and is estimated to be 400 years old, how many grams of nickel-63 were initially in the sample?

6. What is the half-life of a sample that decays from 200 grams to 12.5 grams in eight hours?

questions continued on next page

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7. **Oxygen-15 is an isotope of oxygen that is used in the medical procedure called a PET scan. The half-life of oxygen-15 is roughly two minutes. If a hospital needs one gram of oxygen-15, and the drive from the medical supply company to the hospital is 16 minutes, how many grams of oxygen-15 should be shipped to the hospital?**

8. **A naturally occurring isotope of hydrogen called tritium has a half-life of 12.3 years. If a sample of tritium is one-sixty-fourth of its original amount, how much time has elapsed?**