

Name: _____
PCH: Practice with Natural Growth and Decay

Date: _____

You may use a calculator.

1. Polonium-210 has a half-life of 140 days. Suppose a sample of this substance has a mass of 300 mg. How long will it take for the sample to decay to a mass of 200 mg? Round your answer to 3 decimal places.
2. The half-life of strontium-90 is 28 years. How long will it take a 50 mg sample to decay to a mass of 32 mg? Round your answer to 3 decimal places.
3. If 250 mg of a radioactive element decays to 200 mg in 48 hours, find the half-life of the element. Round your answer to 3 decimal places.

4. A wooden artifact from an ancient tomb contains 65% of the carbon-14 that is present in living trees. The half-life of carbon-14 is 5730 years. How long ago was the artifact made? Round your answer to 3 decimal places.
5. After 3 days a sample of radon-222 has decayed to 58% of its initial amount. Find the half-life of radon-222. Then find how long it will take the sample to decay to 20% of its original amount. Round your answers to 3 decimal places.
6. The population of the world in 2000 was 6.1 billion and the estimated relative growth rate was 1.4% per year. If the population continues to grow at this rate, during what year will it reach 122 billion?

7. The half-life of cesium-137 is 30 years. Suppose we have a 10 gram sample. How much of the sample will remain after 80 years? After how long will only 2 grams of the sample remain? Round your answers to 3 decimal places.