SECTION 14-2 REVIEW

EARTH'S HISTORY

VOCABULARY REVIEW Explain the relationship between the terms in each of the following pairs of terms.

1. radioactive isotope, radioactive dating _____

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2. radioactive decay, half-life _____

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_____

3. microsphere, coacervate _____

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_____

MULTIPLE CHOICE Write the correct letter in the blank.

_____ 1. The age of Earth is estimated to be

　　　　a. about 700,000 years.　　　　　**c.** about 400 million years.
　　　　b. about 50 million years.　　　　 **d.** more than 4 billion years.

_____ 2. Sulfur has an atomic number of 16. Therefore, the isotope sulfur-35 has

　　　　a. 19 protons and 16 neutrons.　　**c.** 16 protons and 19 neutrons.
　　　　b. 35 protons and 16 neutrons.　　**d.** 16 protons and 35 neutrons.

_____ 3. When performing radioactive dating, scientists measure the

　　　　a. number of protons and neutrons in the nucleus of a radioactive isotope.
　　　　b. amount of a particular radioactive isotope contained in a material.
　　　　c. age of a living organism that is exposed to radioactive isotopes.
　　　　d. rate at which the mass of an object decreases over time.

_____ 4. Carbon-14 dating is useful for estimating the age of

　　　　a. relatively young organic material.　　**c.** Earth.
　　　　b. old rocks.　　　　　　　　　　　　 **d.** the solar system.

_____ 5. Researchers using the technique of Miller and Urey have been able to produce

　　　　a. amino acids and nucleotides.　　**c.** ATP and mitochondria.
　　　　b. proteins and DNA.　　　　　　 **d.** cell membranes and simple cells.

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SHORT ANSWER Answer the questions in the space provided.

1. Explain how the half-life of a radioactive isotope affects the usefulness of that isotope in dating
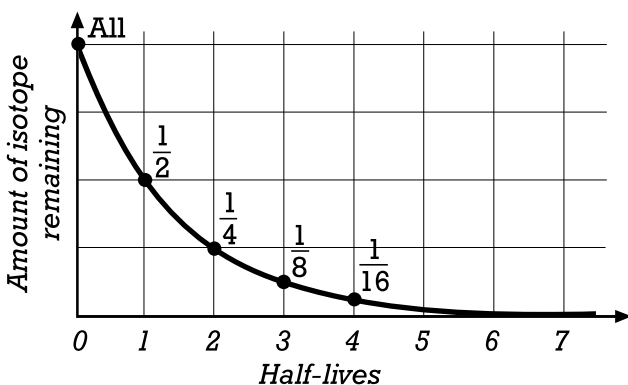
specific types of rocks. _____

_____

_____

2. Why do some scientists think that areas protected from the atmosphere might have favored the

production of organic compounds on early Earth? _____

_____

_____

3. Why was the discovery of microspheres and coacervates an important contribution to the

understanding of how life might have originated on Earth? _____

_____

_____

4. Critical Thinking Does radioactive dating with isotopes of uranium and thorium provide an
estimate of the beginning, middle, or end of the period of Earth's formation? Explain your answer.

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STRUCTURES AND FUNCTIONS Use the figure to answer the following question.

The graph below represents the radioactive decay of an isotope. If the half-life of thorium-230
is 75,000 years, how old is a rock that contains only 1/16th of its original thorium-230? Show
your calculations in the space below.