

## Chapter 29

Use with Section 3

## REINFORCEMENT

## ● Absolute Ages of Rocks

Match the terms in Column I with their definitions in Column II. Write the letter of the correct phrase in the blank at the left.

## Column I

- \_\_\_\_\_ 1. absolute dating  
 \_\_\_\_\_ 2. half-life  
 \_\_\_\_\_ 3. radioactive decay  
 \_\_\_\_\_ 4. radiometric dating  
 \_\_\_\_\_ 5. uniformitarianism

## Column II

- a. Time it takes for half of the atoms in an isotope to decay  
 b. Breaking down of a neutron into a proton and an electron  
 c. Principle that Earth processes occurring today are similar to those that occurred in the past  
 d. Process that uses the properties of atoms in rocks and other objects to determine their ages  
 e. Calculating the absolute age of a rock by measuring the amounts of parent and daughter materials in a rock and by knowing the half-life of the parent material

Follow the steps below to demonstrate the radioactive decay of carbon-14. Then answer the questions.

- Cut a strip of paper 8 cm long. Think of the paper as all of the carbon-14 in an animal when it died.
- The idea is to show how you find the age of a rock that contains an animal fossil by using the half-lives of isotopes. Cut the strip of paper in half.
- Discard one half of the paper. This represents the decayed material. Record the cut in Item 6 below with an X.
- Continue by cutting the second half of the paper in half. Record the cut below.
- Continue Steps 3 and 4 until the paper is so small you cannot make another cut. Record each cut you make.
- Number of cuts: \_\_\_\_\_
- What is the total number of times you were able (practically) to cut the sample in half?  
\_\_\_\_\_
- Each cut represents the half-life of carbon-14. What length of time is represented by each cut?  
\_\_\_\_\_
- Multiply the number of cuts by the half-life of carbon-14. What is the total amount of time represented by the cuts? \_\_\_\_\_
- Could using the half-life of carbon-14 determine when dinosaurs died? Explain.  
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