

Chapter 12

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.

1. Cut a strip of paper 8 cm long. Think of the paper as all of the carbon-14 in an animal when it died.
2. 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.
3. Discard one half of the paper. This represents the decayed material. Record the cut in Item 6 below with an X.
4. Continue by cutting the second half of the paper in half. Record the cut below.
5. Continue Steps 3 and 4 until the paper is so small you cannot make another cut. Record each cut you make.
6. Number of cuts: _____
7. What is the total number of times you were able (practically) to cut the sample in half?

8. Each cut represents the half-life of carbon-14. What length of time is represented by each cut?

9. Multiply the number of cuts by the half-life of carbon-14. What is the total amount of time represented by the cuts? _____
10. Could using the half-life of carbon-14 determine when dinosaurs died? Explain.

