

Dating Fossils

Name _____ Per. _____

First, define half-life:

1. Work in groups of 3 at each table. Use the graph paper on the back of this sheet. On the vertical axis, label the number of pennies from 0 to 40. On the horizontal axis label time in seconds from 0 to 60. Spread out the measurements so that they take up most of the graph paper.

Now get 40 pennies. Turn ALL the pennies so “heads” is up. When told to begin, turn half the pennies tails up. Every 15 seconds, turn half the remaining heads to tails. Fill in the table below and then transfer the data to the graph. NOTE: If the number of heads is odd, you can't take half, but round to the nearest even number.

Seconds	Number of Heads Up
0	
15	
30	
45	
60	

2. Theoretically, how long would it take for the graph line to reach 0?

3. What is the “half-life” of pennies? _____

4. The pennies on heads represent radioactive atoms. Tails represents their stable daughter cells when they decompose. Suppose you saw a table with 101 pennies on heads and 99 on tails. How many seconds have passed since they were all on heads? _____

5. Carbon-14 is a radioactive element with a half-life of 5,700 years. If a fossil has 25% as much C-14 as it did originally, how old is the fossil? _____

6. Look at Figure 11, page 494. Answer the following questions:

A. How old is the earth? _____

B. How many eras are there? _____ How many periods? _____

C. During what period did fish arise? _____

D. What is the longest era? _____

E. About how long ago did the Himalayas rise? _____