

ACTIVITY 11.2.1

Applying Fossil Evidence

Theories about this planet’s past were developed as a result of close observation of records left in stone. It is useful to know that palaeontologists and geologists use the following principles to obtain information from such records:

- Sedimentary rock is laid down horizontally as a result of the force of gravity acting on sediments.
- Younger rock is deposited above older rock.
- Rock will not contain fossils for every species living when sediments were deposited.

In this activity, you can test your own hypotheses about when and in what order events in Earth’s past may have occurred.

Materials

- major event card (1 per group)
- student worksheet
- set of 5 fossil bed cards (1 set per group)

Procedure/Analysis

1. Examine the 10 major events on the card (**Figure 1**) distributed by your teacher. With your partner or group, discuss the order in which these events might have occurred, from most recent to earliest.

Figure 1 Sample major events card for Activity 11.2.1

Group A Major Events
early apes
pterodactyl
earliest photosynthetic organisms
earliest dinosaur
earliest ancient sharks
sabre-toothed cat
jellyfish
earliest flowering plants
earliest mammal
earliest stone tools

2. On your worksheet (**Figure 2**), write the major events to match your proposed order, starting with the most recent at the top, in the first column, “Hypothetical sequence of major events.”

Figure 2 Sample worksheet for Activity 11.2.1. The abbreviation for years ago is ya.

Initial Hypotheses		Fossil Evidence	
Proposed event sequence	Proposed absolute age (ya)	Relative age	New absolute age estimates (ya)

3. How many years ago do you think each major event might have taken place? Record your estimates in the second column, “Estimated absolute time (ya).”
4. Circle the major events in the first column of your worksheet about whose place in the sequence you are most confident.
5. Circle those absolute time estimates in the second column of your worksheet that you think are the most accurate.
6. Examine your set of five fossil bed cards. Determine the relative age of fossils in your deposits by arranging the cards in a sequence from most recent to earliest.
7. On your worksheet, record your sequence in the third column, “Relative time for fossil evidence.” Place the most recent at the top of the column.
8. Compare your hypotheses in column 1 with your empirical data in column 3.
9. Write your estimates for absolute time in the fourth column, “Hypothetical absolute time for fossil evidence (ya).”
10. Where necessary, revise the estimates you recorded in the second column.

Synthesis

- (a) How accurate were your initial hypotheses? If you needed to make changes, which surprised you the most? Why?
- (b) How confident do you feel about your revised relative ages, based on fossil bed data? How confident do you feel about your revised absolute time estimates? Explain.
- (c) Research your list of “major events” and record the latest radiometric date estimates of their absolute ages.