

Dating the Fossil Record

You have received nine rock samples from a paleontologist in California. Your job is to arrange the samples in order from oldest to youngest according to their fossil content and to determine their relative ages using the process of relative dating. Results from absolute dating methods will not be available from a laboratory for several weeks, and the paleontologist needs the information immediately. You know from previous work that the rocks of Sample 2 are the oldest.

Most Recent

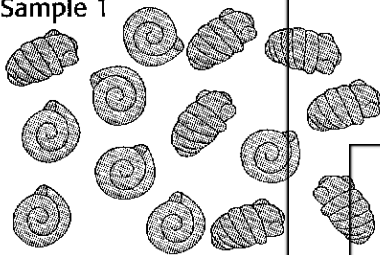
MATERIALS

- set of nine cards representing rock samples
- pencil and paper
- colored markers
- poster board (61 cm²)

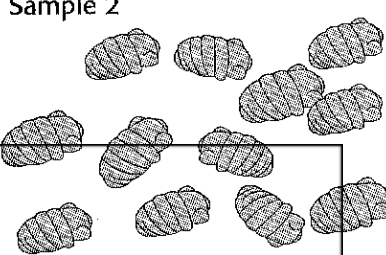
Procedure: Part 1

1. Form teams of three or four students.
2. Arrange the fossil cards from oldest to youngest. Begin with Sample 2 because you know this sample is the oldest. You may need to try several different arrangements to get the cards in order. Hint: After an organism becomes extinct, it does not reappear in younger rocks.

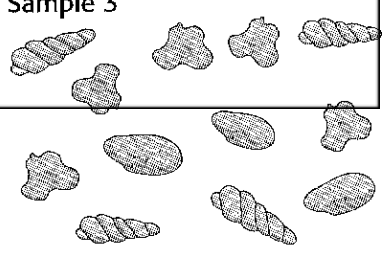
Sample 1



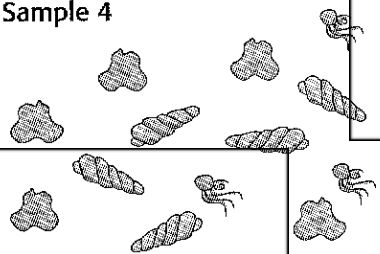
Sample 2



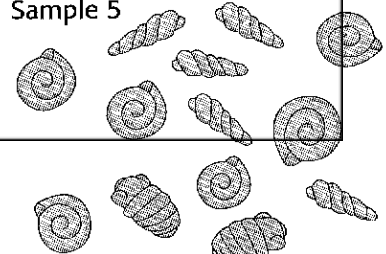
Sample 3



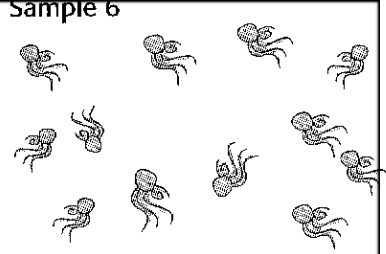
Sample 4



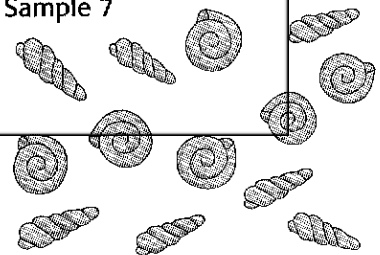
Sample 5



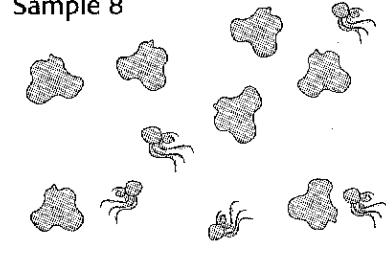
Sample 6



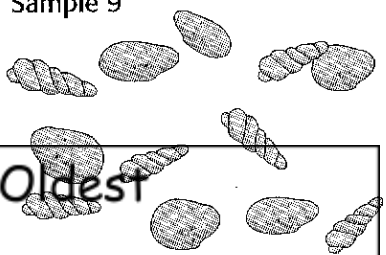
Sample 7



Sample 8

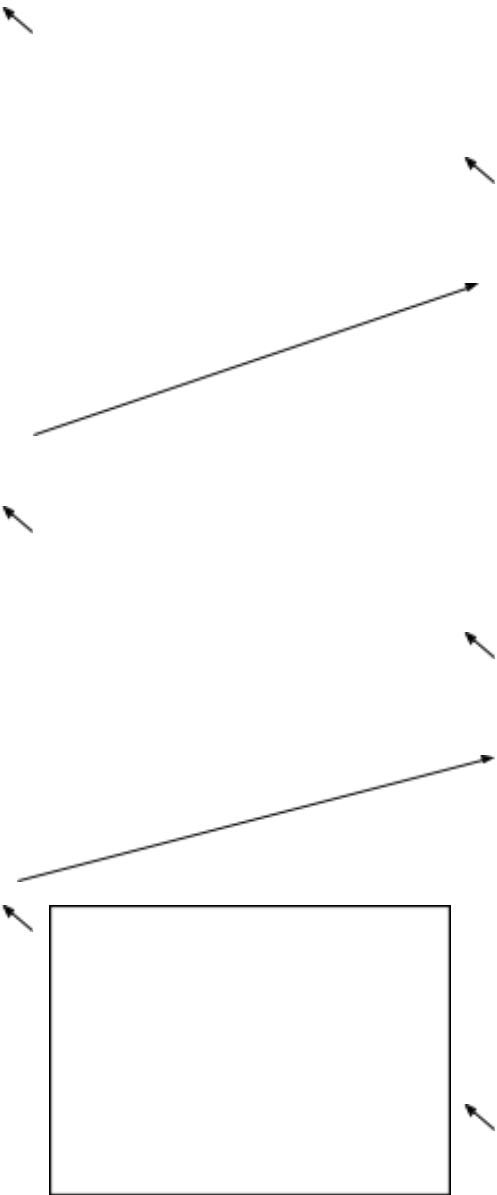


Sample 9



Oldest

Click and drag the Fossil Cards from above in the correct order below. Check with a partner to make sure that you have the correct order.



3. In the table below, record the samples in order from bottom to top (oldest to youngest) in the first column. Sample 2 is done for you.

Fossil Key



*Globus
slimius*



*Bogus
biggus*



*Fungus
amongius*



*Circus
bozoensis*



*Microbius
hairiensis*



*Bananabana
bobana*

Name of Fossil Organism

Order of samples	<i>Globus slimius</i>						Age of sample in millions of years
Sample 2	X						

4. Write the names of the fossils in order oldest to youngest going left to right in the top row of your table. Hint: Examine your fossil cards carefully to determine where each fossil appears in the rock record. Write an X in the appropriate column to indicate which fossil or fossils are present in each sample.

Analysis Part 1

5. Do the X's make a certain pattern across the table?

What would you conclude if there were an X located outside of the pattern in the table?

6. Based on the information in your table, which fossil is the youngest?

7. From the information you have, are you able to tell exactly how old a certain fossil is?

Yes or No?

Why or why not?

8. What information does relative dating provide to paleontologists?

Procedure Part 2

1. You are planning to prepare a timeline for the paleontologist in California. But when the results, shown here, come in from the geology lab, you discover that the dates have been separated from the appropriate rock samples. Absolute dating is very expensive, and you can't have it done again. But wait! You have already determined the relative ages of the samples. All you have to do is arrange the dates from oldest to youngest. Add these dates to your table.

Fossil Ages

The dates provided by the geology lab are as follows: MYA = Millions of Years Ago

28.5 mya, 30.2 mya, 18.3 mya, 17.6 mya, 26.3 mya, 14.2 mya, 23.1 mya, 15.5 mya, and 19.5 mya

Analysis Part 2

3. Based on the information in your timeline, what age range would you assign to the following fossils? **Hint: The age range is the year it was first present and the last year it was present.**

Bananabana bobana:

Bogus biggus:

Circus bozoensis:

Fungus amongius:

Globius slimius:

Microbius hariensis:

4. How long was each organism alive? **Hint: Subtract the last year that it was present by the first year that it was present.**

Bananabana bobana:

Bogus biggus:

Circus bozoensis:

Fungus amongius:

Globius slimius:

Microbius hariensis:

5. Write a Claim, Evidence, Reasoning for this question using what you learned from the lab.

Question: Based on absolute dating (using your table), which fossil organism lived for the longest period of time?

Claim (Answer to your question):

Evidence (Data that proves your claim):

Reasoning (Why your evidence proves your claim):