

## Dating the Fossil Record Activity

Name \_\_\_\_\_ Per. \_\_\_\_\_

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.

### Fossil Key



*Globus slimius*



*Bogus biggus*



*Circus bozoensis*



*Microbius hairiensis*



*Fungus amongius*



*Bananabana bobana*

### Procedure: Part 1

1. 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.
2. Record the samples in order from bottom to top (oldest to youngest) in the first column of **Table 1**. Sample 2 is done for you.
3. Write the fossil names in order by age from left to right in the top row of **Table 1**. **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.

### Materials

- ★ Set of 9 rock sample cards
- ★ colored markers/pencils
- ★ register tape

### Data/Observations. Table 1.

Sample # Order	Name of Fossil Organism					
	<i>Globus slimius</i>					
9.						
8.						
7.						
6.						
5.						
4.						
3.						
2.						
1. <b>Sample 2</b>	X					

### Analysis: Part 1

1. What is the most common number time of appearances (pattern) for all the fossils? \_\_\_\_\_
2. What does it mean if there is an X outside the pattern? \_\_\_\_\_  
\_\_\_\_\_
3. Based on the information in your table, which fossil is the youngest? \_\_\_\_\_
4. From the information you have, are you able to tell exactly how old a certain fossil is? Why or why not?  
\_\_\_\_\_
5. What information does relative dating provide to paleontologists?  
\_\_\_\_\_

**Procedure: Part 2**

You are planning to prepare a timeline for the paleontologist in California. But when the results, shown below, come in from the geology lab, you discover that the dates have become 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 and label your table from bottom to top. Add these dates to your data table.

**Fossil Ages**

The dates provided by the geology lab are as follows: 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.

**Data/Observations. Table 2.**

Sample number	Age of sample (in millions of years)	Contents of sample
2	30.2	Globus slimius

6. Which fossil organism lived for the longest period of time? Explain your answers.

7. Which fossil organism lived for the shortest period of time? Explain your answers.

**Procedure: Part 3**

Your table now contains all the information you need to make a timeline for the paleontologist in California.

8. First, determine the age ranges of each fossil species. Based on the information in your timeline, what age range would you assign to the fossil of *Circus bozoensis*? **HINT:** Measure from the year that the fossil first appeared in the rock record to the first year it was absent in the rock record.

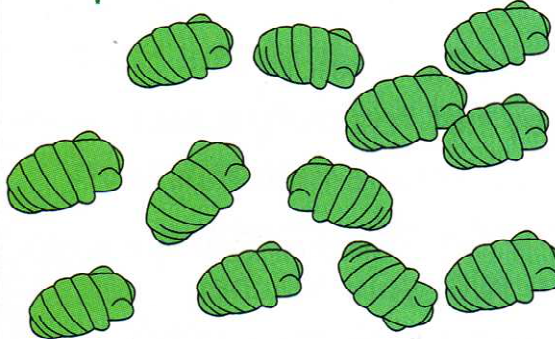
x	Age Range	Fossil Species	Age Range
Globus slimius	to million years old		to million years old
	to million years old		to million years old
	to million years old		to million years old

9. Use colored markers or pencils and register tape to make your timeline. Draw a line of the date range for each fossil species with a metric ruler and label the date ranges. Let 1 centimeter equal 1 million years. Make a color-coded key for each fossil species.

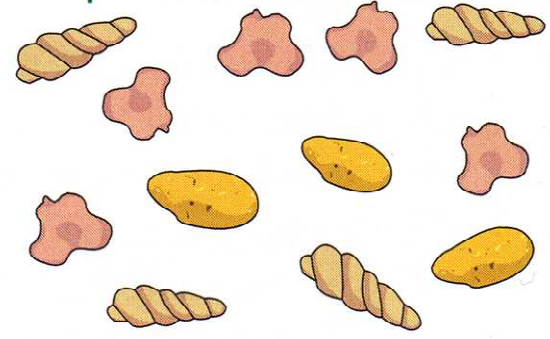
Sample 1



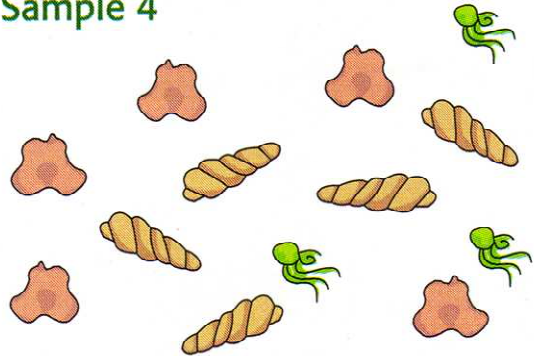
Sample 2



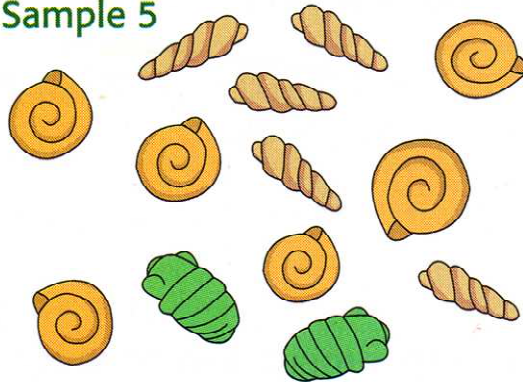
Sample 3



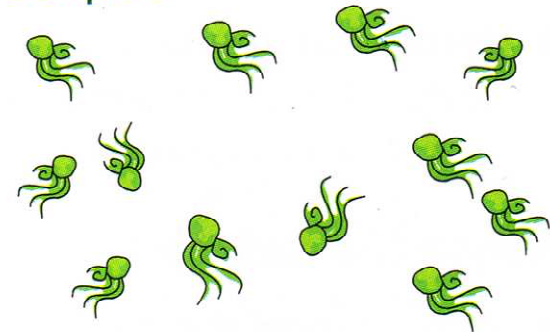
Sample 4



Sample 5



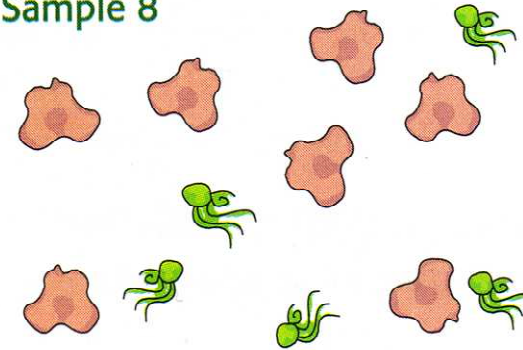
Sample 6



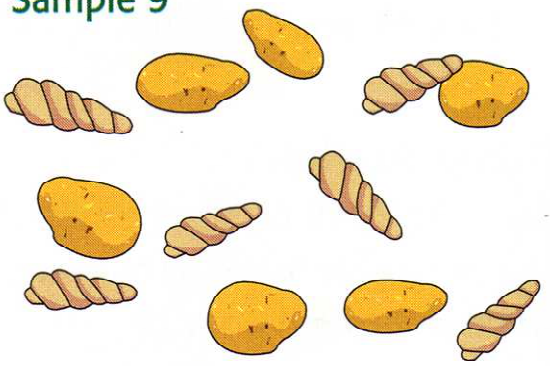
Sample 7



Sample 8



Sample 9



**Life Science: Dating the Fossil Record Activity**

**Answer Key**

Name of Fossil Organism						
Order of samples	<i>Globus slimius</i>	<i>Microbius hairiensis</i>	<i>Fungus amongius</i>	<i>Circus bozoensis</i>	<i>Bogus biggus</i>	<i>Bananabana bobana</i>
Sample 6						X
Sample 8					X	X
Sample 4			X		X	X
Sample 3			X	X	X	
Sample 9			X	X		
Sample 7		X	X			
Sample 5	X	X	X			
Sample 1	X	X				
<b>Sample 2</b>	X					

**Analysis: Part 1**

1. Do the letters make a certain pattern across the table?
2. What would you conclude if there was an X outside the pattern?
3. Based on the information in your table, which fossil is the youngest? B. bobana
4. From the information you have, are you able to tell exactly how old a certain fossil is? Why or why not?
5. What information does relative dating provide to paleontologists? estimate of age in relation to fossil location

**5 pts**

**Analysis: Part 2**

Sample number	Age of sample (in millions of years)	Contents of sample
6	14.2	Bananabana bobana
8	15.5	Bogus biggus, Bananabana bobana
4	17.6	Fungus amongius, Bogus biggus, Bananabana bobana
3	18.3	Fungus amongius, Circus bozoensis, Bogus biggus
9	19.5	Fungus amongius, Circus bozoensis
7	23.1	Microbius hairiensis, Fungus amongius
5	26.3	Globus slimius, Microbius hairiensis, Fungus amongius
1	28.5	Globus slimius, Microbius hairiensis
2	30.2	Globus slimius

6. Which fossil organism lived for the longest period of time? F. amongius; showed up in most samples (8.7 my)
7. Which fossil organism lived for the shortest period of time? Explain your answers. C. bozoensis (1.2 my)
8. Based on the information in your timeline, what age range would you assign to the fossil of Circus bozoensis? **HINT:** Measure from the year that the fossil first appeared in the rock record to the first year it was absent in the rock record.
9. Determine the age ranges of all your fossil species.

**2 pts**

Fossil Species	Age Range	Fossil Species	Age Range
Globus slimius	26.3 to 30.2 million years old	C. bozoensis	18.3 to 19.5 million years old
M. hairiensis	23.1 to 28.5 million years old	B. biggus	15.5 to 18.3 million years old
F. amongius	17.6 to 26.3 million years old	B. bobana	14.2 to 17.6 million years old

**Timeline = 3 pts**