

Name _____
Date _____
Period _____



The Evolving Earth

Geologic and Biologic Time

Part A: Establishing a Timeline

As a group, use the six Timeline Cards to complete the following questions.

- Using the information provided on each card, list the cards in the table below in *chronological* order from the earliest events on earth to the most recent events on Earth. Next to the name of each era, calculate how many years each era lasted.

	Name of Era	Years the Era Lasted
1		
2		
3		
4		
5		
6		

- Place the cards on the desk in order from oldest to most recent. Are all of the eras the same length of time? Which is longest? Which is shortest?

- Which era was Earth in 3.9 billion years ago?

- Which era are we living in now?

Part B: Geology Through the Ages

Now look at the set of *Geology Cards* on the *green paper*. Carefully read the information on each of the six cards. By discussing the events listed on the cards, decide as a group how the cards should be placed in order for them to be in chronological order (from the earliest events on Earth to the most recent events).

1. In what order did you place the *Geology Cards*?

	Geology Card
1	
2	
3	
4	
5	
6	

2. List three or more events in Earth's geologic history that helped you put the cards in order.

Match each of your Geological Cards with the corresponding time period from your Timeline Cards. By placing the cards in order, you have created a geological timeline of events in Earth's past!

Part C: Biology Through The Ages

Now look at the set of *Biology Cards* on the blue paper. Carefully read the information on each of the six cards. Discuss the events listed on the cards and decide as a group how the cards should be placed in *chronological* order (from the earliest events on Earth to the most recent events).

1. In what order did you place the *Biology Cards*?

	Biology Card
1	
2	
3	
4	
5	
6	

2. List three or more events in Earth's biologic history that helped you put the cards in order.

Match each of your *Geology Cards and Biology Cards* with the corresponding time period from your *Timeline Cards*. By placing the cards in order, you have created a biological timeline of events in Earth's past!

3. Get together with another group. Is your timeline the same as the other group's timeline? If not, how would you change your group's timeline and/or the other group's timeline so they match?

Part D: Putting It All Together

Using the timelines you created in parts B and C, work as a group to answer the following questions.

1. In the early pre-cambrian to mid-pre-cambrian time, why was there no life on earth?
2. How did bacteria that perform photosynthesis change Earth's atmosphere?
3. Before the ozone layer formed, how did early bacteria survive the sun's harmful ultraviolet rays? (hint, where did these bacteria live? And no they did not wear sunscreen...)
4. Before life could live on land, how did the atmosphere have to change?
5. During which eras was oxygen poisonous to living things on Earth?

6. At the end of the Mesozoic Era, a massive asteroid hit the earth. Using the information provided on your *Geology* and *Biology* cards, answer the following questions.

a. How might the asteroid have affected the world's climate?

b. Did the asteroid cause all life to become extinct? Use evidence from your cards to explain your reasoning.

Extension: Look at your timeline and discuss the answers to the following questions with your group.

7. What things do you think are used to determine when an era ends?

8. Why do you think the eras are not all the same length?

9. **OPINION:** When do you think the Cenozoic Era will end? What event/change will mark its end?