Name: _____ Class: _____ Date: _____

F3.5 Calculator Timeline Lab

Introduction

The Earth has changed dramatically and repeatedly over a history that spans nearly 5 billion years. Such immense spans of time are difficult for most of us to comprehend. They fall outside our range of human experience. We normally deal with much shorter time intervals, like the time of our next class or the number of days until the next test, or even the number of years until graduation!

It is important for students of geology to expand their sense of time. Extremely slow geologic processes, considered only in terms of human experience, have little meaning. To appreciate the magnitude of geologic time and the history of our incredible planet, you will be creating a timeline of important geologic events scaled to a size more tangible and familiar.

Instructions

- Make a scaled timeline:
  - You will be making an *illustrated* timeline of Earth's history on a long strip of adding machine tape (or) using a meter-wide sheet of chart paper.
  - The timeline should be done to scale.
  - A scaled representation requires that 10 cm on your timeline represent the same amount of time anywhere along the timeline and each amount of time, say 5 million years, and be represented by the same distance throughout the timeline.

- To do this you will:
  - Measure out a strip of adding machine tape 4.56 meters long (or) a total of 4.56 meters on a 1 meter x 36in. (91.44cm).
    - A meter stick will be provided in lab.
  - Select one end to represent the Present. Beginning at that end, mark off each billion years (1 billion, 2 billion, etc.)
  - Starting with the oldest event (Event #1), mark off all of the important events in Earth's history shown in the table.
  - *In each case, you should write the date and event directly on the timeline and draw a picture.*
- Turn your timeline into your instructor on the date due: _____

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Pre-Lab

Answer the following questions. Always remember to show math work, if appropriate and always, always, always include units with your final answer.

☐ ***You must show this first page to your instructor before beginning the timeline.***

1) How many millions are there in a billion?

   1 billion = 1,000,000,000 1 million = 1,000,000

   So, there are _____ millions in a billion

2) In lab, you will make a timeline 4.56 meters long to represent the 4.56 billion years of Earth's history:

   a) How long would 1 billion years be on the timeline?

      4.56 billion = 4.56 meters

      So, 1 billion = _____ meter(s)

   b) How many years would 100 cm represent?

      1 meter = 100cm

      So, 100cm = _____ years

   c) How many years would 1 cm represent?

      100cm ÷ 1 billion years = 1cm ÷ x

      100x = 1,000,000,000

      x = _____ years

   So, .5cm = _____ years and 1mm = _____ years

3) Draw a line that is 1 cm long.

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Important Events in Earth's History			
Event #	**Date in years ago**	**Event**	**Done?**
4.56 billion to 4.0 billion years ago			
1	4.56 billion	Earth forms	
2	4.4 billion	Oldest mineral grain found	
3	4.1 billion	Oldest piece of rock ever found	
4.0 billion to 3.0 billion years ago			
4	3.9 billion	Oldest evidence of a continent	
5	3.8 billion	First evidence of life	
6	3.5 billion	First fossils (algae and bacteria)	
3.0 billion to 2.0 billion years ago* *There are no events in this section of the timeline.			
2.0 billion to 1.0 billion years ago			
7	1.8 billion	Free oxygen in atmosphere	
8	1.1 billion	First fossil of a complex organism (a worm)	
1.0 billion years ago until Today* *These will not all fit in the 1m section. You will need to do pop-outs.			
9	540 million	First abundant life found in the rock record	
10	460 million	First fish	
11	440 million	First land plants	
12	410 million	First land animals	
13	250 million	Largest mass extinction occurs	
14	247 million	First dinosaurs	
15	240 million	First mammals	
16	220 million	Breakup of super-continent Pangaea begins	
17	145 million	First flowering plants	
18	65 million	Dinosaurs and other animals go extinct	
19	30 million	Mammals/flowering plants become abundant	
20	5 million	Beginning of Cascade Volcanic Arc	
21	1.8 million	First primate in genus Homo	
22	40,000	First Homo *sapiens*	
23	13,000	Humans first inhabit North America	
24	10,000	End of last Ice Age	
25	8,000	Founding of Jericho, the first known city	
26	2,000	Roman domination of the world	
27	500	European rediscovery of the Americas	
28	~34	Humans first explore the moon	

(Please note that some of these ages may differ slightly from those given in your text or that you found in another source. These dates change, but the general order and rough position stay constant.)