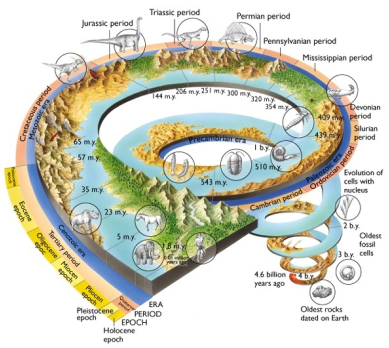
Honors Biology
Unit 6: Evolution

Due Tuesday March 14th IN CLASS!
Worth participation credit

Name: _____ Period: _____



Creating a Geological Timeline

To understand evolution, humans must think in units of time much larger than those we use to define our lives. After all, evolutionary change occurs too slowly to be measured in days, months, or years. Instead, it's documented in layers upon layers of rock deposited over the course of **4.6 billion years**. The geologic time scale we use to study the history of the earth and of it life forms is commonly referred to as "deep time," and it's a concept perhaps as difficult to conceive as deep space. Can humans measure deep time? Yes. Will we ever truly comprehend such immensity of time? Probably not. But to develop a better understanding of evolution in its proper historical context, we must try. This timeline provides a framework for doing so.

Timeline Materials:

2.5 meters of cashiers tape *If taping down timeline will make it easier, just ask for tape!*

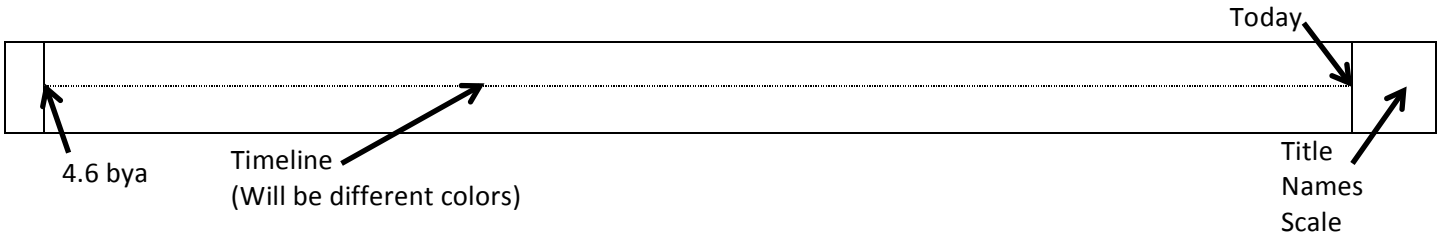
Markers Scissors Glue/Tape Meter stick and ruler

Procedure:

1. From the RIGHT edge of timeline cashier tape, measure 20 cm and draw a vertical line from top to bottom of the cashier tape. (See diagram below)
2. In the 20 cm space write the following:
   Title of timeline: GEOLOGICAL TIMELINE
   Names of all group members and period number

Scale: 1 mm = 2 million years 1 cm = 20 million years 1 m = 2 billion years

3. To the **right** of the 20 cm line, write **Present Day**. This is where the timeline will begin.
4. From the **Present Day** line, draw a **2.3 meter** horizontal line in the middle of the cashier tape. There should be about 10 cm remaining at the end.
5. Draw another vertical line at the end of the **2.3 meter line**. To the right of this line write **4.6 bya** (billion years ago).



6. Now use the table below to identify and **mark the dates of each era in Earth's history**.

Time	Scale	Era
65 mya (million years ago)	3.25 cm	Cenozoic Era Redraw timeline in **blue**
248 mya (million years ago)	12.4 cm	Mesozoic Era Redraw timeline in **red**
540 mya (million years ago)	27 cm	Paleozoic Era Redraw timeline in **green**
4.6 bya (billion years ago)	2 m 30 cm	Precambrian Era Redraw timeline in **orange**

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7. Once your timeline is prepared, cut out the "events" provided to each group and determine where they should be on the timeline. Glue each event down. Determine the "scale" at which each even is located and complete the table below. (Note: you can work on this as a group with one as the scribe, and the rest can copy when done.)
8. Answer the analysis questions when the entire timeline is complete.

Timeline Events:

Event	Year	Scale	Event	Year	Scale
Modern Humans	100,000 YA	0.05 mm	First Land Plants	440 MYA	
First Apes	33 MYA		First Jawed Fish	440 MYA	
Dinosaur Extinction	65 MYA		First Jellyfish	550 MYA	
First Flowering Plants	140 MYA		Sexual Reproducing Organisms	1 BYA	
Pangaea Breaks Apart	175 MYA		First Eukaryotes	1.8 BYA	
First Mammals	220 MYA		O_2 Levels Rise	2.4 BYA	
Start of Dinosaurs	240 MYA		First Prokaryotes	3.5 BYA	
First Insects	380 MYA		Formation of Earth and Moon	4.6 BYA	
First Amphibians	395 MYA				

Analysis: ****Answer in complete sentences!****

1. For how long has life existed on Earth?

2. For what percentage of time has life existed on Earth? What percentage of time have modern humans existed on Earth?

3. For how many years of geological time did dinosaurs exist?

4. Did dinosaurs and humans exist at the same time on Earth?

5. Where on your timeline is the majority of life and diversity located?

6. What do you think is the purpose of making a geological timeline?