Field of Time

Geologic Time Scale Activity

Objective: To create a timeline of earth's history on a football field to show the history of life on Earth.

Directions:

1. Cut out the "Earth Formed" field section and attach it to the "Today" field section using tape.
2. A football field contains 100 yards between the two end zones. The earth is 4,600,000,000 years old (4.6 billion years old). This means each yard equals 46,000,000 years and every ten yards equals 460,000,000 years.
3. Along one of the sidelines label the year of each ten yard marker, as shown below.

Today	0 years
10 yards	460 MYA (million years ago)
20 yards	920 MYA
30 yards	1.38 BYA (billion years ago) *Please Note: 1.38 BYA = 1380 MYA*
40 yards	1.84 BYA
50 yards	2.30 BYA
40 yards	2.76 BYA
30 yards	3.22 BYA
20 yards	3.68 BYA
10 yards	4.14 BYA
Earth Formed	4.60 BYA

4. Shade each time period (listed below) and separate them with dotted lines using different colored pencils.

Precambrian time:	4.60 BYA to 543 MYA
Paleozoic Era:	543 MYA to 248 MYA
Mesozoic Era:	248 MYA to 65 MYA
Cenozoic Era:	65 MYA to Today

5. Along the opposite sideline from the labeled years from step #3, label each of the four time periods, as they are shown above.

6. Each of the events listed on the following page corresponds to a specific time in Earth's history. For this part of the activity you will need to use the times given to calculate the location of the event on the football field. This is the information you need to know!

    a. Recall that 1 yard = 46,000,000 and 46,000,000 is the same as 46 MYA.
    b. So if an event occurred 130 MYA, you only need to divide 130 by 46 which equals 2.8

    (In Math terms: 130 ÷ 46 = 2.8 yards. This event occurred only 2.8 yards away from the goal line of "Today".)

c. **<u>Be Careful:</u>** once you get to dates that are marked **BYA**, you will have to move the decimal over three times before dividing by 46.
    1. For example, 3.0 BYA is the same as 3000 MYA. So just divide 3000 by 46.
    2. 3000 ÷ 46 = 65.2 yards, Pay attention though. You will have to travel 65.2 yards from the "Today" goal line, for every event.

d. **Before you start please consider the following request:** <u>Be CAREFUL and NEAT as your work on this assignment!</u> The neater you are, the clearer your time line will be.

Oldest known rocks	4.0 BYA
Oldest Fossils (stromatolites)	3.5 BYA
Cyanobacteria cause build-up of free oxygen	2.7 BYA
Multicellular Organisms	2.1 BYA
First Animals (colonial sponges)	665 MYA
End of "Snowball Earth"	635 MYA
Protective ozone layer fully formed	600 MYA
Early shelled invertebrates	570 MYA
Cambrian explosion (Burgess Shale)	542 MYA
Early Fish (first vertebrates)	490 MYA
Land Plants emerge	450 MYA
Age of Amphibians begins	354 MYA
Early Reptiles	325 MYA
Pangaea fully assembled	280 MYA
Dinosaurs dominate land	230 MYA
Opening of Atlantic Ocean (seafloor spreading)	220 MYA
Early birds diverge from dinosaurs	180 MYA
Bees and flowering plants evolve simultaneously	150 MYA
K-T Boundary (Dinosaur extinction!)	65 MYA
Earliest primate fossils	60 MYA
Collision of India with Asia (Himalaya Mountains)	40 MYA
Common ancestor between humans and chimps (first hominids)	6 MYA
Several prominent hominid species in Africa	2 MYA
First Neanderthals	0.5 MYA
Our species: *Homo sapiens*	0.2 MYA

Figure out a way to fit these in and label them clearly in the end zone.

KEEP IN MIND: Our species, *Homo sapiens*, goes back about 200,000 years (0.2 MYA), but the first civilizations were only around 10,000 years ago (0.01 MYA), and all of recorded history goes back only about 5,000 years (0.005 MYA)!