STEM Sims™

Fossil Hunt

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Do you need an idea for a scientific study?
Try out one of our ideas or make one of your own.

A person walks along a path in Colorado and finds a fossilized shark's tooth from 100 million years ago. How did this tooth get to this location? Take the following brief quiz to see how much you already know about fossils and geological history. See the bottom of page 4 to check your answers.

1. A large dinosaur fossil was found in Argentina and named Argentinosaurus. How large was this fossil?
   a. 5.3 meters (17 feet)
   b. 10.5 meters (34.4 feet)
   c. 34.2 meters (112 feet)
   d. 88.1 meters (289 feet)

2. Sea creature fossils have been found on the top of Mount Everest, the tallest mountain on Earth.
   a. true
   b. false

3. What is the name of the fecal wastes of fossils?
   a. poolites
   b. bromolites
   c. prontolites
   d. coprolites

4. What is the meaning of the Latin word for "fossil"?
   a. large reptile
   b. early reptile
   c. having been dug up
   d. buried under rock

5. In 2019, the fossilized remains of early parrots that lived about 17 million years ago were found and identified. How large were these parrots?
   a. 0.5 meter (1.64 feet)
   b. 1 meter (3.3 feet)
   c. 5 meters (16.4 feet)
   d. 8 meters (26.2 feet)

Humans and Geological History

It seems to many like humans have been present on Earth forever. However, the human species have been here for about 300,000 years. How does the presence of humans on Earth compare on the relative geological time scale to other organisms?

Materials Required

2-copies of the historical events | large flat surface ~ 4 meters (13 feet) | meter or yard stick | scissors | masking tape

Procedure

1. Make two copies of the historical events.
2. Use the scissors to cut out each historical event. Keep the two sets of events separate.
3. Place a piece of masking tape (about 30 cm long) at the start of the flat surface. Label this tape as “Present Day.”
4. Assume that the start or edge of the large flat surface is the present day, and the opposite end of the surface is the time farthest in the past.
5. Starting at the present day, predict by placing one copy of each event from today to when you believe the event happened. The distance between events should indicate equal passages of time.
6. Observe the correct order and distance (time) between events at the bottom of page 4.
7. Using the second set of event copies, starting at the present day, placing one copy of each event from today to when the event happened. Measure the distance between events carefully to indicate actual passages of time between events.

Historical Events

first homo sapiens (early humans)	**first modern birds**	**first trilobites**	**first dinosaurs**
dinosaurs extinct	**first life forms**	**first modern plants**	**first insects**

Questions

1. Describe how your predicted order and distance between events compared to the actual timing of the events?

2. Explain how the time that humans have been present on Earth compares to other geologi cal historical events.

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Geological Time Events

The fossil record has been used by geologists and paleontologists to create a geological time scale. The scale divided time into eras, periods, and epochs. Although scientists have discovered many fossils, the likelihood of an organism becoming a fossil is dependent on the environmental conditions surrounding the organism's remains. These conditions are rarely met and result in most organism remains experiencing decay and not becoming fossils. However, scientists have found enough fossils to establish time trends based on the fossils present and environmental conditions of the time. Table 1 below provides a representation of the geological time and important evolutionary events that occurred during that time. The numeric values in far-right column indicate the period boundaries and are in millions of years (Ma) before the present day.

Era	Period	Event	Time (Ma)
Cenozoic	Quaternary	modern humans	
	Tertiary	many mammals	2
Mesozoic	Cretaceous	flowering plants, dinosaurs extinct	65
	Jurassic	dinosaurs	150
	Triassic	conifer trees	200
Paleozoic	Permian	trilobite extinction	250
	Pennsylvanian	reptiles	300
	Mississippian	sharks	330
	Devonian	amphibians	360
	Silurian	early land plants and animals	410
	Ordovician	fish	450
Protozoic		invertebrates	500
Archean		early aquatic plants	550

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Answers: Page 2 Answers: 1) c, 2) a, 3) d, 4) c, 5) b. **Page 3 Answers:** Humans and Geological History. 1 cm = 10 million years ago, Events and Distances from Start: early humans: 0.03 mm (300,000 yr); modern birds and plants: 6.0 cm (60 million yr) dinosaurs extinct: 6.5 cm (65 million yr); first dinosaurs: 20 cm (200 million yr); insects: 35 cm (350 million yr); trilobites: 50 cm (500 million yr); life begins 3.4 m (3.4 billion yr)