

Project: Geologic Time Scale Analogy

Biology B

Your task in this project is to work in pairs to create an analogy that helps us (and you) wrap our brains around the nearly incomprehensible span of time that represents the entire history of the Earth.

You will map out significant Biological, Geological and Atmospheric events in your project to convey a sense of how long ago these events happened relative to other events. You will likely be surprised by how “recently” certain events happened relative to the entire history of the planet.

Grading Rubric: Total points possible = 40

F = 0 points

No project submitted.

D = 24 – 27 points

A project was attempted but does not accurately depict the events of Earth’s 4600 million-year history.

Or, a “C” project was attempted but is inaccurate or has poor workmanship.

C = 28 – 31 points

An analogy of 1 meter was selected to depict the 4600 million years of Earth’s history and completed on a length of cash register tape (teacher provided). The placement of events is accurate and complete and the final product shows good workmanship.

Or, a “B” project was attempted but is inaccurate or has poor workmanship.

B = 32-35 points

An analogy of 1 meter was selected to depict the 4600 million years of Earth’s history and completed on a large sheet of butcher paper (teacher provided). Illustrations of selected events are added to make the project interesting and attractive. The placement of events is accurate and complete and the final product shows good workmanship.

Or, an “A” project was attempted but is inaccurate or has poor workmanship.

A = 36 – 40 points

An analogy *other than* 1 meter was selected to depict the 4600 million years of Earth’s history and completed on the media of your choosing. *The analogy that was chosen is something familiar enough to the general public that it helps us to wrap our brains around the nearly incomprehensible span of time that represents the entire history of the Earth.* The placement of events is complete and accurate and the final product shows good workmanship.

Biologic Events

	Millions of Years Ago	
First life (single-celled/prokaryotic)	3600	
Early algae (blue-green/gunflint formation)	2200	
Development of eukaryotic cells	1400	
Advanced single cells	1000	
Multicelled plants and animals	700	
Marine invertebrates abundant	600	
Early shelled organisms	570	
Earliest fishes	500	
First land life (plants and insects)	425	
First amphibians	405	
Trees appear	350	
Development of the self-contained egg	340	
First reptiles	335	
Rapid expansion of living things—"Permian Explosion"	250	
First dinosaurs	225	
First mammals	220	
First birds	180	
Dinosaurs abundant	175	
Flowers become dominant	125	
Extinction of the dinosaurs—"Great Extinction"	65	
Early primates	65	
<i>Australopithecines</i> and <i>Homo habilis</i> develop	3	
<i>Homo erectus</i>	1.2	
First use of fire by man	0.5	
<i>Homo sapiens</i>	0.3	
Modern man (<i>Homo sapiens</i>)	0.1	

Geologic and Atmospheric Events.

	Millions of Years Ago	
Origin of the earth	4600	
Oldest earth rocks	3800	
Period of no oxygen	3700	
Free oxygen begins to build up	2500	
Formation of the Early Supercontinent	1250	
Oxygen content reaches 2% in the atmosphere	600	
Breakup of the Early Supercontinent	580	
Development of the Appalachian Mountains	575	
Oxygen reaches 20% (present level)	380	
Formation of the coal deposits	340	
Formation of Supercontinent II "Pangaea"	200	
Opening of the Atlantic Ocean as the Eastern Hemisphere splits from the West	100	
Formation of the Rocky Mountains	90	
Formation of the Alps	65	
Separation of Australia and Antarctica	50	
Collision of India with Asia	35	
Formation of the Himalaya Mountains	15	
Linking of North and South America with land bridge	1.7	
Worldwide glaciations	1.3	

Don't memorize, just know sequence