**Timeline of Earth**

**Learning Target:** Construct a claim based on evidence about the simultaneous coevolution of Earth’s system and life on Earth.

**Success Criteria:**

* Create a timeline to display Earth’s geological and evolutionary history.
* Describe how Earth’s atmosphere changed as photosynthetic organisms evolved.
* Describe how life evolved as Earth’s atmospheric composition changed.
* Describe how Earth’s geosphere changed in response to the appearance of life on Earth.

**Vocabulary**:

* Prokaryote
* Eukaryote
* Cyanobacteria
* Photosynthesis
* Geosphere

**Literacy**: B. (n.d.). Scientists say Earth's timeline is ready for a new entry. Retrieved October 04, 2016, from https://newsela.com/articles/anthropocene-epoch/id/14068/

**Homework**:

1. The first life on Earth, a simple, single-celled prokaryotic bacteria, appeared on life approximately how long ago?  
   A. 4.6 million years ago C. 3.5 billion years ago  
   B. 4 billion years D. 3.5 million years ago
2. The organism that is theorized to have been the first to inhabit Earth and was photosynthetic and single-celled or colonial was called a \_.  
   A. pterophyte C. cyanobacteria  
   B. spermatophyte D. viroid particle
3. What was the major contributor of oxygen to earth’s early atmosphere?  
   A. photosynthesis C. oxygen decomposition  
   B. organic respiration D. decomposition of ocean water
4. During the Paleozoic Era there was explosion of life in the oceans. Most of the continents were covered in warm, shallow seas. What is true about life on Earth at this time?  
   A. flowering plants appeared C. first small dinosaurs appeared  
   B. fish emerged during this time D. reptiles became most abundant animals
5. All evolutionary changes that allow a species to change in response to the environment, are originally a result of \_.  
   A. beneficial DNA mutations   
   B. movement to new environments where survival is easier

C. cross-breeding with other species of closely related organisms  
D. adaptations that organisms make to the environment during their lifetimes.

1. How did the appearance of plants in Earth’s early history impact the geosphere?  
   A. formation of rocks C. increased moisture on the land  
   B. formation of mountains D. decreased moisture on the land
2. Earth seems to be the only planet in our solar system that can support life. All but one of these is a reason why life is found only on Earth. That is \_.  
   A. a moderate climate C. it is the perfect distance from the sun  
   B. the presence of water on Earth D. it has gravity to hold an atmosphere in place
3. Evidence suggests that originally the Earth’s atmosphere contained a large amount of carbon dioxide, and almost no oxygen. Our atmosphere is different today, it contains a large amount of oxygen, which is good, since we need it to breathe. What caused this atmospheric change?  
   A. global warming  
   B. meteor impact  
   C. photosynthetic organisms taking in carbon dioxide and releasing oxygen  
   D. volcanic eruptions
4. How did the appearance of the smallest creatures, such as the microbes and bacteria, in Earth’s early history impact the geosphere?  
   A. formation of rocks C. decreased moisture  
   B. enriching the soil D. caused land erosion
5. During the Mesozoic Era the Earth is warm, so warm that there are no ice caps. Sea levels are lower, leaving different types of land masses for life. What is true about life on Earth at this time?  
   A. large mammals appeared C. fish emerged during this time  
   B. arrival of amphibians D. reptiles became the most abundant animals
6. During the Cenozoic Era the global climate has turned colder, with the ice caps returning to North America, Eurasian, and Antarctica. All continents extensively developed rocks, particularly on lowland plains such as the Gulf and Atlantic coastal plains of North America. This time in earth’s history marks the disappearance of the dinosaurs. What is true about life on Earth at this time?  
   A. flowering plants appeared C. fish emerged during this time  
   B. non-vertebrates dominated D. small animals diversify quickly