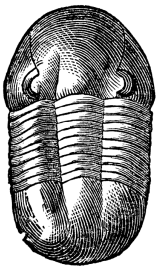
Name: _____ Date: _____ Period: _____

Geologic Time Scale

Different layers of rocks were formed at different times. The rocks at the bottom of the Grand Canyon are much older than the rocks near the top. This is the Law of Superposition. Scientists have been able to form a time line of the Earth's history by comparing rocks and fossils from all over the world. The division of Earth's history makes up the geologic time scale. They have divided Earth history into four main sections that we call eras.

The oldest time period is called the Precambrian Era. This period dates from 4.6 billion years ago to 570 million years ago. It takes up about 75 percent of the Earth's history. At this time, Earth's crust begins to form. Scientists believe that organisms of this era lived in shallow seas. They were very simple animals with no shells or bones, so they left very few fossils. Bacteria become known as the first life on Earth. Most of the evidence of life from that time is in the form of worm-like trails or burrows. These are known as trace fossils. Trace fossils are fossilized tracks and other evidence of the activity of organisms. They tell something about how these animals lived. Most Precambrian rocks are igneous or metamorphic rocks, which don't have as many fossils as sedimentary rocks do.



The next era was the Paleozoic Era. This period extended from 570 million years ago to 225 million years ago. Many Paleozoic animals were invertebrates, or animals without backbones, but they did have hard shell coverings, so lots of fossils have been found. Trilobites, brachiopods, and sponges were common during this time. Warm, shallow seas covered much of the continents. Fish developed in these waters, and are considered to be the first vertebrates, or animals with backbones. Amphibians and land plants developed late in the Paleozoic Era. Vast swamps were found all along the coastlines of the continents. The vegetation that died was buried by sediment, and layer upon layer of this material built up. Eventually, the organic matter turned into coal. At the end of the Paleozoic Era, many of the swamps dried up, and many species of amphibians became extinct. This is all the time period in which the Appalachian Mountains formed. In addition, all of Earth's land comes together to form a single landmass called Pangaea.

The third era was the Mesozoic Era, also called the age of reptiles. Reptiles became very abundant. They were less dependent on water than amphibians and fishes, so they could adapt to the drier environment. This era dates from approximately 225 million years ago to 65 million years ago. This was the time of the huge dinosaurs, the Brontosaurus and the Tyrannosaurus. It was also the time for much smaller ones that were much like our lizards of today. There was a coil-shelled animal that lived in the oceans at that time called the ammonite. It is a good index fossil for this era. Index fossils are the remains of species that existed on Earth for relatively short periods of time, were abundant, and were widespread geographically. These fossils can be used by geologists to assign ages to rock layers. The first mammals and birds appear. Changes in Earth's crust cause Pangaea to slowly break apart. The Atlantic Ocean forms as North America separates from Africa and South America. The Mesozoic Era ended with a change of climate and the extinction of many animals, including dinosaurs and ammonites. Some scientists think these changes were rather abrupt. They may have been caused by a large meteorite striking the Earth.

The final era is the Cenozoic Era. It's time period begins 65 million years ago and continues today. This is a time when mammals have become the primary land animals and many flowering plants have developed. The first primates appear and a small stream begins carving the Grand Canyon. The Rocky and Himalayan Mountain ranges form. The Ice Age occurred ruing this time, and with it, we have seen the first signs of human life.

So, you see, by using dating methods and fossil remains, scientists are able to put together some idea of the Earth's history. There is still a lot that is unknown and a lot that we don't understand about the Earth's history. Maybe one of you will become a paleontologist and fill in missing details about the history of our planet.

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Name: _____ Date: _____

Reading: Geologic Time Scale

Period: _____

1. The rock layers at the _____ are older according to the Law of _____.
2. Scientists use _____ and _____ to create a time line of Earth's history.
3. The division of Earth's history makes up the _____.
4. Scientists have divided Earth history into four periods that are called _____.
5. The four time periods are called:
   a. _____ b. _____ c. _____ d. _____

****

5. The _____ Era is the oldest time period.
6. The Precambrian Era makes up about _____% of the Earth's history.
7. Describe the organisms that lived during the Precambrian Era:
   _____
   _____
8. _____ was the first life on Earth.
9. What are trace fossils? _____
   _____
10. Give 2 examples of trace fossils for this time period. _____

****

11. Many Paleozoic Era animals were _____ or animals with no backbones.
12. The animals did have _____ during the Paleozoic Era, so many fossils have been found.
13. What are three common fossils that have been found?
    a. _____ b. _____ c. _____
14. _____ developed in the warm, shallow seas and are considered to be the first vertebrates.
15. _____ are animals with backbones.
16. Later in the Paleozoic Era, _____ and _____ developed.
17. During this time period, swamp vegetation eventually died and got buried by sediments and turned the organic matter into _____, which is a sedimentary rock.
18. _____, the supercontinent, forms.

****

19. The _____ was called the Age of Reptiles.
20. During this era, _____ were roaming the earth.
21. The ammonite is a coil-shelled animal that lived in the oceans during this era and it is used as an _____.
22. The first _____ and _____ appear.
23. As Pangaea, the supercontinent, breaks apart, the _____ Ocean forms.
24. What were the 2 big changes at the end of the Mesozoic Era?
    _____
25. Scientists think that these changes were caused by a large _____ striking the earth.

****

26. The _____ is the final era.
27. _____ were the main land animals found during this time and _____ plants also developed.
28. The _____ also occurred during this time.
29. The first signs of _____ were found during the Cenozoic Era.
30. What do paleontologists do? _____
    _____
    _____
31. Why are there missing pieces in Earth's history? _____
    _____
    _____

Name: _____ Date: _____ Period: _____

Geologic Time Scale

Event timelines are a great way to visualize information. Using the reading, I would like you to CREATIVELY display Earth's timeline of events. Your timeline will not be to scale, but it will be used to organize information.

You must include:

- A CREATIVE way to display the information
- Time period
- Name of eras
- Important events
- Life forms
- Drawings to represent the events and life forms (with color)

You may use construction paper.