

Chapter 13: The Environment and Change Over Time

Essential question: How does the fossil record support the theory of evolution?

The age of the Earth

Before the 1800s many scientists believed the Earth was _____ of years old. However, _____ and other techniques give an estimate of _____ years old! For much of Earth's history there was no life. If we compare Earth's history to a calendar year, life only begins in _____. Mammals show up in December, and our species, _____, starts making cave paintings at 11:30pm on December 31st.



The Fossil Record



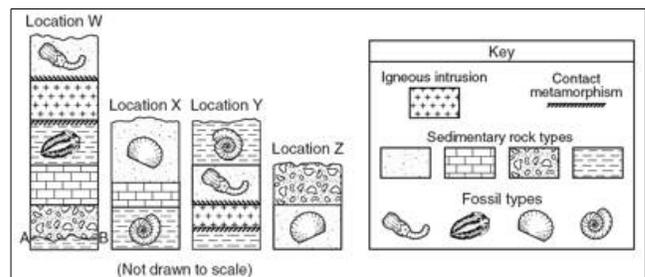
A key piece of evidence that life on Earth used to be very different from today is the fossil record. Fossils are the remains of the hard parts of organisms, like bones, teeth, and shells. There are two types of fossils, molds and casts:

Mold: _____

Cast: _____

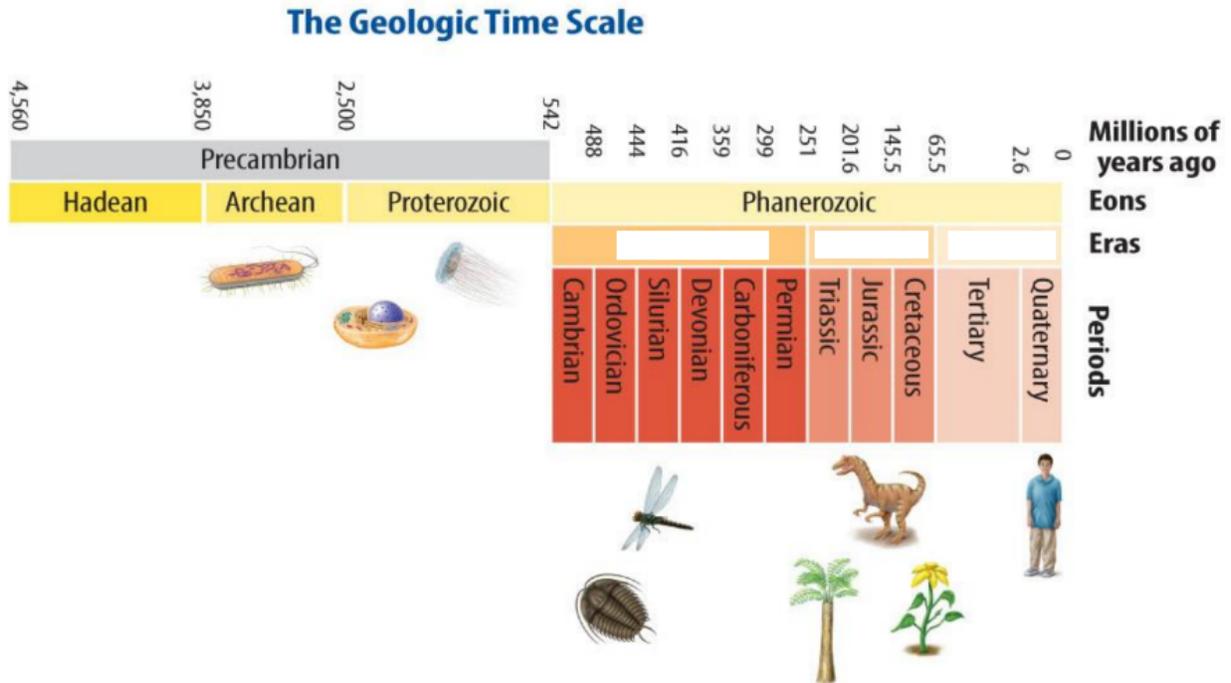
Scientists learn the age of a fossil by _____ the rock in which it is found. Two well known ways to date rocks are radiometric dating and _____ dating. In radiometric dating, the ratio of parent and daughter isotopes in a sample are compared to a known rate of decay (remember the pennies!). Radiometric dating allows us to put a _____ on the age of the rock.

In relative dating, all we know is that lower rock layers tend to be _____, and higher rock layers are _____. However, relative dating allows to put fossils in order of appearance in the history of Earth. A highly recognizable fossil organism that helps scientists to identify the age of a rock is an _____.



Geologic Time Scale

The geologic time scale is based on the order in which organisms came to be and went extinct. The scale is divided into four _____: the _____, _____, _____, and _____.



Multiple mass extinctions have occurred during the _____ eon. It is possible that mass extinctions occurred during the earlier eons, but there is no evidence for them. Why?

Biological Evolution

Biological evolution is the _____.

All populations are evolving, including human populations. In most cases evolution happens too slowly for one person to observe during his lifetime.

What good are hip bones for a whale?

