

FOSSILS AND THE RECORDS THEY LEAVE

Essential Question: _____

Fossils

■ When organisms die, they often decomposed rapidly or are consumed by scavengers, leaving no permanent _____ of their existence.

■ However, some organisms become _____. The preserved remains or traces of an organism from a past geological time embedded in rocks are called fossils.

■ Fossils are _____ remains of organisms.

■ They tell about life long before humans.

■ They suggest that organisms have _____ over time.

Fossil records

■ It is possible to find out how a particular group of organisms _____ by arranging its fossil records in a geological sequence.

■ Like putting things in numerical order.

■ A sequence can be worked out because fossils are mainly found in _____.

■ Sedimentary rocks are formed when layers of silt or mud on top of each other _____. The resulting rock contains a series of horizontal layers.

■ Each layer contains _____ which are typical for that time period when they settled down.

■ The lowest layers contain the _____ rock with the earliest fossils while the highest layers contain the _____ rock with recent fossils.

■ Because of weathering and erosion, fossils may become exposed at the surface.

■ Sometimes scientists have to _____ for them.

■ These scientists are called _____. They are able to date fossils and create fossil records.

Paleontologists use two methods to find the age of a fossil:

■ **Relative dating:** is an _____ age based on what layer of rock the fossil was found in

■ **Radiometric dating:** provides a more _____ age of a fossil. This is done by comparing radioactive elements in the rock to non-radioactive elements. Radioactive elements _____. - Radiometric example: _____

Proof of Evolution

■ The horse provides one of the best examples of evolutionary history based on an almost complete fossil record found in North American sedimentary deposits.

Earliest Horse

■ It was a small animal (like the size of a fox), lightly built and adapted for running.

■ The limbs were short and slender, and the feet were _____ so that the digits were almost vertical.

■ There were ____ digits in the forelimbs and ____ digits in the hind limbs.

Changes in the Horse

- Increase in size (0.4m to 1.5m).
- Lengthening of limbs and feet.
- Reduction of lateral digits.
- Increase in length and thickness of the third digit.
- This fossil record was proof that organisms change over time.

Why does this matter?

- According to fossil records, many _____ which appear at in early layers of rock disappear at a later level.
- This is interpreted in _____ terms as indicating the times at which species originated and became extinct.

Extinction

- When all the organisms of a species _____.
- Natural part of the evolution process.

Why do organisms become extinct?

- Due to quick _____ changes, the species cannot adapt to the change.
- Examples: temperature change, rainfall change, food source disappears and many more.

Mass Extinctions

- This occurs when many species _____ at one time due to the same reason as mentioned previously.
- Examples of Mass Extinctions
 - Climatic changes (ice age).
 - Geological changes (volcanic eruptions).

Summary of Evolution

- Animals must be able to adapt to changes in their environment. These _____ led to a change over time which is called evolution.
- If an animal or species cannot adapt over time, they will _____.
- Animals can adapt through two process:
 - Natural Selection
 - Mutations
- Natural Selection
 - Survival of the _____
- Mutations
 - A genetic change in organism
 - Can be caused by environmental factors
 - Can be beneficial or deadly.
- Fossils provide us with _____ of all these changes.

Assessment :

Underline or highlight these vocabulary terms: fossil records, fossil, sedimentary rock, relative dating, and extinct. What is absolute age?

What is the difference between a fossil record and a fossil?