Name: _____ **Date:** _____

Answer Key: Sifting Stone Secrets: Sophisticated 10th Grade Fossil Findings

Students focus on evidence retrieval and identifying preservation patterns to reconstruct ancient ecosystems and the Earth's biological timeline.

---

1. Which of the following is an example of an 'index fossil,' used by geologists to determine the relative age of rock layers because the organism lived for a short time but was geographically widespread?

Answer: B) Ammonites from the Mesozoic

Ammonites are classic index fossils because they were abundant, evolved rapidly, and had a wide global distribution during the Mesozoic era.

2. The Law of Superposition states that in an undisturbed sequence of rocks, the oldest layers are found at the bottom.

Answer: A) True

This fundamental principle of stratigraphy allows scientists to determine the chronological order of fossils based on their vertical position in sediment.

3. When an organism is buried in sediment and its hard parts dissolve, leaving a hollow space in the shape of the organism, it creates a _____ fossil.

Answer: C) Mold

A mold is the negative image or cavity left behind, while a cast is formed if that cavity later fills with minerals.

4. What type of fossil provides evidence of the behavior or activities of ancient organisms, such as burrows, nests, or footprints?

Answer: B) Trace fossil

Trace fossils capture the actions of organisms (like movement or feeding) rather than the physical remains of the organism itself.

5. Radioactive decay of isotopes like Carbon-14 is used to find the 'relative' age of a fossil compared to other rock layers.

Answer: B) False

Name: _____ **Date:** _____

Radioactive decay is used for 'absolute' dating (providing a numerical age in years), not relative dating.

6. The process where organic matter is compressed over time, leaving behind a thin dark residue of an element, is called _____.

Answer: C) Carbonization

Carbonization occurs when only the carbon film remains from the original organism, often seen in fossilized leaves or fish.

7. If a geologist finds Glossopteris (an ancient fern) fossils in Antarctica, what does this primarily suggest about Earth's history?

Answer: C) The continents were once joined in a warmer climate.

The presence of tropical or temperate plant fossils in icy regions is key evidence for continental drift and plate tectonics.

8. The sudden disappearance of many species from the fossil record at the end of the Cretaceous period is known as a(n) _____.

Answer: A) Mass extinction

Mass extinctions mark significant boundaries in the geologic time scale, indicating rapid environmental changes where many lineages end.

9. Soft-bodied organisms, like jellyfish, are just as likely to become fossils as hard-shelled organisms like clams.

Answer: B) False

Fossilization favors organisms with hard parts (bones, shells, teeth) because soft tissues decay too quickly to be preserved in most environments.

10. Which geologic era is often referred to as the 'Age of Mammals' due to the diversification of mammals following the extinction of large reptiles?

Answer: C) Cenozoic

The Cenozoic era is the most recent era of the Phanerozoic eon and is characterized by the rise of mammals and birds.