

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Answer Key: Deep Time, High Stakes: A 5th Grade Fossil Record Quest

Stratigraphy, index fossils, and paleoecology — use these analytical tools as a formative assessment or independent station activity to reconstruct ancient worlds.

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**1. If a paleontologist finds a layer of rock containing fossilized ferns in the middle of a dry, hot canyon, what is the most likely conclusion about that area's past?**

**Answer:** B) The area was once a lush, moist forest or swamp.

Fossils act as environmental indicators; since ferns require significant moisture to grow, their presence proves the ancient environment was wet, not a desert.

**2. The Law of Superposition states that in undisturbed rock layers, the \_\_\_\_\_ layers are found at the very bottom.**

**Answer:** C) Oldest

In geology, the bottom layer is deposited first, making it the oldest, whereas newer layers pile up on top over time.

**3. True or False: Every plant and animal that has ever lived eventually becomes a fossil.**

**Answer:** B) False

Fossilization is very rare; most organisms decompose or are eaten before they can be preserved in sediment.

**4. Which of these is considered a 'trace fossil' because it shows evidence of an animal's behavior rather than its body?**

**Answer:** C) A fossilized burrow or nest

Trace fossils capture the activities of organisms, such as footprints, nests, or burrows, rather than the physical remains of the body.

**5. True or False: If you find an 'index fossil' in two different states, it means those rock layers are roughly the same age.**

**Answer:** A) True

Index fossils are organisms that lived for a short time but were widespread, allowing scientists to match and date rock layers across different locations.

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**6. When minerals in groundwater seep into the tiny holes of a piece of wood and turn it into stone, the process is called \_\_\_\_.**

**Answer:** B) Petrification

Petrification (or permineralization) occurs when mineral-rich water fills the pores of organic matter, eventually turning it into a stony fossil.

**7. Why are fossils of sea shells often found on the tops of tall mountains like the Himalayas?**

**Answer:** B) The mountain tops used to be underwater before tectonic plates shifted.

Earth's surface is dynamic; tectonic plate movements can push ancient seabed rock upward to form mountain ranges over millions of years.

**8. Scientists who study fossils to learn about the history of life on Earth are known as \_\_\_\_.**

**Answer:** B) Paleontologists

Paleontologists specialize in examining the fossil record to understand biological and geological history.

**9. When a leaf is pressed between layers of soft mud and leaves behind a thin dark film of carbon, it forms which type of fossil?**

**Answer:** C) A carbon film

Carbonization occurs when the organic gases of an organism are squeezed out, leaving a thin, detailed carbon image in the rock.

**10. True or False: We can use the fossil record to see how the complexity of life has changed over billions of years.**

**Answer:** A) True

The fossil record provides chronological evidence of how life evolved from simple single-celled organisms to the complex animals we see today.