Earth's Moving Record

Read evidence from rocks and connect plate motion to Earth changes.

7.10 "Earth and space. The student understands the causes and effects of plate tectonics. The student is expected to: describe the evidence that supports that Earth has changed over time, including fossil evidence, plate tectonics..."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline the three statements labeled **Evidence**. Circle each of the six descriptions labeled **Cause and effect** so you can trace how plate movement changes Earth.

Clues Beneath Our Feet

1. Scientists use several clues to learn that Earth has changed. **Evidence 1:** Fossils of the same ancient land animal occur in rocks on continents now separated by an ocean. **Evidence 2:** Plates move slowly, and matching rock layers and mountain belts appear on opposite continental edges. **Evidence 3:** In an undisturbed stack of sedimentary rock, lower layers formed before layers above them. This rule, superposition, lets scientists place fossils and events in relative order. Together, these clues record a long history rather than a single unchanging Earth.

2. **Cause and effect A:** At a divergent boundary, plates pull apart. As the plates separate beneath an ocean, magma rises and cools into new seafloor, widening an ocean basin. **Cause and effect B:** At a transform boundary, plates slide past each other. Friction can lock them, then stored energy is released as an earthquake. **Cause and effect C:** At a convergent boundary, two continents collide. Their crust crumples and thickens, building a mountain range. Boundary names describe how nearby plates move, not the speed at which people notice change.

3. Volcanoes form in more than one setting. **Cause and effect D:** At some convergent boundaries, one oceanic plate sinks beneath another plate. Rock melts, and magma can rise to erupt as a volcano. **Cause and effect E:** A hot spot is a long-lived upwelling of unusually hot mantle. As a plate moves over it, a chain of volcanoes may form. **Cause and effect F:** A supervolcano erupts after a very large magma reservoir releases enormous amounts of material. Its eruption can spread ash across a wide region.

2 ANSWER WITH EVIDENCE

Use the passage

1. Which labeled evidence uses fossils to show that Earth has changed? What is the clue?

2. How does superposition help scientists place fossils and events in relative order?

3. Describe the plate motion and Earth result in cause and effect A and cause and effect B.

4. How is a hot-spot volcano chain different from a supervolcano eruption?

3 YOUR TURN

Your own words

Write a four-sentence field report about a newly discovered island chain. Describe one rock or fossil observation that supports Earth changing over time, then explain two plate-related processes that could shape the area.

ANSWER KEY

Earth's Moving Record

GRADE 7 · TEKS 7.10

PART 1 · READ AND MARK

Underline the three statements labeled **Evidence**. Circle each of the six descriptions labeled **Cause and effect** so you can trace how plate movement changes Earth. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Which labeled evidence uses fossils to show that Earth has changed? What is the clue?	**Evidence 1. The same ancient land-animal fossils occur on continents now separated by an ocean.**
2	How does superposition help scientists place fossils and events in relative order?	**In an undisturbed sedimentary rock stack, lower layers formed before layers above them. Fossils in lower layers are therefore older than those in higher layers.**
3	Describe the plate motion and Earth result in cause and effect A and cause and effect B.	**A: Plates pull apart beneath an ocean, and magma makes new seafloor that widens an ocean basin. B: Plates slide past each other, friction may lock them, and released stored energy causes an earthquake.**
4	How is a hot-spot volcano chain different from a supervolcano eruption?	**A hot-spot chain may form as a plate moves over a long-lived hot mantle upwelling. A supervolcano erupts when a very large magma reservoir releases material, which can spread ash across a wide region.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

At the sea cliff, fossil shells appear in a lower sedimentary layer, while younger layers lie above it. This order supports the idea that the island has changed over time. A hot spot could form a chain of volcanoes as the plate moves over it. At a divergent boundary, magma could make new seafloor and widen a nearby ocean basin.

Accept equivalent descriptions of the labeled evidence and plate processes when the cause and resulting Earth feature are accurate. For the field report, accept varied plausible observations and any two accurate plate-related mechanisms from the passage.