

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

## Shatter the Surface: A 4th Grade Tectonic Trek Quiz

Can you predict where the next mountain will rise? Analyze the mechanics of subduction zones and seismic waves through complex geological scenarios.

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**1. Imagine you are a geologist studying the 'Ring of Fire.' You find a deep ocean trench next to a string of volcanic islands. Which process is most likely occurring here?**

- A. Plates are sliding past each other without creating or destroying crust.
- B. Two plates are pulling apart, allowing magma to rise and cool into new floor.
- C. One plate is sinking beneath another, melting into magma as it reaches the mantle.
- D. The moon's gravity is pulling the crust upward to form high mountains.

**2. Seismic waves travel at different speeds through various layers of the Earth, helping scientists map what the inside of our planet looks like.**

- A. True
- B. False

**3. When tectonic plates snag and lock together, extreme tension builds up. The sudden release of this stored energy at the \_\_\_\_\_ is what we feel as an earthquake.**

- A. Epicenter
- B. Focus (Hypocenter)
- C. Magma Chamber
- D. Crater

**4. If you move to Iceland, you are standing on a spot where the North American and Eurasian plates are moving away from each other. What feature are you standing on?**

- A. A transform boundary fault
- B. A subduction zone trench
- C. A divergent boundary rift
- D. A dormant shield volcano

**5. Tectonic plates are made of the Earth's crust and the very top solid part of the mantle, together called the lithosphere.**

- A. True
- B. False

**6. The \_\_\_\_\_ describes how most earthquakes occur: plates bend under stress like a rubber band and then snap back to a new position.**

- A. Convection Theory
- B. Elastic Rebound Theory
- C. Rock Cycle Process

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D. Continental Drift

**7. Which of these designs would best help a skyscraper in Tokyo, Japan survive a major earthquake based on engineering principles?**

- A. Glued to a solid concrete slab to keep it from moving entirely.
- B. Built with very thin glass walls to make the building lighter.
- C. Equipped with base isolators (rubber pads) to absorb seismic energy.
- D. Constructed with heavy lead weights at the very top to stop swaying.

**8. Scientists use a tool called a \_\_\_\_\_ to record the magnitude and duration of the vibrations caused by tectonic movement.**

- A. Barometer
- B. Thermometer
- C. Anemometer
- D. Seismograph

**9. Volcanoes can only form at the edges where two tectonic plates meet.**

- A. True
- B. False

**10. What is the primary engine that causes the plates above it to move across the Earth's surface?**

- A. The wind pushing against the continents.
- B. Convection currents in the mantle transferring heat from the core.
- C. Changes in the ocean's tides pulling on the shoreline.
- D. The pressure from falling rain and snow in the mountains.