

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

## When the Crust Fails: A 7th Grade Tectonic Forensics Quiz

Can you predict the unseen forces shaping our world? Analyze complex seismic data and evaluate the mechanics behind Earth's most violent geological shifts.

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**1. A geologist finds a sequence of rock layers where the oldest ocean floor is located furthest from a central underwater ridge. What does this spatial arrangement evaluate to in terms of seafloor dynamics?**

- A. Subduction is occurring directly at the ridge axis.
- B. Paleomagnetism is reversing the flow of the asthenosphere.
- C. New crust is being created at the ridge and pushing older crust away.
- D. The lithosphere is shrinking due to cooling temperatures.

**2. At a convergent boundary where an oceanic plate meets a continental plate, the \_\_\_\_\_ is the process where the denser plate sinks into the mantle.**

- A. Obduction
- B. Subduction
- C. Convection
- D. Seismicity

**3. Seismic P-waves (Primary waves) can travel through both solid and liquid layers of Earth's interior, whereas S-waves (Secondary waves) cannot travel through liquids.**

- A. True
- B. False

**4. If you are analyzing a region with deep-focus earthquakes (over 300km deep), which tectonic setting are you most likely investigating?**

- A. A mid-ocean ridge divergent zone
- B. A transform fault like the North Anatolian Fault
- C. A subduction zone within a Wadati-Benioff zone
- D. A hotspot in the middle of a tectonic plate

**5. Viscosity determines how explosive a volcanic eruption will be. A volcano with \_\_\_\_\_ silica content in its magma is generally the most dangerous.**

- A. Low
- B. High
- C. Variable
- D. Neutral

**6. The Modified Mercalli Intensity scale is the most accurate way for scientists to measure the total energy released by an earthquake's magnitude.**

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- A. True
- B. False

**7. Which of these features is a direct result of 'slab pull' and 'ridge push' mechanisms acting on the Philippine Plate?**

- A. The formation of the Mariana Trench
- B. The creation of a shield volcano over a hotspot
- C. A strike-slip movement with no vertical change
- D. The accumulation of glacial till on the ocean floor

**8. When monitoring a volcano, scientists detect a 'harmonic tremor.' This specific type of seismic activity usually indicates \_\_\_\_\_.**

- A. Tectonic plate collision
- B. The cooling of an ancient lava flow
- C. Magma moving toward the surface
- D. An imminent tsunami in the area

**9. Compare a Stratovolcano (Composite) to a Shield volcano. Why does a Stratovolcano have much steeper slopes?**

- A. It is formed by low-viscosity basaltic lava that travels far.
- B. It is located exclusively on divergent plate boundaries.
- C. It is built from alternating layers of pyroclastic flow and high-viscosity lava.
- D. It lacks a central vent, causing magma to leak from the sides only.

**10. A transform plate boundary is characterized by the creation of new lithosphere through volcanic activity.**

- A. True
- B. False