Name: _____ **Date:** _____

Answer Key: Tectonic Chaos: Crack the Earth's Crust for 5th Grade

Examine the mechanics of deep-sea trenches and seismic waves to determine how the lithosphere transforms our planet's landscape through physical modeling.

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1. Imagine you are an oceanographer discovering a deep-sea trench next to a chain of coastal volcanoes. Which tectonic process is the most likely cause of this formation?

Answer: C) Subduction where an oceanic plate sinks beneath a continental plate

Subduction occurs at convergent boundaries where the denser plate sinks, creating a deep trench and melting rock into magma that feeds coastal volcanoes.

2. To measure the severity of an earthquake, scientists use the _____ to calculate the total energy released based on the size of the fault rupture.

Answer: B) Moment Magnitude Scale

While the Richter scale was common in the past, modern geologists use the Moment Magnitude Scale to more accurately analyze the energy of large, complex earthquakes.

3. A shield volcano, like those found in Iceland, is typically formed by explosive eruptions of thick, sticky magma that builds steep slopes quickly.

Answer: B) False

Shield volcanoes are formed by thin, runny lava that flows long distances, creating broad, gentle slopes rather than steep, explosive peaks.

4. If you observe a fence that has been offset so that one side is now five feet further north than the other side after an earthquake, which boundary type are you looking at?

Answer: C) Transform boundary

Transform boundaries involve plates sliding horizontally past each other, which resulting in surface features being 'offset' or shifted sideways.

5. The precise point inside the Earth's crust where an earthquake begins is called the _____.

Answer: C) Focus

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The focus (or hypocenter) is the internal point of origin; the epicenter is the location on the Earth's surface directly above it.

6. Primary waves (P-waves) are the first seismic waves to reach a seismograph because they travel through both solid rock and liquid layers.

Answer: A) True

P-waves are longitudinal waves that move faster than S-waves and can travel through the liquid outer core of the Earth.

7. Why does oceanic crust usually subduct under continental crust during a collision?

Answer: B) Oceanic crust is denser because it is made of basalt

Density determines which plate sinks. Oceanic basalt is denser than continental granite, causing it to be forced down into the mantle.

8. A fast-moving, deadly cloud of hot ash, gas, and rock fragments that rushes down the side of a volcano is known as a _____.

Answer: C) Pyroclastic flow

Pyroclastic flows are one of the most dangerous volcanic hazards, reaching speeds of over 100 mph and extremely high temperatures.

9. New crust is constantly being created at the center of the Atlantic Ocean where two plates are pulling apart.

Answer: A) True

At divergent boundaries like the Mid-Atlantic Ridge, magma rises to fill the gap, cooling to form brand new oceanic crust.

10. If you were building a bridge in an earthquake-prone zone, which soil type would be the most dangerous to build on due to 'liquefaction'?

Answer: B) Loose, water-saturated sand

Liquefaction occurs when shaking causes loose, wet soil to behave like a liquid, causing buildings and bridges to sink or tilt.