

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

## Crack the Lithic Code: High School Crustal Chronicles Quiz

Challenge the limits of deep time by synthesizing isotopic data and analyzing biotic responses to paleoclimatic shifts throughout the Phanerozoic.

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**1. Which principle of relative dating would a geologist primarily use to argue that a basaltic dike cutting through layers of shale is younger than the shale itself?**

- A. Principle of Original Horizontality
- B. Law of Faunal Succession
- C. Principle of Cross-Cutting Relationships
- D. The Principle of Inclusion

**2. To determine the absolute age of an ancient zircon crystal from the Hadean Eon, scientists measure the decay of \_\_\_\_\_ into Lead-206.**

- A. Carbon-14
- B. Uranium-238
- C. Potassium-40
- D. Rubidium-87

**3. The Great Oxygenation Event, recorded in banded iron formations, was primarily caused by the metabolic activity of early terrestrial plants.**

- A. True
- B. False

**4. The presence of *Glossopteris* flora across South America, Africa, India, and Antarctica serves as critical paleobiological evidence for which theory?**

- A. Island Biogeography
- B. Phyletic Gradualism
- C. Continental Drift
- D. Punctuated Equilibrium

**5. Which of the following represents an 'index fossil'—a species used to define and identify geologic periods due to its wide distribution and short evolutionary lifespan?**

- A. Graptolites
- B. Coelacanths
- C. Modern Sharks
- D. Stromatolites

**6. The 'Cambrian Explosion' refers to the rapid diversification of \_\_\_\_\_ which introduced most major animal phyla to the fossil record.**

- A. Unicellular eukaryotes

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- B. Multicellular marine organisms
- C. Flowering plants (Angiosperms)
- D. Mammalian megafauna

**7. An unconformity in the rock record represents a substantial gap in time where no sediment was deposited or existing rock was eroded away.**

- A. True
- B. False

**8. What geochemical signature found at the K-Pg boundary worldwide supports the hypothesis of a massive bolide impact 66 million years ago?**

- A. High concentrations of Iron Oxide
- B. A global layer of Iridium
- C. Excessive Carbon-12 isotopes
- D. Depletion of Oxygen-18

**9. Permineralization occurs when mineral-rich \_\_\_\_\_ seeps into the pore spaces of an organism's remains, eventually crystallizing into stone.**

- A. Volcanic ash
- B. Groundwater
- C. Glacial melt
- D. Magmatic flow

**10. The principle of Uniformitarianism suggests that the biological and physical processes occurring today are fundamentally different from those in the geologic past.**

- A. True
- B. False