

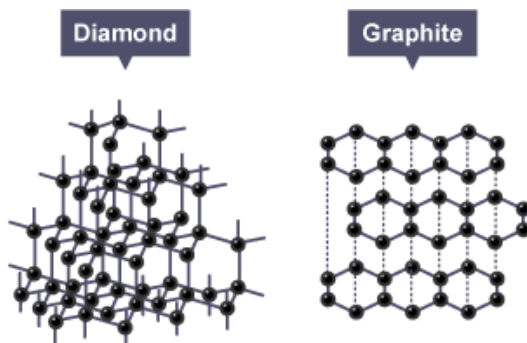
**EMP: Part 3 Take-Home Quiz**

Answer the questions below in complete sentences. Be sure to answer the question completely!

1. List the four major divisions of Earth's history. Explain how these divisions were made and why they are useful.

Precambrian, Cenozoic, Mesozoic, Paleozoic- They are broken up by mass extinctions or major events and break earth's complex timeline into smaller pieces.

The diagram shows the crystal structure of diamond and graphite.



2. Describe the similarities and differences between Diamond and Graphite. Use key terms to support your answer.

Diamond and Graphite have the same chemical composition, but have different molecular arrangements. They are polymorphs.

3. Graphite is a mineral made up of carbon atoms that are bonded together in a regular pattern. Do you think graphite would most likely display cleavage or fracture? Explain.

Due to the structure, and the arrangements into 'sheets', graphite would most likely exhibit cleavage, which is when the break is along a specific plane.

4. What properties do geologists use to identify minerals?

Chemical composition (typically inorganic), crystalline structure, physical properties (streak, luster, etc.), hardness.

5. High heat melts a deposit of sedimentary rock, which hardens into new rock. Which type of rock forms? Explain your answer.

Igneous Rock-The key to this answer is that the high heat **MELTS** the deposit of sedimentary rock. If it changed due to heat and pressure, it would be metamorphic. Because it melts, it is igneous.

Name \_\_\_\_\_

Hour \_\_\_\_\_

6. You are examining a sample of igneous rock. What factors affect the kind of igneous rock found in the sample?

Particle size, whether it is intrusive or extrusive, texture, etc.

7. Create a sequence showing the formation of sedimentary rock. Start with 'Weathering and Erosion'.

Weathering → Erosion → Deposition → Compaction and Cementation (Lithification) → Sedimentary Rock

8. What is a convection current, and how does it affect the cycling of rocks?

Driven from heat within Earth's interior, due to the energy release from radioactive decay, molten material is heated, where it then rises, cools, and sinks back into Earth's interior. It can produce new igneous rock through mid-ocean ridges and sea-floor spreading. As this rock is older and is pushed away from the ridge, it can be forced back into Earth's interior at a divergent boundary, where it is then entered into the convection current again. Convection currents also drive tectonic plate movement.

9. "As the rock in Earth's crust moves through the rock cycle, material is not lost or gained". Do you agree with this statement? Support your claim with examples and details.

This statement is true, and follows the law of conservation of matter. No new material is produced, it is simply transformed into new rock types via the various steps to the rock cycle. Sedimentary rock can form from weathering and erosion of other rock surfaces, then lithification. Metamorphic rock can form when heat and pressure change a rock. Igneous rock can form when magma cools. Each of these rock types can be transformed into other rock types via various processes.

10. Mineral A has a hardness of 5. Mineral B has a hardness of 7. Mineral C can scratch Mineral A, but it can be scratched by mineral B. What ranking on the Mohs hardness scale should Mineral C be assigned? Explain.

6. Minerals can only be scratched by materials that have a higher level of hardness. Since this unknown mineral can be scratched by a 7 but not by a 5, it must be a 6.

11. Which statement best identifies the substance whose characteristics are listed in the table?

Characteristic	Observation	Characteristic	Observation
Naturally Occurring	Yes	Can form by inorganic processes	No
Solid	Yes	Crystal structure	No
Definite Chemical Composition	No		

- a. It is not a mineral because it is a solid.  
b. It is a mineral because it occurs naturally.  
c. It is not a mineral because it doesn't have a crystal structure.  
d. It is a mineral because it forms only organically.