

TEST NAME: **Test 3**  
TEST ID: **330567**  
GRADE: **09 - 12**  
SUBJECT: **Life and Physical Sciences**  
TEST CATEGORY: **My Classroom**

Student: \_\_\_\_\_

Class: \_\_\_\_\_

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

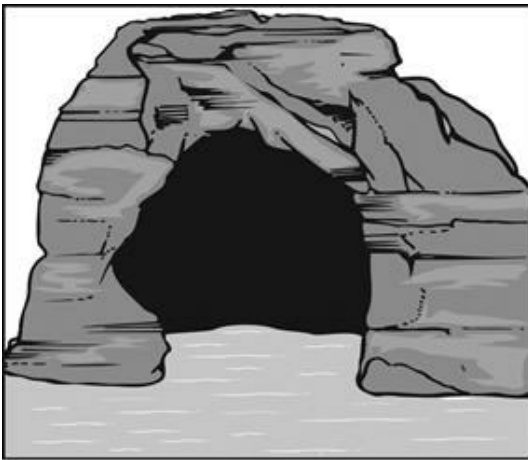
1. Which of the following changes would end Earth's tectonic activity?

- A. Earth's crust becomes a cooler solid.
- B. Earth's mantle becomes a warmer semiliquid.
- C. Earth's mantle becomes cooler and solid.
- D. Earth's outer core becomes warmer.

2. A scientist designs a mathematical model of the rock cycle. The model predicts how changes in Earth processes will affect the amounts of different types of rock on Earth. Which quantity should stay the same as Earth processes change?

- A. the average rate at which Earth rotates
- B. the average distance of Earth from the Sun
- C. the total number of inactive volcanoes on Earth
- D. the total amount of material on Earth

3. Sea caves can form in soft rock as shown in the diagram below.



What is the main process that forms sea caves?

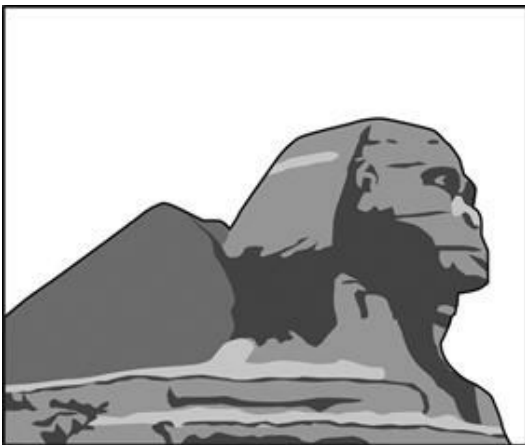
- A. erosion by waves
- B. deposition by tides
- C. dissolving by groundwater
- D. weathering by blowing beach sand

4. A glacier can travel over the surface of Earth and reshape it. The chart describes three things a glacier can do.

Glacial Actions	
1.	breaks large rocks into smaller ones
2.	pushes broken rocks ahead of itself
3.	leaves broken rocks behind when the front edge melts

Which terms best describe these glacial actions in the order as presented?

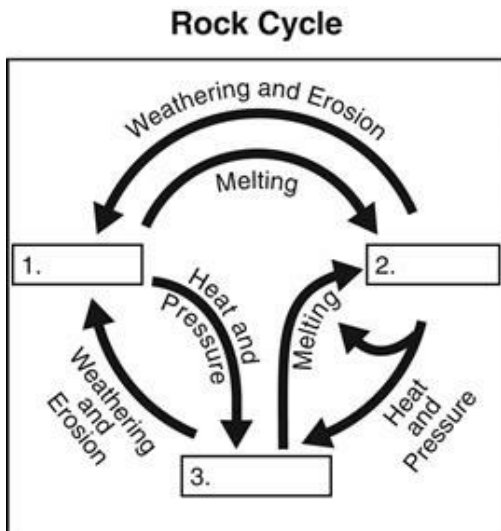
- A. deposition, weathering, erosion
  - B. weathering, erosion, deposition
  - C. erosion, chemical weathering, deposition
  - D. chemical weathering, mechanical weathering, erosion
5. The surface of Earth is composed of large tectonic plates that are constantly shifting as they float on top of molten rock. Which process must occur in the mantle to make the plates move?
- A. normal faulting
  - B. seafloor spreading
  - C. igneous intrusions
  - D. convection currents
6. Marta was studying a diagram of the rock cycle. She wanted to know what could cause a sedimentary rock to become a metamorphic rock. Which processes must occur in order for a sedimentary rock to change into a metamorphic rock?
- A. compaction and cementation
  - B. heating and pressure
  - C. melting and cooling
  - D. uplift and erosion
7. The sphinx in Egypt has been eroded by abrasive desert sands.



Which process has most likely helped in breaking down the surface of the Sphinx?

- A. cementation
- B. deposition
- C. faulting
- D. weathering

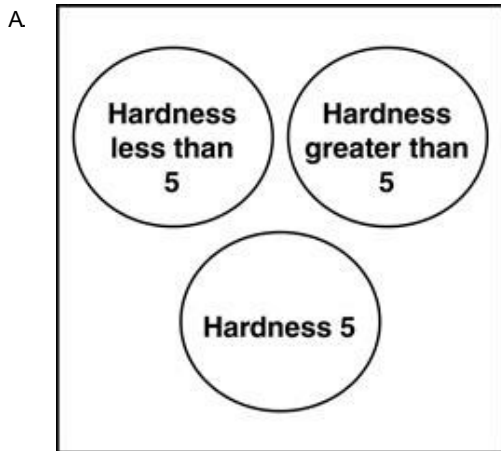
8. An incomplete diagram of the rock cycle is shown.



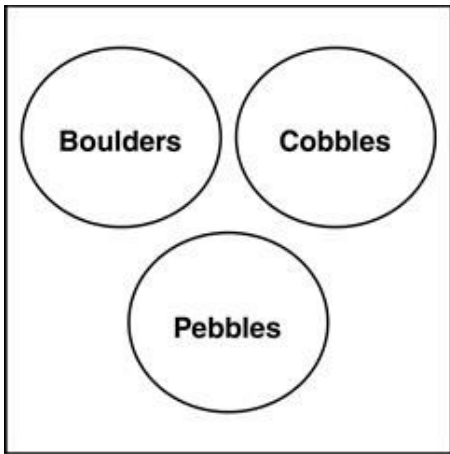
Which terms should be placed in the boxes labeled 1, 2, and 3?

- A.
- B.
- C.
- D.

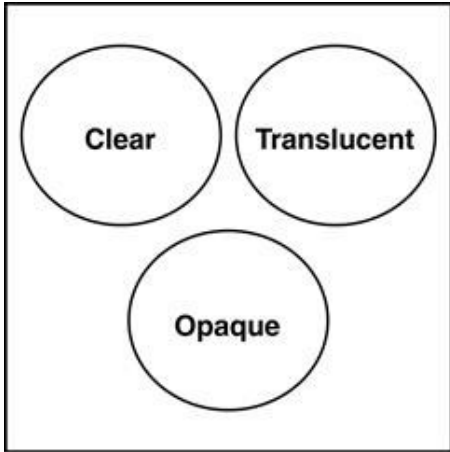
9. A student placed rocks in the groups shown below. Which of the groups is based on the origin of the rocks?



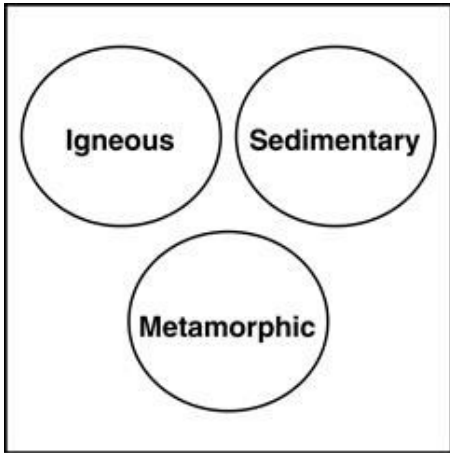
B.



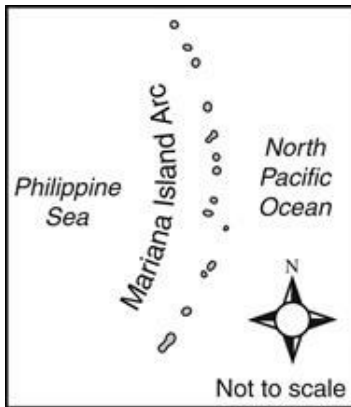
C.



D.

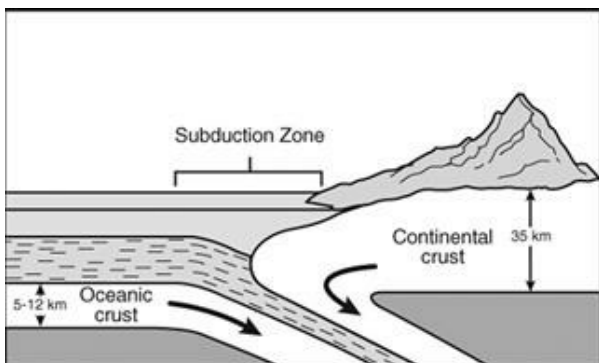


10. The Mariana islands are volcanic islands that form an arc. The island arc is located in the North Pacific Ocean. These islands were formed by converging tectonic plates.



Which process had to occur in order for these islands to be formed?

- A. melting of oceanic crust at mid-ocean ridge
  - B. melting of oceanic crust at subduction zones
  - C. production and deposition of magma from hot spots
  - D. production and deposition of magma from rift valleys
11. Extensive folding of sedimentary rock layers on Earth provides indirect evidence of certain processes occurring throughout Earth's history. Which of these is most likely one of these processes?
- A. convective heat loss from Earth's mantle
  - B. slowing of the rotation of Earth's core
  - C. increase in the density of Earth's atmosphere
  - D. slow increase in the distance of Earth's orbit
12. Which of these structures form when materials are deposited, buried, and cemented?
- A. intrusive structures
  - B. metamorphic rocks
  - C. volcanic mountains
  - D. sedimentary rocks
13. Use the diagram of the subduction zone to answer the question that follows.



What causes the oceanic crust to be pushed under the continental crust?

- A. the weight of the ocean water on the oceanic crust
- B. the reduction of friction on the oceanic crust
- C. the depth of the oceanic crust
- D. the higher density of the oceanic crust

14. **Which of these must occur for sediments to form new rock?**
- A. precipitation
  - B. evaporation
  - C. partial melting
  - D. recrystallization
15. **The Appalachian mountain range stopped forming approximately 250 million years ago. The Himalayan mountain range is still actively forming by tectonic forces. Which is most likely true of the Himalayan mountain range compared to the Appalachian mountain range?**
- A. It is closer to sea level.
  - B. It has a more rounded profile.
  - C. It is made of higher-density rock.
  - D. It has more earthquakes per year.
16. **Which of these statements best describes the rock cycle?**
- A. Layers of rock are broken by faults.
  - B. Rocks in the ocean become rocks on land.
  - C. Lunar rocks change into terrestrial rocks.
  - D. New rocks form from older rocks.
17. **In the Four Corners area in the US Southwest, there are large rocky outcroppings of basalt. These were formed by ancient lava flows. Using this information, what class of rock is this?**
- A. metamorphic
  - B. sedimentary
  - C. igneous
  - D. weathered
18. **Geologists were examining an area in Africa called the Great Rift Valley. Which geologic event most likely caused the formation of the valley?**
- A. diverging continental plates
  - B. collision of tectonic plates
  - C. movement of glaciers
  - D. impacts from meteors
19. **The theory of plate tectonics provides the current explanation for the way in which**
- A. stars change.
  - B. continents move.
  - C. rocks are formed.
  - D. tides are produced.
20. **Plants can help prevent erosion or contribute to erosion. Which describes how plants could contribute to erosion?**
- A. Plants slow the runoff of water and soil.
  - B. Plant roots grow in rocks, breaking the rocks.
  - C. Plant roots hold the soil in place against wind.
  - D. Plants break the impact of raindrops before they hit the soil.

21. **Over time, non-volcanic mountains can form due to the interaction of plate boundaries. Which interaction is most likely associated with the formation of non-volcanic mountains?**
- A. oceanic plates colliding with oceanic plates
  - B. oceanic plates separating from oceanic plates
  - C. continental plates colliding with continental plates
  - D. continental plates separating from continental plates
22. **Answering which question best helps to resolve whether a chain of volcanoes was formed by a hot spot or by a subduction zone?**
- A. Did the volcanoes form and then become extinct in sequence?
  - B. Did the volcanoes release lava and hot gases when erupting?
  - C. Did pressure build up beneath the volcanoes prior to erupting?
  - D. Did emissions from the volcanoes result in the formation of acid rain?
23. **Which scale is used to report the intensity of an earthquake?**
- A. Saffir-Simpson Scale
  - B. Modified Mercalli Scale
  - C. Richter Magnitude Scale
  - D. Moment Magnitude Scale
24. **Which of these natural disasters are the most unpredictable?**
- A. earthquakes
  - B. hurricanes
  - C. tornados
  - D. blizzards
25. **The Himalayan Mountain chain is the youngest and tallest mountain chain on Earth. Which phenomenon contributed most to this area of continental buildup?**
- A. erosion of surrounding continental materials
  - B. eruptions of continental shield volcanoes
  - C. convergence of continental plates
  - D. subsidence of continental landmass
26. **Which is the best evidence that rocks found deep underground were once exposed at the surface?**
- A. The rocks have been melted by a magma.
  - B. The rocks have been broken by faults.
  - C. The rocks have been weathered by water.
  - D. The rocks have been folded by pressure.
27. **Which is an example of organic weathering of rocks?**
- A. glaciers moving large pieces of a fractured rock
  - B. tree roots growing in a fractured rock
  - C. ice freezing on a rock surface
  - D. wind blowing sand against a rock surface

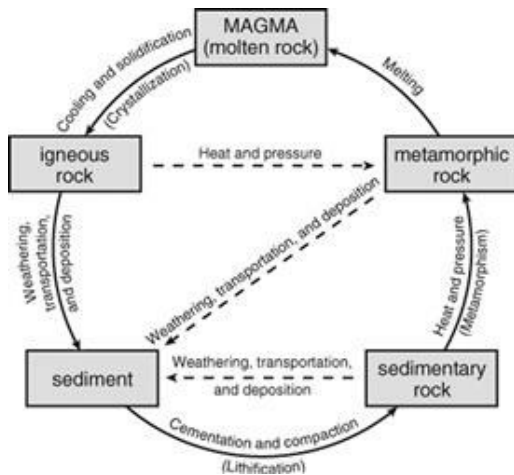


28. **Many of the landforms found on Earth were produced by tectonic activity. The same conditions that cause tectonic activity on Earth should have a similar effect on other rocky planets. Which observation of other planets supports this theory about tectonic activity on Earth?**
- A. These other planets have rates of tectonic activity that are equal to rates on Earth.
  - B. The farther the planets are from the Sun, the less heat they receive to drive tectonic processes.
  - C. The tectonic activity on smaller planets stopped long ago because smaller bodies lose heat more quickly.
  - D. The planets with rapid rates of rotation have more tectonic activity due to rotational stresses that affect a hard crust.
29. **Which of the following is the best evidence that an area of land was once covered by a glacier?**
- A. limestone caverns
  - B. marine fossils
  - C. abrasion of surface rocks
  - D. peeling slabs of rock
30. **Which of these best indicates that sediments can be changed into rock?**
- A. layers of sandstone
  - B. igneous intrusions
  - C. lava beds
  - D. mountains with gneiss
31. **Oceanic crust is composed mainly of basalt. Continental crust is composed mainly of granite. Why does oceanic crust generally tend to subduct under continental crust when plates collide?**
- A. The oceanic crust is thicker than the continental crust.
  - B. The continental crust is thicker than oceanic crust.
  - C. The oceanic crust is denser than the continental crust.
  - D. The continental crust is denser than the oceanic crust.
32. **Water is a very important part of the physical weathering of rock. Which of these properties of water is most important in causing some of the physical weathering of rock?**
- A. Water is a liquid at room temperature.
  - B. Water can contain different minerals.
  - C. Water expands when it freezes.
  - D. Water dissolves many chemicals.
33. **South America and Africa are two continents separated by a large ocean. Scientists have found 200-million-year-old *Mesosaurus* fossils on both continents. What is the explanation for the reason these fossils can be found on both continents?**
- A. The continents were both created through volcanic activity.
  - B. The fossils were brought to South America by explorers.
  - C. The animals crossed a land bridge that once connected the continents.
  - D. The continents were once attached to each other and then drifted apart.
34. **In what way can forest fires affect the lithosphere?**
- A. increasing soil erosion
  - B. causing air pollution
  - C. increasing seismic activity
  - D. causing violent dust storms

35. On the ocean floor, there are long mountain ranges called mid-oceanic ridges. Which description explains how these geological structures were formed?

- A. a transform boundary where one ocean plate slides past another ocean plate
- B. a diverging boundary where two ocean plates move apart from one another
- C. a converging boundary where an ocean plate sinks beneath a continental plate
- D. a converging boundary where an ocean plate sinks beneath another ocean plate

36. Use the diagram of the rock cycle to answer the question that follows.



What has to occur to change igneous rock into sediment?

- A. weathering, transportation, and deposition
- B. heat and pressure
- C. cooling and solidification
- D. cementation and compaction

37. In the rock cycle an igneous rock forms from

- A. cooling temperatures
- B. high pressure and heat
- C. weathering and erosion
- D. compacted plant remains

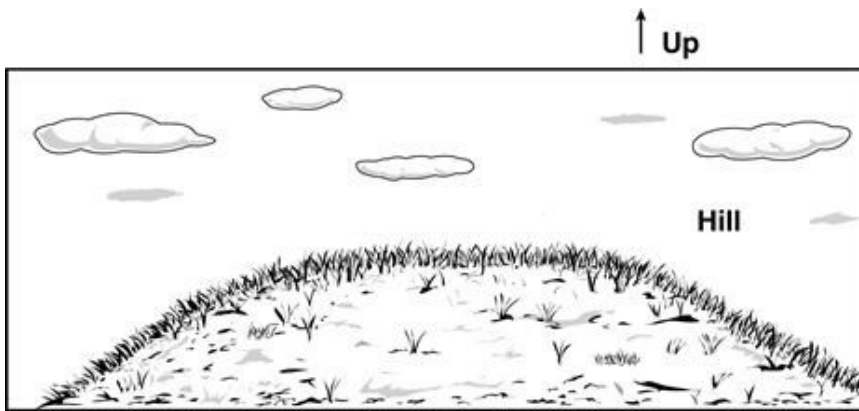
38. Two fossils of the same species were found on two different continents. The continents are separated by the Atlantic Ocean. Scientists dated the fossils to be 2 million years old. Which is the least likely explanation for these findings?

- A. A great land bridge once connected the continents.
- B. The remains were carried by ocean currents.
- C. A single landmass once existed with both continents.
- D. The animals swam across the ocean.

39. Which of these describes a location where minerals are most likely to form?

- A. cooled magma from a volcano
- B. eroded sediment from a riverbed
- C. weathered rock from a canyon
- D. saturated soil from a floodplain

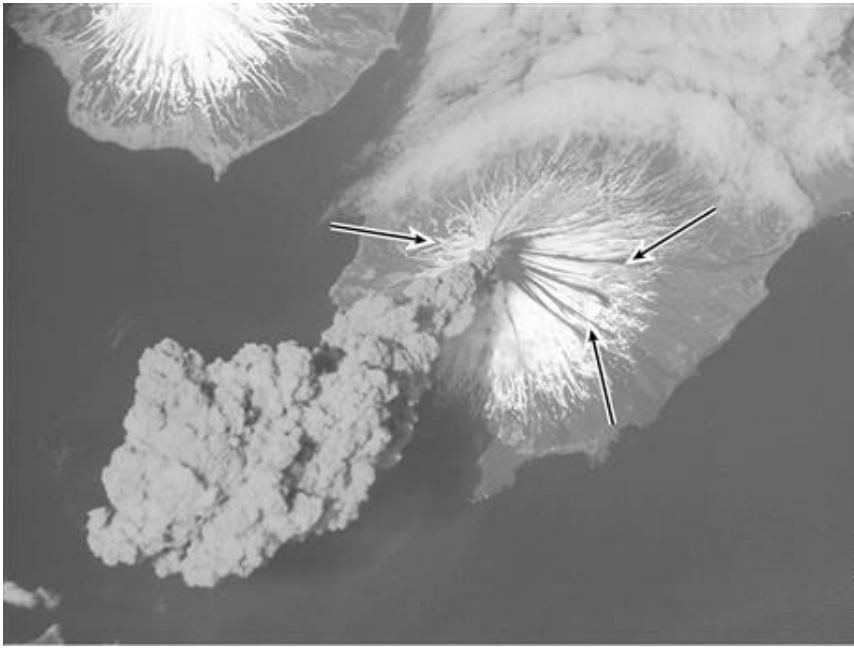
40. A student reads that this hill was formed by crustal plate folding.



The student thinks the hill formed in a different way. Which other process would be most likely to cause the formation of the hill?

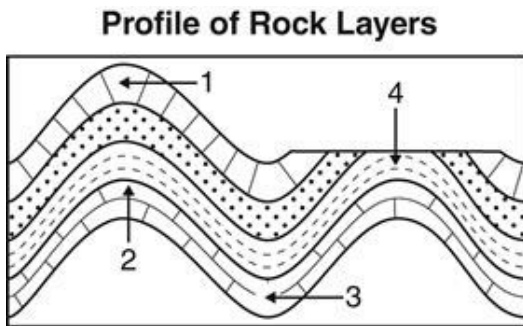
- A. solution of limestone beneath the hill
  - B. erosion of sediments surrounding the hill
  - C. partial melting and cooling of rock inside the hill
  - D. absorption and reflection of solar energy from the surface of the hill
41. Which transition is most responsible for gaps in the fossil record?
- A. metamorphic rock to igneous rock
  - B. igneous rock to metamorphic rock
  - C. metamorphic rock to sedimentary rock
  - D. sedimentary rock to metamorphic rock
42. Vein deposits of gold and silver are often formed in areas that have experienced which geologic process?
- A. igneous intrusion
  - B. transport by water
  - C. chemical weathering
  - D. compaction by pressure
43. Two processes are involved in the formation of a sand dune. Which two processes best describe how a sand dune forms?
- A. wind erosion then deposition
  - B. plate movement then deposition
  - C. wind erosion then water erosion
  - D. water erosion then plate movement
44. A geologist finds a layer of shale near the surface from a certain time period. Nearby, the geologist finds the same layer of shale, but it is deeper underground than the first layer. What might have caused the difference in the depth of the shale layer?
- A. a meteorite
  - B. a fault
  - C. ancient fossils
  - D. animal life

45. The arrows on the satellite image of a volcano point to features that radiate out from the crater found at the top of the volcano toward the base of the volcano.



These indicated features of the volcano suggest which conclusion?

- A. The volcano is old enough to show erosion.
  - B. The volcano is located on a hot spot.
  - C. The eruption formed cracks in the side.
  - D. The eruption caused extensive local rainfall.
46. The diagram shows a profile of rock layers.



Which point indicates the oldest exposed layer?

- A. 1
  - B. 2
  - C. 3
  - D. 4
47. Sedimentary deposits formed from organic material tend to include a high amount of
- A. iron.
  - B. nickel.
  - C. carbon.
  - D. silicon.

48. **Ferromagnetic molecules in the liquid igneous rocks orient themselves to align with Earth's magnetic field. When the rock cools, the molecules are set in place. Earth's poles swap positions periodically, so molecules from different periods have different orientations. Which finding would support modern plate tectonic theory?**
- A. Bands of ferromagnetic molecules with alternating orientations are asymmetrical on either side of a divergent boundary.
  - B. Bands of ferromagnetic molecules with alternating orientations are asymmetrical on either side of a convergent boundary.
  - C. Bands of ferromagnetic molecules with alternating orientations are symmetrical on either side of a convergent boundary.
  - D. Bands of ferromagnetic molecules with alternating orientations are symmetrical on either side of a divergent boundary.
49. **What is one condition necessary to produce diamonds?**
- A. high altitude
  - B. intense pressure
  - C. quick cooling
  - D. low temperatures
50. **Two students exploring a long, shallow valley at the base of a mountain find small pieces of gold that occur naturally at this location. One student thinks that the valley is a fault line that has recently moved and exposed this mineral. The other student disagrees and proposes a different explanation that is equally valid. Which of the following is most likely the second student's explanation?**
- A. The gold formed in the valley due to a chemical reaction between the bedrock and air.
  - B. A miner used the valley as a storage area and left the gold when moving to a new location.
  - C. A lava flow from a volcano passed through the depression, depositing the gold as it passed through.
  - D. The valley is a dry creek bed that transported the gold from a higher elevation when there was flowing water.