



UNIT 4 Key

Grade 6 Science EOG Quiz Answer Key

Geology - (S6E5.a.) Earth's Crust, Mantle, Core, (S6E5.e.) Lithosphere Plates, (S6E5.f.) Earth Surface Processes

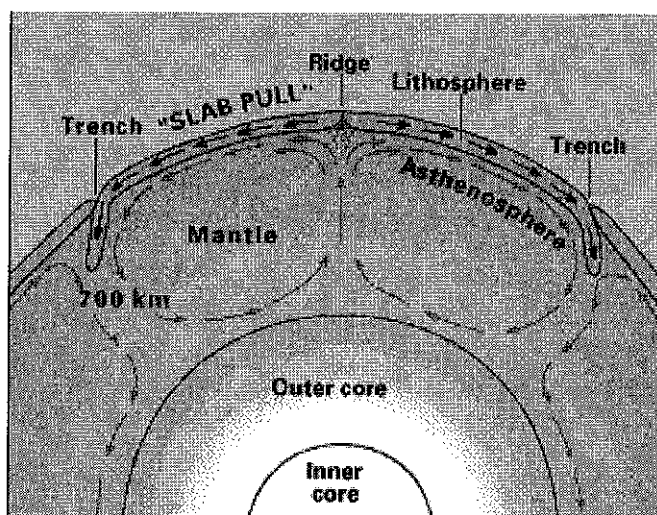
Student Name: _____

Date: _____

Teacher Name: BRITTANY DUDEK

Score: _____

1)



What is the main method of heat transfer from the core to the crust of Earth?

- A) conduction
- B) **convection**
- C) insulation
- D) radiation

Explanation:

Convection currents raise the less dense hot material from the center to the cool crust and material from the cool (dense) crust settles down to the core to be heated again.

2)

Data Analysis

Elements	Density
Aluminum	2.698 g/mL
Calcium	1.54 g/mL
Iron	7.8738 g/mL
Silicon	2.3296 g/mL

Sanjay is learning about the elements that make up Earth's crust. Ms. Richards, his Earth science teacher, gives him an element and asks him to determine which element from Earth's crust it is. She also provides Sanjay with this table. Sanjay weighs the element and finds that it has a mass of 17.98 g. By placing the element in water, he determines the volume of the substance to be 2.2835 mL.

Based on the table from Ms. Richards, what element from Earth's crust did Ms. Richards gave to Sanjay?

- A) iron
- B) calcium
- C) aluminum
- D) silicon

Explanation:

By using the table from Ms. Richards, Sanjay can determine what element from Earth's crust he has by finding its density. To find density, Sanjay must use the formula $\text{density} = \frac{\text{mass}}{\text{volume}}$. The equation he will use is $\text{density} = \frac{17.98 \text{ g}}{2.2835 \text{ mL}}$. Therefore, the density of

this element is $7.8738 \frac{\text{g}}{\text{mL}}$. Based on the table, the element with a density of $7.8738 \frac{\text{g}}{\text{mL}}$ is **iron**, which is the element from Earth's crust Ms. Richards gave to Sanjay.

3) How is the crust DIFFERENT from the other layers of the Earth?

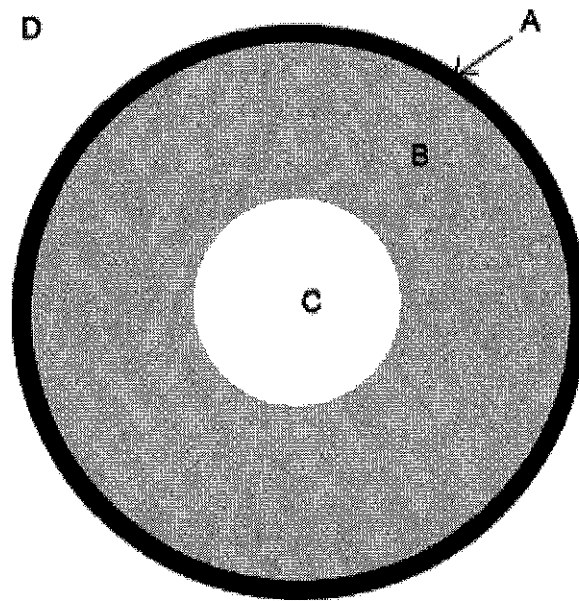
- A) It is hotter.
- B) **It is thinner.**
- C) It is mostly liquid.
- D) It is under pressure.

Explanation:

The Earth's crust is different from the other layers because **it is thinner**. The crust is only 0-100 km thick, while the inner core is about 1,200 km thick.

4)

	Temperature	Density	Composition
Crust	Air temp-500°C	↓	Basalt and Granite
Mantle	500°C-900°C		Silicate Rocks
Core	5000°C-7000°C		Mostly Iron



Layer B in the diagram is located between the crust and core in terms of location, temperature, and pressure. What part of the earth is labeled layer B?

- A) the core
- B) the crust
- C) **the mantle**
- D) the atmosphere

Explanation:

The mantle is located between the crust and the core. The mantle is the thickest layer of the earth.

5) If you were to travel from the surface to the center of Earth, the temperature would

- A) increase minimally.
- B) stay about the same.
- C) **increase dramatically.**
- D) decrease dramatically.

Explanation:

In order for the core of the earth to be molten iron and nickel, the temperature must **increase dramatically** from the surface to the center.

6) Which BEST describes the composition of the Earth's core?

- A) semi-molten
- B) water and organic substances
- C) a solid lower part and a liquid upper part**
- D) contains volcanic, sedimentary and granitic rocks

Explanation:

The Earth's core consists of **a solid lower part and a liquid upper part**. The liquid part is believed to be iron; the solid part is believed to be nickel.

7) How does the density of the Earth's core compare to the other layers of the Earth?

- A) The core is the densest layer.**
- B) The core is the least dense layer.
- C) The core is only less dense than the crust.
- D) The core is only less dense than the mantle.

Explanation:

The pull of gravity increases with the depth of the Earth. This pull is why **the core is the densest layer**.

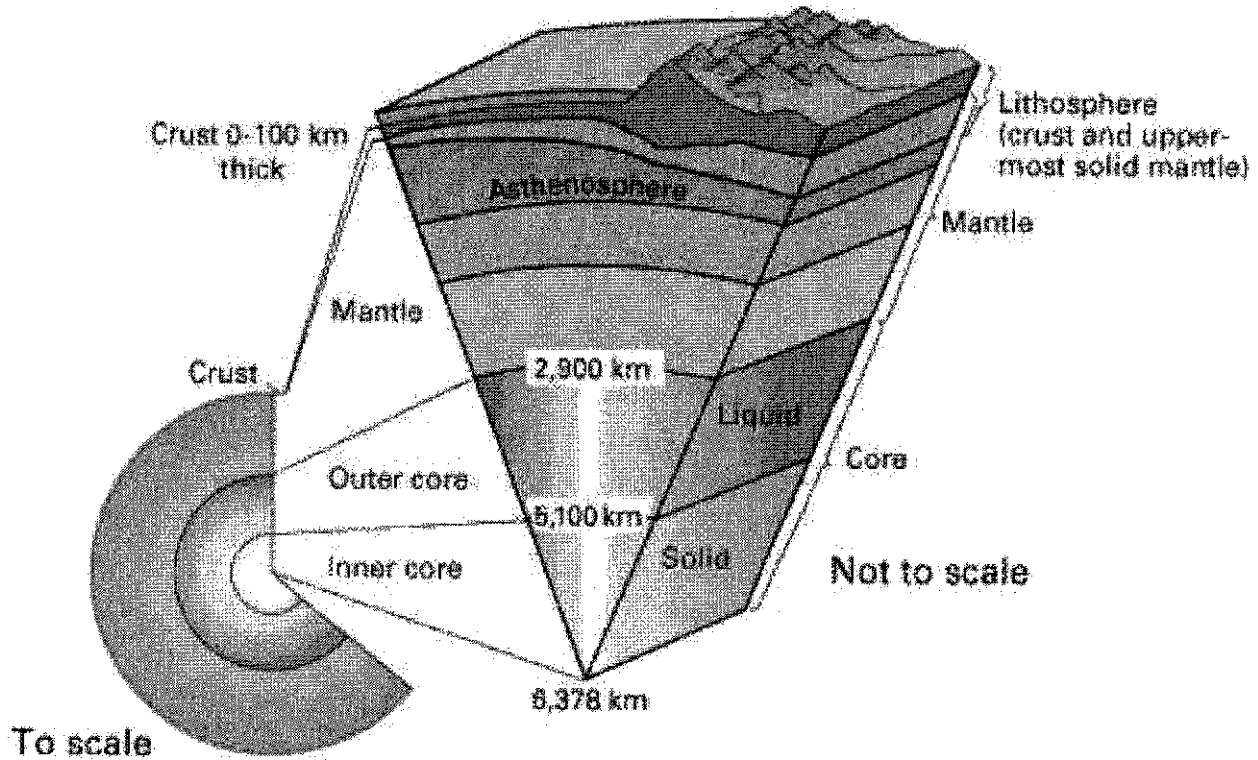
8) How does the temperature of the Earth's mantle compare to the other layers of the Earth?

- A) The mantle is hotter than the core.
- B) The mantle is hotter than the crust.**
- C) The mantle is the same temperature as the core.
- D) The mantle is the same temperature as the crust.

Explanation:

Temperature increases with depth. The crust is the coolest layer of the Earth. **The mantle is hotter than the crust.** The core is hotter than the mantle.

9)



According to the information in the diagram, which layer of the Earth is liquid?

- A) crust
- B) mantle
- C) outer core**
- D) inner core

Explanation:

The **outer core** is liquid. It is between the mantle and the inner core, which are both solid.

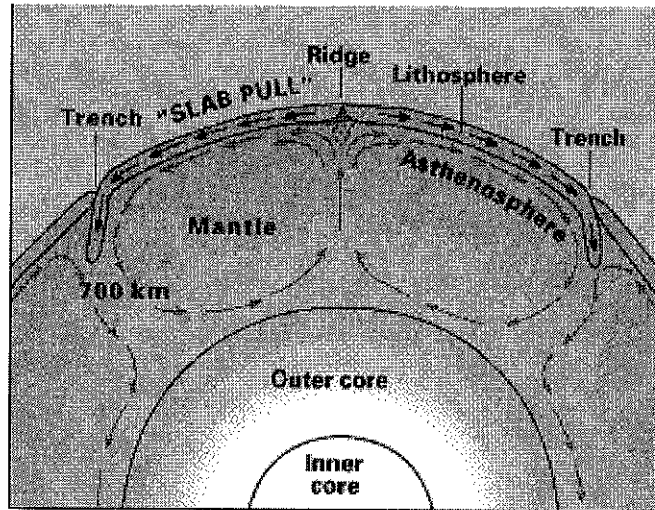
10) Which layer of Earth is the warmest?

- A) crust
- B) Inner core**
- C) outer core
- D) upper mantle

Explanation:

The **inner core** of the Earth is the warmest. The temperature and pressure increase as you go deeper into the Earth's inner structure because the surrounding rock and material increase the energy in the molecules, which increases temperature.

11)



The convection shown in the diagram is powered by heat from which part of the Earth?

- A) **core**
- B) crust
- C) ocean
- D) sun

Explanation:

Heat rises from the **core** up into the mantle to power the convection cycles shown.

12) Geologists trying to drill into the mantle would MOST LIKELY drill from a platform in the ocean, rather than on land, because the crust beneath the ocean is

- A) older.
- B) softer.
- C) **thinner.**
- D) less dense.

Explanation:

Oceanic crust is significantly younger, more dense and **thinner** than continental crust.

13) How are the mantle and the inner core ALIKE?

- A) **They are both solid.**
- B) They both have the same temperature.
- C) They are both under the same pressure.
- D) They are both very close to Earth's center.

Explanation:

The mantle and the inner core are alike because **they are both solid**. The only layer of the Earth comprised of liquid is the outer core.

14) What events caused the formation of most islands in the South Pacific?

- A) earthquakes
- B) hurricanes
- C) meteors
- D) **volcanoes**

Explanation:

volcanoes The other forces are not responsible for or capable of creating islands.

15) If scientists were able to stop the tectonic plates from moving, people on Earth would no longer have

- A) the tides.
- B) **earthquakes.**

- C) ocean waves.
- D) changes in seasons.

Explanation:

If scientists could stop the movement of plates, people on Earth would no longer have **earthquakes**. Earthquakes happen when tectonic plates rub against each other.

16) Different events on Earth are associated with different tectonic plate boundaries. Which events are associated with transform plate boundaries?

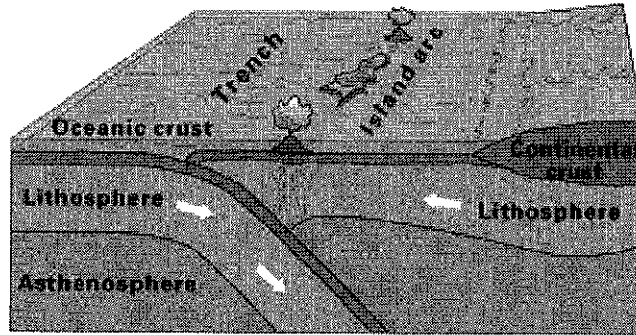
- A) folded mountains
B) **faults and earthquakes**
C) trenches and island arcs
D) volcanoes and sea floor spreading

Explanation:

Faults and earthquakes

occur at transform plate boundaries. Plates slide past each other at these boundaries.

17)



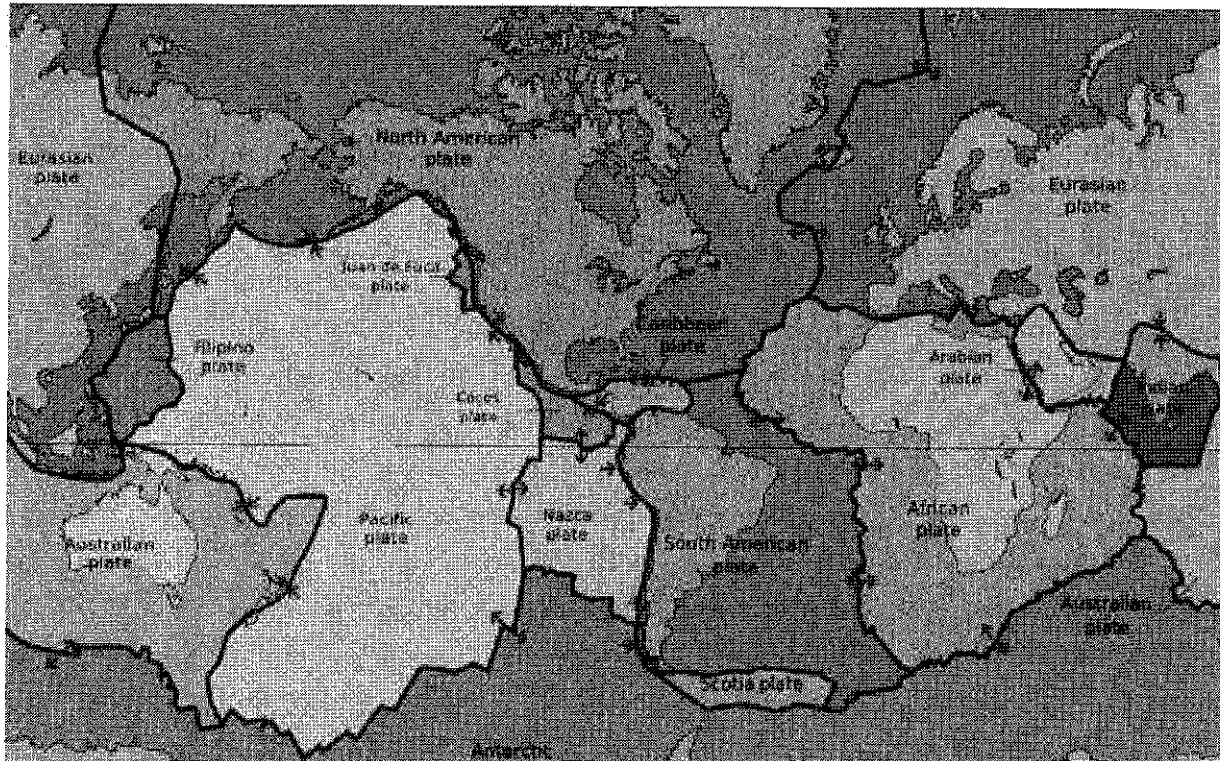
Observe this diagram of a plate boundary. One statement BEST describes what is happening. It is that

- A) the oceanic crust is melting.
B) volcanic islands are forming.
C) **this is typical of a subduction zone.**
D) the tectonic plates are moving away from each other.

Explanation:

If you look closely at the diagram you see the arrows show the plates are moving toward each other. This diagram represents an area that is **this is typical of a subduction zone.**

18)



The map shown would be useful in predicting the location of future

- A) droughts
- B) earthquakes**
- C) hurricanes
- D) tornadoes

Explanation:

The map shown would be useful in predicting the location of future **earthquakes** because they tend to occur on or relatively close to tectonic plate boundaries.

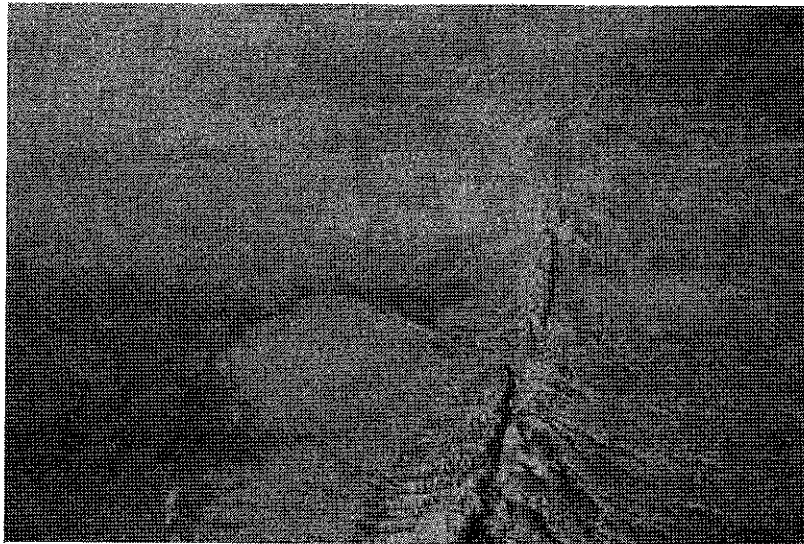
19) The movement of the tectonic plates is caused by

- A) convection currents in Earth's mantle.**
- B) the gravity of the iron-nickel core.
- C) the rotation of the Earth.
- D) the Moho discontinuity.

Explanation:

The movement of the Earth's tectonic plates is caused by **convection currents in Earth's mantle**. Differences in temperature within the layers of the Earth cause convection cells to develop in the semi-molten mantle.

20)



This crack shown in the lithosphere was created by the movement of two or more tectonic plates. What is this crack called?

- A) deposition
- B) fault**
- C) fold
- D) volcano

Explanation:

Any crack in the lithosphere is known as a **fault**.

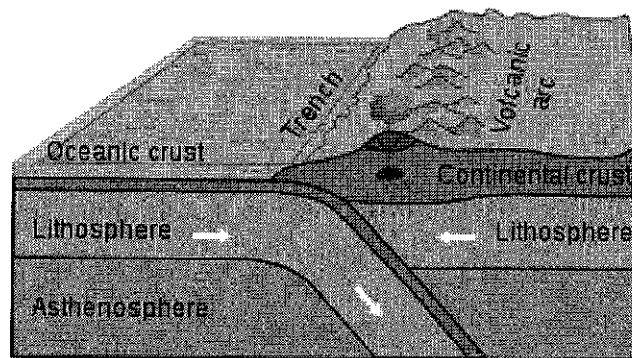
21) In some areas of the world, like California and Japan, earthquakes are a common occurrence. How can this best be explained?

- A) The strong ocean currents are undermining both areas causing earthquakes.
- B) Both area are subjected to strong ocean wind and waves that causes earthquakes.
- C) Both areas are located near the edge of the Pacific Ocean, the unstable sand causes earthquakes.
- D) **Both areas are on the boundary of active plate margins, the motion of the plates causes earthquakes.**

Explanation:

Both areas are on the boundary of active plate margins, the motion of the plates causes earthquakes. Japan is located above the subducting Pacific plate. The famous San Andreas Fault system runs through California. As the plates collide with one another, strain builds up along the boundary. When the strain is released an earthquake happens. Most but not all earthquakes are related to plate tectonics.

22)



Subduction zones occur on Earth where dense oceanic crust dives under more buoyant continental crust. These boundaries are characterized by a deep ocean trench next to a high continental mountain range, large numbers of earthquakes and volcanoes. All of this is further evidence for the

- A) big bang theory.
- B) origin of the species.
- C) **theory of plate tectonics.**
- D) theory of natural selection.

Explanation:

Subduction zones and their resulting features are all evidence for the **theory of plate tectonics**.

Geologists have noted that earthquakes and volcanoes occur in specific patterns throughout the world. These pattern lines follow the boundaries of the seven lithospheric plates and provide further evidence for the movement of these plates, or the theory of plate tectonics.

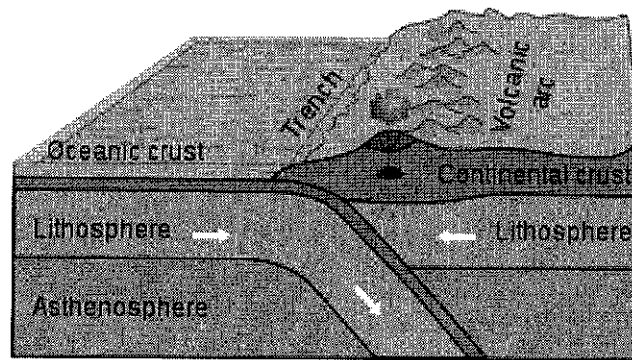
23) There are three types of plate boundaries. Which choice is NOT a type of plate boundary?

- A) convergent
- B) divergent
- C) **thrust**
- D) transform

Explanation:

Thrust is a type of fault; a low angled reverse fault.

24)



An earthquake is a vibration of the Earth produced by a rapid release of energy. This vibration usually begins when there is a build-up of stress in the Earth's crust resulting in

- A) tectonic plates buckling up.
- B) rift zones under the oceans.
- C) **plate movement at fault lines.**
- D) convection currents within Earth's magma.

Explanation:

Earthquakes are vibrations that develop when there is a build-up of stress in the Earth's crust resulting in **plate movement at fault lines**. Most often, earthquakes occur at subduction zones.

25)



What geological forces might be responsible for this range of mountains?

- A) diverging tectonic plates
- B) converging tectonic plates**
- C) erosion of the land by the ocean
- D) deposition of sediments by the ocean

Explanation:

The oceanic crust and continental crust are interacting in this image. Folded mountain ranges are formed at the plate boundaries of **converging tectonic plates**.

26) Hawaii is located over a tectonic plate. Because of this, Hawaii is MOST LIKELY to experience

- A) erosion.
- B) tornadoes.
- C) hurricanes.
- D) volcanic eruptions.**

Explanation:

Hawaii is likely to experience **volcanic eruptions**. This is the biggest threat to Hawaii because it is right on top of a "hot spot" due to its location over a tectonic plate. Hawaii has many active volcanoes that erupt large amounts of magma onto the islands.

27) The movement of earth's plates directly cause all **EXCEPT** this type of catastrophic event:

- A) ice age**
- B) tsunami
- C) volcano
- D) earthquake

Explanation:

Ice age The Earth's plates do not directly affect the timing of an ice age.

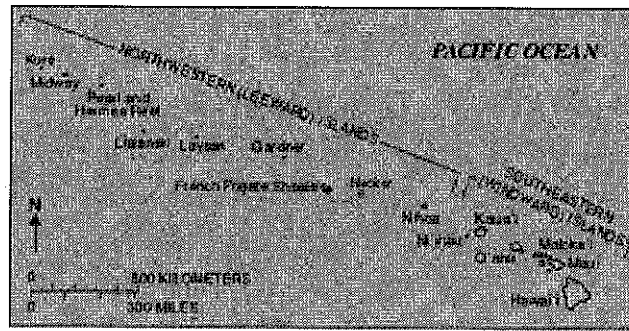
28) Frost wedging is a form of weathering caused by water seeping into the cracks of rocks. This type of weathering is common in regions that have very cold winters. How does frost wedging take place?

- A) This is a physical weathering process — when water freezes, it expands, pushing the rock apart slowly over a period of time.**
- B) This is a chemical weathering process — carbonic acid formed by the reaction of water and carbon dioxide breaks the bonds that hold the rock together.
- C) This is a physical weathering process — when water freezes, the temperature of the rock is decreased, causing the outer layers of the rock to crumble off.
- D) This is a chemical weathering process — water reacts with the chemicals in the rock by a process called hydrolysis and breaks the bonds that hold the rock together.

Explanation:

This is a physical weathering process — when water freezes, it expands, pushing the rock apart slowly over a period of time. The water does not react chemically with the surrounding rocks.

29)



The Hawaiian Islands were formed by seamounts that rose above the ocean surface. What was the original source of the seamounts?

- A) **underwater volcanoes**
- B) earthquakes
- C) landslides
- D) faulting

Explanation:

Seamounts were once **underwater volcanoes**. Volcanic eruptions that occur under oceans are called seamounts.

30) What was Pangaea? When did it form and when did it break apart? It was

- A) a large ocean basin that opened in the Triassic and closed in the Paleocene
- B) the supercontinent that formed in the late Paleozoic and broke apart in Mesozoic**
- C) the huge mountain range formed when Africa pushed northward into Europe in Eocene time
- D) a large, Precambrian shield area of Africa and South America that broke apart early in the Proterozoic

Explanation:

The continents all drifted together during the Paleozoic, became unstable, and started rifting in the Mesozoic.