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*Student**Class***Earth's surface undergoes gradual and sudden changes****A Model For Earth**

1. Scientists estimate the age of the Earth to be about 4.6 billion years old, using evidence and theories. Then they construct a model of what the Earth is composed of. A model is based on what is ...
  - A. **known**
  - B. **inferred**
  - C. **observed**
  - D. **proven**
  
2. A scientist who studies the Earth is called a ....
  - A. **geologist**
  - B. **meteorologist**
  - C. **paleontologist**
  - D. **environmentalist**
  
3. Compared to the other layers of the Earth, the crust, at a temperature of 5°C is ...
  - A. **thicker than the upper mantle**
  - B. **thinner than all the layers**
  - C. **thicker than the lower mantle**
  - D. **thicker than any other layer**
  
4. In order for scientists to study - first hand - the composition of the core of the Earth, they would have to travel 1700 times the depth of the deepest mine in the world. The deepest mine is in South Africa and it reaches a depth of 2.4 miles. What is mined there?
  - A. **coal**
  - B. **gold**
  - C. **silver**
  - D. **diamonds**
  
5. The temperature in the deepest parts of these types of mines protects miners from cold. This is because the deeper the mine gets the closer to the core it is. The normal temperature in these deep mines is ...
  - A. **15°C**
  - B. **19°C**
  - C. **29°C**
  - D. **35°C**
  
6. The core of the Earth is made up of two layers. The inner core, which is made up of nickel and iron reaching temperatures of **7000°C**, because of the pressure of the other layers on this inner core, it is ...
  - A. **molten**
  - B. **liquid**
  - C. **solid**
  - D. **crystal**
  
7. Which of the following foods would you use to model what the Earth is made of ...
  - A. **pear**
  - B. **apple**
  - C. **peach**
  - D. **banana**

**Sudden Earth Events**

8. The largest earthquake recorded in the US was off the coast of California. It was ~9 in magnitude. The reason this is just an estimation is because ...
- A. **the seismograph was turned off**
  - B. **there was nobody around to read the seismogram**
  - C. **seismographs were not invented yet**
  - D. **the earthquake destroyed the seismic equipment**
9. It is likely that San Diego would be able to get early warnings of possible earthquakes in the area because of this attraction ...
- A. **San Diego Zoo**
  - B. **San Diego Emergency Center**
  - C. **San Diego Observatory**
  - D. **Pacific Climatology Center**
10. The pressure under the earth's crust can cause it to move in different ways. A fault that is caused by a compression force is called a ...
- A. **normal fault**
  - B. **reverse fault**
  - C. **strike-slip fault**
  - D. **transform fault**
11. The source of an earthquake can be determined by recording the interval time between the p waves and s waves. The first place that rocks break below the surface in an earthquake is called the ...
- A. **focus**
  - B. **fault line**
  - C. **epicenter**
  - D. **shadow zone**
12. Scientists study the effect of an earthquake by locating this point , which is the place on the surface that is directly above where the earthquake first began, called the ...
- A. **focus**
  - B. **fault line**
  - C. **epicenter**
  - D. **shadow zone**
13. An earthquake in Japan registers on a seismograph in Detroit, Michigan. This occurs because ...
- A. **seismographs anywhere will record all earthquakes**
  - B. **the earth's crust is solid, allowing the surface waves to be recorded anywhere**
  - C. **seismic waves travel through all the layers of the Earth**
  - D. **the core of the earth is liquid**
14. Seismologists use a special machine that measures earthquakes. It is called the ...
- A. **Richter Scale**
  - B. **Seismogram**
  - C. **Seismologist**
  - D. **Seismograph**
15. In 1935 Charles Richter developed a scale that helped geologists understand about the strength or magnitude (intensity) of an earthquake. The scale he developed starts at 0 and each increase of 1 indicates an increase of 10 times the amount of ...
- A. **damage**
  - B. **seismic waves**
  - C. **ground motion**
  - D. **fault movement**

16. Volcanoes erupt when they become active. Until an eruption occurs, volcanoes are described as ...
- A. **stagnant**
  - B. **dormant**
  - C. **extinct**
  - D. **plugged**
17. There are a number of volcanoes that border the Pacific Ocean. These volcanoes are known as the **Ring of Fire**. The name comes from the fact that these volcanoes erupt with red-hot lava, fire and steam. Most volcanoes in the Ring of Fire occur at ...
- A. **subduction zones**
  - B. **abduction zones**
  - C. **conduction zones**
  - D. **compression zones**
18. One of the most dangerous side effects of an erupting volcano is a ...
- A. **hurricane**
  - B. **tornado**
  - C. **earthquake**
  - D. **tsunami**
19. Mt. St. Helens volcano in Washington was thought to be dormant, until it erupted suddenly and caused widespread damage. After the eruption, people who lived in New England had to clean this off their cars because the prevailing wind carried it that far ...
- A. **lava**
  - B. **ash**
  - C. **smoke**
  - D. **volcanic rock**
20. Volcanoes can cool temperatures around the world. Despite the hot temperatures and the destruction they can create at the source, the lowering of world temperatures following a volcanic eruption can be caused by ...
- A. **a rapid lava flow into the ocean**
  - B. **an ash plume causing mudflows**
  - C. **an ash layer in the atmosphere**
  - D. **a large number of tsunamis**
21. A device that geologists use to measure minute changes in the angle of the ground's slope is called a ...
- A. **seismograph**
  - B. **seismogram**
  - C. **surveyor's level**
  - D. **magma scope**
22. Not very many volcanologists use this special suit to study molten lava up close, but those who do are able to get close enough to the magma flow to make observations, take measurements, or collect gas and lava samples. This special suit is coated with ...
- A. **reflective plastic**
  - B. **fireproof insulation**
  - C. **reflective metal**
  - D. **flammable liquid**

**Incremental Changes: Wind, Water and Ice**

23. Weathering is the process by which rocks are broken down by means of water, glacial ice, wind and waves. This process can in three ways. Which way described below is incorrect? ...
- A. **chemically**
  - B. **mechanically**
  - C. **gravitationally**
  - D. **biologically**
24. Tony found that when he poured water into a crack in a rock sample and froze it, then allowed it to thaw, the crack was actually wider. The type of weathering he investigated was classified as ...
- A. **chemical**
  - B. **biological**
  - C. **mechanical**
  - D. **gravitational**
25. André tested the effects of water on the natural rock samples found in his schoolyard. He tested the rock samples with pure water (pH 6.8), rainwater (pH 4.5) and tap water (pH 6.7). The type of weathering he investigated was classified as ...
- A. **chemical**
  - B. **biological**
  - C. **mechanical**
  - D. **gravitational**
26. On a field trip to the foothills, the class was amazed, when their teacher pointed out a tree growing in a rock. The roots of the tree had worked their way into the cracks and split the rock in many places. The type of weathering they observed was classified as ...
- A. **chemical**
  - B. **biological**
  - C. **mechanical**
  - D. **gravitational**
27. The movement of materials from place to place is called ...
- A. **weathering**
  - B. **deposition**
  - C. **glaciation**
  - D. **erosion**
28. Landslides and rock slides can have devastating effects on the landscape. To study these, scientists are using new technology and sound waves. One of the major forces besides an earthquake responsible for these types of sudden changes is ...
- A. **Chinook winds**
  - B. **frost wedging**
  - C. **gravitational pull**
  - D. **acidic rainwater**
29. A science field trip included a stop at the 'Big Rock'. A receding glacier left behind this rock. It is called ...
- A. **an erratic**
  - B. **a moraine**
  - C. **a striation**
  - D. **an abrasion**
30. Allison and Rachel were investigating the effects of landforms that have been created by the action of running water. They were told that the Alberta badlands are an example of this type of landform, called ...
- A. **sediment**
  - B. **fluvial**
  - C. **bedrock**
  - D. **striation**

**ANSWER KEY**

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