

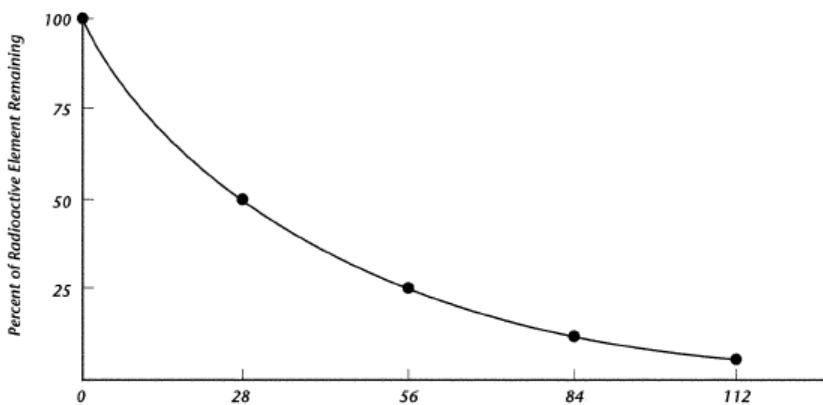
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### Earth Science Exam 3 Study Guide

#### Unit 3: Geologic History of Earth

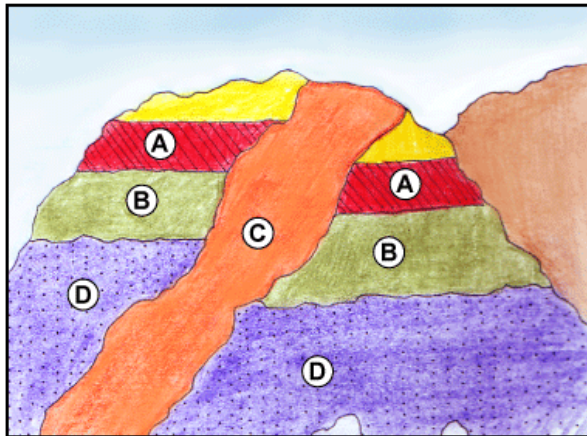
1. The \_\_\_\_\_ age of a rock is its age compared with the ages of other rocks.
2. The time it takes for half of the radioactive atoms in a sample of a radioactive element to decay is the element's \_\_\_\_\_ life.
3. Geologists use radioactive dating to determine the \_\_\_\_\_ ages of rocks.
4. The law of superposition helps geologists determine the relative age of a rock layer.
5. Radioactive decay occurs when atoms of some elements break down to form atoms of \_\_\_\_\_ element.

**Radioactive Decay of Strontium-90**



6. What is the half-life of strontium 90? \_\_\_\_  
How old is the rock if:  
a. 1 half life has been completed? \_\_\_\_  
b. If 2 half lives have been completed? \_\_\_\_  
c. If three half-lives have been completed? \_\_\_\_

**Hance Rapids Rock Formation**



7. Which labeled rock layer is the youngest?  
Which one is the oldest?

#### Unit 4: Landforms and Topography

8. What kind of weathering causes the mineral composition of rocks to change? \_\_\_\_\_ weathering.
9. In the process of cave formation, limestone is weathered by acidic water. What is the name of this type of weathering? \_\_\_\_\_ weathering
10. A permeable rock weathers easily because it contains many small, connected \_\_\_\_\_.
11. What can cause the loss of soil that is not protected by plant cover? erosion by \_\_\_\_\_ or \_\_\_\_\_
12. What occurs when roots force rocks apart? \_\_\_\_\_ weathering
13. Weathering is the breakdown of rocks into smaller particles. How does ice cause weathering?  
Water \_\_\_\_\_ as it freezes, cracking rocks.

14. Which increases runoff? \_\_\_\_\_ down crops and vegetation.

15. Beach grasses are vital in preserving barrier islands. Which key role do these grasses play in island preservation? They \_\_\_\_\_ sand dunes to capture wind-blown sand.

16. Which is one way people try to control coastal erosion in Louisiana? They move \_\_\_\_\_ to barrier islands.

17. What kind of mass movement is shown in the figure on the right? Note the shape of the tree trunks. \_\_\_\_\_

18. Studies show that most of the land in Louisiana was created in the last 65 million years. Which constructive force is **most** responsible for creating the land in Louisiana? sediment \_\_\_\_\_ by \_\_\_\_\_.

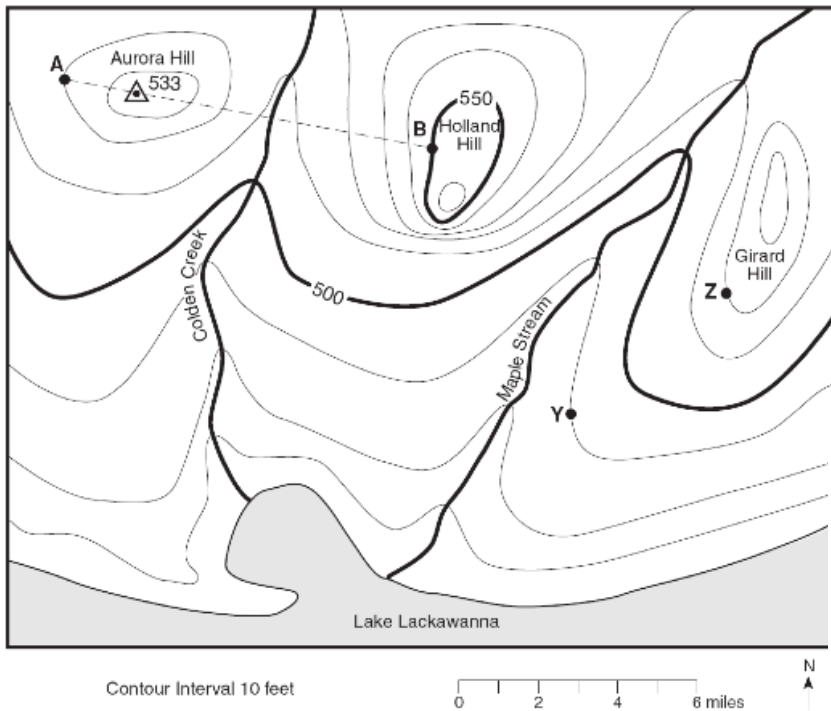
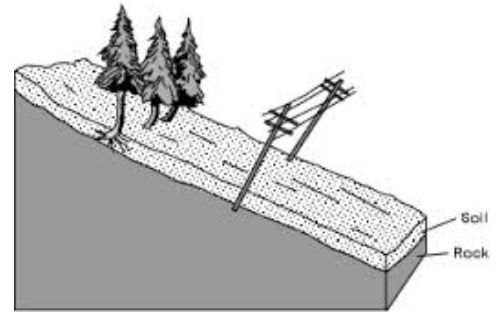
19. Which effect have hurricanes had on coastal regions in Louisiana? increase in \_\_\_\_\_ loss. Hurricanes cause more damage near the coast than they do farther inland because of storm \_\_\_\_\_ and \_\_\_\_\_.

It is believed that the \_\_\_\_\_ of Louisiana act as “speed bumps for hurricanes.

20. Since 1932, Louisiana has been losing approximately twenty-four square miles of its coastal wetlands per year. Which processes are responsible for this loss of land? \_\_\_\_\_ intrusion, the building of \_\_\_\_\_, the building of \_\_\_\_\_.

21. French settlers began building levees along the Mississippi River in the early 1700s. People have since made the levees higher and added miles of levees up and down the river. How do levees affect the lower Mississippi River valley? They limit the \_\_\_\_\_ of sediments in the valley.

22. David is looking at a contour map. He wants to find a canyon on the map. What should he look for? several \_\_\_\_\_ lines in nested V-shapes or U-shapes

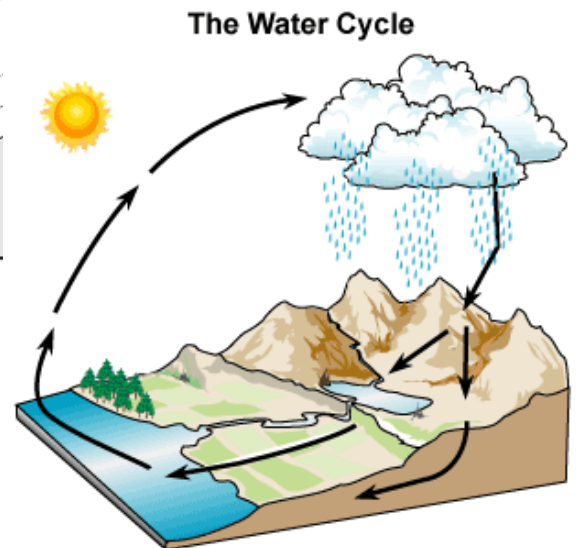


23. Base your answers to the following questions on the topographic map below. Points A, B, Y, and Z are reference points on the topographic map. Elevation is in meters.

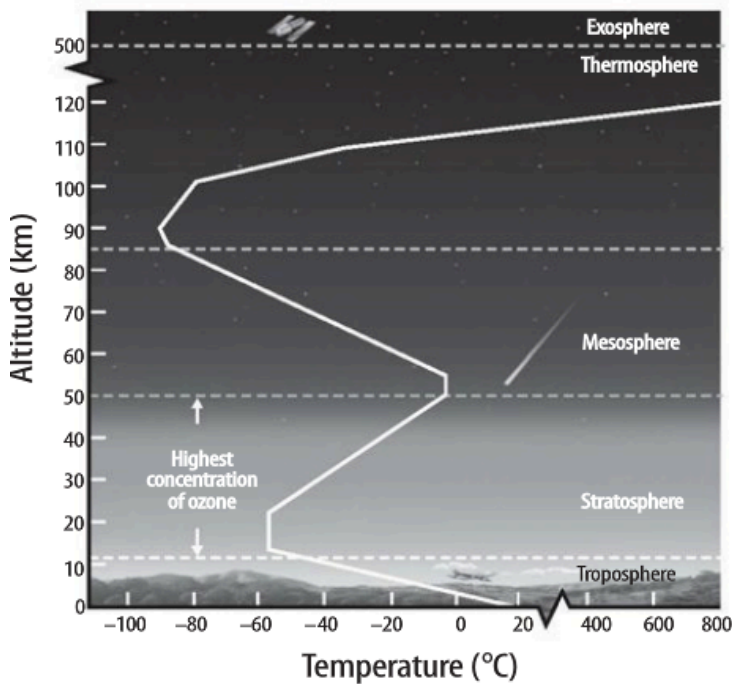
- a. The contour interval of the map is \_\_
- b. The elevation of point Y is \_\_\_\_
- c. Colden creek is flowing \_\_\_\_\_
- d. Where would the steepest slope be on the map?

### Unit 5: Factors that Affect Earth

24. Much of the water that falls on the land as rain returns to the ocean. Which two processes return liquid water on land to the ocean? \_\_\_\_\_ and \_\_\_\_\_



25. In parts of the western United States, significant amounts of snow can disappear from the ground without melting. The names for this process in the water cycle is \_\_\_\_\_
26. Which two processes in the water cycle increase the amount of water vapor in the atmosphere \_\_\_\_\_ and \_\_\_\_\_.



27. The uppermost layer of the atmosphere is the \_\_\_\_\_.

28. . Ozone is located in the \_\_\_\_\_.  
Ozone supports life on Earth by \_\_\_\_\_  
\_\_\_\_\_ radiation.

29. If the mass of an object is 20 gr and it volume is 10 cm<sup>3</sup>, then its density would be \_\_\_\_\_.

30. As altitude increases, air density \_\_\_\_\_.

31. Meteors are chunks of stone and metal from space. The layer of the atmosphere that protects Earth from meteors is the \_\_\_\_\_.

32. As you rise upwards in the atmosphere, air pressure \_\_\_\_\_.

33. The layer of our atmosphere in which weather occurs is the \_\_\_\_\_.

34. The temperature in the troposphere \_\_\_\_\_ as altitude increases.

35. The troposphere contains gases that are commonly referred to as "green house gases. The presence of these gases affects the troposphere because they \_\_\_\_\_ heat radiation from Earth's surface.

36. Increasing concentrations of greenhouse gases, such as carbon dioxide (CO<sub>2</sub>) and methane (CH<sub>4</sub>) are causing global warming. As tropical oceans become warmer as a result, increasing evaporation will lead to increasing \_\_\_\_\_ in some areas.

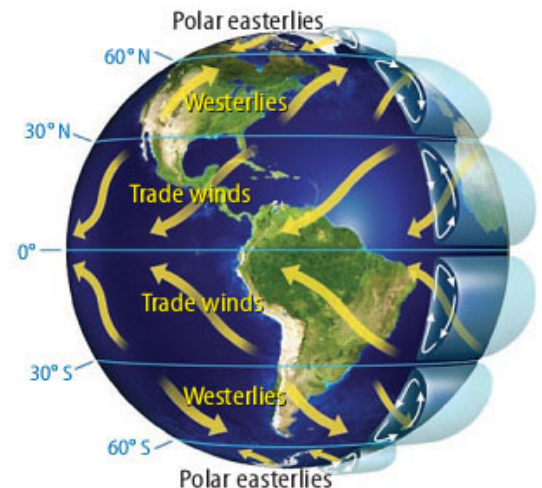
37. The doldrums are located at about \_\_\_\_\_ latitude.

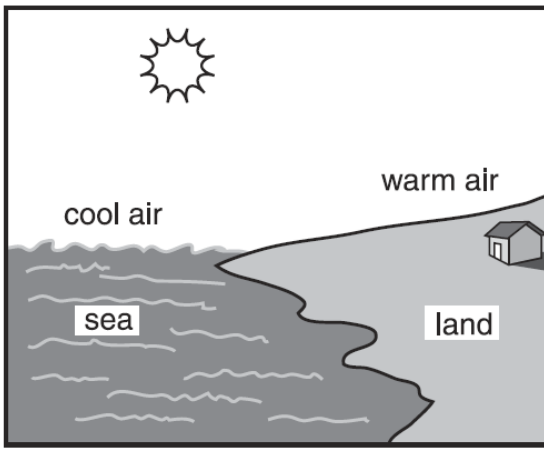
38. Cool air tends to be more \_\_\_\_\_ and flow under warm air.

39. The Sun's energy heats the \_\_\_\_\_ of Earth more than the \_\_\_\_\_, creating air pressure differences that drive global winds.

40. Earth's rotation makes global winds curve. This is called the \_\_\_\_\_.

41. The wind that blows from the land to the sea due to local temperature and pressure differences is called \_\_\_\_\_.





43. The diagram shows a place where air currents will form due to the uneven heating of Earth. In which direction will air currents **most likely** move? Why? What would happen at night? Why?

44. Which weather data most likely indicates that the next day will be sunny? (\_\_\_\_\_ air pressure)  
If you read a barometer to measure the atmospheric pressure and you notice that the pressure is rapidly falling what kind of weather you would predict? There will be a \_\_\_\_\_, and the temperature will \_\_\_\_\_.

45. Isobars are lines on a weather map that connect points of the same atmospheric \_\_\_\_\_.

46. Isotherms are lines on a weather map that connect points of the same \_\_\_\_\_.

47. \_\_\_\_\_ **Front:** A cold air mass is replacing a warm air mass. Showers and thunderstorms form along leading edge of front. A cold front is symbolized by :

48. \_\_\_\_\_ **Front** A warm air mass is replacing a cold air mass. Widespread, continuous precipitation occurs along and ahead of the front. A warm front is symbolized by: \_\_\_\_\_

Review Newton's Laws study guide.

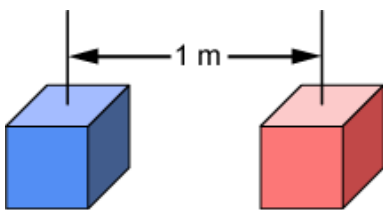
### Unit 6: Earth's Forces

49. Which of these sets of objects will have the **greatest** gravitational attraction between them?

- two 1-kilogram objects 1 meter apart
- two 1000-kilogram objects 1 meter apart
- two 1-kilogram objects 1000 meters apart
- two 1000-kilogram objects 1000 meters apart

50. A person who weighs 600 newtons on Earth would weigh only 100 newtons on the Moon. Which statement best explains why?

- The circumference of Earth is larger than that of the Moon.
- The density of Earth is greater than that of the Moon.
- The mass of Earth is greater than that of the Moon.
- The diameter of the Earth is larger than that of the Moon.



51. Two blocks are on a table. They are 1 meter (m) apart.

What will happen to the force of gravity between the blocks if the left block is moved 0.5 meters closer to the right block?

- The force of gravity will still be zero.
- The force of gravity will be 1.5 times greater.
- The force of gravity will double.
- The force of gravity will be 4 times greater

$$F_G = \frac{Gm_1m_2}{d^2}$$