

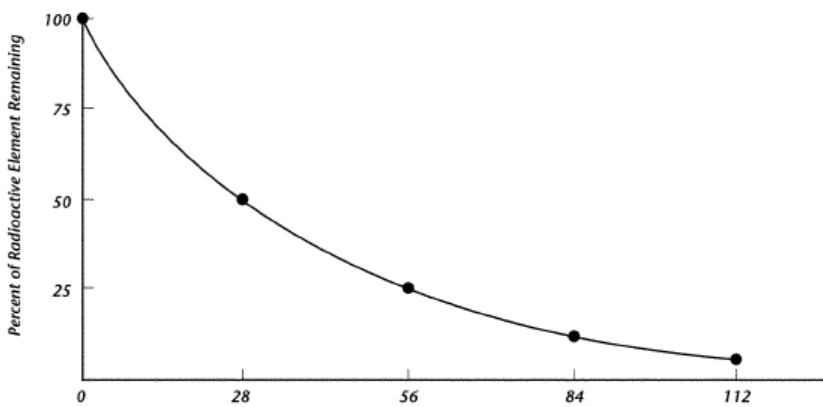
Name: \_\_\_\_\_ Date: \_\_\_\_\_

### Earth Science Exam 3 Study Guide

#### Unit 3: Geologic History of Earth

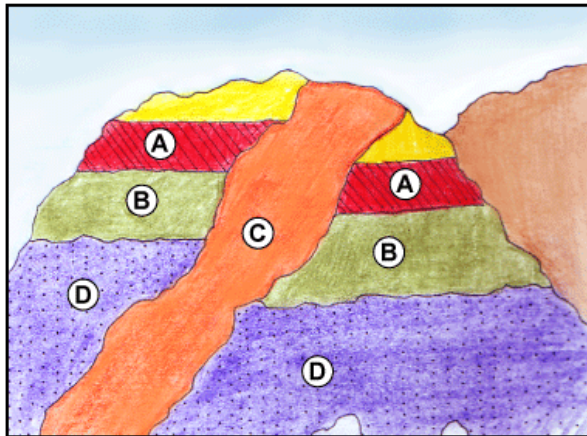
1. The relative age of a rock is its age compared with the ages of other rocks.
2. The time it takes for half of the radioactive atoms in a sample of a radioactive element to decay is the element's half-life.
3. Geologists use radioactive dating to determine the absolute ages of rocks
4. The law of superposition 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 another element.**

Radioactive Decay of Strontium-90



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

Hance Rapids Rock Formation



7. Which labeled rock layer is the youngest?  
Which one is the oldest?  
**The youngest layer is the intrusion C.**  
**The oldest layer is layer D at the bottom.**

#### Unit 4: Landforms and Topography

8. What kind of weathering causes the mineral composition of rocks to change? **chemical** weathering
9. In the process of cave formation, limestone is weathered by acidic water. What is the name of this type of weathering? **Chemical** weathering
10. A permeable rock weathers easily because it **contains many small, connected airspaces**
11. What can cause the loss of soil that is not protected by plant cover? **erosion by water or wind**
12. What occurs when roots force rocks apart? **mechanical weathering**

13. Weathering is the breakdown of rocks into smaller particles. How does ice cause weathering?

Water expands as it freezes, cracking rocks.

14. Which increases runoff? cutting down crops and vegetation.

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

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

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

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 deposition by rivers.

19. Which effect have hurricanes had on coastal regions in Louisiana? increase in land loss.

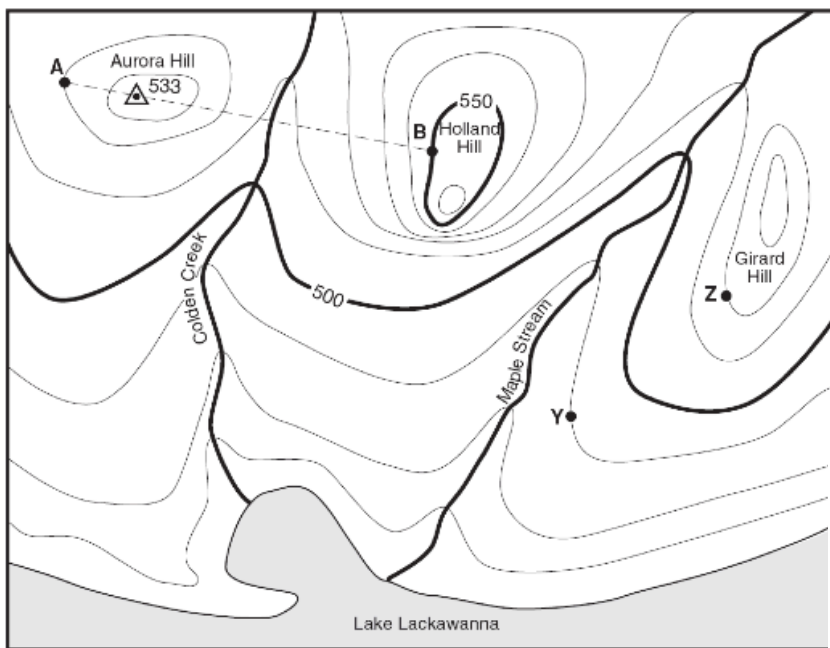
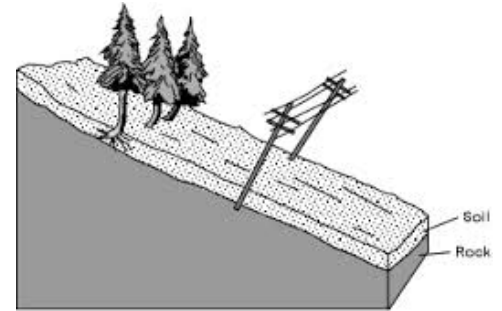
Hurricanes cause more damage near the coast than they do farther inland because of storm surge and flooding.

It is believed that the wetlands of Louisiana are very important because they 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? saltwater intrusion, the building of levees, the building of canals.

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 deposition 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 contour lines in nested V-shapes or U-shapes

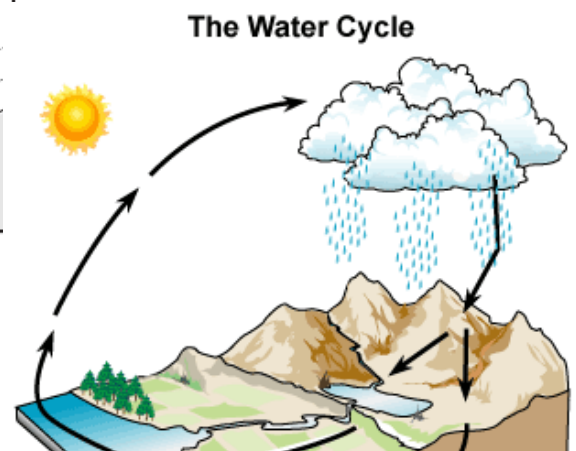


23. Base your answers to the following questions on the topographic map below. Points A, B, Y, and Z are reference points on the topographic map. Elevation is in meters.

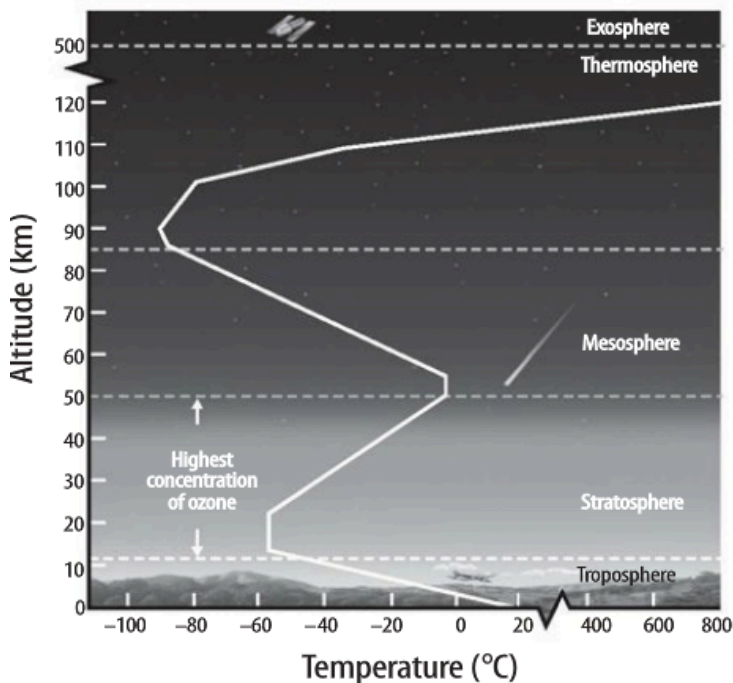
- The contour interval of the map is \_\_\_
- The elevation of point Y is \_\_\_
- Colden creek is flowing \_\_\_\_\_
- Which statement best describes the evidence shown on the map that indicates that the southern side of

Holland Hill has the steepest slope. The fact that the contour lines are close to each other.

## 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? **runoff and infiltration**
25. In parts of the western United States, significant amounts of snow can disappear from the ground without melting. Which term names this process in the water cycle? **sublimation**
26. Which two processes in the water cycle increase the amount of water vapor in the atmosphere **evaporation and transpiration**



27. The uppermost layer of the atmosphere is the **thermosphere**.
28. Ozone is located in the **stratosphere**. Ozone supports life on Earth by **absorbing UV** radiation.
29. If the mass of an object is 20 gr and its volume is 10 cm<sup>3</sup>, then its density would be **20/10= 2 gr/cm<sup>3</sup>**.
30. As altitude increases, air density **decreases**.
31. Meteors are chunks of stone and metal from space. The layer of the atmosphere that protects Earth from meteors is the **mesosphere**.

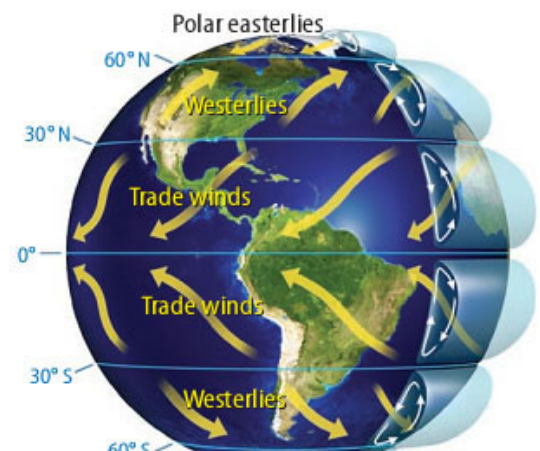
32. As you rise upwards in the atmosphere, air pressure **decreases**.
33. The layer of our atmosphere in which weather occurs is the **troposphere**.
34. The temperature in the troposphere **decreases** as altitude increases.
35. The troposphere contains gases that are commonly referred to as "green house gases. The presence of these gases affects the troposphere because they **absorb** 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 rainfall in some areas .

37. The doldrums are located at about **0°** latitude.

38. Cool air tends to be more **dense** and flow under warm air.

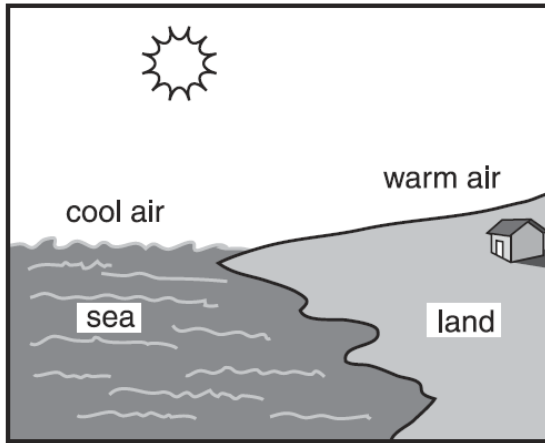
39. The Sun's energy heats the equatorial regions of Earth more than the polar regions, creating air pressure differences that drive global winds.

40. Earth's rotation makes global winds curve. This is called the **Coriolis Effect**



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

42. The weather of the continental United States is affected by global winds known as the **prevailing westerlies**



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? **From Sea to land ( sea breeze)**  
Why?

What would happen at night? Why?

44. Which weather data most likely indicates that the next day will be sunny? **(rising 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 storm, and the temperature will rise.**

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

46. Isotherms are lines on a weather map that connect points of the same **temperature.**

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

48. **Warm Front** A warm air mass is replacing a cold air mass. Widespread, continuous precipitation occurs along and ahead of the front  
Review Newton's Laws study guide.

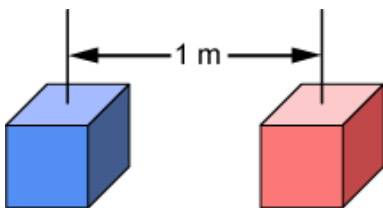
### Unit 6: Earth's Forces

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

- a. two 1-kilogram objects 1 meter apart
- b. two 1000-kilogram objects 1 meter apart**
- c. two 1-kilogram objects 1000 meters apart
- d. 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?

- a. The circumference of Earth is larger than that of the Moon.
- b. The density of Earth is greater than that of the Moon.
- c. The mass of Earth is greater than that of the Moon.**
- d. 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?

- a. The force of gravity will still be zero.
- b. The force of gravity will be 1.5 times greater.
- c. The force of gravity will double.
- d. The force of gravity will be 4 times greater**

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