Physical Geology
South Sevier High School
Lecture Notes – Chapter 12

_____
87

Name _____
Date _____
Per _____

1. A _____ is a large, long-lasting mass of ice, formed on land, that moves downhill under its own weight.

2. Glaciers are part of Earth's _____, and along with sea ice, glaciers are known as the _____.

3. About _____% of the world's supply of fresh water is locked up in glacial ice.

4. Glaciers develop as _____ is compacted and recrystallized, first into _____ and then glacial _____.

5. _____ glaciation occurs in mountainous regions in the form of valley glaciers.

6. _____ glaciation covers large land masses in Earth's polar regions in the form of ice sheets.

7. An _____ glacier gains more snow than it loses, has a (positive/negative) budget.

8. A _____ glacier shrinks back upslope and has a (positive/negative) budget.

9. Snow is added in the zone of _____ of glaciers, whereas melting (and calving of icebergs) occurs in the zone of _____.

10. Valley glaciers and ice sheets move downslope under the force of _____.

11. Due to friction, glacier flow is (fastest/slowest) at the top center of a glacier and (fastest/slowest) along its margins.

12. The Story of Antarctica (Fill in the blanks) (16pts):

- A layer of ice up to ____ miles thick covers a continent as big as the United States and Mexico combined.
- Antarctic ice contains ____% of the world's fresh water (____% of the world's ice). If it were divided up, every person on Earth could have a chunk of ice larger than the Great Pyramid.
- Although ____% of Antarctica is ice, there is land underneath the ice cover, unlike the Arctic where the ice floats on top of the ocean.
- The average temperature on the continent is -____^{o}C. The lowest temperature ever recorded anywhere on Earth was measured here at -_____^{o}F (-89^{o}C.).
- Because of the frigid air temperatures, rain rarely falls here. It rarely snows either; the South Pole gets less than 6 inches of snow a year making it a _____!
- For six months every year, the sun shines 24 hours a day at the South Pole. But don't expect it to warm you up much. Winds reach up to _____ mph along the coast. During the dark six months of the year, the Antarctic winter (our summer), the South Pole station has a population of 28 people who can't leave.
- "What time is it?" is a tricky question in a place where all time zones converge. So everyone in Antarctica officially goes by _____ time.
- Plant and animal fossils and coal beds indicate it was once _____ here. Antarctica, all alone at the bottom of the world, was once part of a larger land mass near the equator and gradually moved southward. What is now the Antarctic was once attached to _____, _____, _____, and _____.
- Antarctica's ice is so heavy that it compresses the land surface over much of the continent to below _____. The ice is so heavy, in fact, that it deforms the South Pole, making the Earth slightly _____.

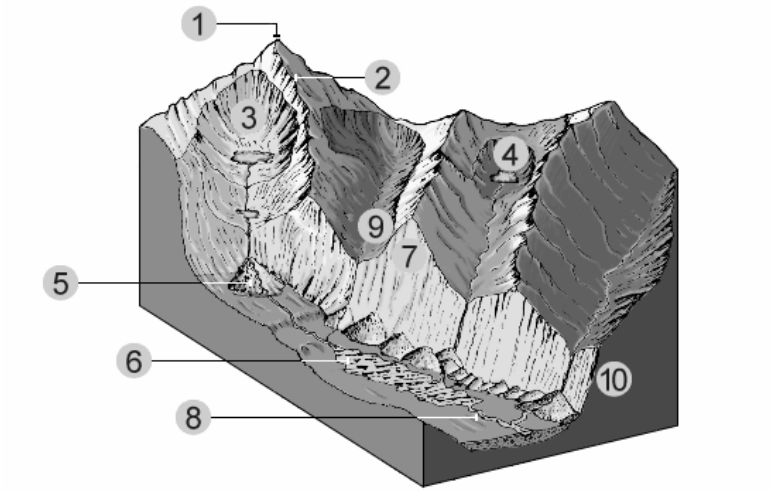
13. Glaciers erode underlying rock by _____ of rock fragments and abrasion as they are dragged along.

14. Match the following erosional landscapes with their correct definition:

15. _____ U-shaped valley
_____ Hanging valley
_____ Cirque
_____ Arêtes
_____ Horns

a. Sharp ridges separating glacial valleys
b. Sharp peaks remaining after cirques have cut back on 3+ sides
c. A valley carved by a glacier
d. Steep-sided, half-bowl-shaped recesses carved into mountains
e. Small tributary glacial valley left stranded above quickly-eroded valleys

16. Examine the image below. This image shows _____ features of glaciation. Write the names of what each number represents:



1._____

2._____

3._____

4._____

9._____

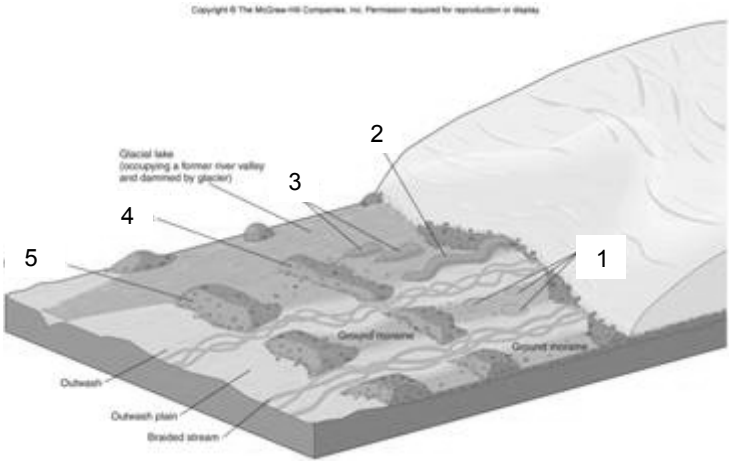
17. General name for unsorted, unlayered glacial sediment is _____.

18. Deposits of till left behind at the sides and end of a glacier are called moraines. There are three kinds of moraines and they are:

a. _____ moraines are elongate, low mounds of till along sides of valley glaciers.
b. _____ moraines are lateral moraines trapped between adjacent ice streams.
c. _____ moraines are ridges of till piled up along the front end of a glacier.

19. Successive end moraines left behind by a retreating glacier are called _____ moraines.

20. Examine the image below. This image shows _____ features of glaciation.



1._____

2._____

3._____

4._____

5._____

21. Annual sediment deposition in glacial lakes produces _____, which can be counted like tree rings.

22. Theory of _____ _____ states that at times in the past, colder climates prevailed during which much more of the land surface of Earth was glaciated than at present.

23. The most recent glacial age was at its peak approximately _____ years ago.

24. Large pluvial lakes (formed in a period of abundant rainfall) existed in closed basins in Utah, Nevada and eastern California. The Great Salt Lake is a remnant of the much larger pluvial Lake _____.

25. _____ are coastal inlets formed by drowning of glacially carved valleys by rising sea level.

26. Levels of _____, _____, and global _____ from Earth's past may be determined by examining deep ice cores from glacial ice.

27. Rocks called _____, which are lithified glacial till, have distinctive textures that suggest emplacement of sediments by glaciers.

28. The weight of an ice sheet several thousand meters thick is heavy enough to cause a portion of Earth's crust to "sink". When the ice melts, the land mass rebounds to its original position. This is called _____ _____.

29. Why could it be argued that glacial ice is actually a metamorphic rock (5pts)?

30. Why are glaciers the only erosional agent to produce a U-shaped valley (5pts)?

31. Contrast the effects of alpine and continental glaciation on landscape development (5pts).

32. How would you know that a series of mountains were shaped by glaciation rather than regular erosion (5pts)?