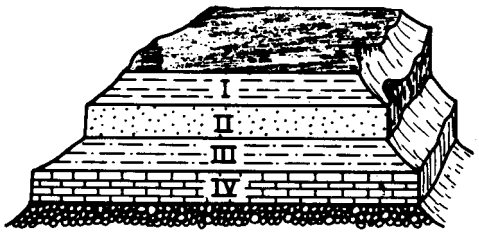
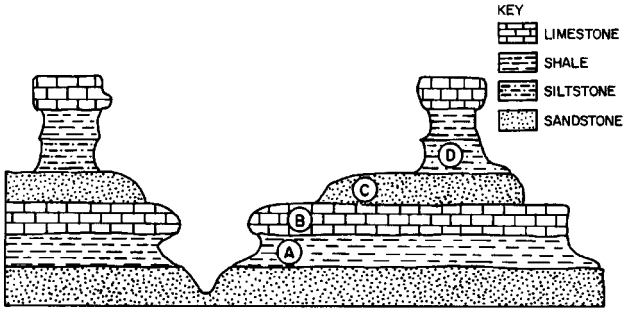
Name _____

1. In the cross section of the hill shown below, which rock units are probably most resistant to weathering?



1) I and II
2) II and III
3) II and IV
4) I and III

2. The diagram below represents a geologic cross section of a portion of the Earth's surface. The letters identify different layers of sedimentary rock.



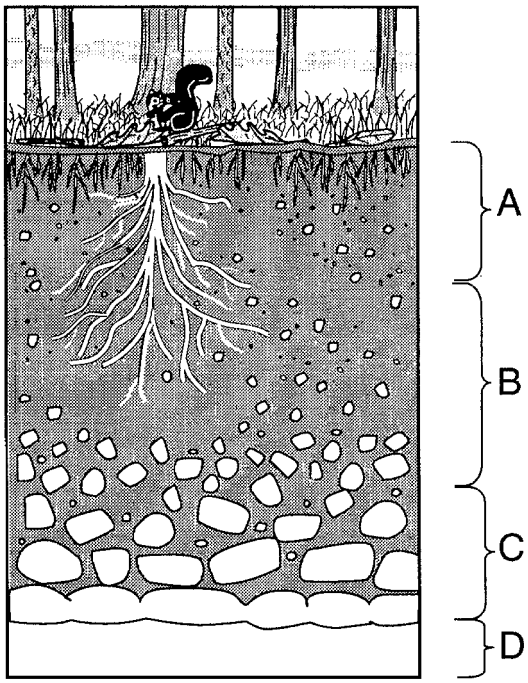
Which rock layer is probably the most resistant to erosion?

1) *A*
2) *B*
3) *C*
4) *D*

3. Sediments found in glacial moraines are best described as

1) unsorted and layered
2) unsorted and not layered
3) sorted and layered
4) sorted and not layered

4. The diagram below shows a soil profile formed in an area of granite bedrock. Four different soil horizons, *A*, *B*, *C*, and *D*, are shown.



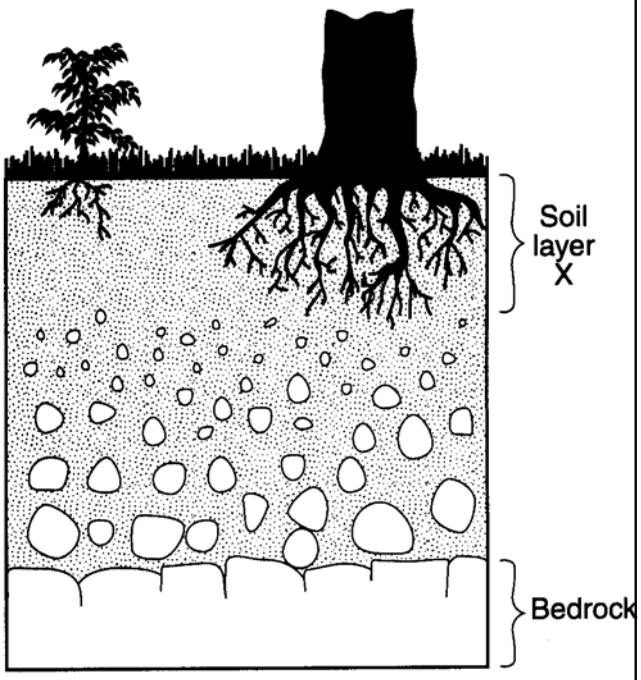
Which soil horizon contains the greatest amount of material formed by biological activity?

1) *A*
2) *B*
3) *C*
4) *D*

5. Granite pebbles are found on the surface in a certain area where only sandstone bedrock is exposed. Which is the most likely explanation for the presence of these pebbles?

1) The granite pebbles were transported to the area from a different region.
2) Ground water tends to form granite pebbles within layers of sandstone rock.
3) Some of the sandstone has been changed into granite.
4) The granite pebbles were formed by weathering of the exposed sandstone bedrock.

6. The cross section below shows soil layer *X*, which was formed from underlying bedrock.



Which change would most likely cause soil layer to increase in thickness?

1) a decrease in rainfall
2) an increase in biologic activity
3) a decrease in slope
4) an increase in air pressure

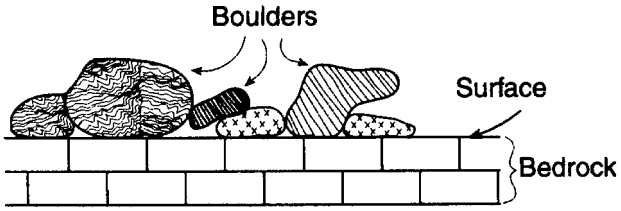
7. A sediment particle transported by a stream over a long period of time will most likely show

1) a decrease in density and size
2) a decrease in mass and number of angular edges
3) an increase in volume and number of cleavage planes
4) an increase in weight and hardness

8. A large, scratched boulder is found in a mixture of unsorted, smaller sediments forming a hill in central New Jersey. Which agent of erosion most likely transported and then deposited this boulder?

1) ocean waves
2) running water
3) a glacier
4) wind

9. The cross section below represents large boulders made of granite, gneiss, and quartzite that are found lying on limestone bedrock near Oswego, New York.



If no overturning of bedrock has occurred, which statement correctly explains the source of the boulders?

1) The limestone bedrock formed under conditions of high heat and pressure.
2) The limestone was changed by contact metamorphism caused by a lava flow.
3) The boulders were transported and deposited on the limestone bedrock by a glacier.
4) Older igneous and metamorphic bedrock that once covered the limestone eroded away, forming the boulders.

10. Unsorted, angular, rough-surfaced cobbles and boulders are found at the base of a cliff. What most likely transported these cobbles and boulders?

1) ocean currents
2) gravity
3) wind
4) running water

11. An increase in the velocity of a stream is most likely due to

1) a decrease in the amount of material held in suspension
2) an increase in stream discharge
3) an increase in the width of the riverbed
4) a decrease in the slope of the stream channel

12. Base your answer to the following question on the diagrams below. Diagrams *A*, *B*, and *C* represent three different river valleys.

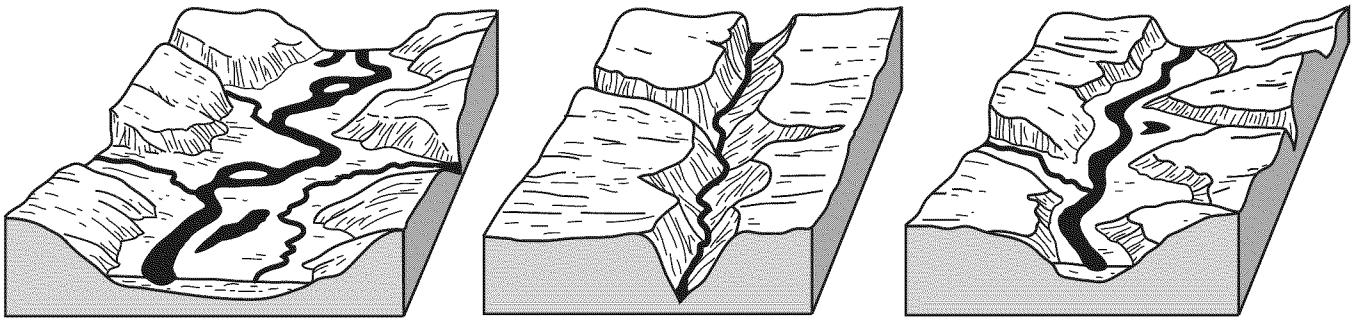
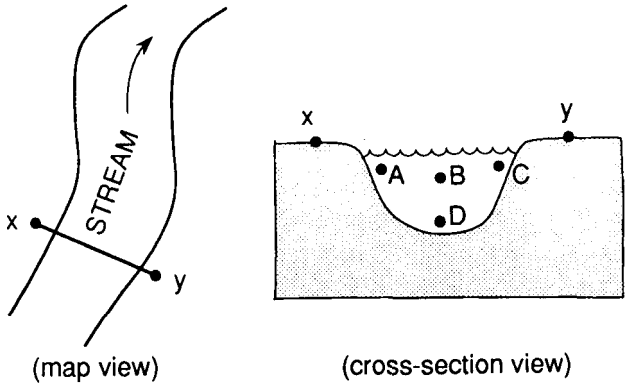


Diagram A Diagram B Diagram C

Most sediments found on the floodplain shown in diagram *A* are likely to be

1) rounded and weathered from underlying bedrock
2) angular and weathered from underlying bedrock
3) angular and weathered from bedrock upstream
4) rounded and weathered from bedrock upstream

13. The diagrams below represent the map view of a stream and the cross section of the stream at line *XY*. Letters *A*, *B*, *C*, and *D* identify four locations within the stream.



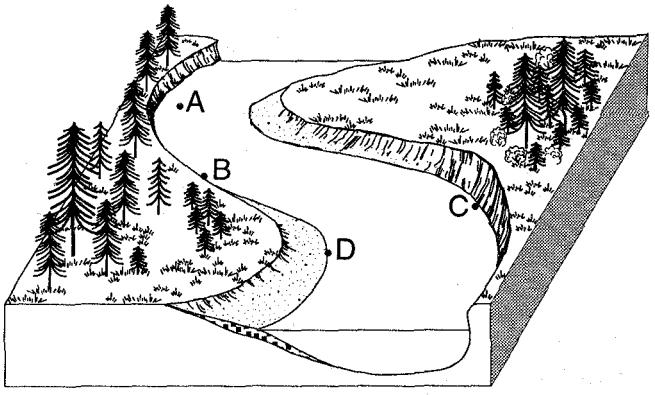
At which location is the water moving fastest?

1) *A*
2) *B*
3) *C*
4) *D*

14. Which event is the best example of erosion?

1) dissolving of rock particles on a limestone gravestone by acid rain
2) rolling of a pebble along the bottom of a stream
3) breaking apart of shale as a result of water freezing in a crack
4) crumbling of bedrock in one area to form soil

15. the diagram below. The diagram shows points *A* , *B*, *C*, and *D* on a meandering stream.



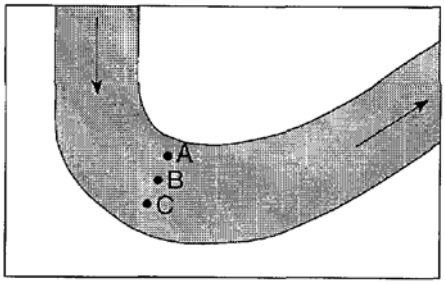
Which material is most likely to be transported in suspension during periods of slowest stream velocity?

1) sand
2) clay
3) gravel
4) silt

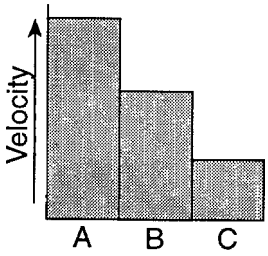
16. The particles in a sand dune deposit are small and very well-sorted and have surface pits that give them a frosted appearance. This deposit most likely was transported by

1) ocean currents
2) wind
3) gravity
4) glacial ice

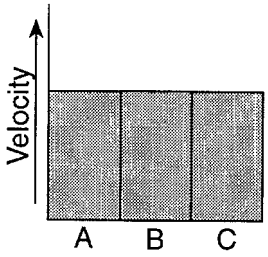
17. The map below represents a large stream meander (bend). The arrows show the direction of stream flow. Stream velocity was measured at surface locations *A*, *B*, and *C*.



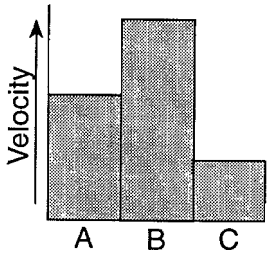
Which graph best represents the relative velocities of the stream at locations A, B. and C?



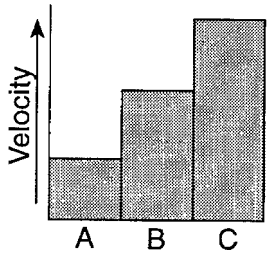
1)



3)

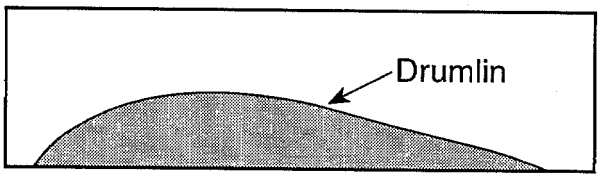


2)



4)

18. The diagram below represents a side view of a hill (drumlin) that was deposited by a glacier on the Atlantic coast.



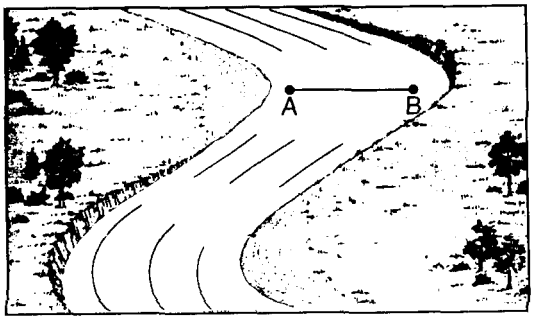
This hill is most likely composed of

1) cemented sediments
2) unsorted sediments
3) vertically layered sediments
4) horizontally layered sediments

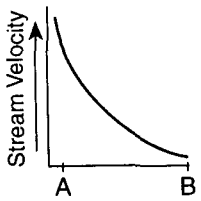
19. Which geologic evidence best supports the inference that a continental ice sheet once covered most of New York State?

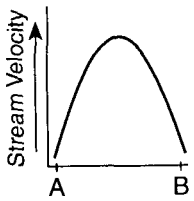
1) scratched and polished bedrock; unsorted gravel
deposits; transported boulders
2) polished and smooth pebbles; meandering rivers; V-shaped valleys
3) sand and silt beaches; giant swamps; marine fossils found on mountaintops
4) basaltic bedrock; folded, faulted, and tilted rock structures; lava flows

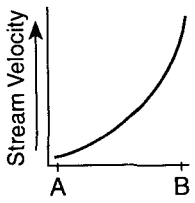
20. The diagram below shows a meandering stream. Measurements of stream velocity were taken along straight line *AB*.

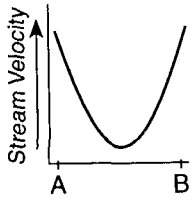


Which graph best shows the relative stream velocities across the stream from *A* to *B*?

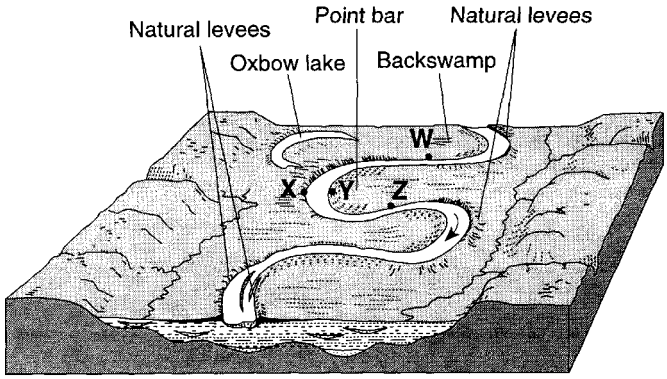
1)


2)


3)


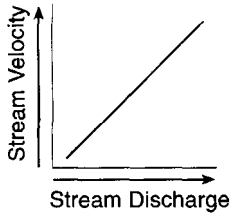
4)


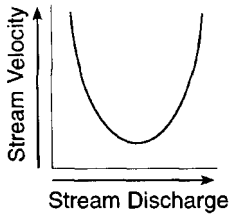
Base your answers to questions **21** and **22** on the diagram below, which represents the landscape features associated with a meandering stream. Points *W*, *X*, *Y*, and *Z* are locations along the stream bank.

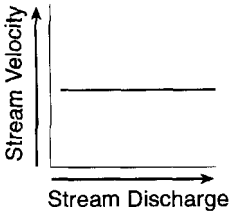


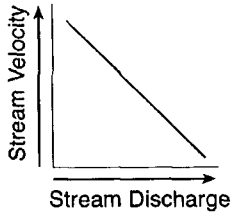
21. Which material does the stream carry in solution?
    1) colloids
    2) ions
    3) silt
    4) sand

22. Which graph shows how changes in stream discharge usually affect stream velocity?

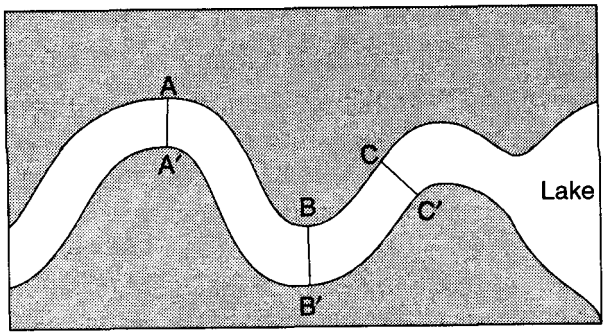
1)


2)


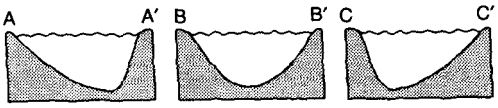
3)


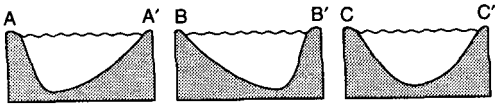
4)


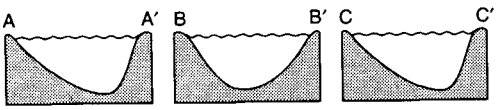
23. The map below represents a meandering stream flowing into a lake. A student measured water depths in the stream at three locations: *A–A'*, *B–B'*, and *C–C'*.

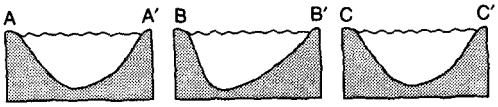


Which set of cross sections best represents the streambed at the three locations?

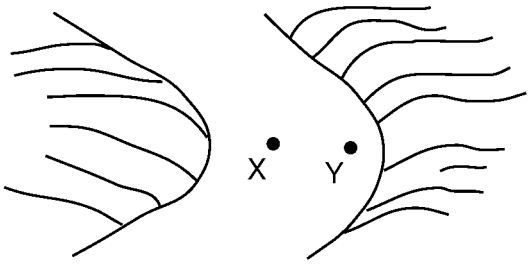
1) 

2) 

3) 

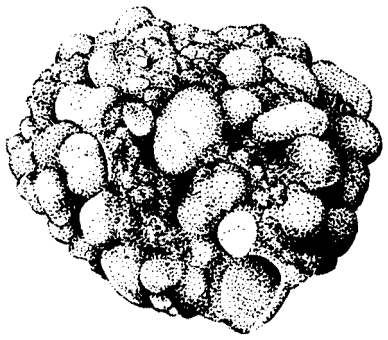
4) 

24. The diagram below shows a stream flowing past points *X* and *Y*. If the velocity of the stream at point *X* is 100 centimeters per second, which statement best describes the sediments being transported past these points?



1) At points *X* and *Y*, only clay is being transported.
2) Some pebbles and cobbles are being transported at points *X* and *Y*, but not sand, silt, or clay.
3) At points *X* and *Y*, only sand, silt, and clay are being transported.
4) Some pebbles being transported at point *Y* are bigger than those being transported at point *X*.

25. The diagram below shows a sedimentary rock sample.

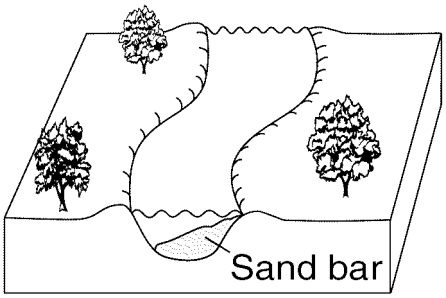


(Shown actual size)

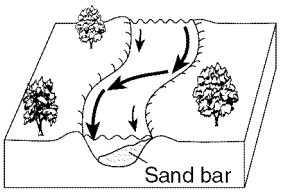
Which agent of erosion was most likely responsible for shaping the particles forming this rock?

1) wind
2) running water
3) mass movement
4) glacial ice

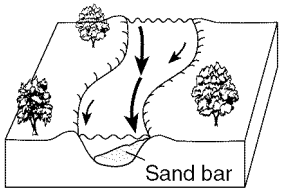
26. The diagram below shows a meandering stream flowing across nearly flat topography and over loose sediments.



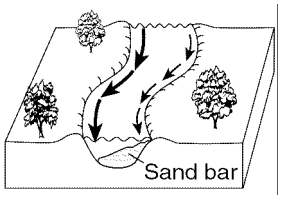
If arrow length represents stream velocity, which diagram best shows the relative stream velocities in this section of the stream?



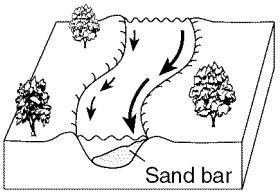
1)



3)

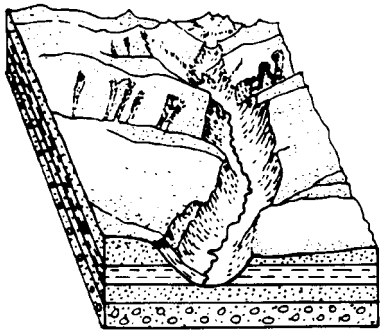


2)



4)

27. The diagram below represents a section of the Earth's crust.



This surface landscape was most likely caused by

1) erosion by valley glaciers
2) sinking of rock layers
3) folding of the crust
4) deposition of stream sediments

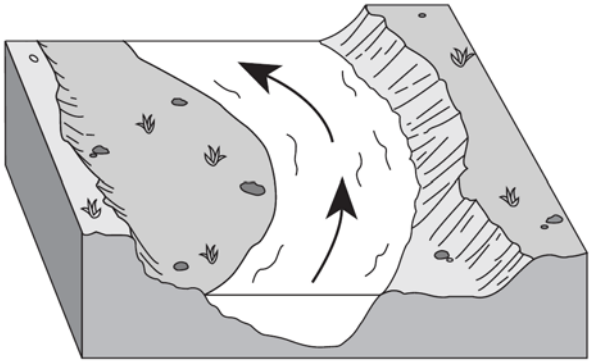
28. The four particles shown in the table below are of equal volume and are dropped into a column filled with water.

Particle	Shape	Density
A	flat	2.5 g/cm^3
B	flat	3.0 g/cm^3
C	round	2.5 g/cm^3
D	round	3.0 g/cm^3

Which particle would usually settle most rapidly?

1) *A*
2) *B*
3) *C*
4) *D*

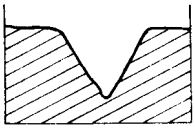
29. The diagram below shows a section of a meander in a stream. The arrows show the direction of stream flow.

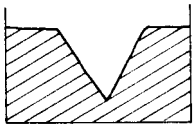


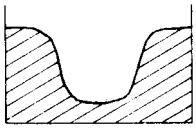
The streambank on the outside of this meander is steeper than the streambank on the inside of this meander because the water on the outside of this meander is moving

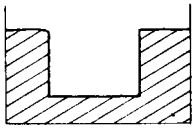
1) slower, causing deposition
2) slower, causing erosion
3) faster, causing erosion
4) faster, causing deposition

30. The diagram below represents a stream valley. Which diagram below best shows how this valley might be modified after a glacier has moved through it?



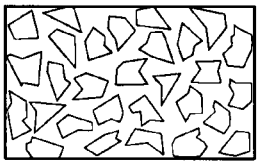
1) 

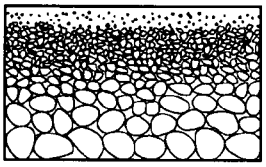
2) 

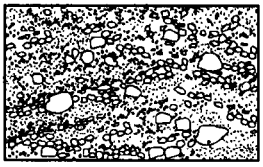
3) 

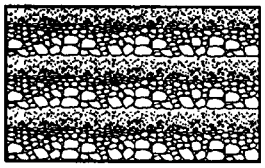
4) 

31. Which diagram best illustrates a cross section of sediments that were transported and deposited by a glacier?

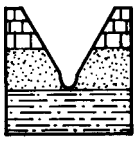
1) 

2) 

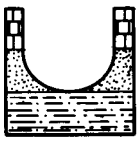
3) 

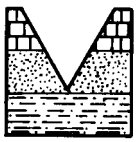
4) 

32. Which diagram best represents a cross section of a valley which was glaciated and then eroded by a stream?

1) 

2) 

3) 

4) 

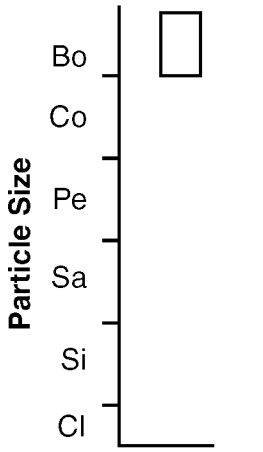
33. Base your answer to the following question on the map below, which shows a portion of a drumlin field. Elevations are in feet.

These drumlins are composed of sediments transported and deposited directly by glacial ice. These sediments are likely to be

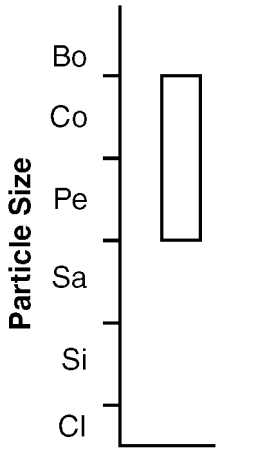
1) found underwater, mixed with organic materials
2) well sorted in horizontal layers
3) unsorted and not in layers
4) well-rounded, sand-sized particles

34. Which graph best represents the range of particle sizes that can be carried by a glacier?

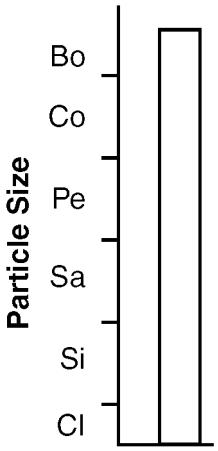
Key	
Cl clay	Pe pebbles
Si silt	Co cobbles
Sa sand	Bo boulders



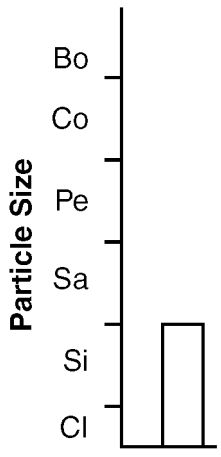
1)



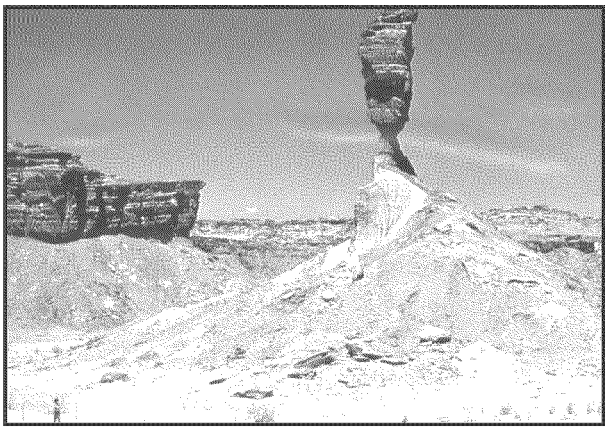
3)



2)



35. The picture below shows a geological feature in the Kalahari Desert of southwestern Africa.

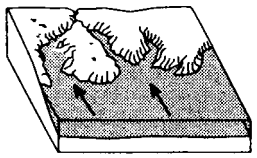


Which process most likely produced the present appearance of this feature?

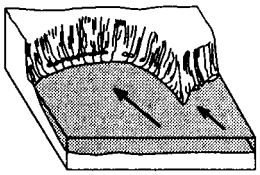
1) plate tectonics
2) wind erosion
3) earthquake vibrations
4) volcanic eruption

36. The diagrams below represent landscape features found along the seacoast. The arrows show ocean-wave direction. Which shoreline has been shaped more by deposition than by erosion?

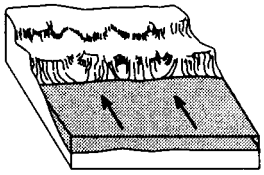
1)



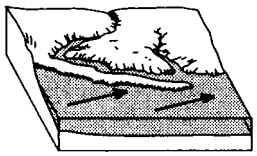
2)



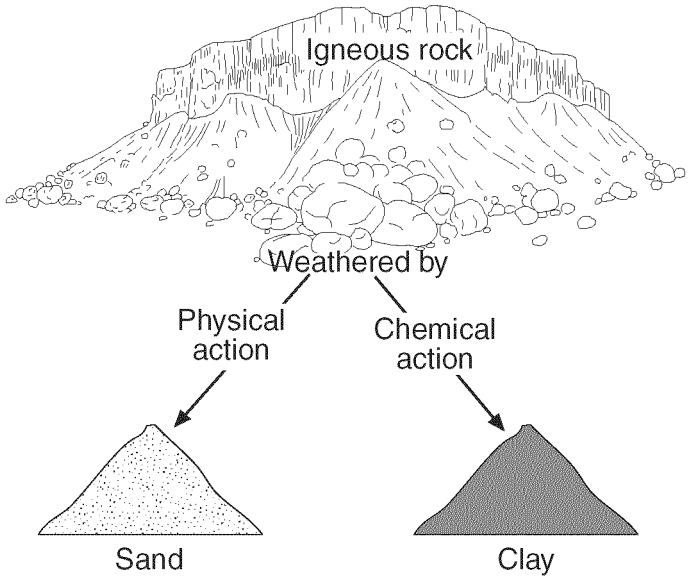
3)



4)



37. Base your answer to the following question on the diagram below, which shows igneous rock that has undergone mainly physical weathering into sand and mainly chemical weathering into clay.



Describe the change in temperature and moisture conditions that would cause an increase in the rate of chemical weathering into clay.

38.

Agent of Erosion	Surface Feature Formed
(1)	
(2)	
(3)	

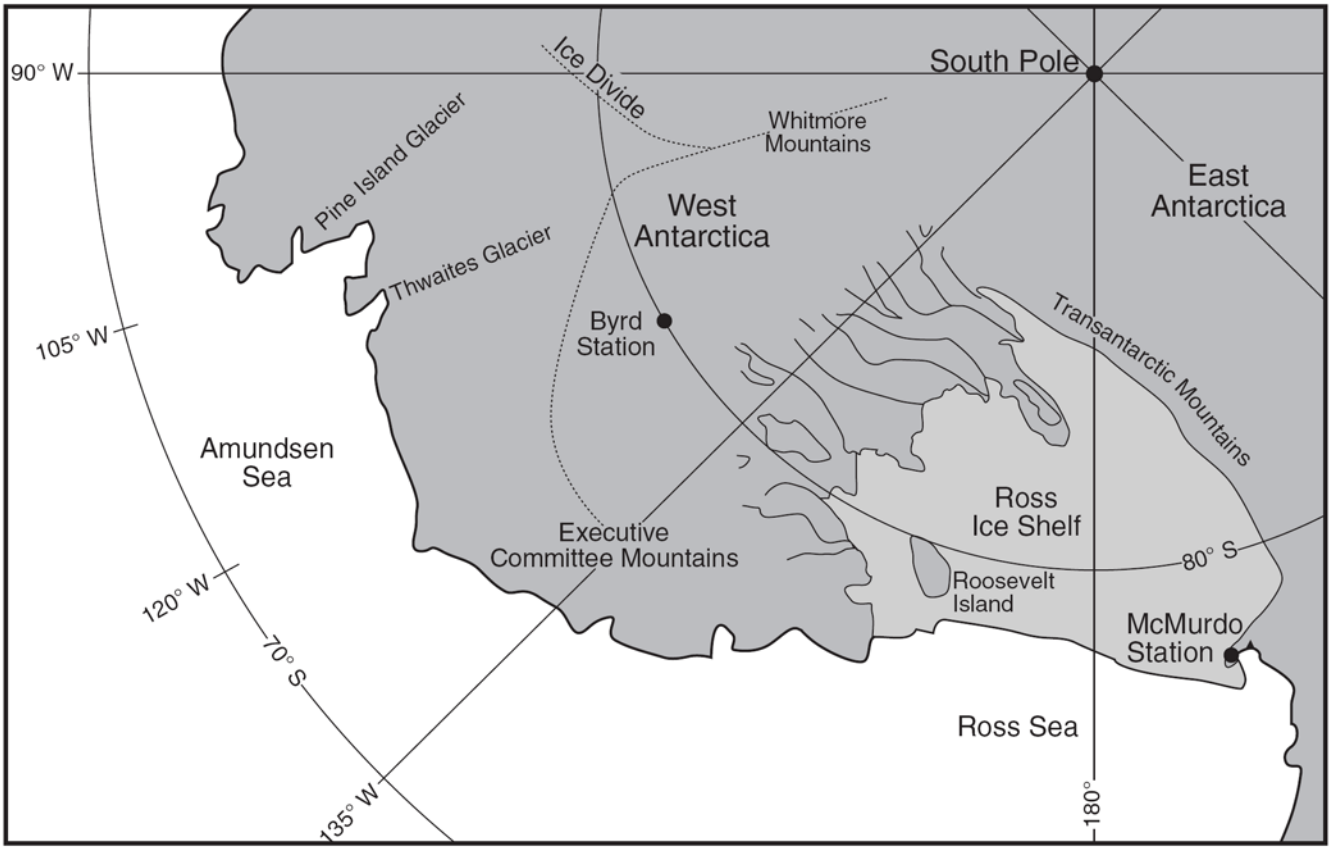
Complete the table above, by listing *three* agents of erosion and identifying *one* characteristic surface feature formed by *each* agent of erosion.

Base your answers to questions **39** and **40** on passage and map below. The map shows a portion of the continent of Antarctica.

Antarctica's Ice Sheet

The size and shape of the West Antarctic Ice Sheet depends on many factors, including melting and freezing beneath the glacier, the amount of snowfall, snow removal by wind, iceberg formation, and the rate of ice flow. Glacial moraines are found in the Executive Committee Mountains shown on the map. Moraines are located up to 100 meters in elevation above the present ice sheet surface, which indicates that a thicker ice sheet existed 20,000 years ago.

The world's oceans and climate are influenced by Antarctica's ice. Even a small increase in sea level from melting glaciers would be a disaster for the nearly two billion people who live near coastal areas.

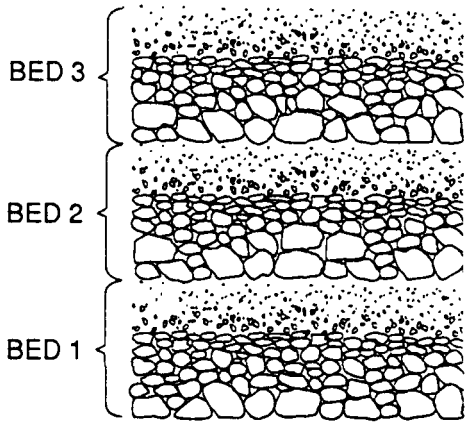


39. Identify *one* piece of evidence found on the sides of some Antarctic mountains that indicates that an ice sheet, hundreds of meters thicker than the current ice sheet,existed in the past.

40. What is the duration of insolation on December 21 at McMurdo Station?

_____

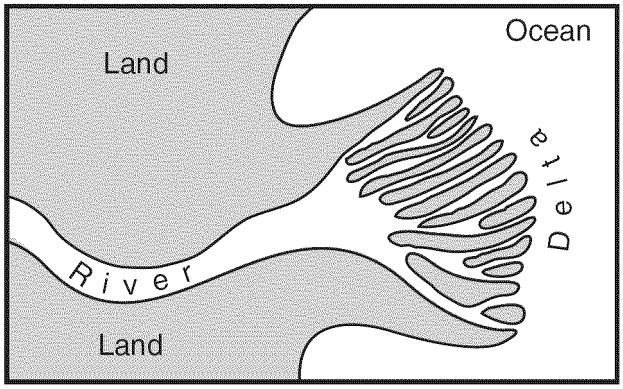
41. The diagram below shows three beds of sediment deposited at different times in a quiet body of water.



The sediment deposited in each bed is best described as

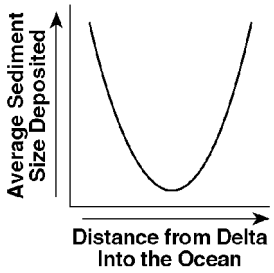
1) sorted mainly according to particle size
2) sorted mainly according to particle shape
3) showing no evidence of sorting
4) a mixture of sorted and unsorted particles

42. The map below shows a river emptying into an ocean, producing a delta.

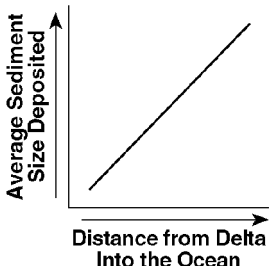


Which graph best represents the relationship between the distance from the river delta into the ocean and the average size of sediments deposited on the ocean floor?

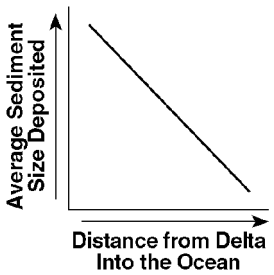
1)



2)



3)



4)