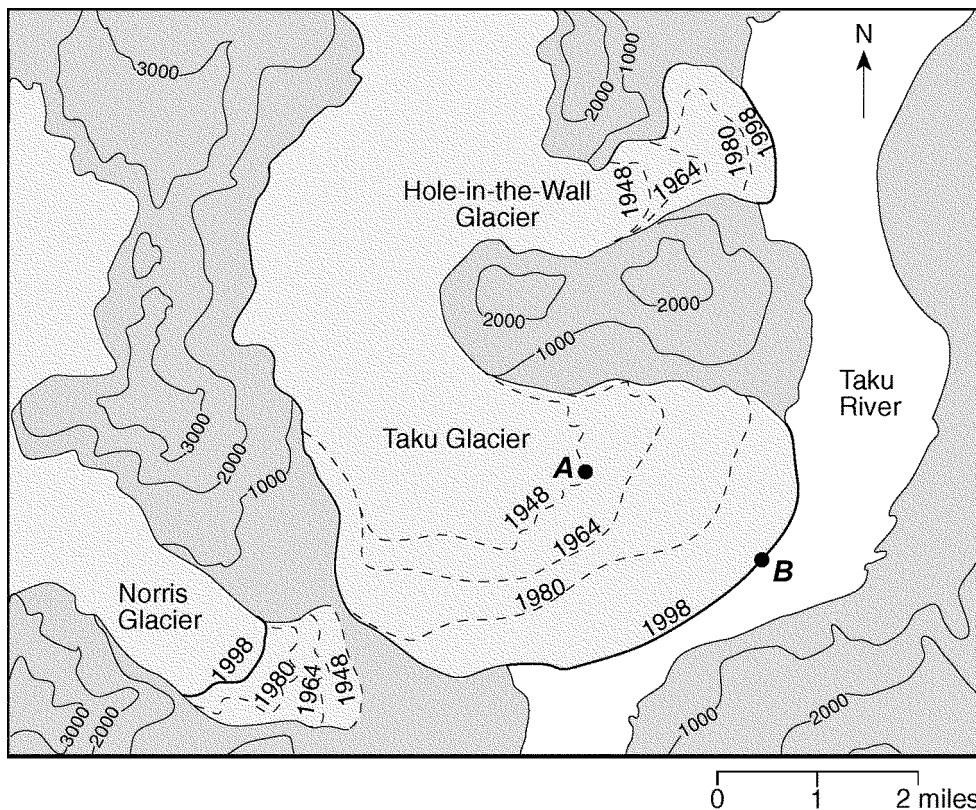


Name: \_\_\_\_\_

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|--|---|
| <p>1) Which property would <i>best</i> distinguish sediment deposited by a river from sediment deposited by a glacier?</p> <p>A) thickness of sediment layers<br/>         B) age of fossils found in the sediment<br/>         C) mineral composition of the sediment<br/>         D) amount of sediment sorting</p> <p>2) What will be the <i>most</i> probable arrangement of rock particles deposited directly by a glacier?</p> <p>A) unsorted and layered<br/>         B) unsorted and not layered<br/>         C) sorted and not layered<br/>         D) sorted and layered</p> | <p>3) Describe the arrangement of sediment found in a glacial moraine.</p> <p>4) What <i>two</i> pieces of evidence would a scientist most likely find to indicate that glaciers had once existed in an area?</p> |
|--|---|

Questions 5 and 6 refer to the following:

The topographic map below shows three glaciers found in Alaska. Dashed lines show the inferred location of the front edge of each glacier in 1948, 1964, and 1980. Solid lines show the location of the front edge of each glacier in 1998. Points A and B show the location of the front edge of the Taku Glacier in 1948 and 1998. Elevations are in feet.

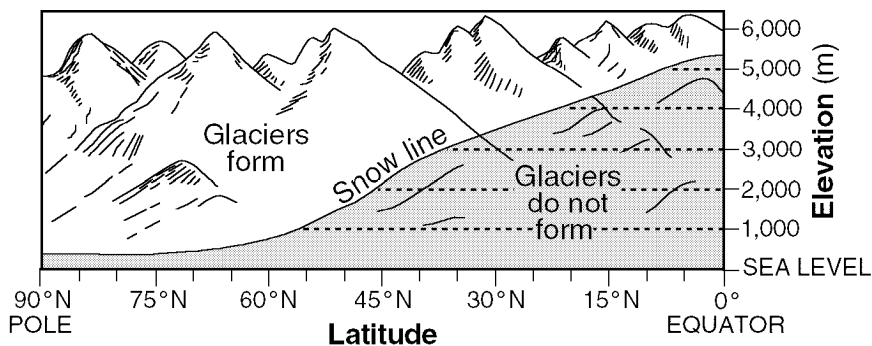


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| <p>5) Determine the rate, in miles per year, that the front edge of the Taku Glacier moved between point A and point B in the given topographic map.</p> | <p>6) What <i>two</i> pieces of evidence would a scientist most likely find to indicate that glaciers had once existed in an area?</p> |
|--|--|

- 7) Which agent of erosion was primarily responsible for forming the long, narrow, U-shaped valleys in the Finger Lakes region of New York State?
- A) meandering streams
  - B) landslides
  - C) wind
  - D) continental glaciers
- 8) Which agent of erosion is mainly responsible for the formation of the depressions occupied by *both* the kettle lakes and finger lakes found in New York State?
- A) streams
  - B) waves
  - C) glaciers
  - D) wind
- 9) Why are Precambrian gneiss cobbles and boulders commonly found on top of the surface bedrock in the Catskills?
- A) The surface bedrock of the Catskills is composed of Precambrian gneiss.
  - B) Many meteorites composed of gneiss have landed in the Catskills.
  - C) Glaciers transported these rocks from the Adirondacks to the Catskills.
  - D) The surface bedrock of the Catskills has been overturned.

- 10) What will be the *most* probable arrangement of rock particles deposited directly by a glacier?
- A) sorted and layered
  - B) unsorted and not layered
  - C) sorted and not layered
  - D) unsorted and layered
- 11) Which agent of erosion is mainly responsible for the formation of the depressions occupied by *both* the kettle lakes and finger lakes found in New York State?
- A) glaciers
  - B) streams
  - C) wind
  - D) waves
- 12) Which property would *best* distinguish sediment deposited by a river from sediment deposited by a glacier?
- A) mineral composition of the sediment
  - B) thickness of sediment layers
  - C) age of fossils found in the sediment
  - D) amount of sediment sorting
- 13) Which agent of erosion was primarily responsible for forming the long, narrow, U-shaped valleys in the Finger Lakes region of New York State?
- A) continental glaciers
  - B) wind
  - C) landslides
  - D) meandering streams

- 14) The graph below shows the snow line (the elevation above which glaciers form at different latitudes in the Northern Hemisphere).



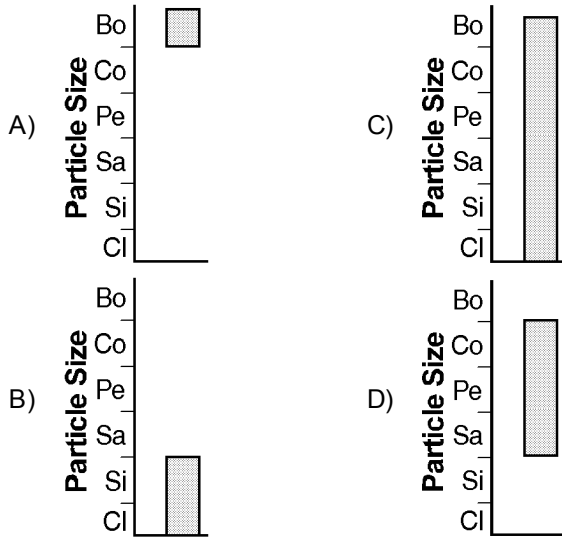
At which location would a glacier most likely form?

- A) 30° N latitude at an elevation of 3,000 m
  - B) 15° N latitude at an elevation of 4,000 m
  - C) 45° N latitude at an elevation of 1,000 m
  - D) 0° latitude at an elevation of 6,000 m
- 15) Some glaciers currently exist near Earth's equator due to the cold, snowy climate of certain locations. Which type of landform exists where these glaciers occur?
- A) drag loose rocks over Earth's surface
  - B) deposit rounded sand in V-shaped valleys
  - C) deposit sediment in unsorted piles
  - D) continually melt and refreeze
- 16) Glaciers often form parallel scratches and grooves in bedrock because glaciers

- 17) The occurrence of parallel scratches on bedrock in a U-shaped valley indicates that the area has most likely been eroded by
- A) a glacier  
 B) waves  
 C) wind  
 D) a stream
- 18) Which graph *best* represents the range of particle sizes that can be carried by a glacier?

KEY:

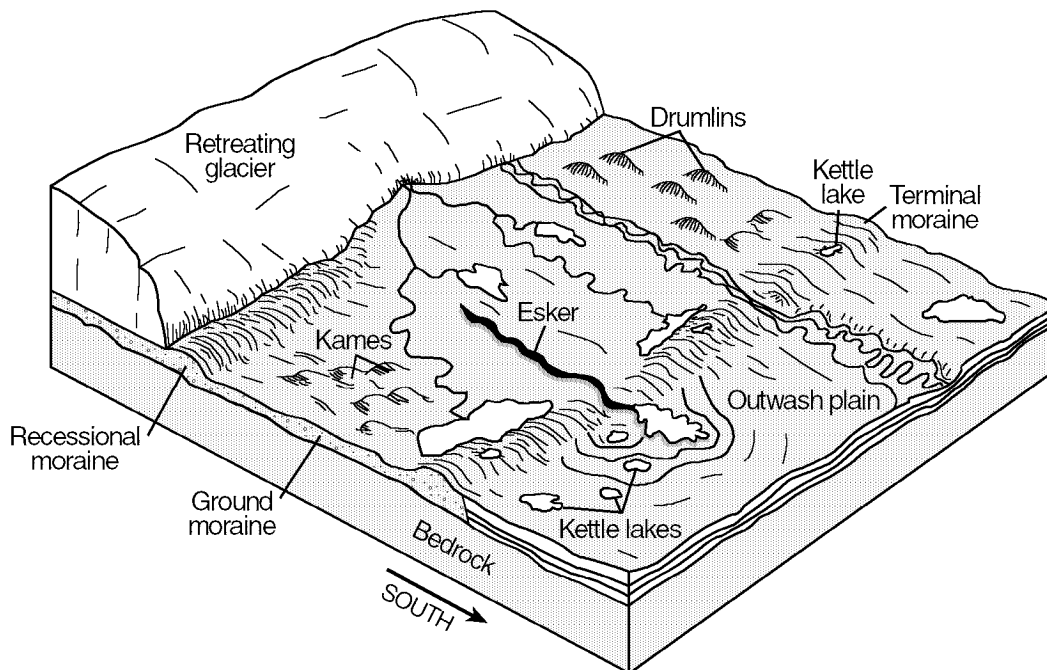
Cl = clay	Sa = sand	Co = cobbles
Si = silt	Pe = pebbles	Bo = boulders



- 19) Which statement *best* describes sediments deposited by glaciers and rivers?
- A) Glacial deposits and river deposits are both unsorted.  
 B) Glacial deposits are sorted, and river deposits are unsorted.  
 C) Glacial deposits are unsorted, and river deposits are sorted.  
 D) Glacial deposits and river deposits are both sorted.

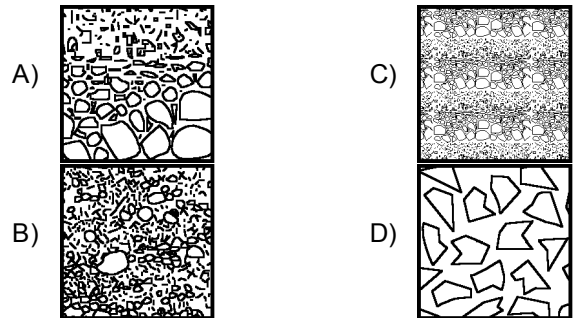
Questions 20 through 22 refer to the following:

The block diagram below shows some of the landscape features formed as the *most* recent continental glacier melted and retreated across western New York State.

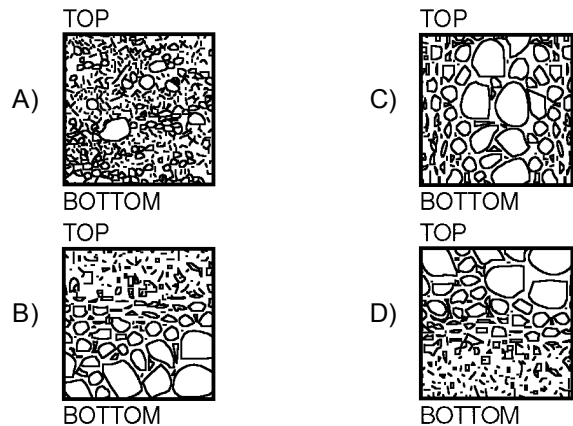


- 20) The moraines pictured in the block diagram were deposited directly by the glacier. The sediments within these moraines are most likely
- A) unsorted by size and layered
  - B) unsorted by size and unlayered
  - C) sorted by size and layered
  - D) sorted by size and unlayered
- 21) The shape of elongated hills labeled drumlins is *most* useful in determining the
- A) age of the glacier
  - B) thickness of the glacial ice
  - C) direction of glacial movement
  - D) rate of glacial movement
- 22) During which geologic epoch did this glacier retreat from New York State?
- A) Early Mississippian
  - B) Pleistocene
  - C) Late Pennsylvanian
  - D) Eocene
- 23) Describe the arrangement of sediment deposited directly from glaciers.
- 24) Outwash plains are formed as a result of deposition by
- A) winds from hurricanes
  - B) meltwater from glaciers
  - C) landslides
  - D) ocean waves
- 25) The occurrence of parallel scratches on bedrock in a U-shaped valley indicates that the area has most likely been eroded by
- A) a glacier
  - B) wind
  - C) a stream
  - D) waves
- 26) Glaciers often form parallel scratches and grooves in bedrock because glaciers
- A) deposit sediment in unsorted piles
  - B) continually melt and refreeze
  - C) drag loose rocks over Earth's surface
  - D) deposit rounded sand in V-shaped valleys
- 27) Which statement *best* describes sediments deposited by glaciers and rivers?
- A) Glacial deposits are sorted, and river deposits are unsorted.
  - B) Glacial deposits and river deposits are both sorted.
  - C) Glacial deposits and river deposits are both unsorted.
  - D) Glacial deposits are unsorted, and river deposits are sorted.

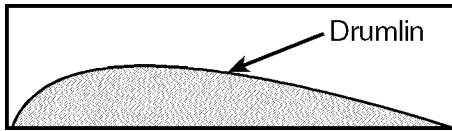
- 28) The bedrock at a certain location is deeply scratched, and in some places is covered by a layer of unsorted sediment. Which erosional agent was probably responsible for these features?
- A) running water
  - B) ocean waves
  - C) glaciers
  - D) wind
- 29) A large, scratched boulder is found in a mixture of unsorted, smaller sediments forming a hill in central New York State. Which agent of erosion most likely transported and then deposited this boulder?
- A) a glacier
  - B) running water
  - C) ocean waves
  - D) wind
- 30) Which erosional agent typically deposits hills of unsorted sediments?
- A) winds
  - B) glaciers
  - C) ocean waves
  - D) streams
- 31) A deposit of rock particles that are angular, scratched, and unsorted has most likely been transported and deposited by
- A) ocean waves
  - B) wind
  - C) running water
  - D) a glacier
- 32) Which diagram *best* illustrates a cross section of sediments that were transported and deposited by a glacier?



- 33) Which soil profile diagram *best* represents a deposit of sand and gravel left by a glacier?

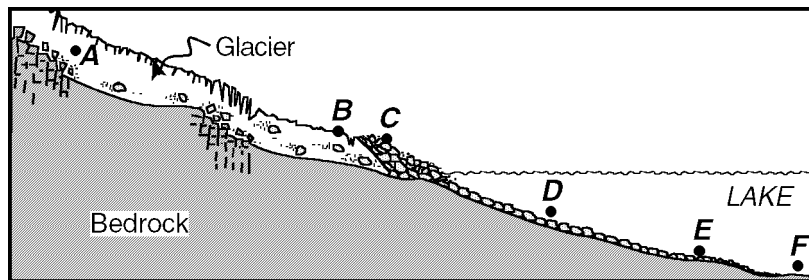


- 34) The diagram below represents a side view of a hill (drumlin) that was deposited by a glacier in central New York.



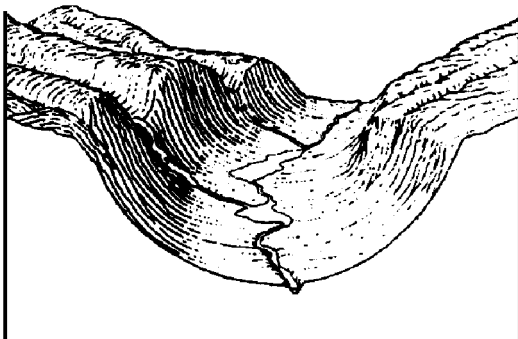
This hill is most likely composed of

- A) cemented sediments
  - B) unsorted sediments
  - C) vertically layered sediments
  - D) horizontally layered sediments
- 35) The diagram below represents a glacier moving out of a mountain valley. The water from the melting glacier is flowing into a lake. Letters A through F identify points within the erosional/depositional system.



Deposits of unsorted sediments would probably be found at location

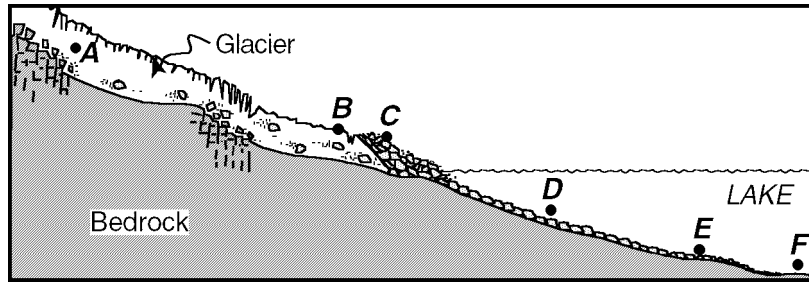
- A) F
  - B) D
  - C) C
  - D) E
- 36) The diagram below represents the surface topography of a mountain valley.



Which agent of erosion most likely created the shape of the valley shown in the diagram?

- A) ocean waves
- B) wind
- C) running water
- D) glaciers

- 37) The diagram below represents a glacier moving out of a mountain valley. The water from the melting glacier is flowing into a lake. Letters A through F identify points within the erosional/depositional system.

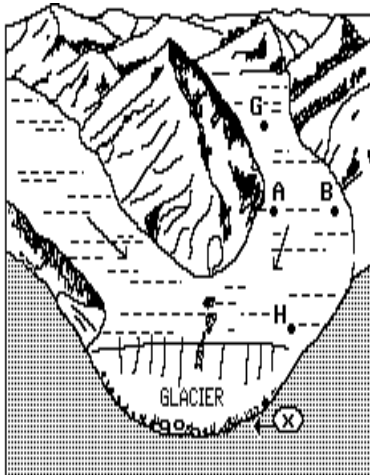


Which characteristic would form as the glacier advances from point A to point B?

- A) V-shaped valleys
- B) a thick, well-sorted soil
- C) layers of salt and other evaporites
- D) scratched and polished bedrock

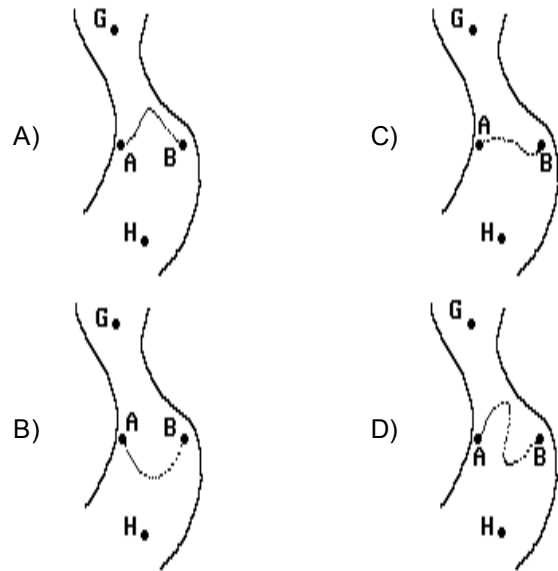
Questions 38 through 41 refer to the following:

The diagram below represents two branches of a valley glacier. Points A, B, G, and H are located on the surface of the glacier. Point X is located at the interface between the ice and the bedrock. The arrows indicate the general direction of ice movement.



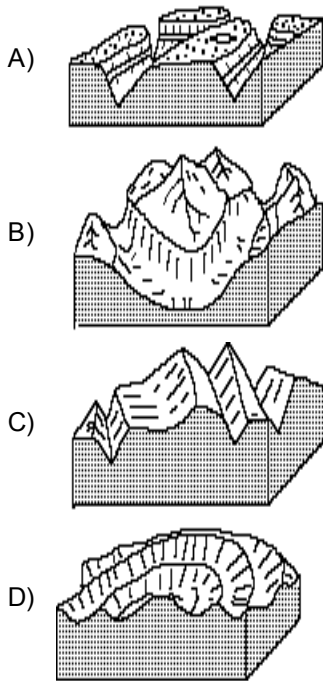
- 38) Which force is primarily responsible for the movement of the glacier?
- A) gravity
  - B) ground water
  - C) running water
  - D) wind

- 39) Metal stakes were placed on the surface of the glacier in a straight line from position A to position B. Which diagram best shows the position of the metal stakes several years later?



- 40) The sediment deposited by the valley glacier at position X is best described as
- A) sorted according to particle density
  - B) sorted according to particle texture
  - C) sorted according to particle size
  - D) unsorted

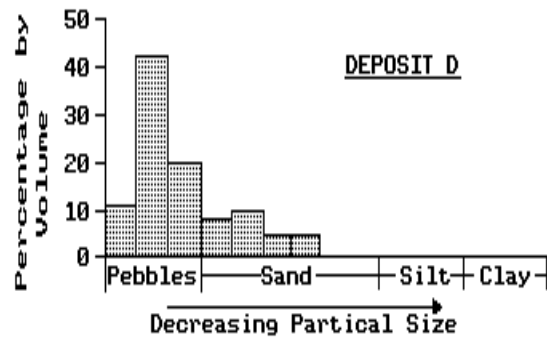
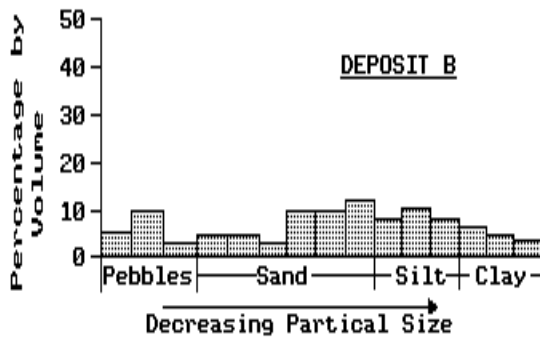
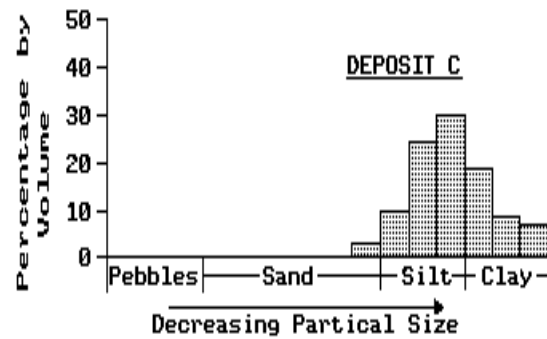
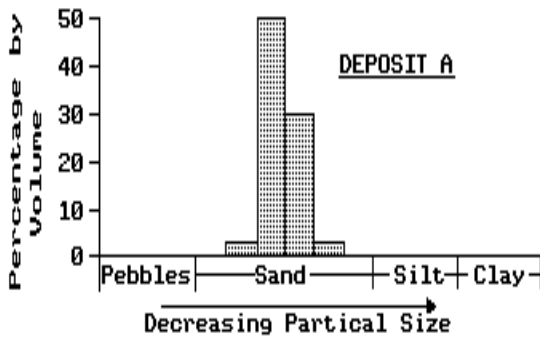
41) Which cross section best represents the valley shapes of this landscape area after the glacier melts?



42) A low hill is composed of unsorted sediments that have mixed grain sizes. This hill was probably deposited by

- A) running water
- B) wave action
- C) the wind
- D) a glacier

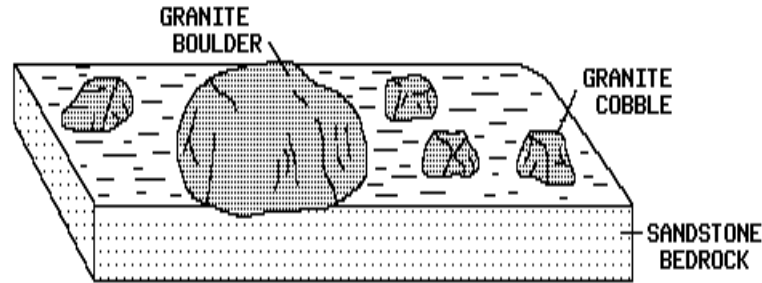
43) The bar graphs below show the percentages by volume of the sediment sizes that are found in four different sediment deposits, A, B, C, and D.



What was the most probable agent of erosion that deposited the unsorted sediments in deposit B?

- A) wind
- B) ocean waters
- C) a glacier
- D) a stream

- 44) The diagram below represents a surface and cross-sectional view of a portion of the Earth 15 kilometers from a mountain range.



The best explanation for the presence of an isolated boulder in this location is that the boulder was

- A) transported there by a glacier  
 B) placed there by a volcanic eruption  
 C) deposited there by a slow-moving stream  
 D) eroded from a limestone cliff
- 45) A hilly region of Long Island is composed of unconsolidated and unsorted sediments. Which erosional agent was probably most influential in forming this landscape?  
 A) streams  
 B) wind  
 C) wave action  
 D) glaciers
- 46) What was one of the major effects of the continental glaciers on the landscapes of New York State?  
 A) They folded many of the rock layers.  
 B) They formed numerous sharp mountain peaks and knife-edged ridges.  
 C) They deposited a covering of transported rock material over most of the State.  
 D) They carved the wide U-shaped valleys into narrow v-shaped valleys.
- 47) Which landscape characteristic best indicates the action of glaciers?  
 A) polished and scratched surface bedrock  
 B) deposits of well-sorted sediments  
 C) residual soil covering large areas  
 D) few lakes