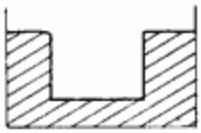
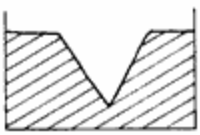
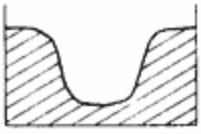
Name: **Date:**

1. 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?

A) 

B) 

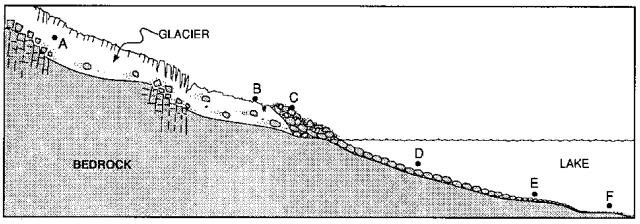
C)

D) 

2. Which rock material was most likely transported to its present location by a glacier?

A) rounded sand grains found in a river delta
B) rounded grains found in a sand dune
C) residual soil found on a flat plain
D) unsorted loose gravel found in hills

3. Base your answer to the following question on the *Earth Science Reference Tables* and the diagram below. The diagram 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.



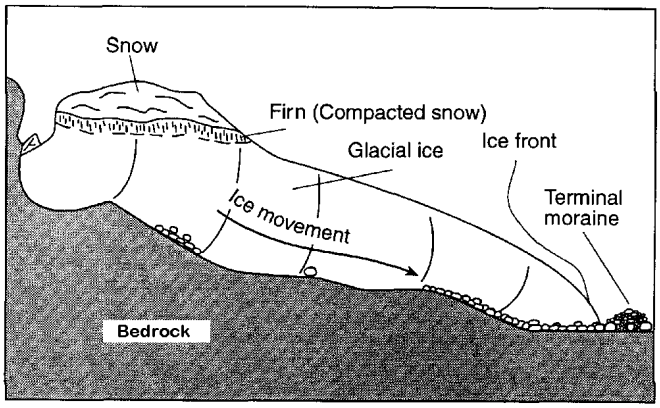
Which characteristic would form as the glacier advances from point *A* to point *B*?

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

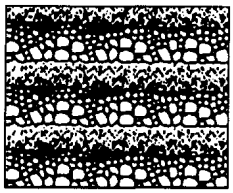
4. An elongated hill that is composed of unsorted sediments deposited by a glacier is called

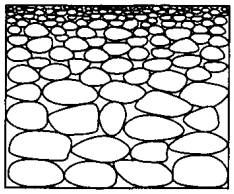
A) a delta
B) a drumlin
C) a sand dune
D) an outwash plain

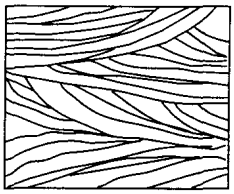
Base your answers to questions **5** through **7** on the diagram which represents a profile of a mountain glacier in the northern United States.

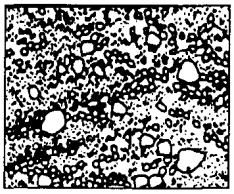


5. Which cross section best represents the sediment that was transported and deposited by this glacier?

A) 

B) 

C) 

D) 

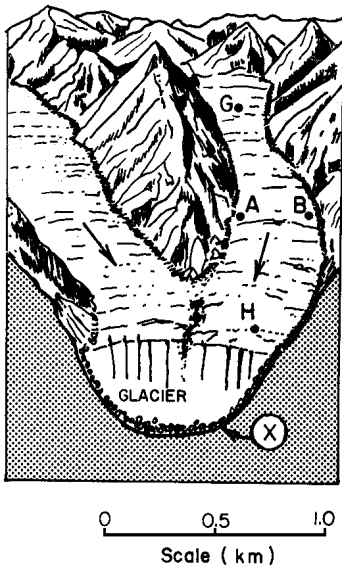
6. Over a period of years, this glacier gains more snow mass than it loses. What will be the most likely result of this gain?

A) The glacier will decrease in size, and the ice front will retreat.
B) The glacier will decrease in size, and the ice front will advance.
C) The glacier will increase in size, and the ice front will retreat.
D) The glacier will increase in size, and the ice front will advance.

7. The downhill movement of mountain glaciers such as the one shown in the diagram is primarily caused by

A) evaporation of ice directly from the glacier
B) snow blowing across the top of the glacier
C) the force of gravity pulling on the glacier
D) water flowing over the glacier

Base your answers to questions **8** and **9** on the *Earth Science Reference Tables* and the diagram below. The diagram 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.



8. Which force is primarily responsible for the movement of the glacier?

   A) ground water B) running water
   C) gravity D) wind

9. The sediment deposited by the valley glacier at position *X* is best described as

   A) sorted according to particle size
   B) sorted according to particle density
   C) sorted according to particle texture
   D) unsorted

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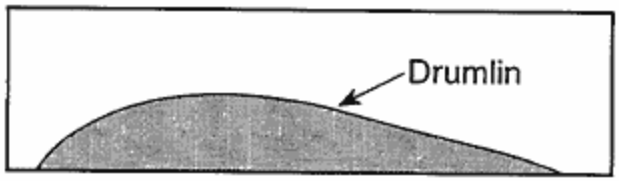
10. The diagram below represents a side view of a hill (drumlin) that was deposited by a glacier on the Atlantic coast.



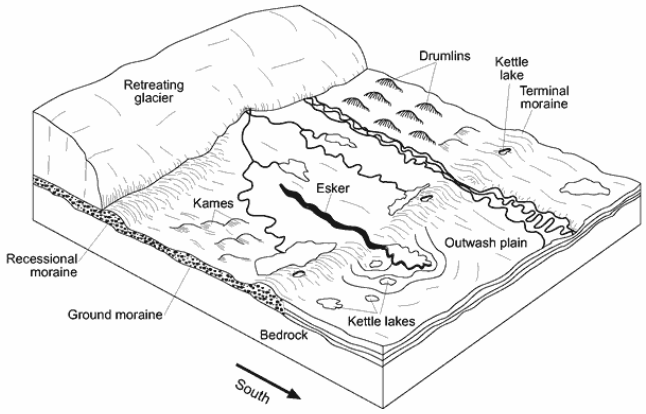
This hill is most likely composed of

   A) cemented sediments
   B) unsorted sediments
   C) vertically layered sediments
   D) horizontally layered sediments

11. 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?

   A) wind B) a glacier
   C) ocean waves D) running water

12. Base your answer on the block diagram below, which shows some of the landscape features formed as the most recent continental glacier melted and retreated across western New York State.

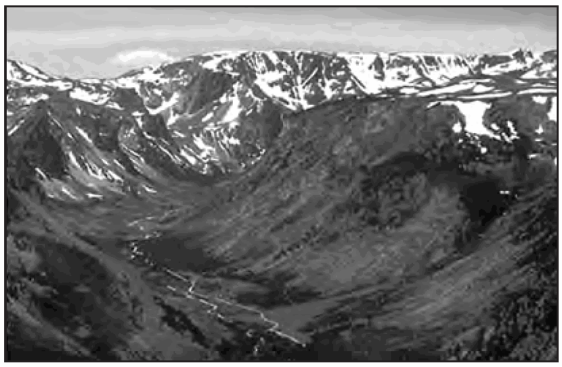


The shape of elongated hills labeled drumlins is most useful in determining the

   A) age of the glacier
   B) direction of glacial movement
   C) thickness of the glacial ice
   D) rate of glacial movement

13. Photographs *A* and *B* below show two different valleys.

Photograph A



Photograph B

Which list best identifies the agent of erosion that primarily determined the shape of each valley?

A) photograph *A*—glacier; photograph *B*—river
B) photograph *A*—river; photograph *B*—glacier
C) both photographs—river
D) both photographs—glacier

14. The photograph below shows scratched and polished bedrock produced by weathering and erosion.

Which agent of erosion most likely carried sediment that scratched and polished this bedrock surface?

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

15. The photograph below shows scratched and grooved bedrock with boulders on its surface.

Source: www.nr.gov.nl.ca

The scratches and grooves were most likely created when

A) alternating thawing and freezing of water cracked the bedrock
B) flooding from a nearby lake covered the bedrock
C) a glacier dragged rocks over the bedrock
D) rocks from a landslide slid along the bedrock