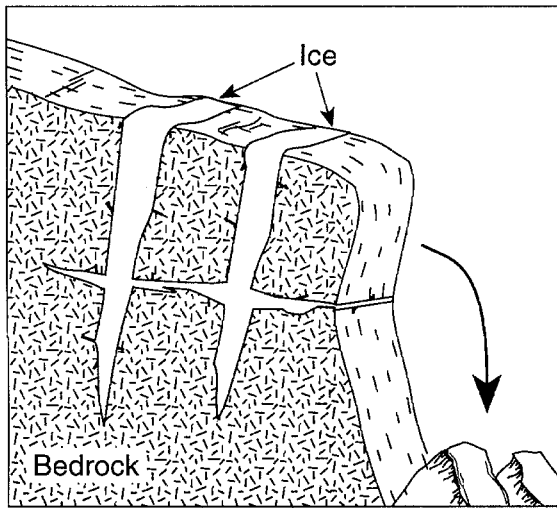


- Which property of water makes frost action a common and effective form of weathering?
 - Water dissolves many earth materials.
 - Water expands when it freezes.
 - Water cools the surroundings when it evaporates.
 - Water loses 80 calories of heat per gram when it freezes.

- By which processes are rocks broken up and moved to different locations?

- evaporation and condensation
- weathering and erosion
- burial and cementation
- compaction and transportation

- The diagram below shows a process called frost wedging.



Frost wedging is an example of

- weathering
- cementing
- metamorphism
- deposition

- In which climate would the chemical weathering of limestone occur most rapidly?

- cold and dry
- cold and humid
- warm and dry
- warm and humid

- Which change would cause the topsoil in West Virginia to increase in thickness?

- an increase in slope
- an increase in biologic activity
- a decrease in rainfall
- a decrease in air temperature

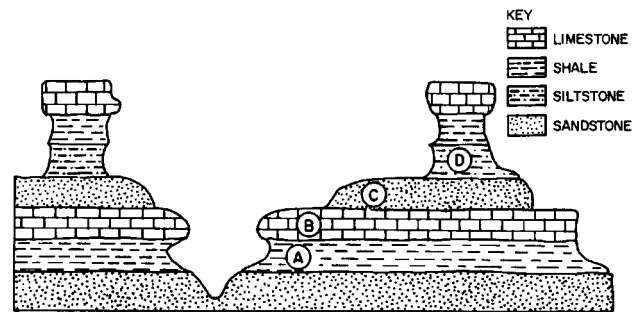
- Which type of climate has the greatest amount of rock weathering caused by frost action?

- a wet climate in which temperatures remain below freezing
- a wet climate in which temperatures alternate from below freezing to above freezing
- a dry climate in which temperatures remain below freezing
- a dry climate in which temperatures alternate from below freezing to above freezing

- Water is a major agent of chemical weathering because water

- cools the surroundings when it evaporates
- dissolves many of the minerals that make up rocks
- has a density of about one gram per cubic centimeter
- has the highest specific heat of all common earth materials

- 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?

- A
- B
- C
- D

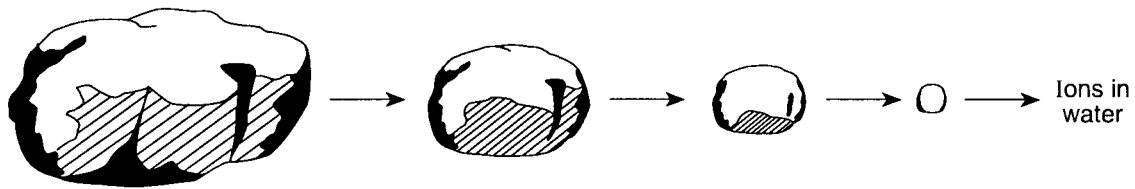
- Four pieces of the same rock material which have different shapes but equal volumes are exposed to the atmosphere. Which piece would probably weather fastest?

- a piece shaped like a sphere
- a piece shaped like a cube
- a piece shaped like a cylinder
- a piece shaped flat and thin

- How are dissolved materials carried in a river?

- in solution
- in suspension
- by precipitation
- by bouncing and rolling

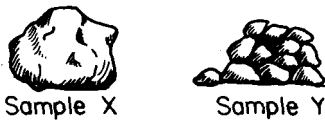
11. The diagram below shows what happens to a rock within a stream's erosional-depositional system as time passes.



Which process of change is best represented by the sequence shown in the diagram?

- 1) deposition 2) metamorphism 3) condensation 4) weathering

12. In the diagram below, sample X and sample Y represent equal masses of earth material which are weathering under the same conditions. The samples have the same mineral composition.



The weathering rate for sample Y will most likely be

- 1) less than X 2) greater than X
3) the same as X

13. 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) Some of the sandstone has been changed into granite.
3) The granite pebbles were formed by weathering of the exposed sandstone bedrock.
4) Ground water tends to form granite pebbles within layers of sandstone rock.

14. The composition of sediments on the Earth's surface usually is quite different from the composition of the underlying bedrock. This observation suggests that most

- 1) bedrock is formed from sediments
2) bedrock is resistant to weathering
3) sediments are residual
4) sediments are transported

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

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

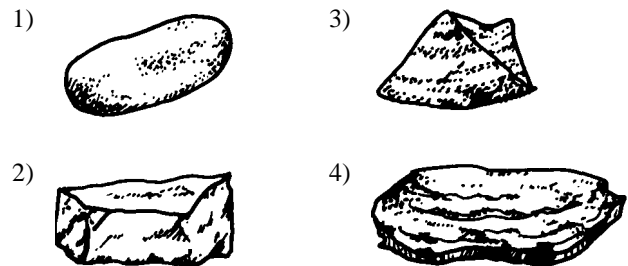
16. Large igneous boulders have been found on surface sedimentary bedrock in North Carolina. Which statement best explains the presence of these boulders?

- 1) Sedimentary bedrock is composed of igneous boulders.
2) Boulders were transported to the area by ice.
3) The area has had recent volcanic activity.
4) The area was once part of a large mountain range.

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

- 1) rounded sand grains found in a river delta
2) rounded grains found in a sand dune
3) residual soil found on a flat plain
4) unsorted loose gravel found in hills

18. Which quartz sample has probably undergone abrasion in a stream for the longest period of time?



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

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

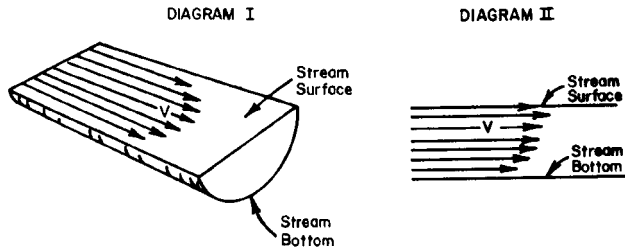
20. A large, scratched boulder is found in a mixture of unsorted, smaller sediments forming a hill in central New Jersey. Which agent of erosion most likely transported and then deposited this boulder?

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

21. Which landscape characteristic indicates a landscape has been formed primarily by streams?

- 1) residual soil covering a large area
- 2) coastal sand dunes
- 3) V-shaped valleys
- 4) parallel hills of unsorted sediments

22. In the two diagrams below, the length of the arrows represents the relative velocities of stream flow at various places in a stream. Diagram I shows the different water velocities across the surface. Diagram II shows the different water velocities at various depths.



At which location in the stream is the water velocity greatest?

- 1) at the center along the bottom
- 2) at the center near the surface
- 3) at the sides along the bottom
- 4) at the sides near the surface

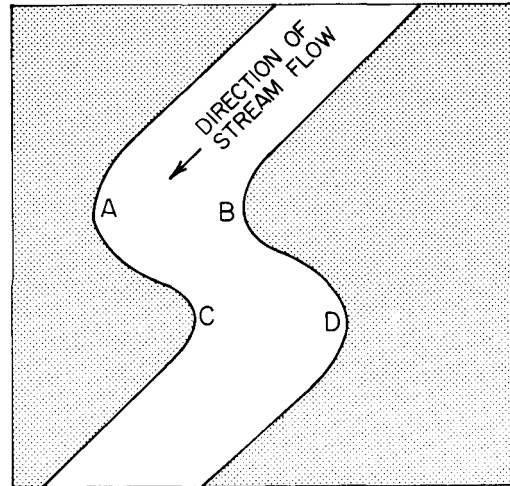
23. Many elongated hills, each having a long axis with a mostly north-south direction, are found scattered across New York State. These hills contain unsorted soils, pebbles, and boulders. Which process most likely formed these hills?

- 1) stream deposition
- 2) wind deposition
- 3) wave deposition
- 4) glacial deposition

24. 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?

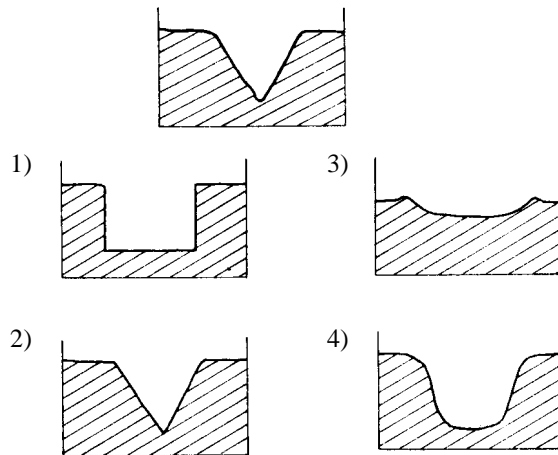
- 1) wind
- 2) waves
- 3) streams
- 4) glaciers

25. The map below represents a view of a flowing stream. The letters identify locations in the stream near the interface between land and water. At which two locations is erosion due to flowing water likely to be greatest?



- 1) A and B
- 2) B and D
- 3) A and D
- 4) B and C

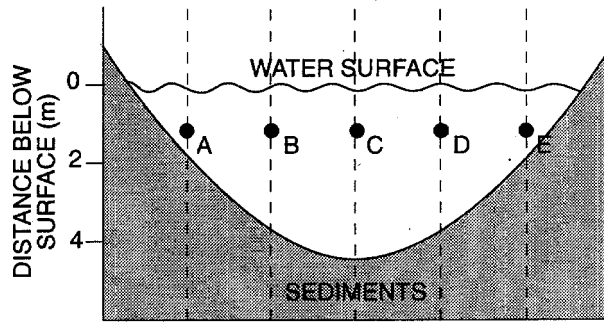
26. The diagram below represents a stream valley. Which diagram below best shows how this valley might be modified after a glacier has moved through it?



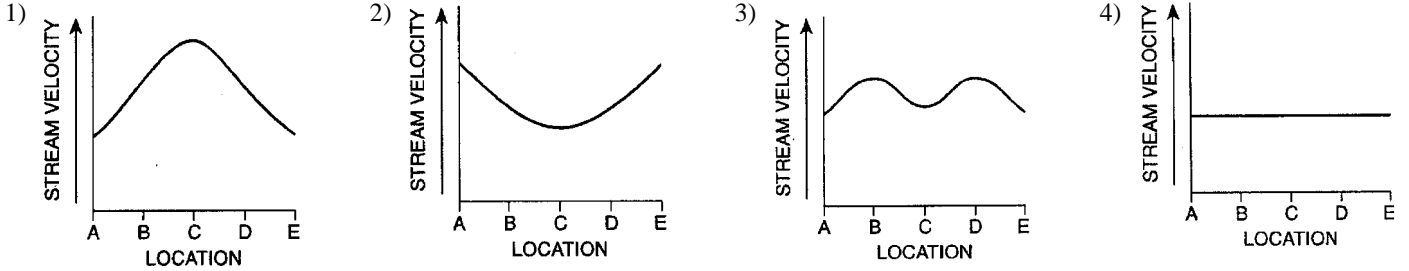
27. Which rock particles will remain suspended in water for the longest time?

- 1) pebbles
- 2) sand
- 3) silt
- 4) clay

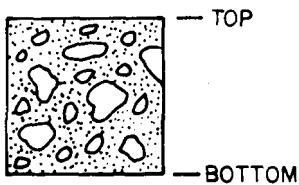
28. The diagram below represents a cross section of a stream. Points A, B, C, D, and E are locations within the stream channel.



Which graph best represents stream velocity at locations A through E?



29. The diagram below represents the cross section of a soil deposit from a hill in central New York State.



The deposition was most likely caused by

- 1) a glacier
- 2) a wind storm
- 3) a stream entering a lake
- 4) wave action along a beach

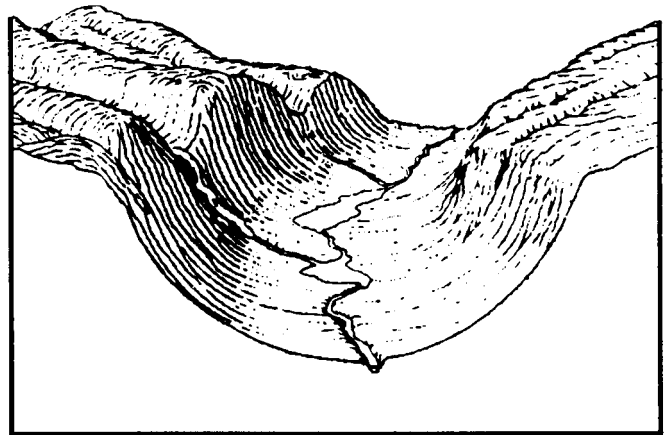
30. Which characteristics of a particle would usually result in the longest settling time for the particle in calm water?

- 1) low density and round shape
- 2) low density and flat shape
- 3) high density and round shape
- 4) high density and flat shape

31. Which stream velocity would transport cobbles, but would not transport boulders?

- 1) 50 cm/sec
- 2) 100 cm/sec
- 3) 200 cm/sec
- 4) 400 cm/sec

32. The diagram below represents the surface topography of a mountain valley.



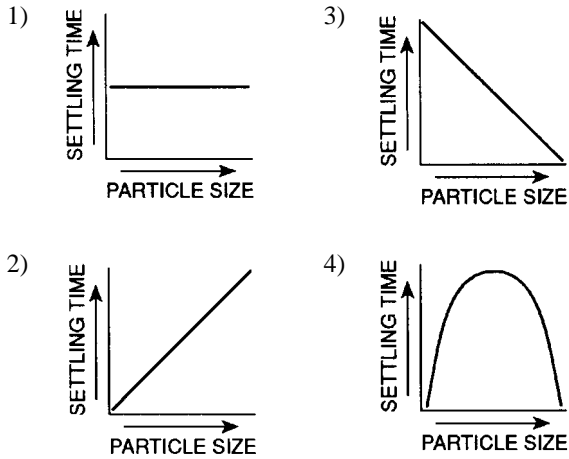
Which agent of erosion most likely created the shape of the valley shown in the diagram?

- 1) wind
- 2) glaciers
- 3) ocean waves
- 4) running water

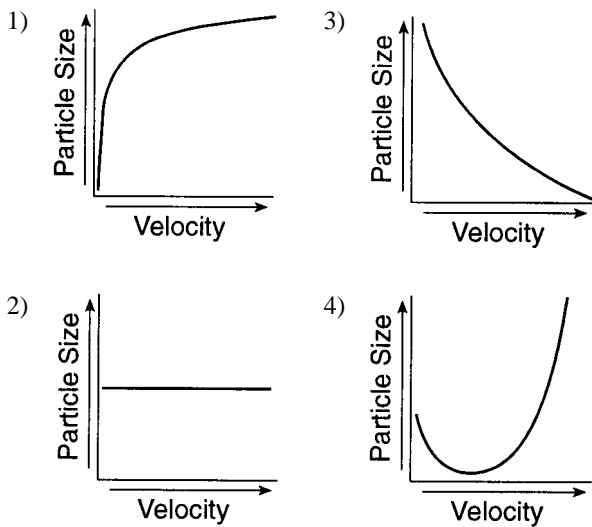
33. Compared to a low-density spherical particle, a high-density spherical particle of the same size will sink through water

- 1) more slowly
- 2) more rapidly
- 3) at the same rate

34. In a soil sample, the particles have the same shape but different sizes. Which graph best represents the relationship between particle size and settling time when these particles are deposited in a quiet body of water?



35. Which graph best shows the general relationship between stream velocity and the diameter of particles transported by a stream?



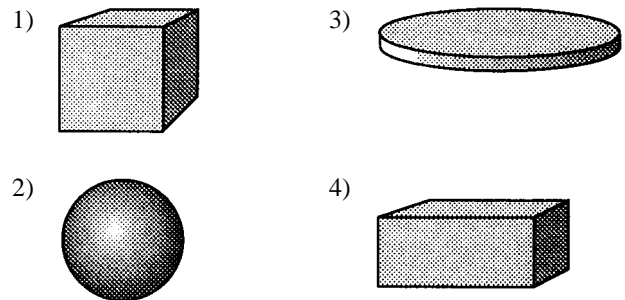
36. As the gradient of a stream increases, the stream's ability to carry sediment

- 1) decreases
- 2) increases
- 3) remains the same

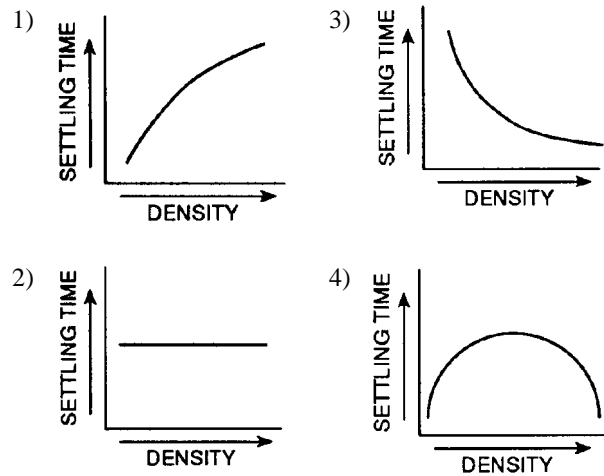
37. Four samples of aluminum, A, B, C, and D, have identical volumes and densities, but different shapes. Each piece is dropped into a long tube filled with water. The time each sample takes to settle to the bottom of the tube is shown in the table below.

Sample	Time to Settle (sec)
A	2.5
B	3.7
C	4.0
D	5.2

Which diagram most likely represents the shape of sample A?



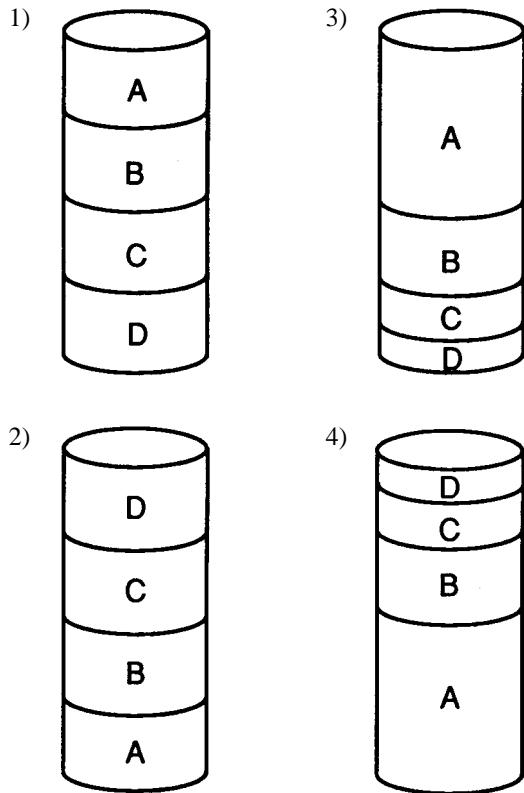
38. Which graph shows the relationship between the density of particles and their settling time in still water? [Assume that the particles have the same size and shape.]



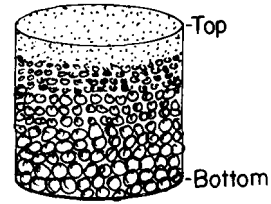
39. Four different kinds of particles (*A*, *B*, *C*, and *D*) with the same shape and diameter were mixed and poured into a column of water. The mass, volume, and density of the particles are shown below.

Particle	Mass (g)	Volume (cm ³)	Density (g/cm ³)
<i>A</i>	100	67	1.5
<i>B</i>	100	33	3.0
<i>C</i>	100	22	4.5
<i>D</i>	100	17	6.0

Which diagram best shows how the particle beds would be arranged in the column of water after settling?



40. The diagram below represents a core sample of a sedimentary deposit found at a particular location. The deposition most likely occurred as a result of



- 1) dropping directly from a glacier
- 2) an avalanche on a mountainside
- 3) a decrease in the velocity of a stream
- 4) dropping of weathered rock fragments from a cliff
