

Name: _____ Date: _____

UNIT SEVEN

Sediments and Sedimentary Rocks

*Dedicated to: _____

Anticipation Guideline (Sedimentary Rock)

Read page#127-131 in your Earth Science Textbook. Base on the reading; **decide** whether or not each statement below is true (yes) or False (no). If the statement is no, please **indicate** the page# and line# where the correct answer is located in the text. In addition, be sure to **correct** the wrong word in the statement with the correct vocabulary. You may only fill out yes or no on one side of the table. The other side of the table will be done by you after hurricane topics.

Your hypothesis

correct answer after reading

Yes	No	Statements	Yes	No	Page# Line#
		Sedimentary Rock forms through the compacting and cementing of sediments			
		Clastic sedimentary rocks are formed from lava			
		Clastic rocks are made of loose sediments			
		The water in seas, lakes often contain dissolved minerals			
		Organic sedimentary rocks are formed from dissolved minerals			
		Halite is an example of organic sedimentary rock			
		Common organic sedimentary rocks are limestone and coal			
		Fossils is not a feature of sedimentary rock			
		Other sedimentary rock features are ripple marks and mudcracks			

Sedimentary Rock

Key Concept#1

- How do those layers form?
 - **Order or process:**

Mechanical Weathering

- _____

Examples:

- _____
- _____
- _____

Chemical Weathering

- _____

Examples:

- _____
- _____
- _____
- _____

Name: _____ Date: _____

Key Concept#2

- What affects the rate of chemical Weathering? _____

Key Concept#3

- What type of climate would increase the rate of physical and chemical weathering?
 - Chemical weathering: _____
 - Mechanical weathering: _____

Key Concept #4

- Erosion _____

Agents of Erosion

Effects of Erosion or Natural Disaster from Erosion

- _____
- _____

Evidence of Stream and Glacial Erosion

Stream Erosion

Glacier Erosion

Name: _____ Date: _____

Key Concept #5

Factors of Deposition

1. _____
2. _____
3. _____

Two types of deposition by water and Glacial

- a) Water - _____
- b) Glacier- _____

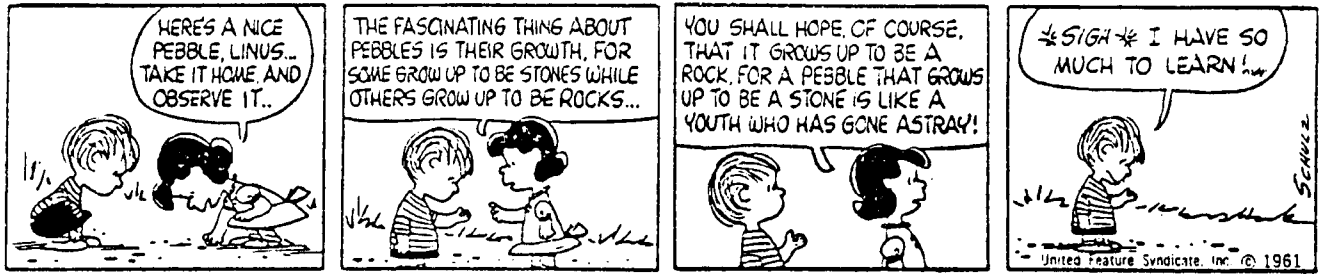
Weathering and Erosion HW

- 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 334 Joules of heat per gram when it freezes.
- At high elevations, which is the most common form of physical weathering?
 - abrasion of rocks by the wind
 - alternate freezing and melting of water
 - dissolving of minerals into solution
 - oxidation by oxygen in the atmosphere
- Which process involves either a physical or chemical breakdown of earth materials?
 - deposition
 - sedimentation
 - weathering
 - cementing
- 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 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
- Which characteristic would most likely remain constant when a limestone cobble is subjected to extensive abrasion?
 - shape
 - mass
 - volume
 - composition
- 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
- Which geologic feature is caused primarily by chemical weathering?
 - large caves in limestone bedrock
 - a pattern of parallel cracks in a granite mountain
 - blocks of basalt at the base of a steep slope
 - the smooth, polished surface of a rock in a dry, sandy area
- Which activity demonstrates chemical weathering?
 - freezing of water in the cracks of a sandstone sidewalk
 - abrasion of a streambed by tumbling rocks
 - grinding of talc into a powder
 - dissolving of limestone by acid rain
- 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?

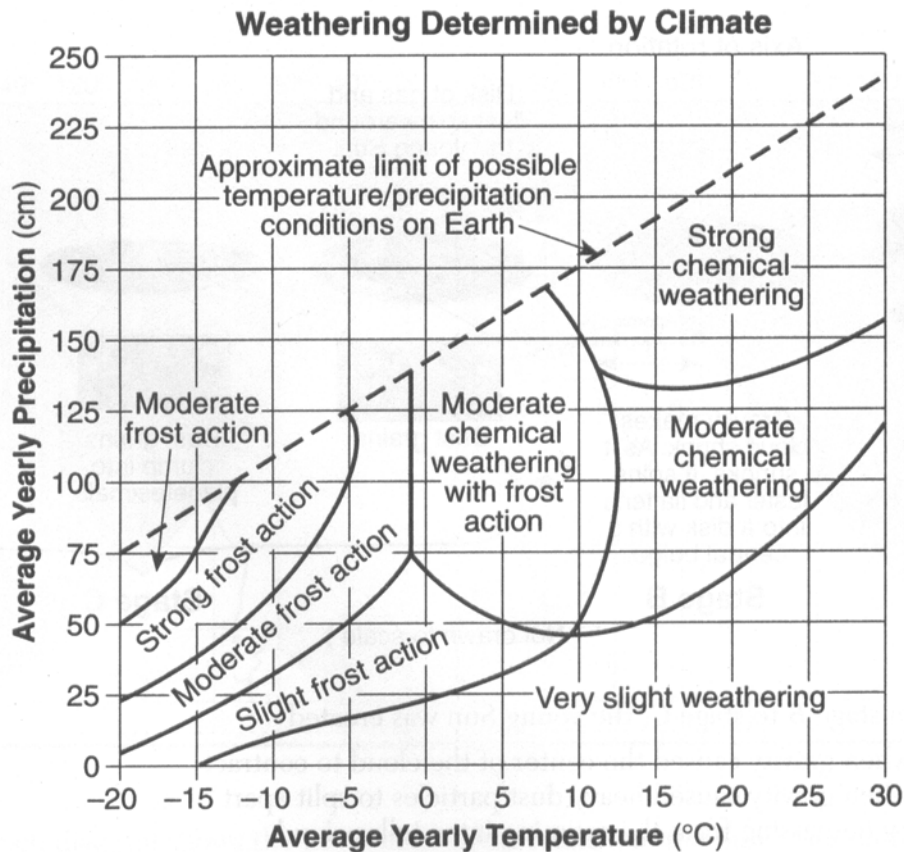
1	A	3	C
2	B	4	D
- Four pieces of the same rock material which have different shapes but equal volumes are exposed to the atmosphere. Which piece would probably weather fastest?
 - a piece shaped like a sphere
 - a piece shaped like a cube
 - a piece shaped like a cylinder
 - a piece shaped flat and thin
- A large rock is broken into several smaller pieces. Compared to the rate of weathering of the large rock, the rate of weathering of the smaller pieces is
 - less
 - greater
 - the same

13. In the cartoon below, Lucy gives Linus incorrect information about pebbles.



If Lucy wanted to give Linus correct information about pebbles, which statement would be most accurate?

- 1 Pebbles can become cemented together to form a rock called gabbro.
 - 2 Pebble is the name given to the smallest-size sediment.
 - 3 Any large rock that weathers could become a pebble.
 - 4 Magma is composed of pebbles.
14. Base your answer to the following question on the graph below, which shows the effect that average yearly precipitation and temperature have on the type of weathering that will occur in a particular region.

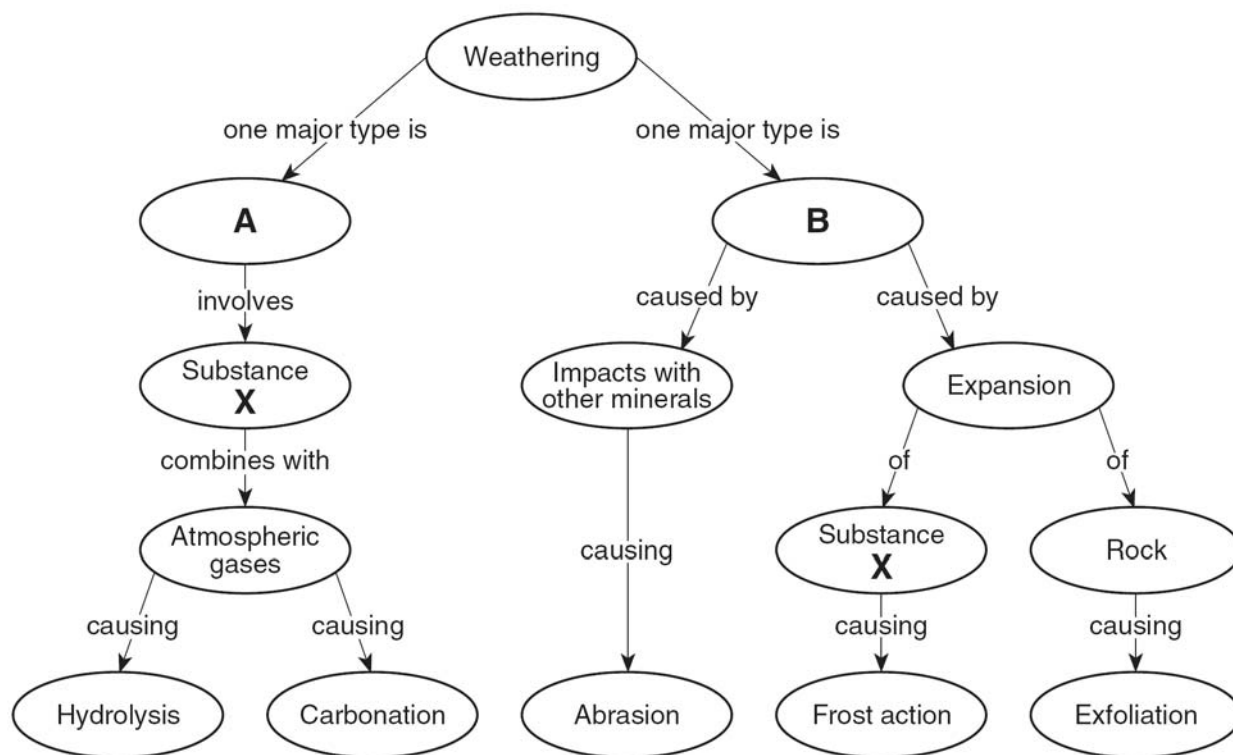


Which type of weathering is most common where the average yearly temperature is 5°C and the average yearly precipitation is 45 cm?

- 1 moderate chemical weathering
- 2 very slight weathering
- 3 moderate chemical weathering with frost action
- 4 slight frost action

Weathering and Erosion HW

Base your answers to questions **15** and **16** on flowchart below, which shows a general overview of the processes and substances involved in the weathering of rocks at Earth's surface. Letter **X** represents an important substance involved in both major types of weathering, labeled **A** and **B** on the flowchart. Some weathering processes are defined below the flowchart.



Definitions
Frost action – the breakup of rocks caused by the expansion of substance X
Abrasion – the wearing down of rocks or particles as they rub or bounce against other rocks
Exfoliation – the peeling away of large sheets of loosened material at the surface of a rock
Hydrolysis – the change in a material caused by contact with substance X
Carbonation – the change in a material caused by contact with carbonic acid

15. Which weathering process is most common in a hot, dry environment?
- 1 abrasion 2 carbonation 3 frost action 4 hydrolysis
16. Which term best identifies the type of weathering represented by **A**?
- 1 physical 2 biological 3 chemical 4 glacial
-
17. Which statement best characterizes the soils found in New York State?
- 1 All the soil has been removed by glaciation.
 - 2 Wind erosion has been the dominant agent in soil formation.
 - 3 Transported soils are similar in composition to underlying bedrock.
 - 4 Transported soils are far more common than residual soils.

18. Base your answer to the following question on on the photographs and news article below.

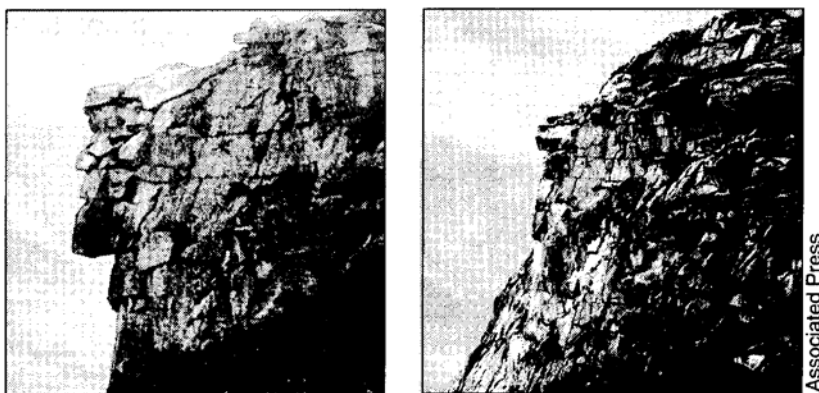
Old Man's Loss Felt in New Hampshire

FRANCONIA, N.H. — Crowds of visitors were drawn to Franconia Notch on Sunday to mourn the loss of New Hampshire's well-known symbol — the Old Man of the Mountain granite profile.

The 700-ton natural formation was just a pile of rocks after breaking loose from its 1,200-foot-high mountainside perch. It was unclear when the outcropping fell because clouds had obscured the area Thursday and Friday; a state park trail crew discovered the collapse Saturday morning.

The famous mountain's history dates millions of years. Over time, nature carved out a 40-foot-tall profile resembling an old man's face, and it eventually became New Hampshire's most recognizable symbol.

The Buffalo News, May 5, 2003

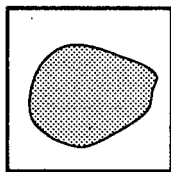


Granite profile of the Old Man of the Mountain is shown before the collapse, and after

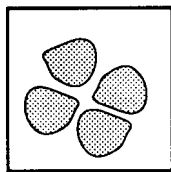
Which agent of erosion is most likely responsible for the collapse of the granite profile?

- 1 running water 2 glacial ice 3 wave action 4 mass movement

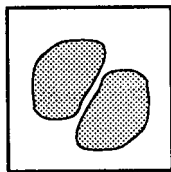
19. The four limestone samples illustrated below have the same composition, mass, and volume. Under the same climatic conditions, which sample will weather fastest?



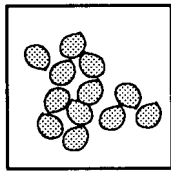
1



3

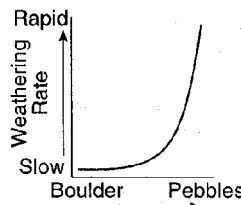


2

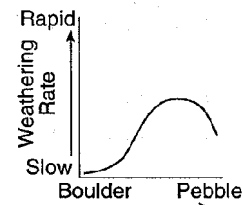


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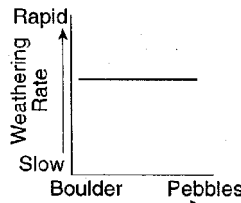
20. Which graph best represents the chemical weathering rate of a limestone boulder as the boulder is broken into pebble-sized particles?



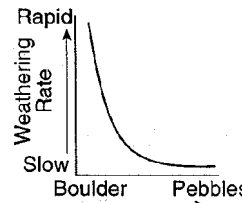
1



3



2



4

Weathering and Erosion HW
Answer Key
[New Exam]

1. 2

2. 2

3. 3

4. 4

5. 2

6. 4

7. 2

8. 1

9. 4

10. 2

11. 4

12. 2

13. 3

14. 4

15. 1

16. 3

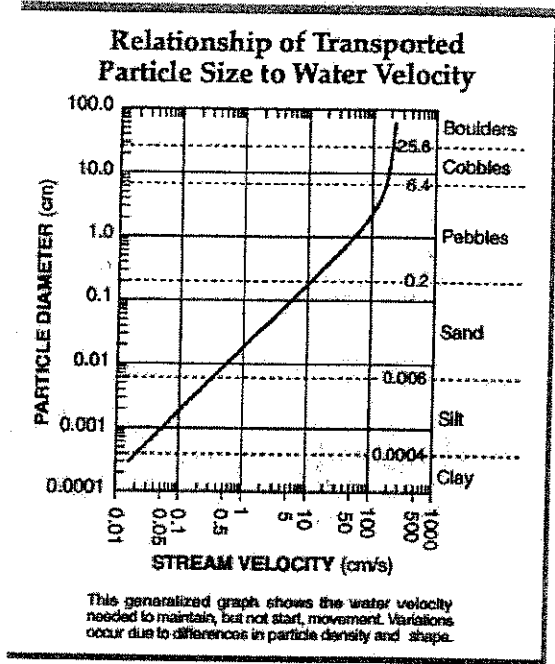
17. 4

18. 4

19. 4

20. 1

Name: _____ Date: _____



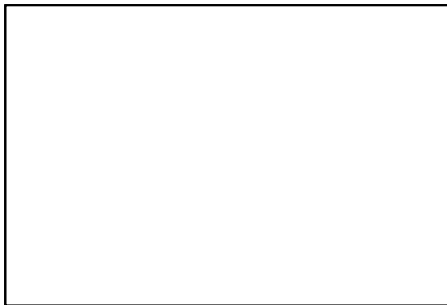
Scheme for Sedimentary Rock Identification

INORGANIC LAND-DERIVED SEDIMENTARY ROCKS					
TEXTURE	GRAIN SIZE	COMPOSITION	COMMENTS	ROCK NAME	MAP SYMBOL
Clastic (fragmental)	Pebbles, cobbles, and/or boulders embedded in sand, silt, and/or clay	Mostly quartz, feldspar, and clay minerals; may contain fragments of other rocks and minerals	Rounded fragments	Conglomerate	
			Angular fragments	Breccia	
	Sand (0.006 to 0.2 cm)		Fine to coarse	Sandstone	
	Silt (0.0004 to 0.006 cm)		Very fine grain	Siltstone	
	Clay (less than 0.0004 cm)	Compact; may split easily	Shale		
CHEMICALLY AND/OR ORGANICALLY FORMED SEDIMENTARY ROCKS					
TEXTURE	GRAIN SIZE	COMPOSITION	COMMENTS	ROCK NAME	MAP SYMBOL
Crystalline	Fine to coarse crystals	Halite	Crystals from chemical precipitates and evaporites	Rock salt	
		Gypsum		Rock gypsum	
		Dolomite		Dolostone	
Crystalline or bioclastic	Microscopic to very coarse	Calcite	Precipitates of biologic origin or cemented shell fragments	Limestone	
Bioclastic		Carbon	Compacted plant remains	Bituminous coal	

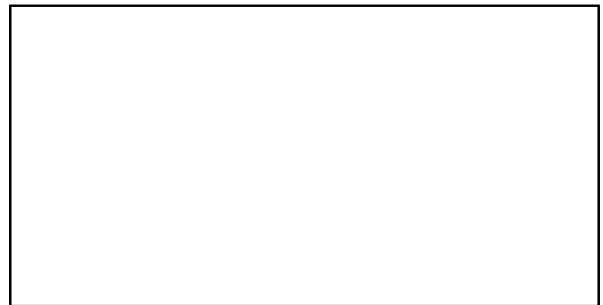
How do sedimentary rock form chemically and biologically?

Rock Salt, Gypsum and Limestone

- Evaporite: _____
- Precipitate _____



Step#1



Step#2



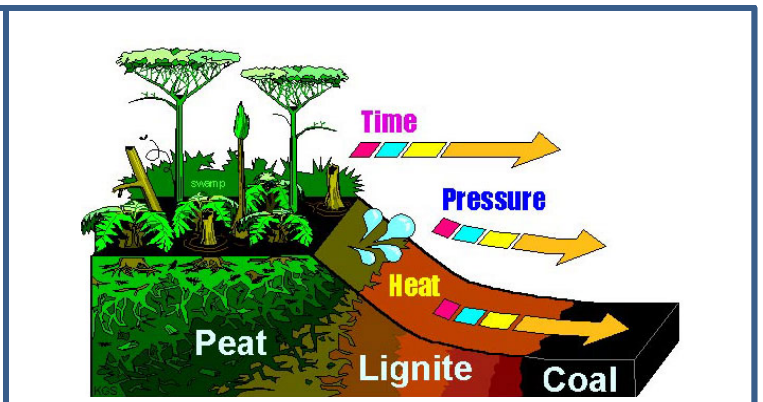
Step #3



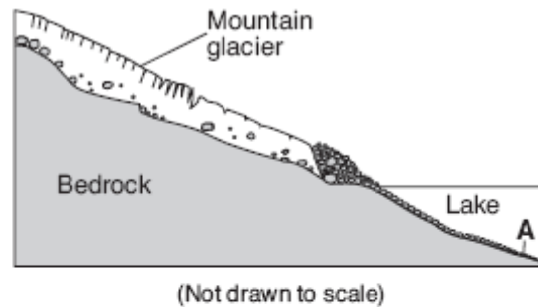
Step #4

Formation of organic limestone

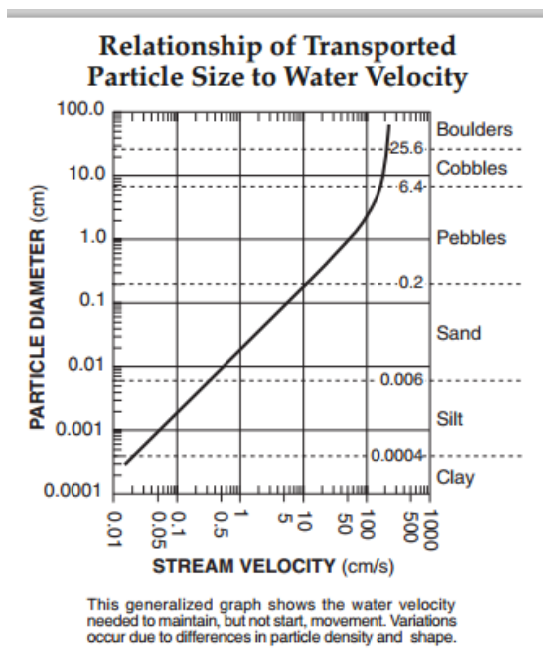
Formation of Coal



Base your answers to questions 1 through 3 on the cross section below, which represents a glacier moving down a mountain valley. The water from the melting glacier is flowing into a lake. Letter A represents location on the bottom of the lake.



- 1 Describe the most likely shape of a cross section of the glacial valley as viewed from the lake. [1]
- 2 After the glacier melts, what evidence might be found on the surface of the bedrock indicating that the glacier had passed over the surface? [1]
- 3 Sediments found at location A range in diameter from 0.0004 to 0.006 centimeter. What name is given to this size sediment? [1]

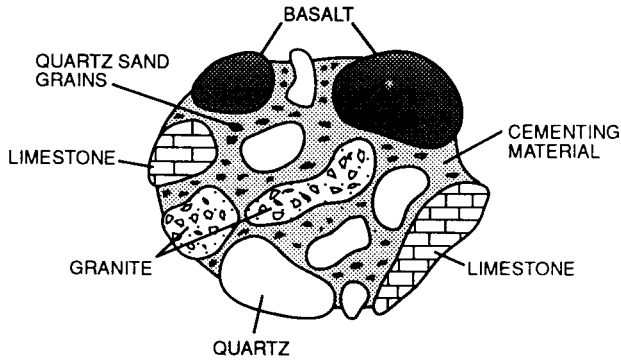


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Sedimentary Rock HW

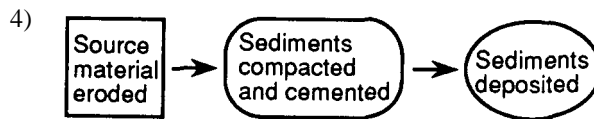
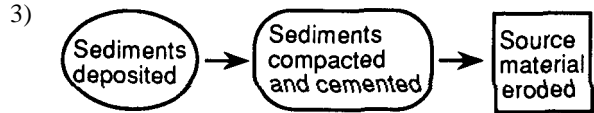
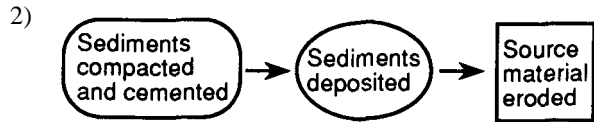
- A rock that forms directly from land-derived sediments is
 - sandstone
 - dolostone
 - gabbro
 - granite
- The diagram below represents a conglomerate rock. Some of the rock particles are labeled.



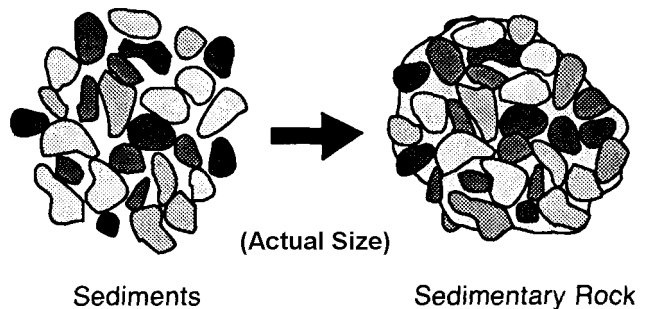
Which conclusion is best made about the rock particles?

- They are the same age.
 - They originated from a larger mass of igneous rock.
 - They all contain the same minerals.
 - They have different origins.
- Which rock was most likely formed from pebble sized sediment deposited in shallow water at an ocean shoreline?
 - shale
 - basalt
 - siltstone
 - conglomerate

- Which sequence of events occurs in the formation of a sedimentary rock?



- Base your answer to the following question on the diagram below.



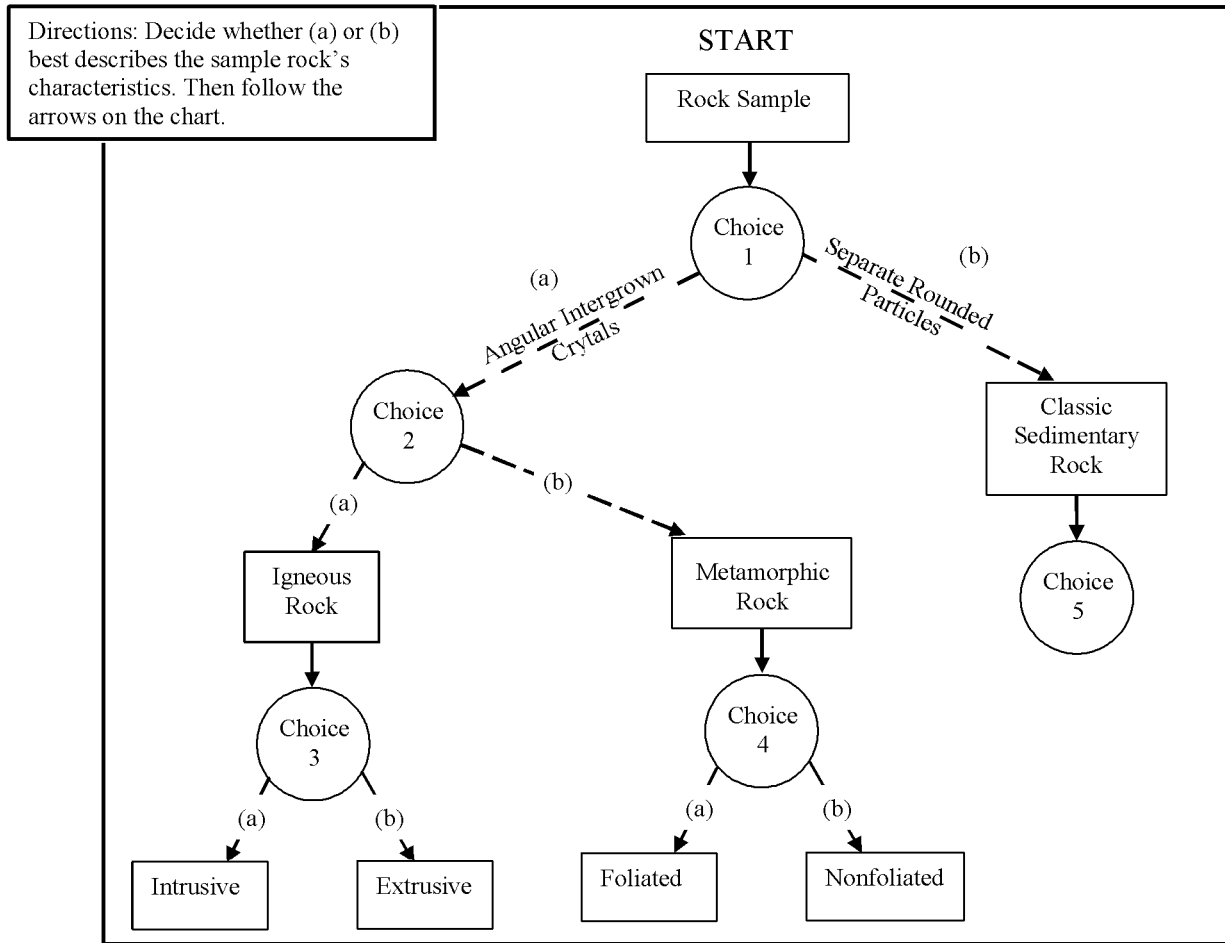
Which two processes formed this rock?

- folding and faulting
 - melting and solidification
 - compaction and cementation
 - heating and application of pressure
- Which feature is characteristic of sedimentary rocks?
 - layering
 - foliation
 - distorted structure
 - glassy texture

Sedimentary Rock HW

7. Base your answer to the following question on the diagram below which shows the structure of a student-developed chart for identifying some rock samples. The circles labeled choice 1 through choice 4 represent decision-making steps leading either to path (a) or path (b). Choice 5 has not been completed.

Student Chart



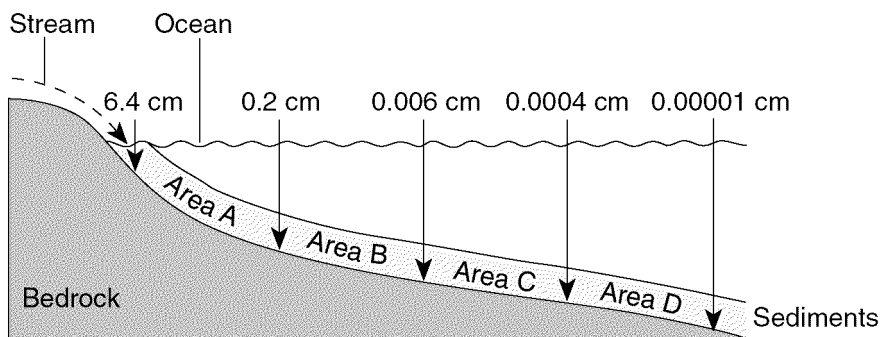
Before the student can select either path (a) or path (b) at choice 1, the student must make a decision about

1) mineral composition	3) the temperature at which rocks form
2) crystal size	4) the appearance of the rock grains

8. Which rock is made up of angular fragments of rock held together by a natural cement?
- | | |
|------------|--------------|
| 1) breccia | 3) granite |
| 2) scoria | 4) quartzite |

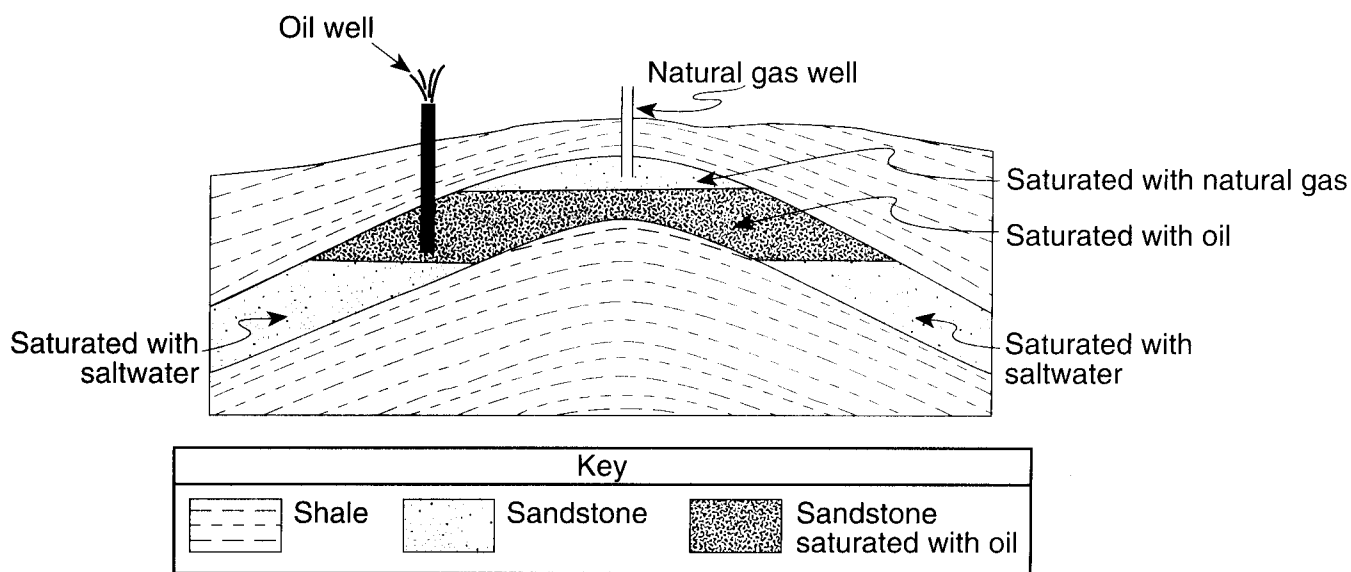
Sedimentary Rock HW

9. The profile below shows the average diameter of sediment that was sorted and deposited in specific areas A, B, C, and D by a stream entering an ocean.



As compaction and cementation of these sediments eventually occur, which area will become siltstone?

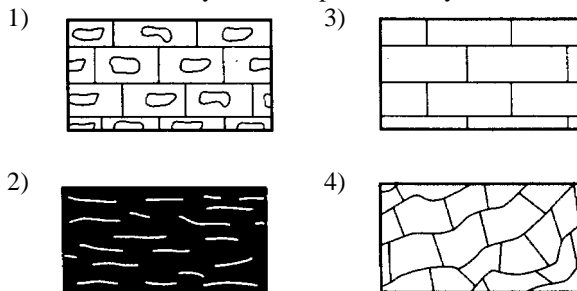
- 1) A 2) B 3) C 4) D
10. Base your answer to the following question on the cross section below, which shows a typical bedrock structure where oil and natural gas deposits are found.



According to the diagram, in which type of rock are these natural gas and oil deposits found?

- 1) coarse-textured igneous rock 3) porous clastic sedimentary rock
 2) foliated metamorphic rock 4) intrusive crystalline sedimentary rock
-
11. Which rock type most often contains fossils?
 1) gabbro 3) limestone
 2) quartzite 4) metaconglomerate

12. Which map symbol is used to represent an organically formed sedimentary rock composed mostly of carbon?



Sedimentary Rock HW

13. Limestone, gypsum, and salt are rocks formed by the processes of
- 1) melting and solidification
 - 2) evaporation and precipitation
 - 3) erosion and deposition
 - 4) weathering and metamorphism
14. Which sedimentary rocks are formed by chemical precipitation from seawater?
- 1) gypsum and limestone
 - 2) fossil limestone and shale
 - 3) sandstone and siltstone
 - 4) conglomerate and dolostone
15. Dolostone is classified as which type of rock?
- 1) land-derived sedimentary rock
 - 2) chemically formed sedimentary rock
 - 3) foliated metamorphic rock
 - 4) nonfoliated metamorphic rock
-

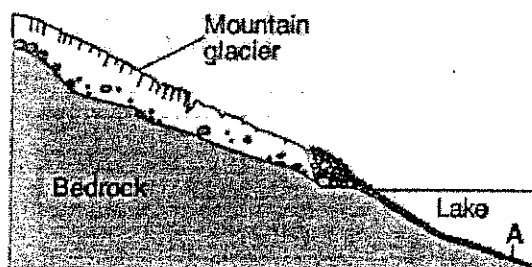
Sedimentary Rock HW
Answer Key
sedimentaryrock [Feb 15, 2013]

1. 1
 2. 4
 3. 4
 4. 1
 5. 3
 6. 1
 7. 4
 8. 1
 9. 3
 10. 3
 11. 3
 12. 2
 13. 2
 14. 1
 15. 2
-

Sedimentary Rock HW

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Base your answers to questions 1 through 3 on the cross section below, which represents a glacier moving down a mountain valley. The water from the melting glacier is flowing into a lake. Letter *A* represents location on the bottom of the lake.



(Not drawn to scale)

- 1 Describe the most likely shape of a cross section of the glacial valley as viewed from the lake. [1]
- 2 After the glacier melts, what evidence might be found on the surface of the bedrock indicating that the glacier had passed over the surface? [1]
- 3 Sediments found at location *A* range in diameter from 0.0004 to 0.006 centimeter. What name is given to this size sediment? [1]