

Ch 11 rocks and minerals Practice Ques

1. Base your answer to the following question on s
Which process is necessary for the formation of igneous rocks?

- A) erosion
- B) deposition
- C) solidification**
- D) metamorphism

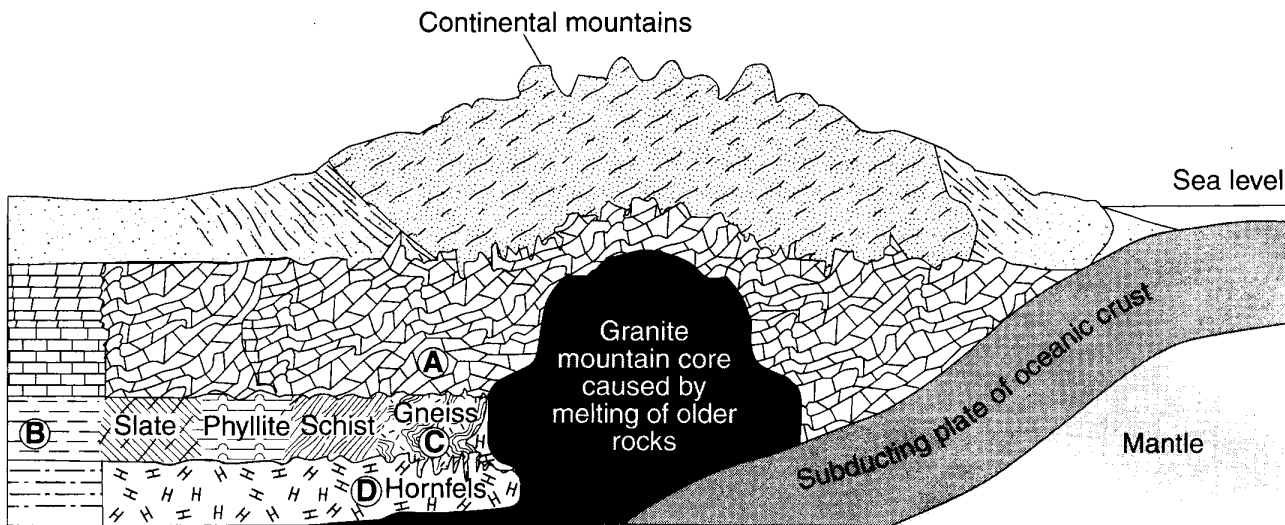
2. Which mineral has a hardness of 2.5 – 3 and makes good construction material?

- A) Pyroxene
- B) Biotite Mica**
- C) Gypsum
- D) Magnetite

3. Which mineral is commonly used as a food additive?

- A) calcite
- B) talc
- C) halite**
- D) fluorite

4. Base your answer to the following question on the cross section below, which shows the bedrock structure of a portion of the lithosphere. Letters *A* through *D* represent locations in the lithosphere.



Explain why the type of rock changes between locations *B* and *C*.

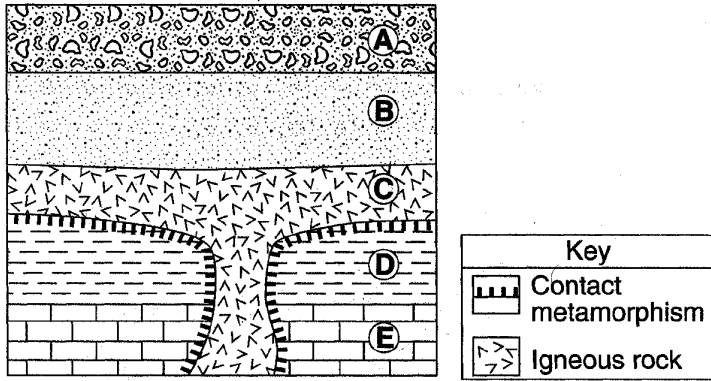
5. Brachiopod fossils were found in a layer of limestone rock. In which type of environment did the limestone layer form?

- A) shallow marine**
- B) tropical forest
- C) coastal plain
- D) interior grassland

6. Which two processes lead directly to the formation of both breccia and conglomerate?

- A) melting and solidification
- B) heat and pressure
- C) compaction and cementation**
- D) evaporation and precipitation

7. Base your answer to the following question on the cross section below, which shows rock units *A* through *E* that have not been overturned.



Describe *one* piece of evidence shown in the cross section that can be used to infer that rock unit *A* is younger than rock unit *B*.

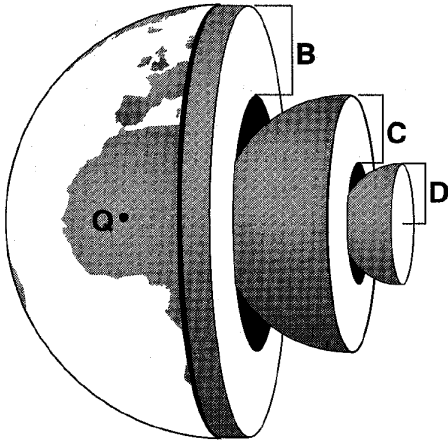
8. Base your answer to the following question on the passage below.

Earth's Early Atmosphere

Early in Earth's history, the molten outer layers of Earth released gases to form an early atmosphere. Cooling and solidification of that molten surface formed the early lithosphere approximately 4.4 billion years ago. Around 3.3 billion years ago, photosynthetic organisms appeared on Earth and removed large amounts of carbon dioxide from the atmosphere, which allowed Earth to cool even faster. In addition, they introduced oxygen into Earth's atmosphere, as a by-product of photosynthesis. Much of the first oxygen that was produced reacted with natural Earth elements, such as iron, in the lithosphere and produced new varieties of rocks and minerals. Eventually, photosynthetic organisms produced enough oxygen so that it began to accumulate in Earth's atmosphere. About 450 million years ago, there was enough oxygen in the atmosphere to allow for the development of an ozone layer 30 to 50 kilometers above Earth's surface. This layer was thick enough to protect organisms developing on land from the ultraviolet radiation from the Sun.

Identify *one* mineral with a red-brown streak that formed when oxygen in Earth's early atmosphere combined with iron.

9. Base your answer to the following question on the diagram of Earth shown below. Letters *B*, *C*, and *D* represent layers of Earth. Letter *Q* represents a location on Earth's surface.



What is the probable density of the granitic bedrock at *Q*?

- A) 1.0 g/cm³ B) 2.7 g/cm³ C) 3.0 g/cm³ D) 5.5 g/cm³
10. 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



Associated Press

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

The granite bedrock formed when

- A) sediments were buried B) a volcano erupted
 C) **magma cooled underground** D) limestone recrystallized

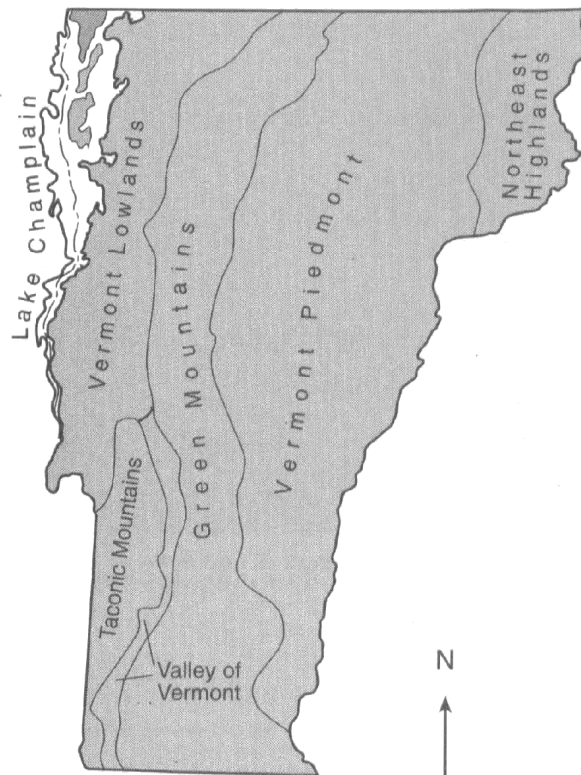
11. Base your answer to the following question on the passage and map below. The map shows the generalized landscape regions of Vermont.

Landscape Regions of Vermont

Most of Vermont's landscape regions consist of ancient, weathered mountains that were covered by several ice sheets during the last ice age. When the ice melted, sand, cobbles, and boulders were deposited throughout the state, Vermont is divided into six landscape regions.

- (1) The Vermont Lowlands region has a mild climate, with Lake Champlain moderating its temperature.
- (2) The Green Mountains run the length of Vermont and were formed over 400 million years ago. Most of the bedrock is metamorphic and the region is known for its deposits of talc and asbestos.
- (3) The Taconic Mountains extend into New York State. Slate and marble are commonly mined in this region.
- (4) The Valley of Vermont is a narrow valley between two mountain ranges. Most of the bedrock in the region is limestone and marble.
- (5) The Vermont Piedmont covers the largest area of the state. This region consists of rolling hills and valleys. Granite mining is an important industry.
- (6) The Northeast Highlands is a mountainous region composed of granite bedrock.

Generalized Landscape Regions of Vermont

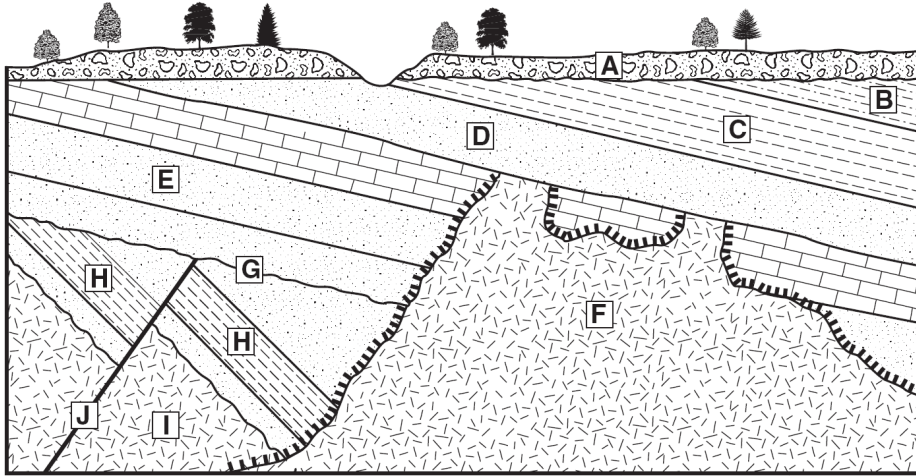


Which processes formed the granite that is mined in Vermont?

- A) compaction and cementation of sediments **B) cooling and solidification of magma**
C) uplift and weathering of bedrock D) application of heat and pressure to shale

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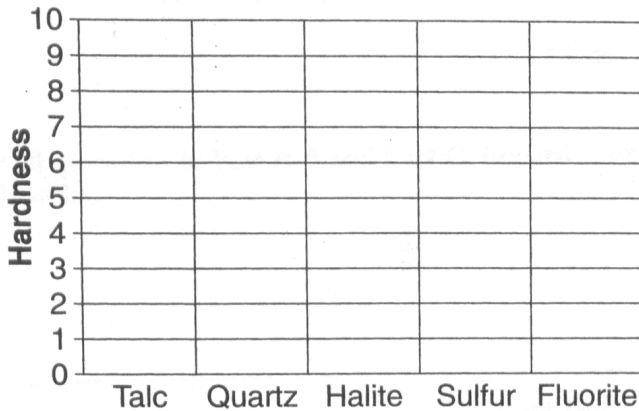
12. Base your answer to the following question on cross section below which shows a portion of Earth's crust. Letters *A* through *J* represent rock units or geologic structures. The rock units have not been overturned.



Key	
	Igneous rock
	Contact metamorphism

On the same cross section, place an **X** to indicate a location where the rock, marble, was formed.

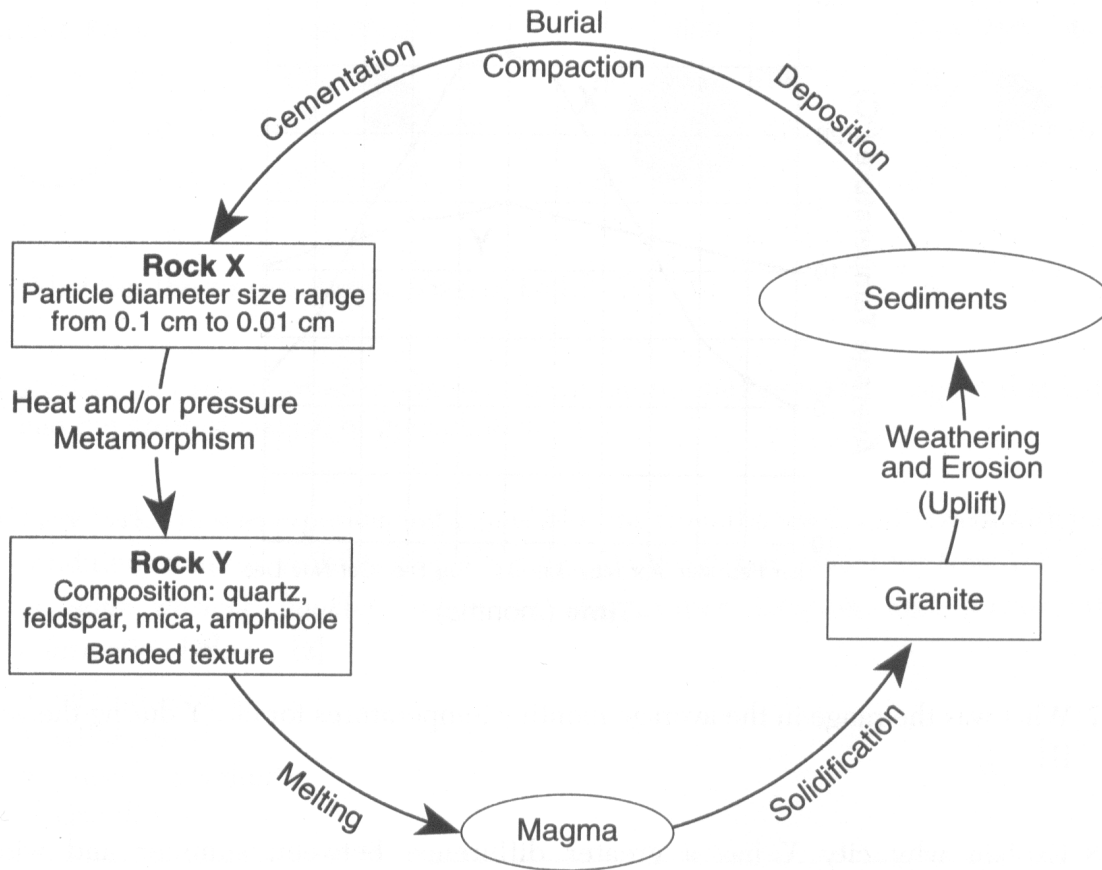
13. Base your answer to the following question on the hardness of the minerals talc, quartz, halite, sulfur, and fluorite.



Which mineral shown on the grid would be the best abrasive? State *one* reason for your choice.

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14. Base your answer to the following question on the diagram below, which represents a part of the cycle. The igneous rock, granite, and the characteristics of sedimentary rock X and metamorphic rock Y are shown.

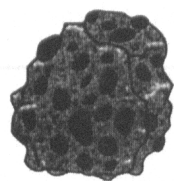


Complete the table below, with descriptions of the observable characteristics used to identify granite.

Characteristic of Granite	Description
Texture	
Color	
Density	

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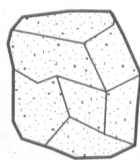
15. Base your answer to the following question on the drawings of six sedimentary rocks labeled *A* through *F*.



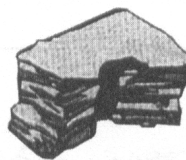
A
Conglomerate



B
Breccia



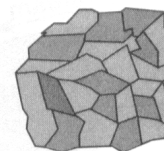
C
Sandstone



D
Shale



E
Limestone



F
Rock salt

Which table shows the rocks correctly classified by texture?

A)

Texture	clastic	bioclastic	crystalline
Rock	A, B, C, D	E	F

B)

Texture	clastic	bioclastic	crystalline
Rock	A, B, C	D	E, F

C)

Texture	clastic	bioclastic	crystalline
Rock	A, C	B, E	D, F

D)

Texture	clastic	bioclastic	crystalline
Rock	A, B, F	E	C, D

16. During the Permian Period, sedimentary bedrock in the Appalachian Region was subjected to high temperature and pressure. Calcite deposits that had existed in this environment would most likely have formed

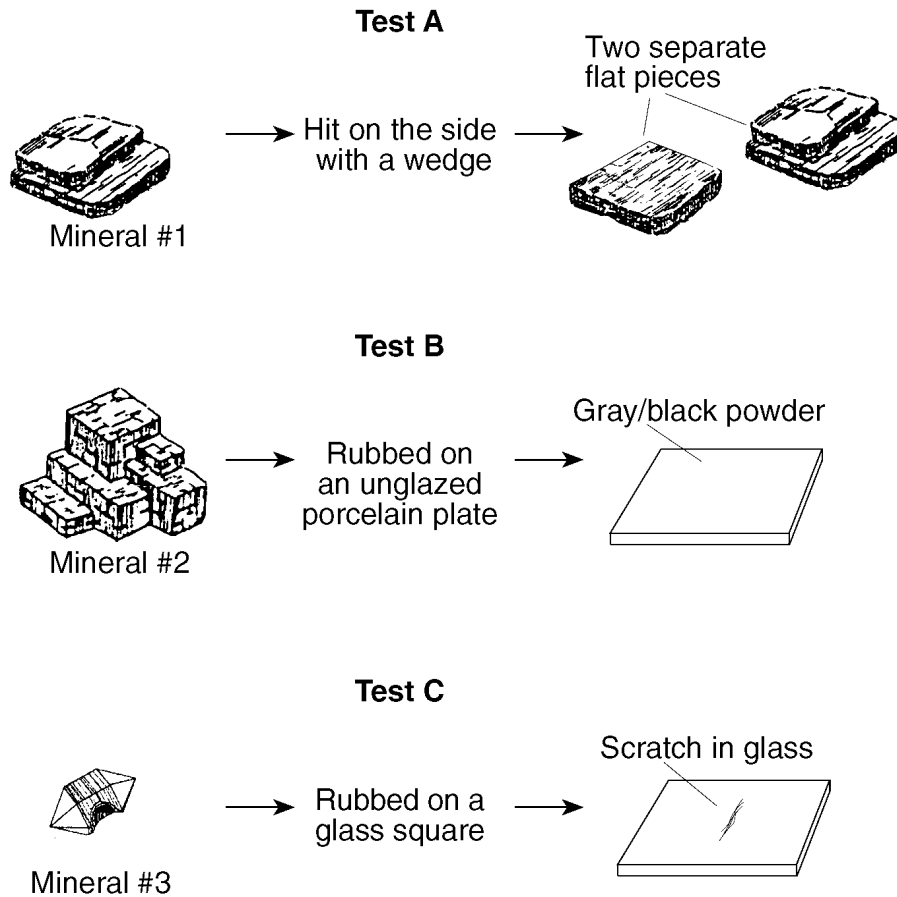
- A) schist B) gabbro
C) **marble** D) gneiss

17. Which mineral will scratch glass (hardness = 5.5), but not pyrite?

- A) gypsum B) fluorite
C) **orthoclase** D) quartz

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18. Base your answer to the following question on the diagram below, which shows three minerals with three different physical tests, *A*, *B*, and *C*, being performed on them.



The results of all three physical tests shown are most useful for determining the

- A) rate of weathering of the minerals **B) identity of the minerals**
C) environment where the minerals formed D) geologic period when the minerals formed

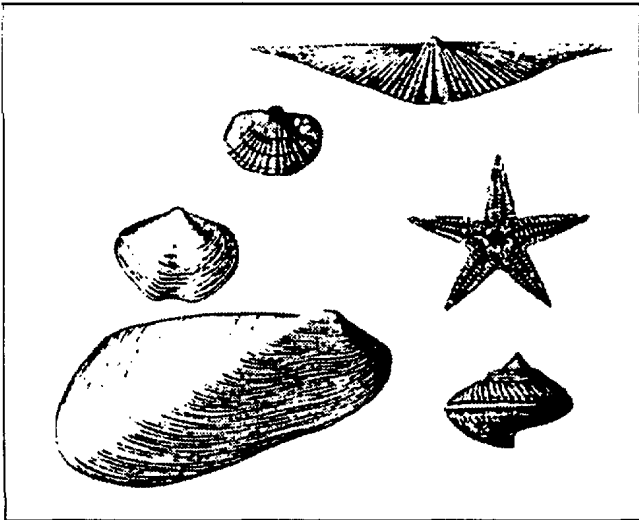
19. Which process is necessary for the formation of igneous rocks?

- A) erosion B) deposition
C) solidification D) metamorphism

20. For an igneous rock to be classified as rhyolite, it must be light colored, be fine grained, and contain

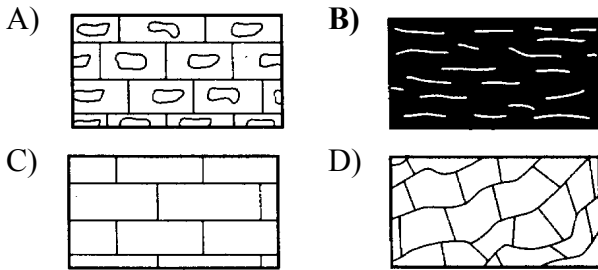
- A) quartz** B) calcite
C) pyroxene D) olivine

21. The diagram below represents the fossils found in a bedrock formation located in central Rhode Island.

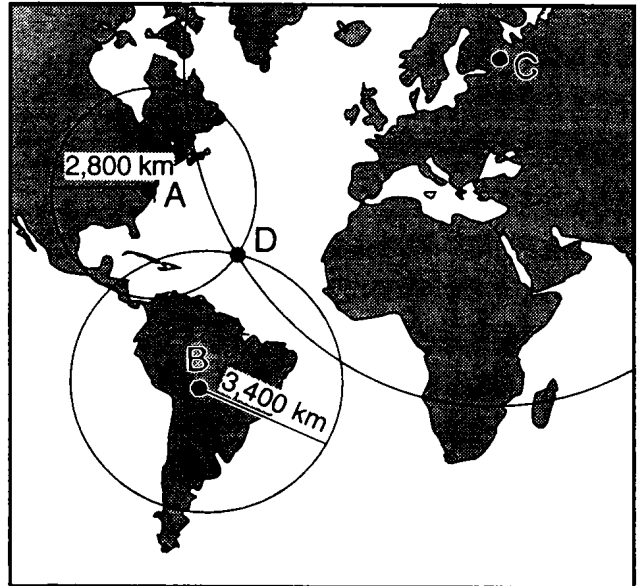


In which type of rock were the fossils most likely found?

- A) sedimentary rock that formed in an ocean environment
 - B) sedimentary rock that formed in a land environment
 - C) igneous rock that formed in an ocean environment
 - D) igneous rock that formed in a land environment
22. Which map symbol is used to represent an organically formed sedimentary rock composed mostly of carbon?



23. Base your answer to the following question on the map below, which shows seismograph recording stations at locations *A*, *B*, and *C*. Location *D* is an earthquake epicenter. The distances from locations *A* and *B* to this epicenter are given in kilometers.



Which statement best describes the igneous crustal bedrock below locations *A*, *B*, *C*, and *D*?

- A) The bedrock below *D* is mostly basalt; below *A*, *B*, and *C*, the bedrock is mostly granite.
- B) The bedrock below *D* is mostly granite; below *A*, *B*, and *C*, the bedrock is mostly basalt.
- C) The bedrock below *A*, *B*, *C*, and *D* is mostly basalt.
- D) The bedrock below *A*, *B*, *C*, and *D* is mostly granite.

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24. Base your answer to the following question on the table below which provides information about the crystal sizes and the mineral compositions of four igneous rocks, *A*, *B*, *C*, and *D*.

Mineral	Coarse Grained		Fine Grained	
	Rock <i>A</i>	Rock <i>B</i>	Rock <i>C</i>	Rock <i>D</i>
	Percent of Rock	Percent of Rock	Percent of Rock	Percent of Rock
Quartz	40	0	0	0
Pyroxene	0	25	0	70
Plagioclase feldspar	20	0	60	10
Potassium feldspar	20	0	0	0
Biotite	10	0	17	0
Hornblende	10	0	23	3
Olivine	0	75	0	17

Which two rocks most likely formed farthest below the surface of Earth?

- A) *A* and *B* B) *B* and *C* C) *C* and *D* D) *A* and *D*

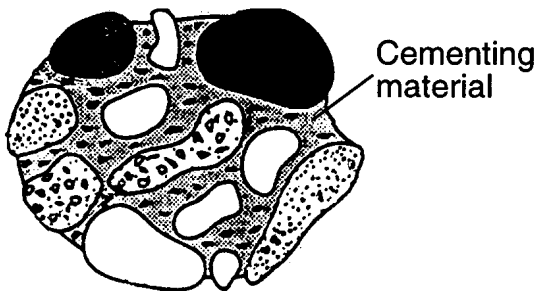
25. Fossils would most likely be found in a sample of

- A) limestone B) granite
C) quartzite D) metaconglomerate

26. Some Moon rock samples have coarse intergrown crystals composed of plagioclase feldspar, hornblende, and olivine. These Moon rock samples are most similar to Earth rock samples of

- A) gabbro B) marble
C) breccia D) pumice

27. Base your answer to the following question on the rock sample shown below.

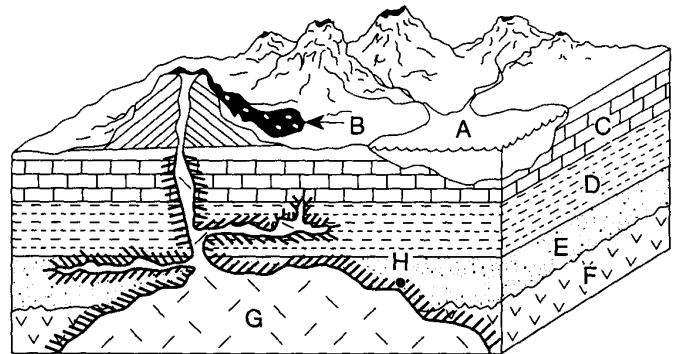


(Actual size)

The average size of the pebbles in the sample is approximately

- A) 1.2 cm B) 0.2 cm
C) 6.4 cm D) 13.2 cm

28. Base your answer to the following question on the block diagram below which shows a cross section of Earth's crust. Letter *A* identifies a lake, and letters *B* through *G* represent different types of bedrock.



Key:

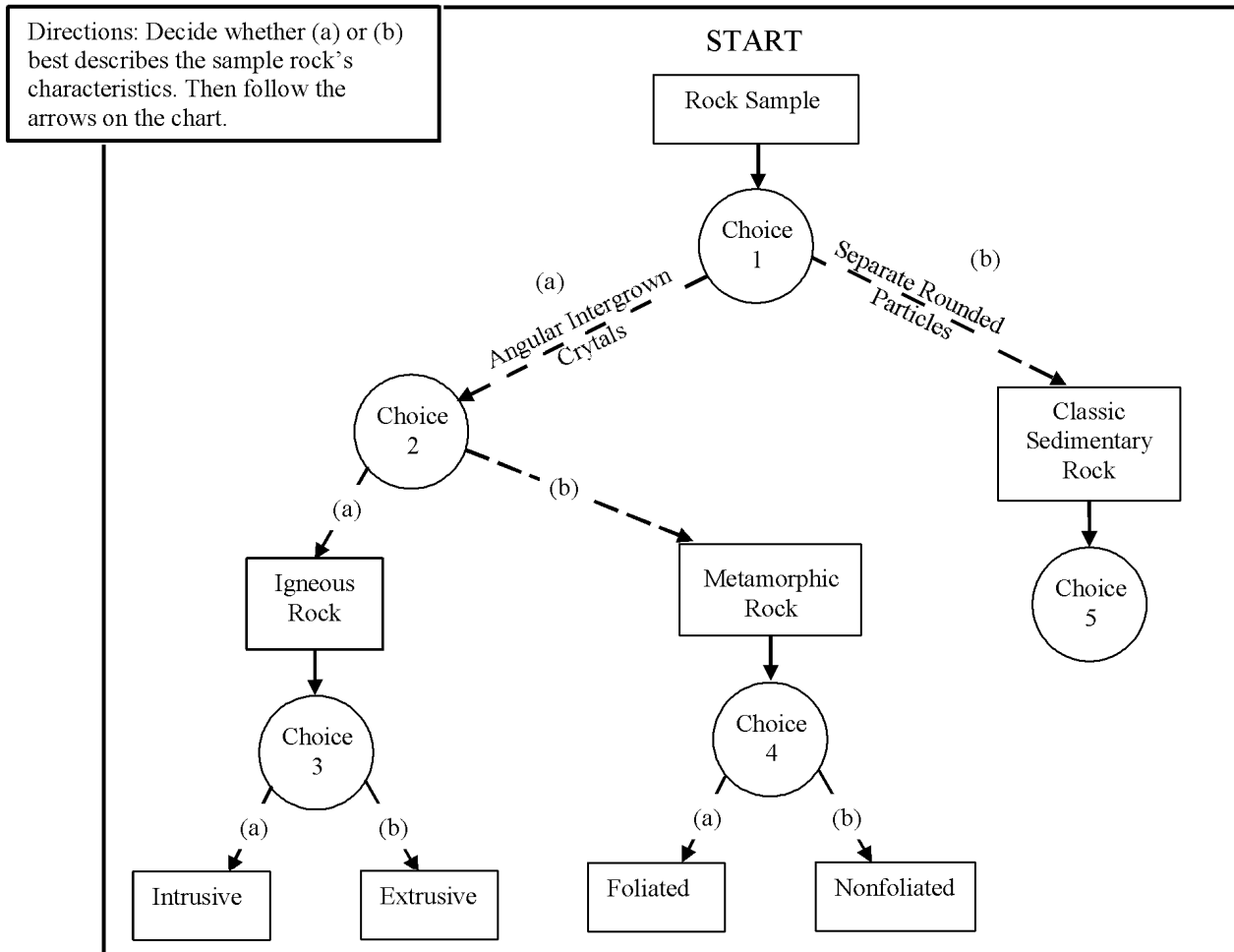
- | | |
|-------------------------------|---------------------------------|
| Limestone <i>C</i> | Intrusive igneous rock <i>F</i> |
| Shale <i>D</i> | Intrusive igneous rock <i>G</i> |
| Fine-grain sandstone <i>E</i> | Lava flow <i>B</i> |
| Contact metamorphism | |

Which diagram best represents a sample of rock *G*?

- A) B) C) D)

29. 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



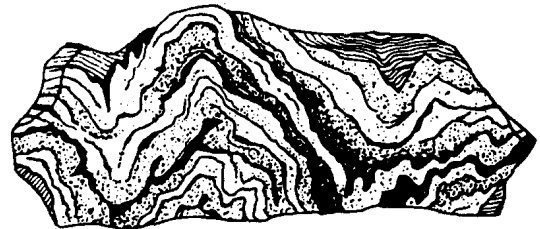
At choice 2, the student should generally select path (a) if the student observes

- A) a random arrangement of mineral crystals
- B) distorted structure and crystal alignment
- C) bands of mineral crystals
- D) layers of same-sized crystals

30. Where is metamorphic rock frequently found?

- A) on mountaintops that have horizontal layers containing marine fossils
- B) within large lava flows
- C) as a thin surface layer covering huge areas of the continents
- D) along the interface between igneous intrusions and sedimentary bedrock

31. The diagram below represents a sample of a rock.

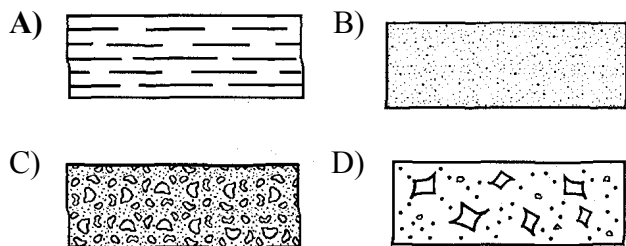


This rock would be classified as metamorphic because it shows

- A) distorted banding
- B) an organic composition
- C) a mixture of minerals
- D) crystals from precipitation

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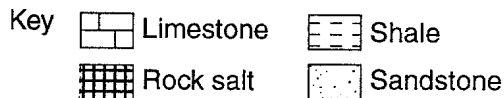
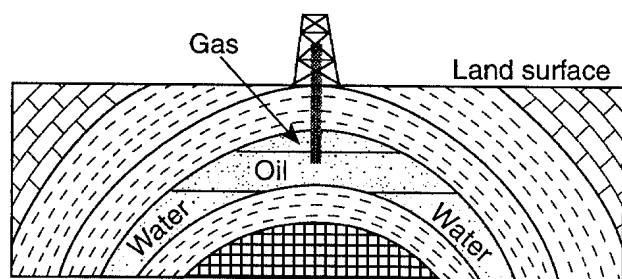
32. Which symbol represents the sedimentary rock with the smallest grain size?



33. Which processes change sedimentary rocks into metamorphic rocks?

- A) erosion and deposition
- B) melting and solidification
- C) evaporation and condensation
- D) temperature and pressure changes**

34. The diagram below represents a geologic cross section of a location in Texas where an oil well has been drilled into the bedrock.



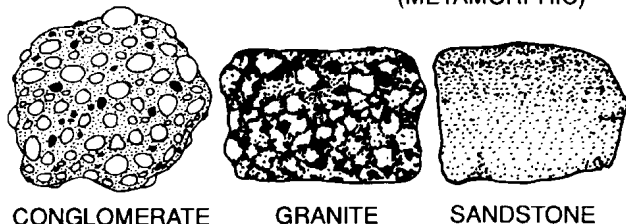
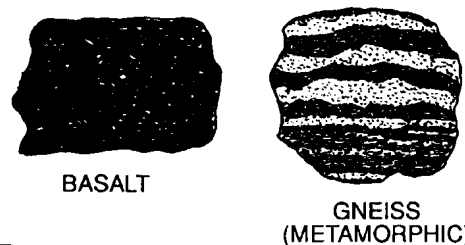
Oil, water, and natural gas can collect and stay in the sandstone layer because sandstone often

- A) has a grain size ranging from fine to coarse (0.006 to 0.2 cm)
- B) is composed mainly of grains of quartz
- C) contains air spaces, making it porous and permeable**
- D) metamorphoses to quartzite

35. Limestone can form as a result of

- A) cooling of molten rock under the oceans
- B) metamorphosis of conglomerate rock
- C) precipitation from evaporating water**
- D) radioactive decay of dolostone

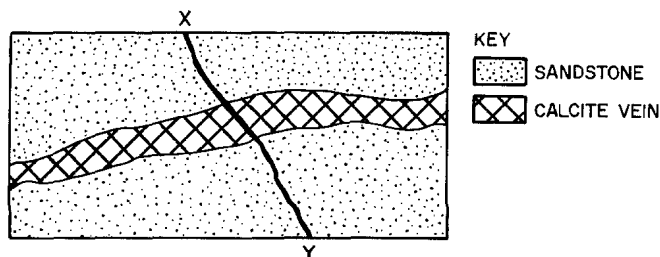
36. Base your answer to the following question on the diagrams below of five rock samples.



Which sample would most likely contain fossils?

- A) gneiss
- B) granite
- C) sandstone**
- D) basalt

37. The diagram below represents a layer of sandstone containing a vein of calcite and a crack labeled XY.

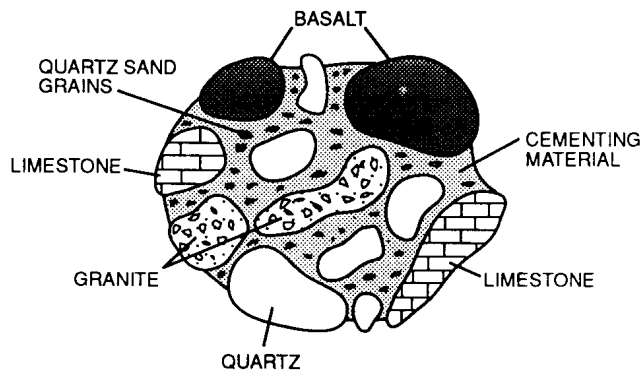


Which is oldest?

- A) the calcite vein
- B) the crack labeled XY
- C) the sandstone layer
- D) the individual sand grains in the rock**

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38. The diagram below represents a conglomerate rock. Some of the rock particles are labeled.



Which conclusion is best made about the rock particles?

- A) They are the same age.
- B) They originated from a larger mass of igneous rock.
- C) They all contain the same minerals.
- D) They have different origins.**

39. A sedimentary rock consists of grains of sand cemented together. What is the relative age of the sand grains?

- A) younger than the rock
- B) older than the rock**
- C) the same age as the rock

40. Which two mineral grains would most likely be found in soil formed from granite?

- A) olivine and pyroxene
- B) potassium feldspar and quartz**
- C) plagioclase and pyroxene
- D) olivine and nepheline

Answer Key

Ch 11 Practice Questions

- | | |
|---|---|
| <p>1. <u> C </u></p> <p>2. <u> B </u></p> <p>3. <u> C </u></p> <p>4. $\&\#151$; Heat and pressure increase from <i>B</i> to <i>C</i>. $\&\#151$; Regional metamorphism is greatest at <i>C</i>. $\&\#151$; Different grades of metamorphism</p> <p>5. <u> A </u></p> <p>6. <u> C </u></p> <p>7. — Rock unit <i>A</i> is above rock unit <i>B</i>.</p> <p>— Older sedimentary rock unit <i>B</i> is found beneath younger sedimentary rock unit <i>A</i>.</p> <p>8. hematite</p> <p>9. <u> B </u></p> <p>10. <u> C </u></p> <p>11. <u> B </u></p> <p>12. X is located anywhere in the contact metamorphic zone in the limestone layer.</p> <p>13. <i>Examples:</i> –hardest mineral shown
–hardness of 7
–Quartz has the same hardness as garnet, which is used as an abrasive.</p> | <p>17. <u> C </u></p> <p>18. <u> B </u></p> <p>19. <u> C </u></p> <p>20. <u> A </u></p> <p>21. <u> A </u></p> <p>22. <u> B </u></p> <p>23. <u> A </u></p> <p>24. <u> A </u></p> <p>25. <u> A </u></p> <p>26. <u> A </u></p> <p>27. <u> A </u></p> <p>28. <u> A </u></p> <p>29. <u> A </u></p> <p>30. <u> D </u></p> <p>31. <u> A </u></p> <p>32. <u> A </u></p> <p>33. <u> D </u></p> <p>34. <u> C </u></p> <p>35. <u> C </u></p> <p>36. <u> C </u></p> <p>37. <u> D </u></p> <p>38. <u> D </u></p> <p>39. <u> B </u></p> <p>40. <u> B </u></p> |
|---|---|

14.

Characteristic of Granite	Description
Texture	coarse nonvesicular 1 mm to 10 mm
Color	light colored white pink gray
Density	low 2.7 g/cm ³

15. **A**
16. **C**