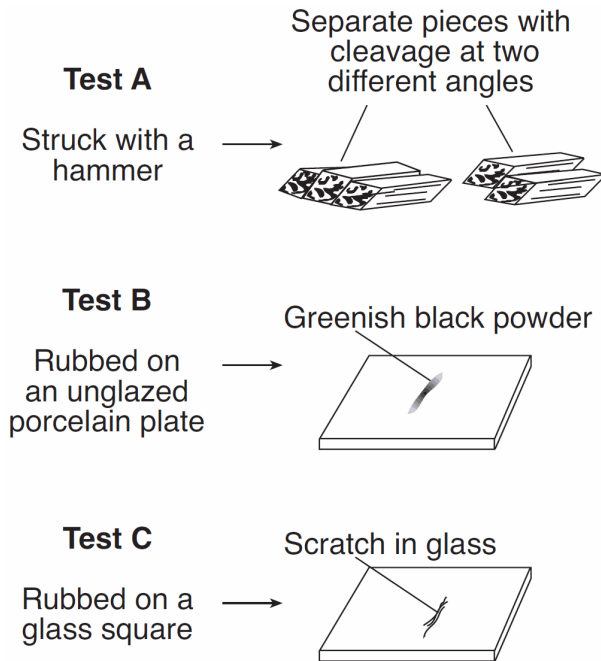


## Review - Unit 2 - Rocks and Minerals

Base your answers to questions 1 and 2 on the diagram below, which shows the results of three different physical tests, *A*, *B*, and *C*, that were performed on a mineral.



1. The luster of this mineral could be determined by

- A) using an electronic balance
- B) using a graduated cylinder
- C) observing how light reflects from the surface of the mineral
- D) observing what happens when acid is placed on the mineral

2. Which mineral was tested?

- A) amphibole
- B) quartz
- C) galena
- D) graphite

3. A human fingernail has a hardness of approximately 2.5. Which two minerals are *softer* than a human fingernail?

- A) calcite and halite
- B) sulfur and fluorite
- C) graphite and talc
- D) pyrite and magnetite

4. Which mineral is mined for its iron content?

- A) hematite
- B) fluorite
- C) galena
- D) talc

5. The internal atomic structure of a mineral most likely determines the mineral's

- A) color, streak, and age
- B) origin, exposure, and fracture
- C) size, location, and luster
- D) hardness, cleavage, and crystal shape

6. What is the best way to determine if a mineral sample is calcite or quartz?

- A) Observe the color of the mineral.
- B) Place the mineral near a magnet.
- C) Place a drop of acid on the mineral.
- D) Measure the mass of the mineral.

7. An unidentified mineral that is softer than calcite exhibits a metallic luster and cubic cleavage. This mineral most likely is

- A) galena
- B) pyrite
- C) halite
- D) pyroxene

8. Which two rocks are primarily composed of a mineral that bubbles with acid?

- A) limestone and marble
- B) granite and dolostone
- C) sandstone and quartzite
- D) slate and conglomerate

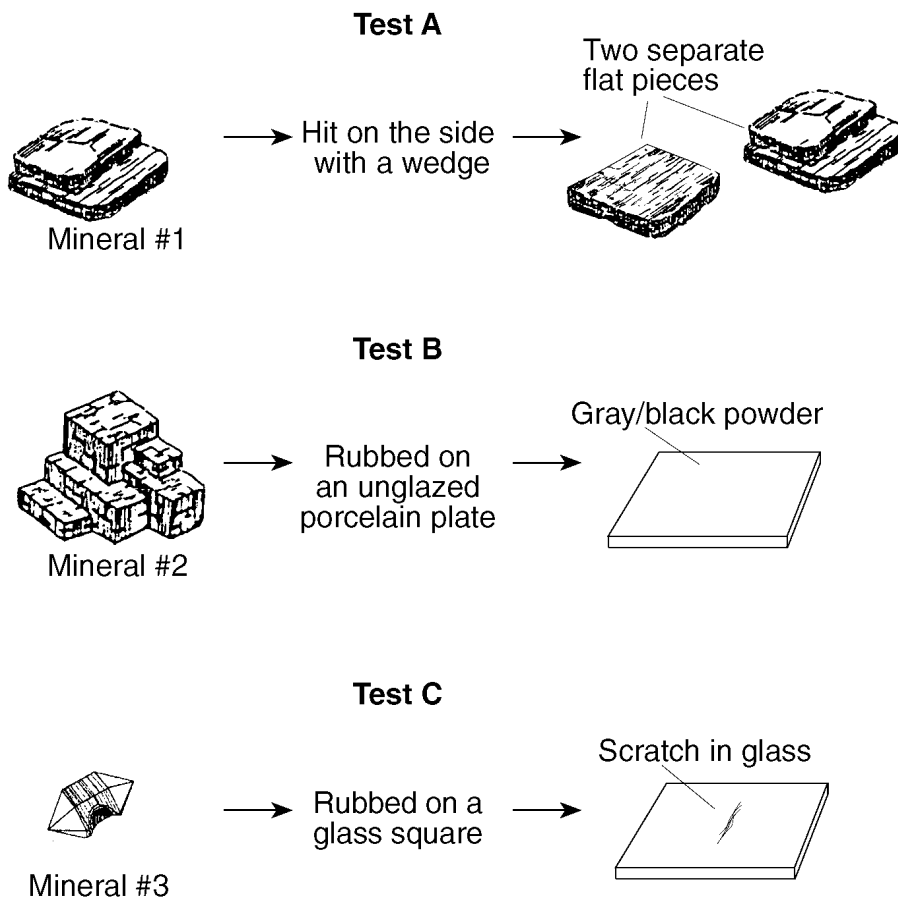
9. Which statement about the minerals plagioclase feldspar, gypsum, biotite mica, and talc can best be inferred from the chart?

- A) These minerals have the same chemical and physical properties.
- B) These minerals have different chemical properties, but they have similar physical properties.
- C) These minerals have different physical and chemical properties, but they have identical uses.
- D) The physical and chemical properties of these minerals determine how humans use them.

10. Which mineral leaves a green-black powder when rubbed against an unglazed porcelain plate?

- A) galena
- B) graphite
- C) hematite
- D) pyrite

Base your answers to questions 11 and 12 on the diagram below, which shows three minerals with three different physical tests, *A*, *B*, and *C*, being performed on them.



11. 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

12. Which sequence correctly matches each test, *A*, *B*, and *C*, with the mineral property tested?

- A) *A*—cleavage; *B*—streak; *C*—hardness
- B) *A*—cleavage; *B*—hardness; *C*—streak
- C) *A*—streak; *B*—cleavage; *C*—hardness
- D) *A*—streak; *B*—hardness; *C*—cleavage

13. Which mineral is white or colorless, has a hardness of 2.5, and splits with cubic cleavage?

- A) calcite
- B) halite
- C) pyrite
- D) mica

14. Which property is most useful in mineral identification?

- A) hardness
- B) color
- C) size
- D) texture

15. Which mineral property is illustrated by the peeling of muscovite mica into thin, flat sheets?

- A) luster
- B) streak
- C) hardness
- D) cleavage

16. Silicate minerals contain the elements silicon and oxygen. Which list contains only silicate materials?

- A) graphite, talc, and selenite gypsum
- B) potassium feldspar, quartz, and amphibole
- C) calcite, dolomite, and pyroxene
- D) biotite mica, fluorite, and garnet

17. Base your answer to the following question on the data table below.

### MINERAL HARDNESS

Moh's Hardness Scale	Approximate Hardness of Common Objects
Talc	1
Gypsum	2
Calcite	3
Fluorite	4
Apatite	5
Feldspar	6
Quartz	7
Topaz	8
Corundum	9
Diamond	10

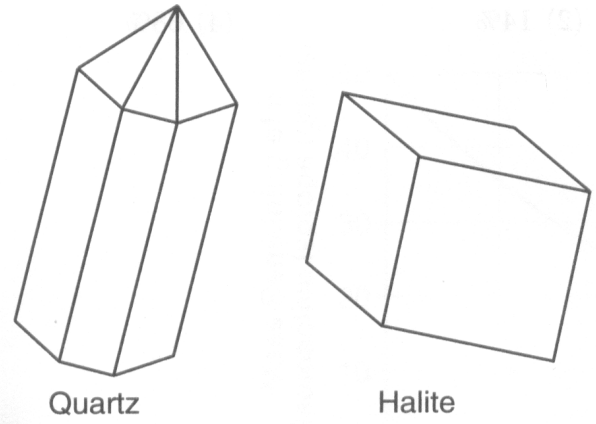
Approximate Hardness of Common Objects:

- Fingernail (2.5)
- Copper penny (3.5)
- Iron nail (4.5)
- Glass (5.5)
- Steel file (6.5)
- Streak plate (7.0)

Moh's scale arranges minerals according to their relative

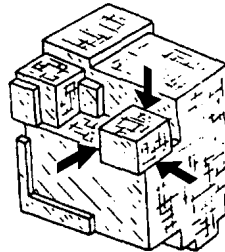
- A) resistance to breaking  
 B) resistance to scratching  
 C) specific heat  
 D) specific gravity
18. How are the minerals biotite mica and muscovite mica different?
- A) Biotite mica is colorless, but muscovite mica is not.  
 B) Biotite mica contains iron and/or magnesium, but muscovite mica does not.  
 C) Muscovite mica scratches quartz, but biotite mica does not.  
 D) Muscovite mica cleaves into thin sheets, but biotite mica does not.
19. Which of the following elements is not found in Plagioclase Feldspar?
- A) Na    B) Al    C) Si    D) Pb
20. Which of the following show cleavage in 2 directions at 90%?
- A) Pyrite                      B) Pyroxene  
 C) Garnet                        D) Fluorite
21. Which rock is sedimentary in origin and formed as a result of chemical processes?
- A) granite                        B) shale  
 C) breccia                        D) dolostone

22. The diagrams below show the crystal shapes of two minerals.



Quartz and halite have different crystal shapes primarily because

- A) light reflects from crystal surfaces  
 B) energy is released during crystallization  
 C) of impurities that produce surface variations  
 D) of the internal arrangement of the atoms
23. The diagram below shows a broken crystal of the mineral halite



The shape of the halite crystal is a direct result of the

- A) internal arrangement of the atoms in the crystal  
 B) emperature at which the crystal formed  
 C) type of surface on which the crystal formed  
 D) stream erosion that changed the crystal
24. Most sandstone bedrock is composed of sediment that was
- A) sorted by size and not layered  
 B) sorted by size and layered  
 C) unsorted and not layered  
 D) unsorted and layered
25. Which process led to the formation of thick salt deposits found in the bedrock at some locations in New York State?
- A) melting                        B) runoff  
 C) condensation                D) evaporation

26. Base your answer to the following question on the two tables below and on your knowledge of Earth science. Table 1 shows the composition, hardness, and average density of four minerals often used as gemstones. Table 2 lists the minerals in Moh's Scale of Hardness from 1 (softest) to 10 (hardest).

Table 1

Gemstone Mineral	Composition	Hardness	Average Density (g/cm <sup>3</sup> )
emerald	Be <sub>3</sub> Al <sub>2</sub> (Si <sub>6</sub> O <sub>18</sub> )	7.5–8	2.7
sapphire	Al <sub>2</sub> O <sub>3</sub>	9	4.0
spinel	MgAl <sub>2</sub> O <sub>4</sub>	8	3.8
zircon	ZrSiO <sub>4</sub>	7.5	4.7

Table 2

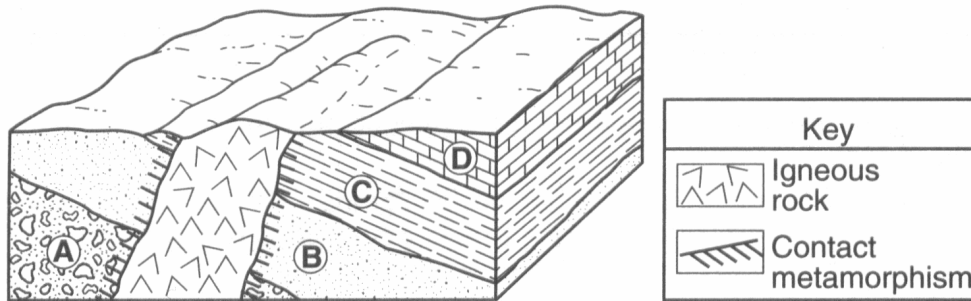
Moh's Scale of Hardness
1 talc
2 gypsum
3 calcite
4 fluorite
5 apatite
6 feldspar
7 quartz
8 topaz
9 corundum
10 diamond

KEY

Al = aluminum	O = oxygen
Be = beryllium	Si = silicon
Mg = magnesium	Zr = zirconium

The hardness and density of each gemstone is based primarily on the gemstone's

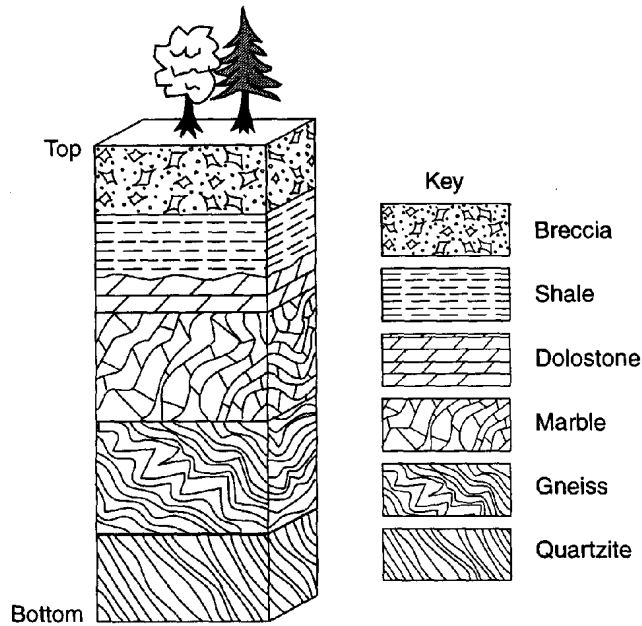
- A) internal arrangement of atoms                      B) geologic time of formation  
 C) oxygen content    D) natural abundance
27. Base your answer to the following question on the block diagram below, which shows a portion of Earth's crust. Letters *A*, *B*, *C*, and *D* indicate sedimentary layers.



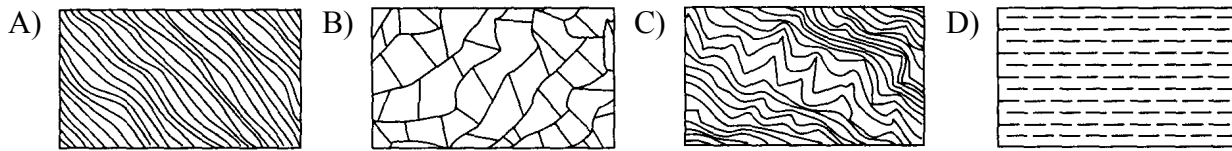
Which processes produced rock layer *B*?

- A) subduction and melting                                      B) uplift and solidification  
 C) heat and pressure    D) compaction and cementation
28. Particles of sediment collected from a lake bottom averaged 1.2 centimeters in diameter. If left on the lake bottom to become buried by more sediment and compressed into rock, these particles would form
- A) sandstone                      B) conglomerate  
 C) quartzite                      D) granite
29. A rock is composed of several large, rounded pebbles and sand grains cemented together. Which inference about the rock is best supported by this description?
- A) The rock is older than the pebbles.  
 B) The rock is igneous.  
 C) The rock is sedimentary.  
 D) The rock resulted from evaporation of sea water.

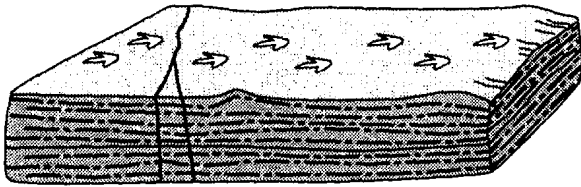
30. Base your answer to the following question on the diagram below, which represents a cross section of rock layers that have not been overturned.



Within which rock type would a fossil most likely be found?



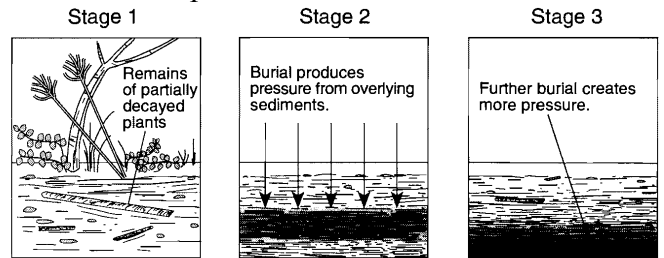
31. Base your answer to the following question on the diagram below, which represents a rock sample containing fossilized *Coelophysis* footprints.



The siltstone layer containing the dinosaur footprints was turned into rock by

- A) folding and faulting  
 B) burial and cementation  
 C) weathering and erosion  
 D) deformation and melting
32. Which process most likely formed a layer of the sedimentary rock, gypsum?
- A) precipitation from seawater  
 B) solidification of magma  
 C) folding of clay-sized particles  
 D) melting of sand-sized particles

33. The diagram below shows three stages in the formation of a specific rock.



Which rock is formed as a result of these three stages?

- A) limestone                      B) gneiss  
 C) schist                              D) coal
34. Which rock most likely formed as a result of biologic processes?
- A) granite                              B) basalt  
 C) sandstone                          D) limestone
35. Which texture best describes an igneous rock that formed deep underground?
- A) glassy                              B) vesicular  
 C) fine grained                        D) coarse grained

36. Which processes lead directly to the formation of igneous rock?

- A) weathering and erosion
- B) compaction and cementation
- C) heat and pressure
- D) melting and solidification

37. What is the color and type of rock that forms oceanic crust at mid-ocean ridges?

- A) light colored and igneous
- B) light colored and sedimentary
- C) dark colored and igneous
- D) dark colored and sedimentary

38. Which igneous rock is dark colored, cooled rapidly on Earth's surface, and is composed mainly of plagioclase feldspar, olivine, and pyroxene?

- A) obsidian
- B) rhyolite
- C) gabbro
- D) scoria

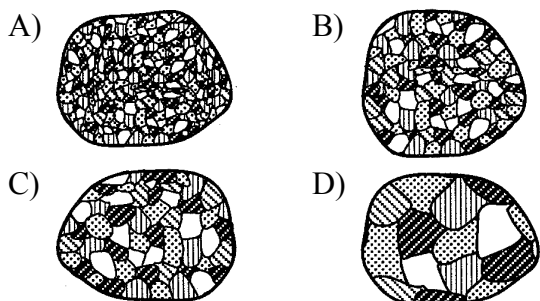
39. Which igneous rock has a vesicular texture and contains the minerals potassium feldspar and quartz?

- A) andesite
- B) pegmatite
- C) pumice
- D) scoria

40. Which is the best description of the properties of basalt?

- A) fine-grained and mafic
- B) fine-grained and felsic
- C) coarse-grained and mafic
- D) coarse-grained and felsic

41. Which granite sample most likely formed from magma that cooled and solidified at the slowest rate?



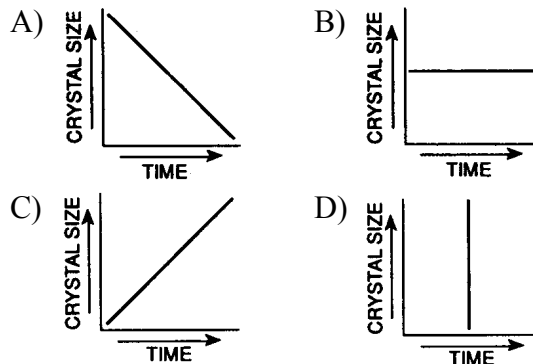
42. Which rock is only formed by regional metamorphism?

- A) slate
- B) hornfels
- C) dunite
- D) marble

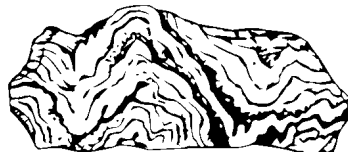
43. The best evidence for determining the cooling rate of an igneous rock during its solidification is provided by

- A) index fossils
- B) faults in the rock
- C) the crystal size of its minerals
- D) the disintegration of radioactive substances

44. Which graph best represents the relationship between the length of time molten magma takes to cool and the size of the crystals in the rock formed by the magma?



45. The rock shown below has a foliated texture and contains the minerals amphibole, quartz, and feldspar arranged in coarse-grained bands.



Which rock is shown?

- A) slate
- B) dunite
- C) gneiss
- D) quartzite

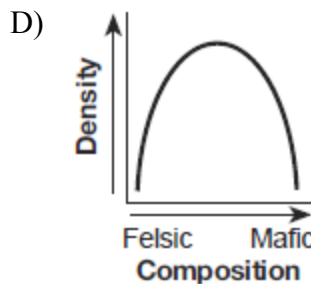
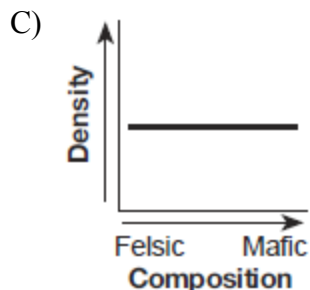
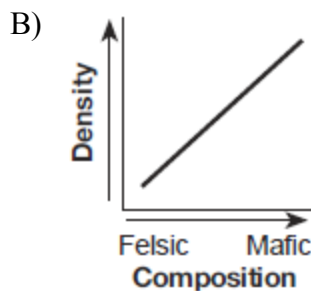
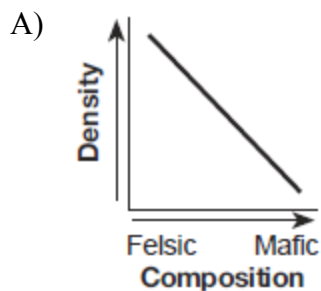
46. Which rock is foliated, shows mineral alignment but not banding, and contains medium-sized grains of quartz and pyroxene?

- A) phyllite
- B) schist
- C) gneiss
- D) quartzite

47. Which two kinds of adjoining bedrock would most likely have a zone of contact metamorphism between them?

- A) shale and conglomerate
- B) shale and sandstone
- C) limestone and sandstone
- D) limestone and granite

48. Which graph best shows the relationship between the compositions of different igneous rocks and their densities?



49. The data table below lists characteristics of rocks *A*, *B*, *C*, and *D*.

**Rock Characteristics**

Rock	Texture	Grain Size	Mineral Composition
A	nonfoliated	fine to coarse	calcite, dolomite, carbon
B	banding	coarse	biotite, quartz, plagioclase feldspar
C	bioclastic	microscopic to coarse	carbon, pyroxene, mica
D	foliated	fine to medium	quartz, amphibole, garnet

Which rock is most likely phyllite?

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

50. Which sequence of change in rock type occurs as shale is subjected to increasing heat and pressure?

- A) shale → schist → phyllite → slate → gneiss  
 B) shale → slate → phyllite → schist → gneiss  
 C) shale → gneiss → phyllite → slate → schist  
 D) shale → gneiss → phyllite → schist → slate

51. Rocks are classified as igneous, sedimentary, or metamorphic based primarily on their

- A) texture  
 B) crystal or grain size  
 C) method of formation  
 D) mineral composition

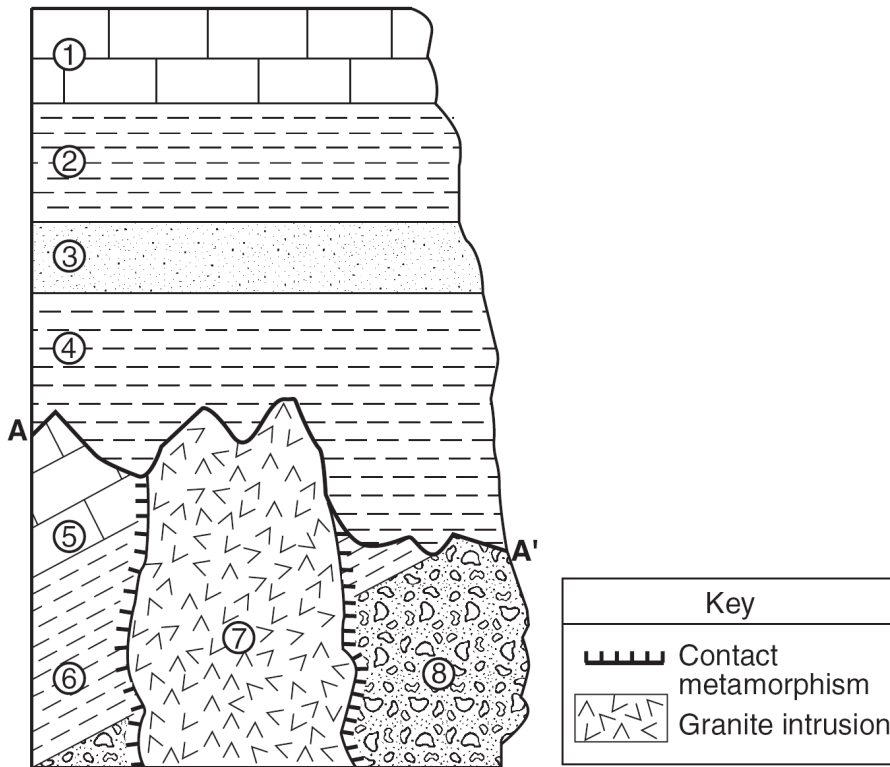
52. Which characteristic of an igneous rock would provide the most information about the environment in which the rock solidified?

- A) color                      B) texture  
 C) hardness                      D) streak

53. Which characteristic of nonsedimentary rocks would provide the *least* evidence about the environment in which the rocks were formed?

- A) structure  
 B) color  
 C) crystal size  
 D) mineral composition

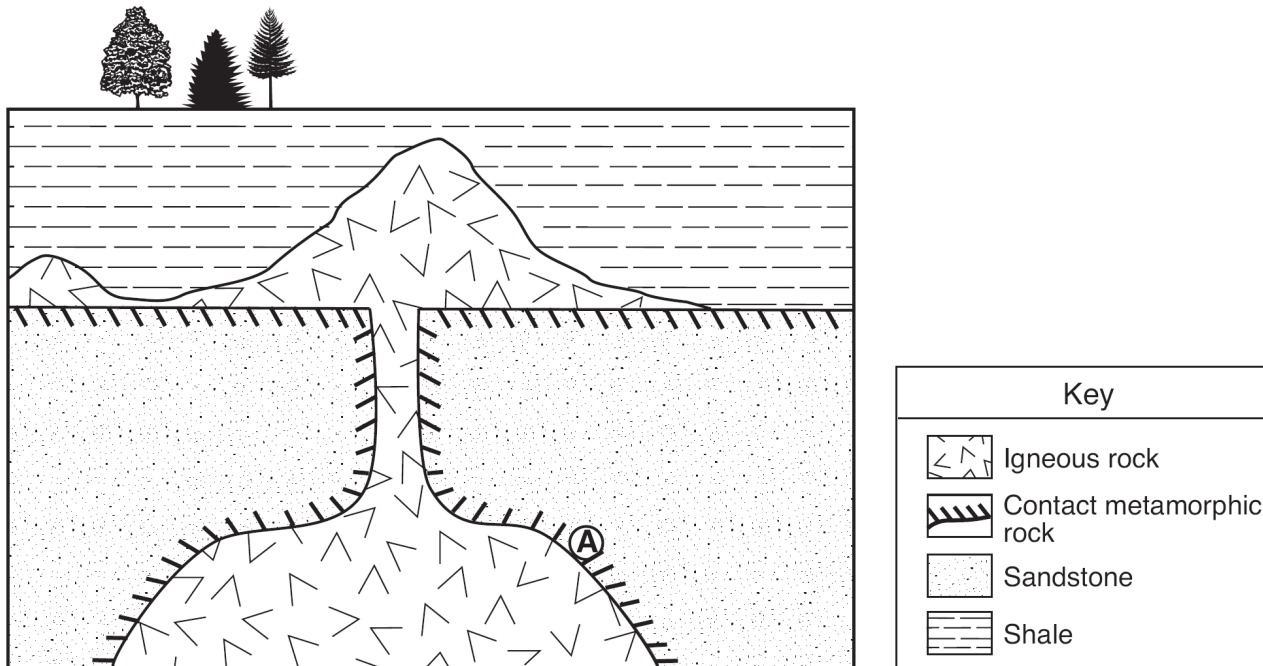
54. Base your answer to the following question on the cross section below. Rock units are labeled 1 through 8. The line between *A* and *A'* indicates an unconformity.



Which rock most probably formed in the contact metamorphic zone within rock unit 6?

- A) marble      B) basalt      C) quartzite      D) hornfels

55. Base your answer to the following question on the geologic cross section below. Location *A* is within the metamorphic rock.



The metamorphic rock at location *A* is most likely

- A) marble      B) quartzite      C) phyllite      D) slate



- 
56. How would the age of sandstone fragments found in a conglomerate rock compare with the age of the conglomerate rock?
- A) The sandstone fragments are younger than the conglomerate rock.
  - B) The sandstone fragments are older than the conglomerate rock.
  - C) The sandstone fragments and the conglomerate rock are the same age.
  - D) The sandstone fragments may be either younger or older than the conglomerate rock.
57. Which type(s) of rock can be the source of deposited sediments?
- A) igneous and metamorphic rocks, only
  - B) metamorphic and sedimentary rocks, only
  - C) sedimentary rocks, only
  - D) igneous, metamorphic, and sedimentary rocks
58. Metamorphic rocks form as the direct result of
- A) precipitation from evaporating water
  - B) melting and solidification in magma
  - C) erosion and deposition of soil particles
  - D) heat and pressure causing changes in existing rock
-

**Answer Key**  
**Review - Rocks and Minerals**

- |     |          |     |          |
|-----|----------|-----|----------|
| 1.  | <u>C</u> | 36. | <u>D</u> |
| 2.  | <u>A</u> | 37. | <u>C</u> |
| 3.  | <u>C</u> | 38. | <u>D</u> |
| 4.  | <u>A</u> | 39. | <u>C</u> |
| 5.  | <u>D</u> | 40. | <u>A</u> |
| 6.  | <u>C</u> | 41. | <u>D</u> |
| 7.  | <u>A</u> | 42. | <u>A</u> |
| 8.  | <u>A</u> | 43. | <u>C</u> |
| 9.  | <u>D</u> | 44. | <u>C</u> |
| 10. | <u>D</u> | 45. | <u>C</u> |
| 11. | <u>B</u> | 46. | <u>B</u> |
| 12. | <u>A</u> | 47. | <u>D</u> |
| 13. | <u>B</u> | 48. | <u>B</u> |
| 14. | <u>A</u> | 49. | <u>D</u> |
| 15. | <u>D</u> | 50. | <u>B</u> |
| 16. | <u>B</u> | 51. | <u>C</u> |
| 17. | <u>B</u> | 52. | <u>B</u> |
| 18. | <u>B</u> | 53. | <u>B</u> |
| 19. | <u>D</u> | 54. | <u>D</u> |
| 20. | <u>B</u> | 55. | <u>B</u> |
| 21. | <u>D</u> | 56. | <u>B</u> |
| 22. | <u>D</u> | 57. | <u>D</u> |
| 23. | <u>A</u> | 58. | <u>D</u> |
| 24. | <u>B</u> |     |          |
| 25. | <u>D</u> |     |          |
| 26. | <u>A</u> |     |          |
| 27. | <u>D</u> |     |          |
| 28. | <u>B</u> |     |          |
| 29. | <u>C</u> |     |          |
| 30. | <u>D</u> |     |          |
| 31. | <u>B</u> |     |          |
| 32. | <u>A</u> |     |          |
| 33. | <u>D</u> |     |          |
| 34. | <u>D</u> |     |          |
| 35. | <u>D</u> |     |          |
-