

Rocks & Minerals

1. Of the Earth's more than 2,000 identified minerals, only a small number are commonly found in rocks. This fact indicates that most
 - 1) minerals weather before they can be identified
 - 2) minerals have properties that are difficult to identify
 - 3) rocks have a number of minerals in common
 - 4) exposed surface rocks are igneous
2. In which group are all the earth materials classified as minerals?
 - 1) feldspar, quartz, and olivine
 - 2) granite, rhyolite, and basalt
 - 3) cobbles, pebbles, and silt
 - 4) conglomerate, sandstone, and shale
3. What do most igneous, sedimentary, and metamorphic rocks have in common?
 - 1) They are formed from molten material.
 - 2) They are produced by heat and pressure.
 - 3) They are composed of minerals.
 - 4) They exhibit crystals, banding, and distinct layers.
4. Which rock is usually composed of several different minerals?
 - 1) rock gypsum
 - 2) chemical limestone
 - 3) quartzite
 - 4) gneiss

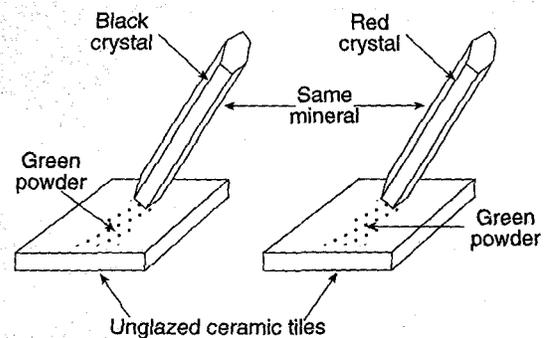
5. The three statements below are observations of the same rock sample:
 - The rock has intergrown crystals from 2 to 3 millimeters in diameter.
 - The minerals in the rock are gray feldspar, green olivine, green pyroxene, and black amphibole.
 - There are no visible gas pockets in the rock.

This rock sample is most likely

- 1) sandstone
 - 2) gabbro
 - 3) granite
 - 4) phyllite
6. Minerals are identified on the basis of
 - 1) the method by which they were formed
 - 2) the type of rock in which they are found
 - 3) the size of their crystals
 - 4) their physical and chemical properties

7. Scratching a mineral against a glass plate is a method used for determining the mineral's
 - 1) color
 - 2) hardness
 - 3) luster
 - 4) cleavage
8. One of the most abundant minerals in beach sand is quartz. Which property of quartz could account for its abundance?
 - 1) hardness
 - 2) texture
 - 3) color
 - 4) luster
9. Which mineral property is illustrated by the peeling of muscovite mica into thin, flat sheets?
 - 1) luster
 - 2) streak
 - 3) hardness
 - 4) cleavage
10. Which rock type is most likely to be monomineralic?
 - 1) rock salt
 - 2) rhyolite
 - 3) basalt
 - 4) conglomerate

11. The diagram below shows the results of one test for mineral identification.



Which mineral property is being tested?

- 1) density
 - 2) fracture
 - 3) streak
 - 4) luster
12. Which mineral is composed of Calcium and Fluorine?
 - 1) Amphiboles
 - 2) Calcite
 - 3) Hematite
 - 4) Fluorite

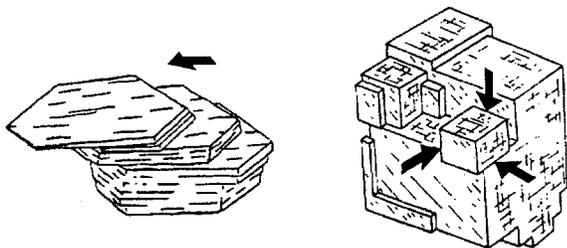
Rocks & Minerals

Base your answers to questions 21 through 24 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 A	Rock B	Rock C	Rock D
	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

21. Which characteristic of rock B could be caused by the minerals pyroxene and olivine?
 1) green color 2) felsic composition 3) folded layers 4) metallic luster
22. Rock B most likely is
 1) conglomerate 2) schist 3) obsidian 4) peridotite
23. The mineral quartz in rock A is composed of the two most abundant elements by mass in Earth's crust. These two elements are oxygen and
 1) magnesium 2) silicon 3) iron 4) lead
24. Which two rocks most likely formed farthest below the surface of Earth?
 1) A and B 2) B and C 3) C and D 4) A and D

25. The diagrams below illustrate a specific property of certain minerals.



This property is most closely related to the

- 1) arrangement of atoms in the mineral
- 2) impurities found in the mineral
- 3) softness of the mineral
- 4) density of the mineral

26. Which property best describes a rock which has formed from sediments?

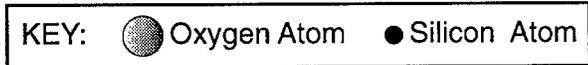
- 1) crystalline structure
- 2) distorted structure
- 3) banding or zoning of minerals
- 4) fragmental particles arranged in layers

27. Which characteristic determines whether a rock is classified as a shale, a siltstone, a sandstone, or a conglomerate?

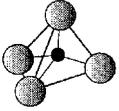
- 1) the absolute age of the sediments within the rock
- 2) the mineral composition of the sediments within the rock
- 3) the particle size of the sediments within the rock
- 4) the density of the sediments within the rock

Rocks & Minerals

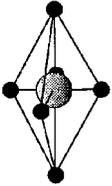
28. Which model best represents the silicon-oxygen tetrahedron?



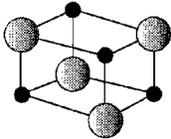
1)



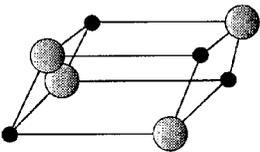
2)



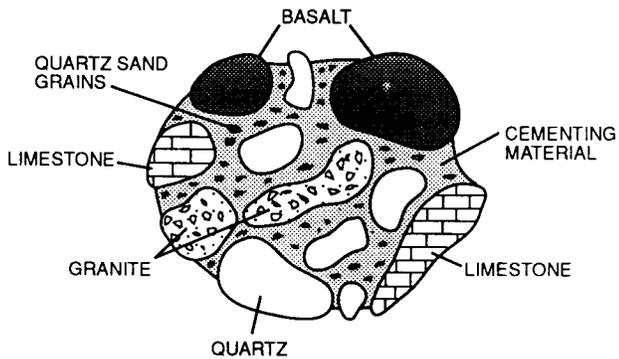
3)



4)



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



Which conclusion is best made about the rock particles?

- 1) They are the same age.
- 2) They originated from a larger mass of igneous rock.
- 3) They all contain the same minerals.
- 4) They have different origins.

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

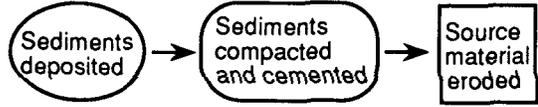
1)



2)



3)



4)



31. Which sedimentary rock could form as a result of evaporation?

- | | |
|-----------------|--------------|
| 1) conglomerate | 3) shale |
| 2) sandstone | 4) limestone |

32. Large rock salt deposits in the Syracuse area indicate that the area once had

- 1) large forests
- 2) a range of volcanic mountains
- 3) many terrestrial animals
- 4) a warm, shallow sea

33. 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

34. Limestone is a sedimentary rock which may form as a result of

- | | |
|----------------------|-----------------------|
| 1) melting | 3) metamorphism |
| 2) recrystallization | 4) biologic processes |

Rocks & Minerals

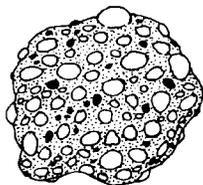
Base your answers to questions 35 through 37 on the diagrams below of five rock samples.



BASALT



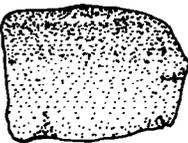
GNEISS
(METAMORPHIC)



CONGLOMERATE



GRANITE



SANDSTONE

35. Which sample is composed of sediments 0.006 centimeter to 0.2 centimeter in size that were compacted and cemented together?

- 1) conglomerate
- 2) sandstone
- 3) gneiss
- 4) granite

36. Which sample would most likely contain fossils?

- 1) gneiss
- 2) granite
- 3) sandstone
- 4) basalt

37. If granite were subjected to intense heat and pressure, it would most likely change to

- 1) conglomerate
- 2) sandstone
- 3) gneiss
- 4) basalt

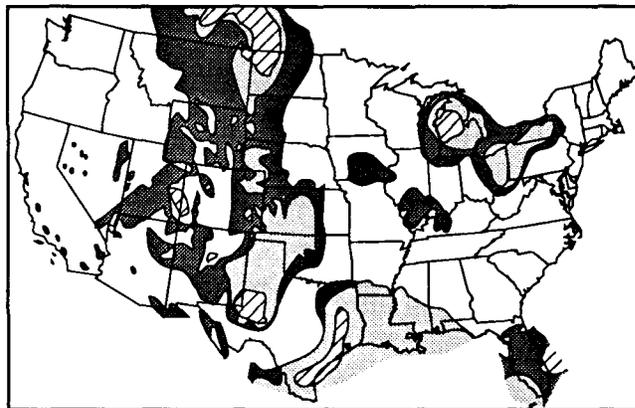
38. Sedimentary rocks of organic origin would most likely be formed from

- 1) sediments eroded by running water
- 2) materials deposited by glaciers
- 3) shells of marine animals
- 4) particles removed from the atmosphere by precipitation

39. A coarse-grained igneous rock contains plagioclase feldspars and pyroxenes, but no quartz. This rock is most likely

- 1) basalt
- 2) rhyolite
- 3) granite
- 4) gabbro

40. The map below shows certain mineral deposits in the surface bedrock in areas of the United States.



KEY

- Gypsum
- Gypsum and halite
- Gypsum, halite, and potassium salts

What do each of these areas of mineral deposits have in common?

- 1) They are active fault zones of the Earth's crust.
- 2) They were once covered by evaporating seas.
- 3) They presently have hot, dry climates.
- 4) They are sites of active volcanoes.

41. Which is usually a characteristic of igneous rocks with a high density?

- 1) They are light in color.
- 2) They are felsic.
- 3) They have a high aluminum content.
- 4) They contain iron.

42. Which rock is of felsic composition, low in density, light in color, and coarse grained?

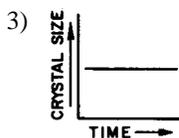
- 1) rhyolite
- 2) basalt
- 3) granite
- 4) gabbro

43. Gabbro is composed mainly of

- 1) plagioclase feldspars and pyroxene
- 2) hornblende and quartz
- 3) biotite and olivine
- 4) potassium feldspar and quartz

Rocks & Minerals

44. Which graph best shows the relationship between the size of the crystals in an igneous rock and the length of time it has taken the rock to solidify?



45. Most igneous rocks form by which processes?

- 1) melting and solidification
- 2) heat and pressure
- 3) erosion and deposition
- 4) compaction and cementation

46. Which characteristic of rocks tends to increase as the rocks are metamorphosed?

- 1) density
- 2) porosity
- 3) permeability
- 4) number of fossils present

47. What is the main difference between metamorphic rocks and most other rocks?

- 1) Many metamorphic rocks contain only one mineral.
- 2) Many metamorphic rocks have an organic composition.
- 3) Many metamorphic rocks exhibit banding and distortion of structure.
- 4) Many metamorphic rocks contain a high amount of oxygen-silicon tetrahedra.

48. Which rocks would most likely be separated by a transition zone of altered rock (metamorphic rock)?

- 1) sandstone and limestone
- 2) granite and limestone
- 3) shale and sandstone
- 4) conglomerate and siltstone

49. Metamorphic rocks result from the

- 1) erosion of rocks
- 2) recrystallization of rocks
- 3) cooling and solidification of molten magma
- 4) compression and cementation of soil particles

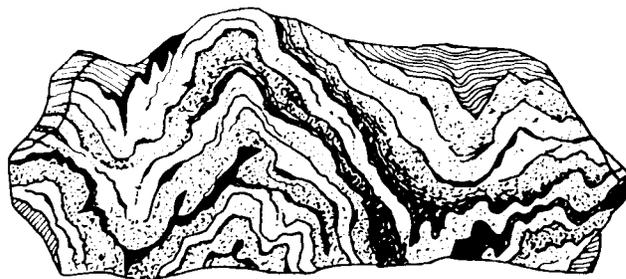
50. Metamorphic rocks form as the direct result of

- 1) precipitation from evaporating water
- 2) melting and solidification in magma
- 3) erosion and deposition of soil particles
- 4) heat and pressure causing changes in existing rock

51. Which metamorphic rock will have visible mica crystals and a foliated texture?

- 1) marble
- 2) quartzite
- 3) schist
- 4) slate

52. The diagram below represents a rock with a distorted layer structure.



The distorted structure of this rock is most likely the result of

- 1) a long period of weathering
- 2) glacial activity
- 3) wind erosion
- 4) extreme pressure

53. Which rock forms by the recrystallization of unmelted rock material under conditions of high temperature and pressure?

- 1) granite
- 2) gneiss
- 3) rock gypsum
- 4) bituminous coal

54. Which characteristic provides the best evidence about the environment in which a rock was formed?

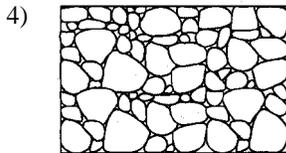
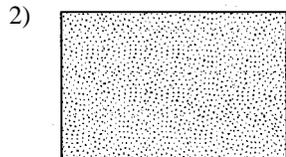
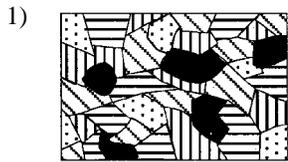
- 1) the color of the rock
- 2) the size of the rock
- 3) the texture of the rock
- 4) the thickness of the rock

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

- 1) structure
- 2) color
- 3) crystal size
- 4) mineral composition

Rocks & Minerals

56. Which diagram best represents a sample of the metamorphic rock gneiss? [Diagrams show actual size.]



57. Which rocks form relatively thin layers, compared to the thickness of the continent, over large areas of the continents?

- 1) granite and gabbro 3) metamorphic rocks
2) sandstone and shale 4) intrusive igneous rocks

58. In which part of the Earth are felsic rocks most likely to be found?

- 1) continental crust 3) plastic mantle
2) oceanic crust 4) rigid mantle

59. Which type(s) of rock can be the source of deposited sediments?

- 1) igneous and metamorphic rocks, only
2) metamorphic and sedimentary rocks, only
3) sedimentary rocks, only
4) igneous, metamorphic, and sedimentary rocks

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

- 1) limestone and marble 3) sandstone and quartzite
2) granite and dolostone 4) slate and conglomerate