

Name: _____

Rocks and Mineral Practice

1. Which land-derived sedimentary rock could have formed by the compaction and cementation of particles smaller than 0.0003 centimeter in diameter?
(A) sandstone (B) shale
(C) limestone (D) siltstone

2. Which mineral is composed of Calcium and Fluorine?
(A) Amphiboles (B) Fluorite
(C) Hematite (D) Calcite

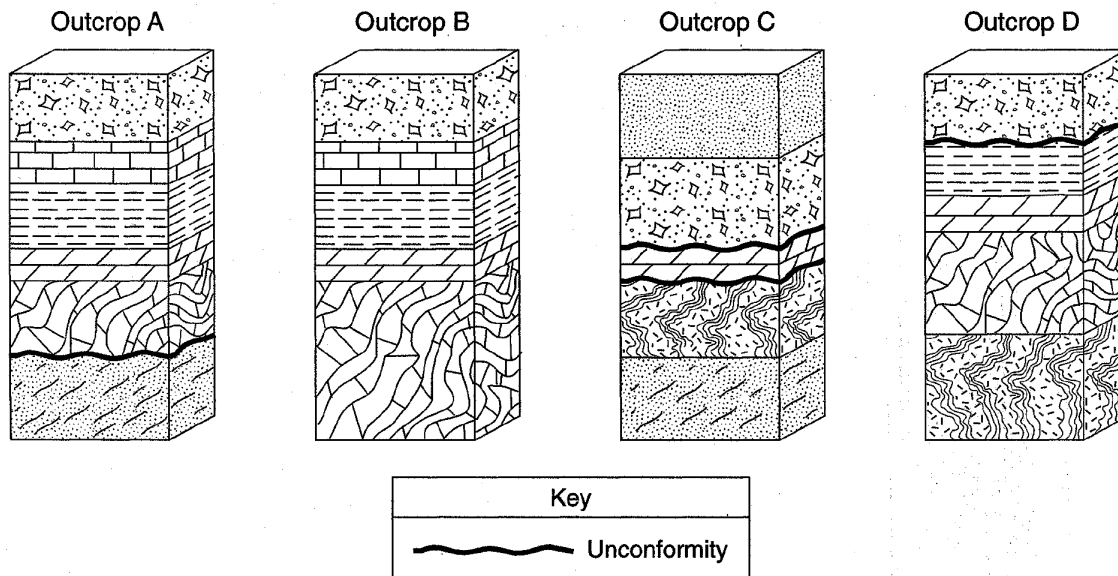
3. Which mineral will scratch fluorite, galena, and pyroxene?
(A) dolomite (B) olivine
(C) calcite (D) graphite

4. A mineral's physical characteristics, such as hardness, cleavage, and luster, are dependent on the
(A) age of the mineral sample
(B) size of the mineral sample
(C) method by which the mineral sample was broken
(D) internal arrangement of the mineral's atoms

5. Which process could lead directly to the formation of pumice rock?
(A) deposition of quartz sand
(B) explosive eruption of lava from a volcano
(C) precipitation of minerals from evaporating seawater
(D) metamorphism of unmelted rock material

ANSWER KEY: goo.gl/zqV1hi

6. Base your answer to the following question on the block diagrams of four rock outcrops, *A*, *B*, *C*, and *D*, located within 15 kilometers of each other. The rock layers have not been overturned.



By which process was the quartzite formed?

- (A) precipitation from seawater (B) cementation of shells
(C) deposition of clastic sediment (D) metamorphism of sandstone

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

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

8. Which process led to the formation of thick salt deposits found in the bedrock at some locations in New York State?

- (A) runoff (B) melting
(C) condensation (D) evaporation

9. Which mineral is commonly mined as a source of the element lead (Pb)?

- (A) gypsum (B) quartz
(C) magnetite (D) galena

10. Which element, found in both biotite mica and muscovite mica, makes up the greatest percent by volume of Earth's crust?

- (A) nitrogen (B) silicon
(C) potassium (D) oxygen

11. The diagram below shows a rock with deformed structure and intergrown crystals.



The rock was probably formed by

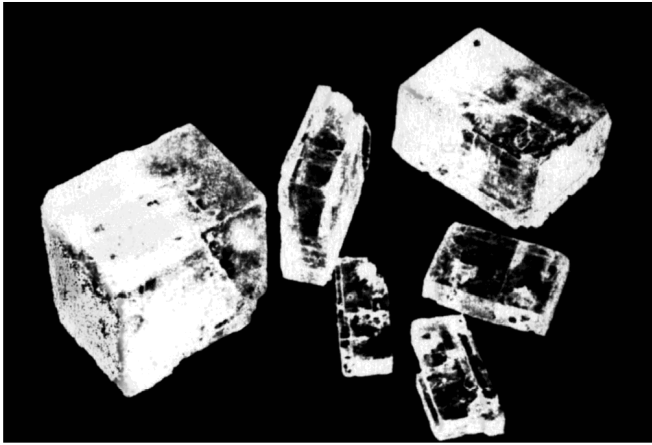
- (A) volcanic lava that cooled on Earth's surface
(B) sediments that were deposited on the ocean floor
(C) a meteor impact on Earth's surface
(D) heat and pressure that changed a preexisting rock

ANSWER KEY: goo.gl/zqV1hi

12. Where are the Earth's sedimentary rocks generally found?

- (A) deep within the Earth's crust
- (B) as a thin layer covering much of the continents
- (C) in regions of recent volcanic activity
- (D) along the mid-ocean ridges

13. Base your answer to the following question on the photograph below. The photograph shows several broken samples of the same colorless mineral.



Which physical property of this mineral is most easily seen in the photograph?

- (A) streak
- (B) cleavage
- (C) fracture
- (D) hardness

14. The minerals talc, muscovite mica, quartz, and olivine are similar because they

- (A) have the same hardness
- (B) are the same color
- (C) break along cleavage planes
- (D) contain silicon and oxygen

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

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

16. Dolostone is classified as which type of rock?

- (A) foliated metamorphic rock
- (B) nonfoliated metamorphic rock
- (C) chemically formed sedimentary rock
- (D) land-derived sedimentary rock

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

- (A) shale
- (B) limestone
- (C) conglomerate
- (D) sandstone

18. Which material is made mostly of the mineral quartz?

- (A) sulfuric acid
- (B) pencil lead
- (C) window glass
- (D) plaster of paris

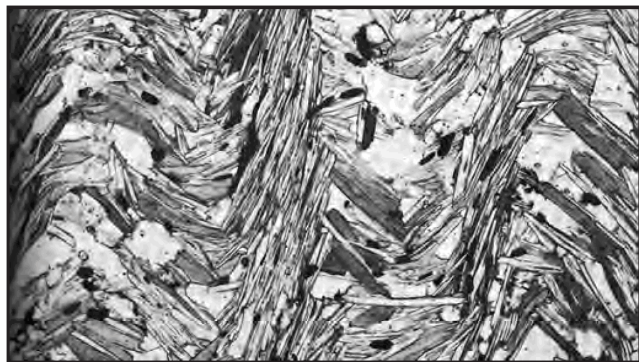
19. Which of the following elements is not found in Plagioclase Feldspar?

- (A) Al
- (B) Na
- (C) Pb
- (D) Si

20. Which mineral can be found in granite, andesite, gneiss, and hornfels?

- (A) pyroxene
- (B) biotite mica
- (C) olivine
- (D) quartz

21. The photograph below shows the texture of a rock composed of various minerals as seen through a microscope.



(Magnified 20 times)

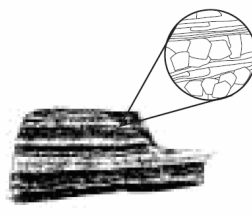
Which rock is most likely shown above?

- (A) anthracite coal (B) sandstone
(C) dunite (D) schist

22. Rhyolite is an example of a

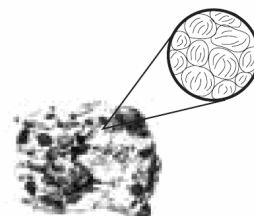
- (A) polymineralic igneous rock
(B) polymineralic sedimentary rock
(C) monomineralic igneous rock
(D) monomineralic sedimentary rock

23. Base your answer to the following question on the pictures of four rocks shown below. Magnified views of the rocks are shown in the circles.



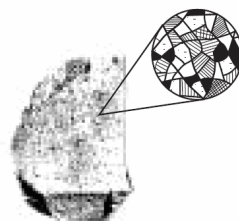
Rock 1

Bands of coarse intergrown crystals of various sizes



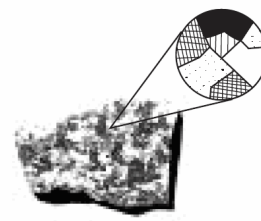
Rock 2

Particles of 0.01-cm to 1.0-cm size cemented together



Rock 3

Intergrown crystals less than 0.1 cm in size



Rock 4

Intergrown crystals, mostly 2.0 cm in size

Which rock is metamorphic and shows evidence of foliation?

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

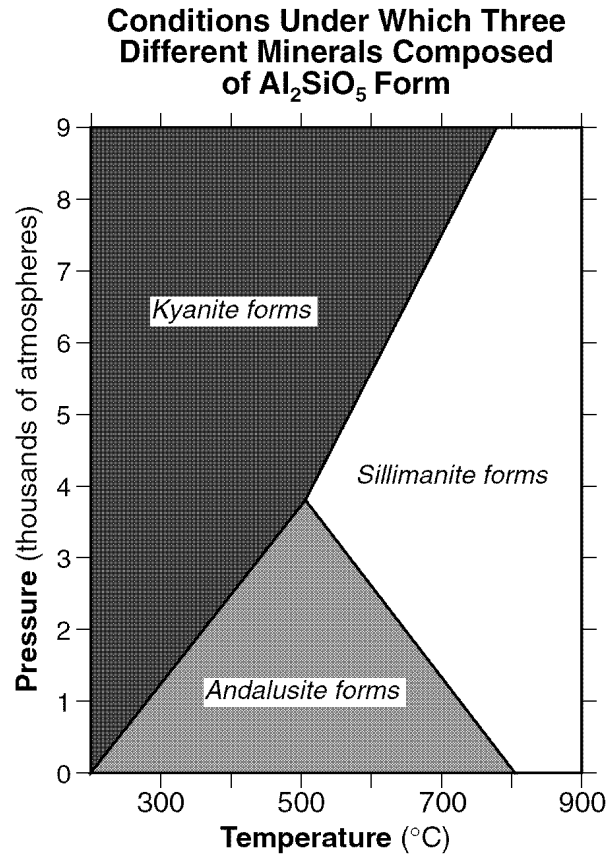
24. Which process most likely formed a layer of the sedimentary rock, gypsum?

- (A) folding of clay-sized particles
(B) precipitation from seawater
(C) solidification of magma
(D) melting of sand-sized particles

25. Rocks can be classified as sedimentary, igneous, or metamorphic based primarily upon differences in their

- (A) age (B) color
(C) density (D) origin

26. Base your answer to the following question on the graph below, which shows the crustal temperature and pressure conditions under which three different minerals with the same chemical composition (Al_2SiO_5) crystallize.



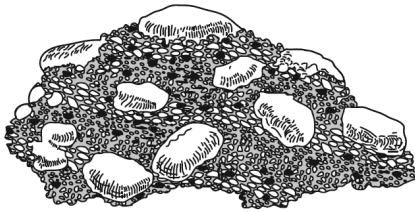
Under which crustal temperature and pressure conditions will andalusite form?

- (A) 700°C and 8000 atmospheres (B) 500°C and 2000 atmospheres
(C) 600°C and 4000 atmospheres (D) 300°C and 6000 atmospheres
27. Which rock is composed of the mineral halite that formed when seawater evaporated?
- (A) dolostone (B) limestone (C) rock salt (D) rock gypsum

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

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

29. Base your answer to the following question on the diagram below, which represents a rock composed of cemented pebbles and sand.



This rock should be classified as

- (A) a bioclastic sedimentary rock (B) an extrusive igneous rock
(C) a clastic sedimentary rock (D) an intrusive igneous rock

30. Which mineral is the major component of drywall?

- (A) muscovite mica (B) talc
(C) calcite (D) selenite gypsum

31. Although more than 2,000 minerals have been identified, 90% of Earth's lithosphere is composed of the 12 minerals listed below.

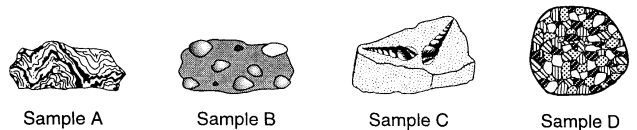
Rock-Forming Minerals

feldspar	augite
quartz	garnet
mica	magnetite
calcite	olivine
hornblende	pyrite
kaolinite	talc

The best explanation for this fact is that most rocks

- (A) are composed only of recrystallized minerals
(B) have a 10% nonmineral composition
(C) are monomineralic
(D) have a number of minerals in common

32. The diagram below shows four rock samples.



Which sample best shows the physical properties normally associated with regional metamorphism?

- (A) A (B) B (C) C (D) D

33. Which igneous rock has a vesicular texture and a felsic composition?

- (A) pumice (B) granite
(C) scoria (D) basalt

34. In which group do the rocks usually have the mineral quartz as part of their composition?

- (A) granite, rhyolite, sandstone, hornfels
(B) conglomerate, gabbro, rock salt, schist
(C) breccia, fossil limestone, bituminous coal, siltstone
(D) shale, scoria, gneiss, metaconglomerate

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35. Base your answer to the following question on the table below, which shows the characteristics of four different mineral samples.

Mineral Characteristics

Mineral Sample	Color	Luster	Streak	Breakage Pattern
Galena	gray	metallic	gray	breaks into cubes
Halite	colorless	nonmetallic	colorless	breaks into cubes
Quartz	colorless	nonmetallic	colorless	irregular breakage
Gold	yellow	metallic	yellow	irregular breakage

Which two mineral samples most likely have a similar internal arrangement of atoms?

- (A) gold and halite (B) gold and galena
(C) galena and halite (D) galena and quartz

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

- (A) metamorphism
(B) recrystallization
(C) biologic processes
(D) melting

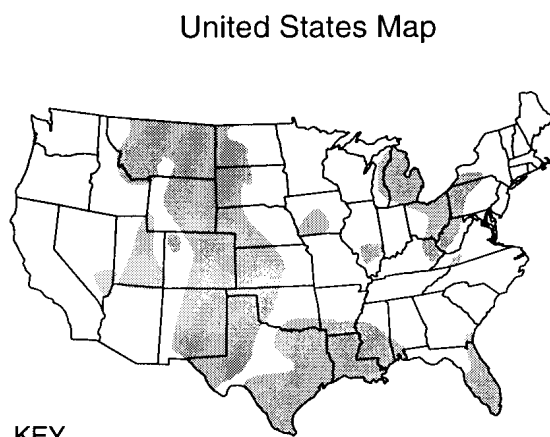
37. The table below shows some properties of four different minerals.

Mineral Variety	Color	Hardness	Luster	Composition
flint	black	7	nonmetallic	SiO ₂
chert	gray, brown, or yellow	7	nonmetallic	SiO ₂
jasper	red	7	nonmetallic	SiO ₂
chalcedony	white or light color	7	nonmetallic	SiO ₂

The minerals listed in the table are varieties of which mineral?

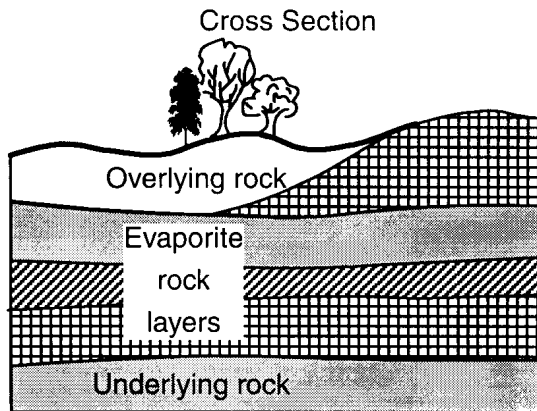
- (A) olivine (B) garnet (C) magnetite (D) quartz

38. Base your answer to the following question on the map and cross section below. The shaded areas on the map represent regions of the United States that have evaporite rock layers (layers of rock formed from the evaporation of seawater) under the surface bedrock. The cross section shows the generalized structure of the area in which the evaporite layers are found in New York State.



KEY

Evaporite rock regions



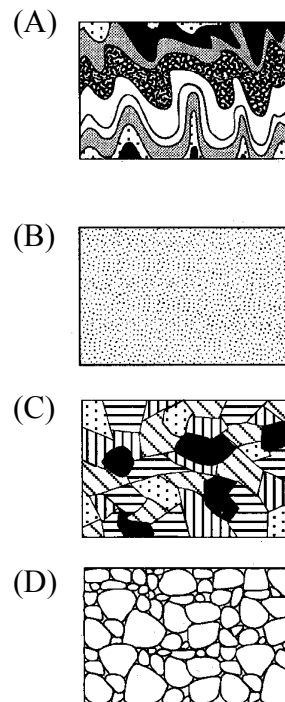
These evaporite deposits could be composed of which minerals?

- (A) hornblende and olivine (B) garnet and pyroxene
(C) halite and gypsum (D) mica and feldspar

39. 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.

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



41. The cartoon below presents a humorous look at history.



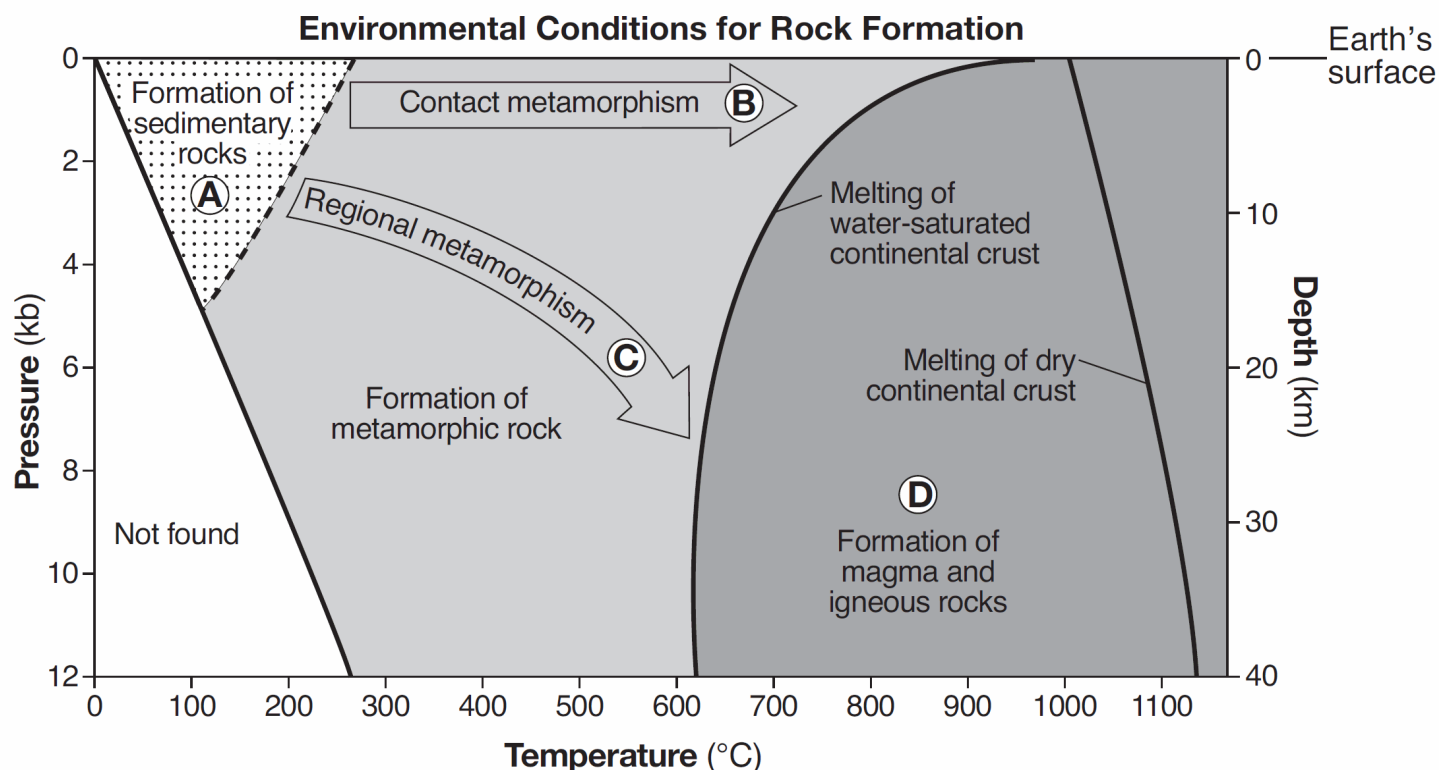
"You know, I like this hobby, too... But it seems like people from other communities have collected all the shiny mica rocks with foliated textures...There aren't any left for us!"

What kind of rocks does the complaining rock collector want?

- (A) felsic volcanic rocks
- (B) inorganic sedimentary rocks
- (C) clastic sedimentary rocks
- (D) regionally metamorphosed rocks

42. Base your answer to the following question on the graph below and on your knowledge of Earth science.

The graph shows the temperature, pressure, and depth environments for the formation of the three major rock types. Pressure is shown in kilobars (kb). Letters *A* through *D* identify different environmental conditions for rock formation.



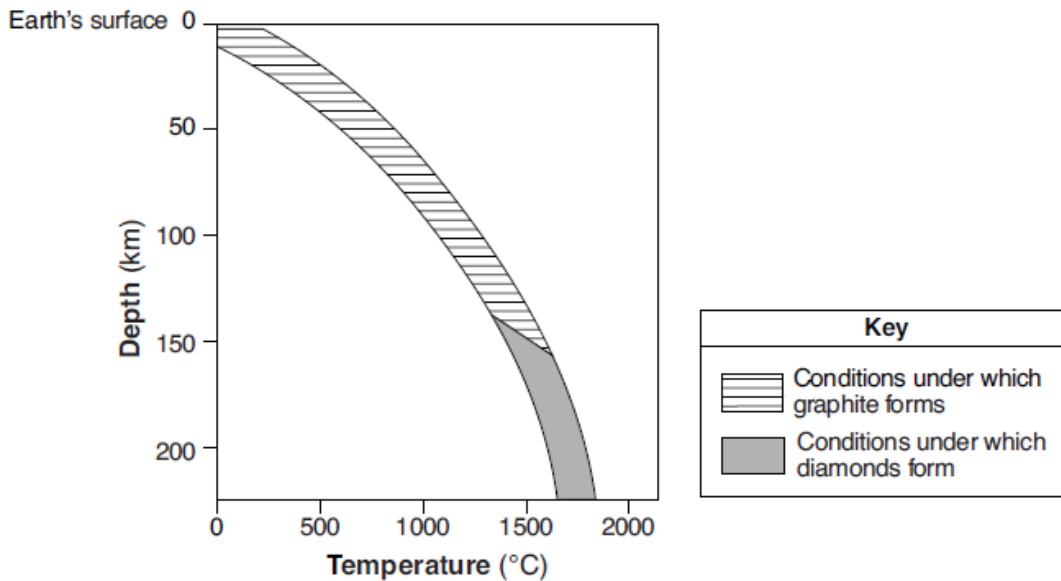
At what pressure and temperature is sand most likely to be compacted into sandstone?

- (A) 2 kb and 150°C (B) 6 kb and 200°C
(C) 10 kb and 400°C (D) 12 kb and 900°C

43. Which group lists rocks in order by grain size from smallest to largest?

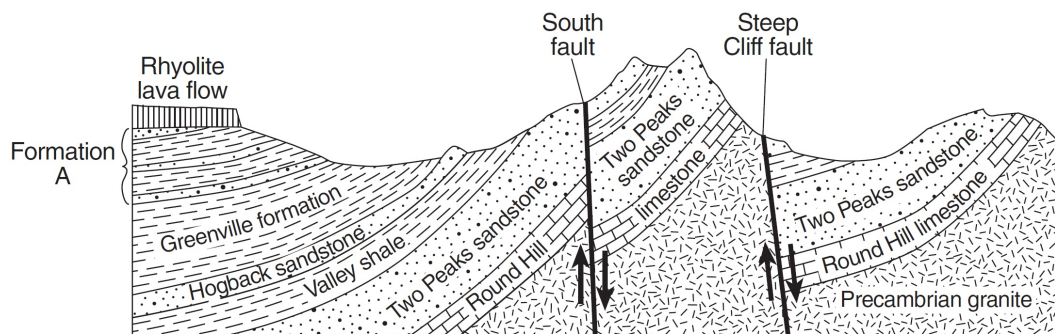
- (A) shale, sandstone, conglomerate
(B) shale, conglomerate, sandstone
(C) sandstone, shale, conglomerate
(D) conglomerate, sandstone, shale

44. The graph below shows the depth and temperature conditions in Earth's interior under which carbon becomes either the mineral graphite or the mineral diamond.



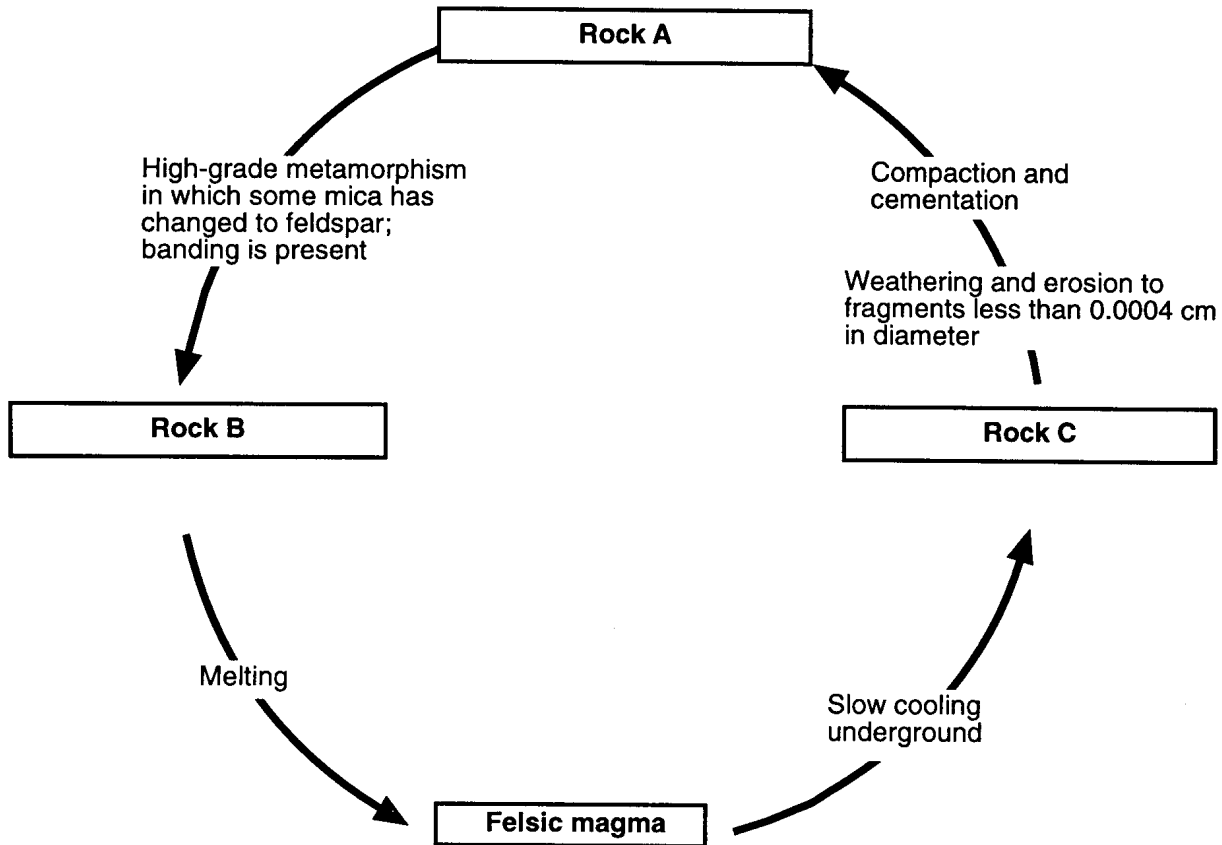
Compared to the depth and temperature conditions under which graphite forms, describe the difference in the relative depth and relative temperature conditions under which most diamonds form.

45. Base your answer to the following question on the cross section below and on your knowledge of Earth science. The cross section represents rock formations that exist in the southwestern part of the United States. Names of the faults and rock units are indicated on the diagram.



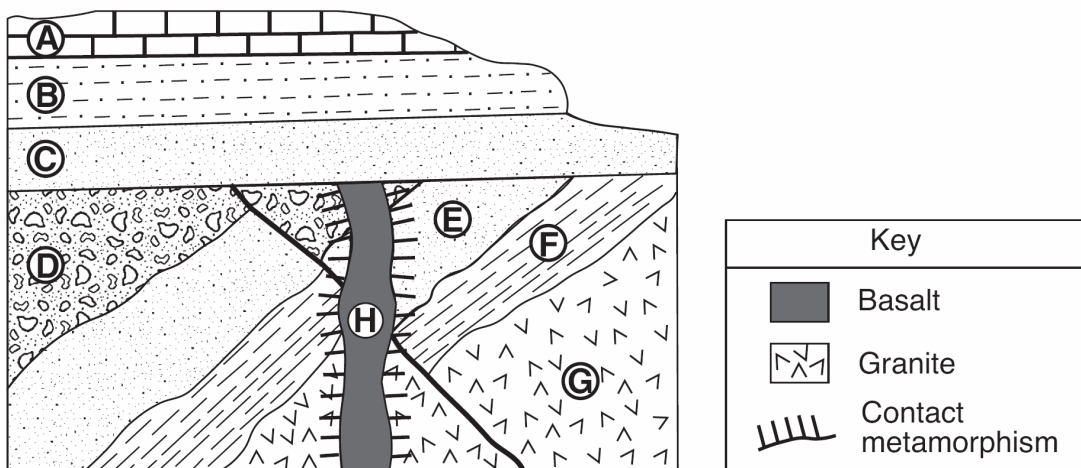
Formation A consists of three thin sandstone layers interbedded with shale layers. Hornfels and quartzite are found at the top of formation A. Describe how the hornfels and quartzite formed.

46. Base your answer to the following question on the rock cycle diagram below.



State the specific names of rocks *A*, *B*, and *C* in the diagram. Do *not* write the terms "sedimentary," "igneous," and "metamorphic."

47. Base your answer to the following question on the cross section below. Letters *A* through *H* represent rock units in which overturning has not occurred.



State the diameter of a particle normally found in rock unit *B*.

ANSWER KEY: goo.gl/zqV1hi

48. Base your answer to the following question on the information below.

A student on a field trip in New York State collected a sample of metamorphic bedrock containing bands of coarse-grained crystals of plagioclase feldspar, pyroxene, quartz, and mica. Identify the metamorphic rock found by the student.

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

Carbon

Carbon may be the most important element on our planet because it is the chemical building block of all living things. The element carbon is formed in dying stars and scattered when the stars explode. Our solar system formed from such star remnants. Pure carbon comes in several forms, which include the minerals graphite and diamond (hardness = 10), and the fossil fuels bituminous coal and anthracite coal. Almost all diamonds are mined from igneous rocks that originate at an approximate depth of 150 kilometers under immense pressure. Most graphite is formed through the metamorphism of organic material in rocks closer to Earth's surface.

Identify *two* uses for the mineral graphite.

50. A family wants to use rock materials as flooring in the entrance of their new house. They have narrowed their choice to granite or marble. Which of these rocks is more resistant to the physical wear of foot traffic and explain why this rock is more resistant.