

ROCKS

Aim 5: What is the rock cycle?

HW from “Reviewing Earth Science, the Physical Setting”

- Read “Rock Cycle” p45&46
- Do all questions on Part A&B-1 on p46&47

Review Unit

- Do all Chapter Review Questions p49-53

Rocks change and cycle through major processes. See RT page 6.

Melting and solidification to make igneous rocks

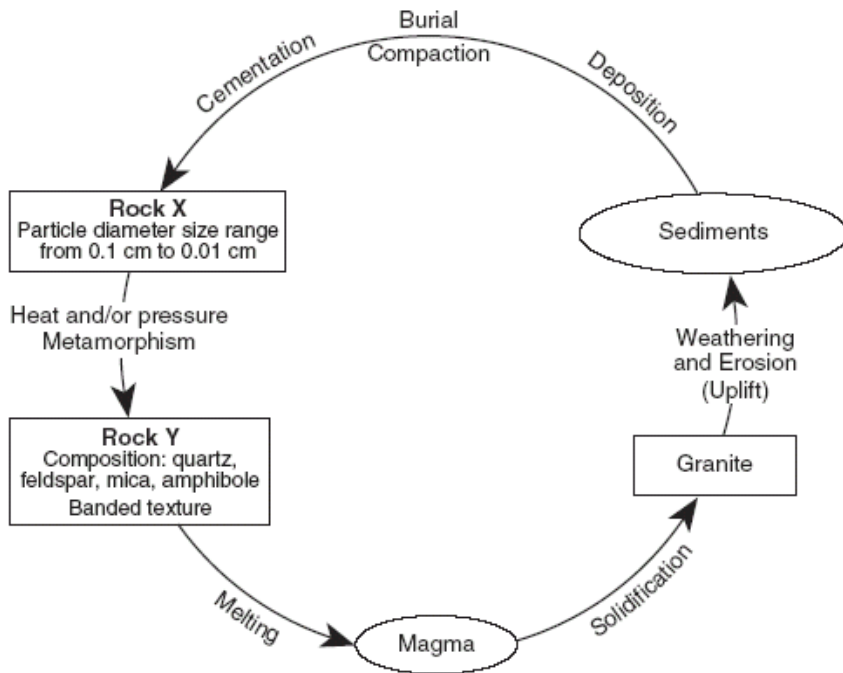
Uplift, Weathering and Erosion to make sediments

Deposition, Burial, Compaction and Cementation to make sedimentary rocks

Heat and/or Pressure (Metamorphism) to make metamorphic rocks

Test your understanding

8/07
Base your answers to questions 60 through 62 on the diagram below, which represents a part of the rock cycle. The igneous rock, granite, and the characteristics of sedimentary rock X and metamorphic rock Y are shown.



60 Identify sedimentary rock X.

61 Identify metamorphic rock Y.

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

Characteristic of Granite	Description
Texture	
Color	
Density	

Base your answers to questions 54 through 56 on the data table below, which shows some characteristics of four rock samples, numbered 1 through 4. Some information has been left blank.

Data Table

Rock Sample Number	Composition	Grain Size	Texture	Rock Name
1	mostly clay minerals		clastic	shale
2	all mica	microscopic, fine	foliated with mineral alignment	
3	mica, quartz, feldspar, amphibole, garnet, pyroxene	medium to coarse	foliated with banding	gneiss
4	potassium feldspar, quartz, biotite, plagioclase feldspar, amphibole	5 mm		granite

54 State a possible grain size, in centimeters, for most of the particles found in sample 1.

55 Write the rock name of sample 2.

56 Write a term or phrase that correctly describes the texture of sample 4.

1/06

34 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.

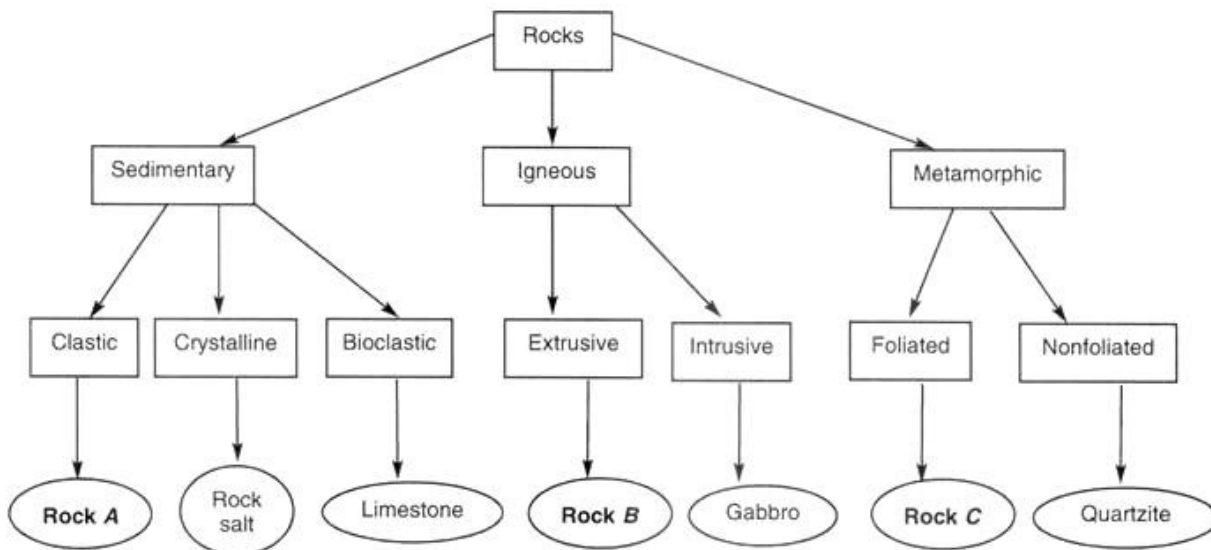
This rock sample is most likely

- (1) sandstone (2) gabbro (3) granite (4) phyllite

2003-8

Base your answers to questions 75 through 78 on the Rock Classification flowchart shown below. Letters A, B, and C represent specific rocks in this classification scheme.

Rock Classification Flowchart

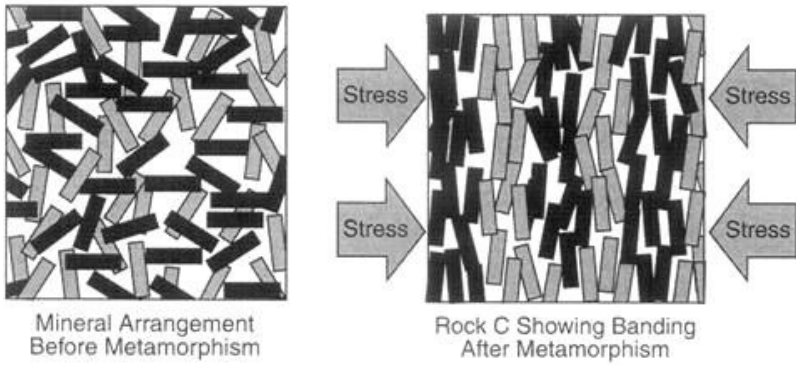


75 Rock A is composed of very fine-grained quartz and feldspar particles 0.005 centimeter in diameter. State the name of rock A.

76 Rock B has a glassy, vesicular texture and is composed mainly of potassium feldspar and quartz. State the name of rock B.

77 Granite could be placed in the same position in the flowchart above as gabbro. Describe two differences between granite and gabbro.

78 The diagram below represents two magnified views showing the arrangement of minerals before and after metamorphism of rock C. State the name of rock C.

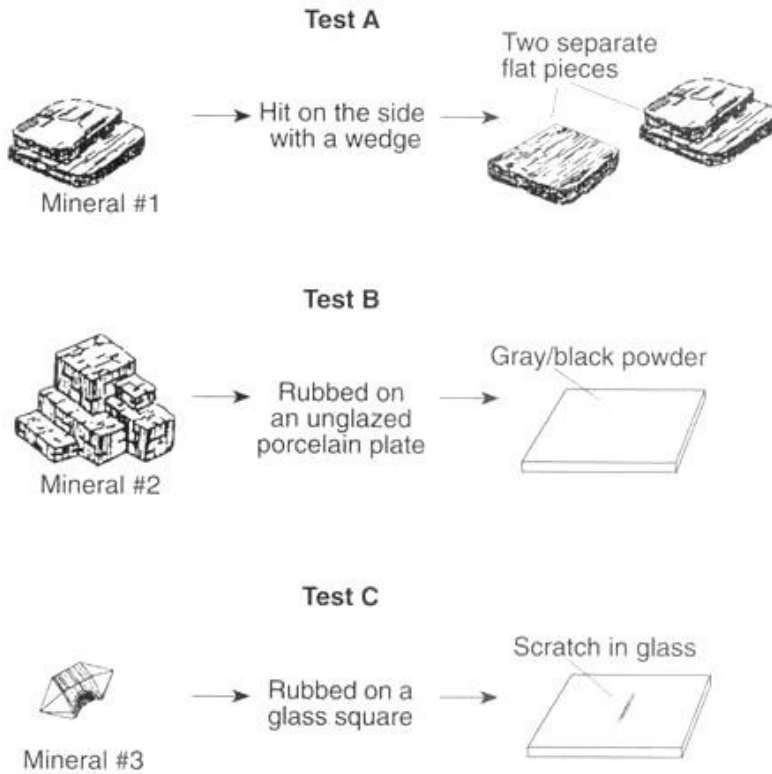


2003-6

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

- (1) phyllite (2) schist (3) gneiss (4) quartzite

Base your answers to questions 29 and 30 on the diagram below, which shows three minerals with three different physical tests, A, B, and C, being performed on them.



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

- (1) A-cleavage; B-streak; C-hardness
 (2) A--cleavage; B-hardness; C-streak
 (3) A-streak; B-cleavage; C-hardness
 (4) A-streak; B-hardness; C-cleavage

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

- (1) rate of weathering of the minerals
 (2) identity of the minerals
 (3) environment where the minerals formed
 (4) geologic period when the minerals formed

32 During the intrusion of the Palisades Sill, contact metamorphism changed sandstone and shale into

- (1) diorite (2) marble (3) limestone (4) hornfels

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

- (1) precipitation from seawater (2) solidification of magma
(3) folding of clay-sized particles (4) melting of sand-sized particles

Base your answers to questions 61 and 62 on the information below and on your knowledge of Earth science.

Howe Caverns

Many scientists believe that the formation of the rocks in which Howe Caverns is now found began millions of years ago. At that time, an ocean covered the eastern region of New York State. Hundreds of feet of calcium carbonate (CaCO_3) sediments were deposited in layers along the edge of this ocean. These layers eventually formed the sedimentary rock limestone, which makes up the walls of today's Howe Caverns.

Much later, tectonic forces raised this region of New York State above sea level exposing the rock to weathering and erosion. These tectonic forces cracked the thick limestone, creating pathways for groundwater to infiltrate and gradually increase the size of the cracks. Eventually some of the larger cracks provided pathways for the underground stream, which carved the winding passages of Howe Caverns seen today.

61 State two processes that caused these sediments to become limestone.

62 Identify one method that could be used to determine that the walls of Howe Caverns are made of limestone.

2002-6

4 The diagrams below represent four rock samples. Which rock was formed by rapid cooling in a volcanic lava flow?

[The diagrams are not to scale.]



Bands of alternating light and dark minerals

(1)



Glassy black rock that breaks with a shell-shape fracture

(3)



Easily split layers of 0.0001-cm-diameter particles cemented together

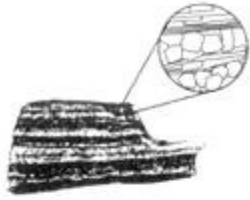
(2)



Interlocking 0.5-cm-diameter crystals of various colors

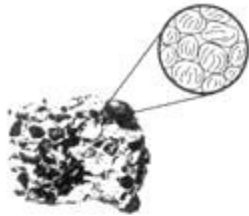
(4)

Base your answers to questions 46 and 47 on the pictures of four rocks shown below. Magnified views of the rocks are shown in the circles.



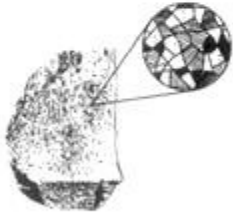
Rock 1

Bands of coarse intergrown crystals of various sizes



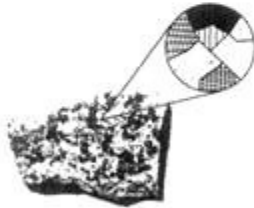
Rock 2

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

46 Which rock is metamorphic and shows evidence of foliation?

- (1) 1 (2) 2 (3) 3 (4) 4

47 What do all four rock samples have in common?

- (1) They show cleavage. (2) They contain minerals.
(3) They are organically formed. (4) They formed on Earth's surface.