

### Chapter 3 Self-Test: Rocks

Successful students test themselves before major tests and exams. You don't know what you don't know until you test yourself.

1. Start by answering all the questions you can without your notes or the book and circle these problem numbers. If you can answer at least half of the questions without your notes or the book then you are in good shape. If not, you have a lot of work (learning) to do between now and the day of the test.
2. For those questions that you did not circle, identify which section (e.g. 4.1, 4.4) in the book covers each question in the left-hand margin.
3. Start by reading the entire section that you wrote down most often. Your goal is not to word search or to look up answers, but to read for understanding.
4. When you get to a paragraph or page with information pertaining to one of your questions, read the entire page or paragraph carefully and think of how you could organize the information in your science journal so that you understand it better.

#### Classification of Major Sedimentary Rocks

Clastic Sedimentary Rocks				Chemical Sedimentary Rocks					
Texture (grain size)	Sediment Name	Rock Name		Composition	Texture (grain size)	Rock Name			
Coarse (over 2 mm)	Gravel (rounded fragments)	Conglomerate		Calcite, CaCO <sub>3</sub>	Fine to coarse crystalline	Crystalline Limestone			
	Gravel (angular fragments)	Breccia				Travertine			
Medium (1/16 to 2 mm)	Sand	Sandstone				Visible shells and shell fragments loosely cemented	Coquina		
							Fossiliferous Limestone		
Fine (1/16 to 1/256 mm)	Mud	Siltstone			Microscopic shells and clay	Chalk			
Very fine (less than 1/256 mm)	Mud	Shale				Quartz, SiO <sub>2</sub>	Very fine crystalline	Chert (light colored) Flint (dark colored)	
					Gypsum CaSO <sub>4</sub> •2H <sub>2</sub> O			Fine to coarse crystalline	Rock Gypsum
					Halite, NaCl		Fine to coarse crystalline	Rock Salt	
				Altered plant fragments	Fine-grained organic matter		Bituminous Coal		

Figure 3-2

- \_\_\_\_\_ 1. According to Figure 3-2, what type of rock is composed of very fine crystalline quartz?
- a. chalk
  - b. sandstone
  - c. rock gypsum
  - d. flint

- \_\_\_\_ 2. According to Figure 3-2, a coarse-grained rock with angular fragments would be classified as a \_\_\_\_.
- |                 |                          |
|-----------------|--------------------------|
| a. conglomerate | c. breccia               |
| b. sandstone    | d. crystalline limestone |
- \_\_\_\_ 3. Which of the following is NOT an agent of metamorphism?
- |                  |                            |
|------------------|----------------------------|
| a. heat          | c. pressure                |
| b. running water | d. a hydrothermal solution |
- \_\_\_\_ 4. Which agent of metamorphism can cause the overall composition of the rock to change?
- |                            |                  |
|----------------------------|------------------|
| a. heat                    | c. pressure      |
| b. a hydrothermal solution | d. running water |
- \_\_\_\_ 5. Which of the following metamorphic rocks has a nonfoliated texture?
- |           |           |
|-----------|-----------|
| a. slate  | c. marble |
| b. gneiss | d. schist |
- \_\_\_\_ 6. The foliated metamorphic rock that forms when the sedimentary rock shale is subjected to relatively low temperatures and pressures is \_\_\_\_.
- |            |              |
|------------|--------------|
| a. marble  | c. quartzite |
| b. granite | d. slate     |

### Completion

Complete each statement.

7. A(n) \_\_\_\_\_ is a solid mass of mineral or mineral-like matter that occurs naturally.
8. Rocks are generally classified as igneous, \_\_\_\_\_, or metamorphic.
9. Because of the processes that take place within the \_\_\_\_\_, rocks can change from one type to another.
10. The rock cycle is driven internally by heat from \_\_\_\_\_, and externally by energy from the sun.
11. \_\_\_\_\_ rocks form when magma hardens and cools.
12. When igneous rocks cool rapidly, and ions do not have time to unite into an orderly crystalline structure, \_\_\_\_\_ texture results.
13. An igneous rock that contains mostly pyroxene and olivine has a(n) \_\_\_\_\_ composition.
14. During the processes of erosion and deposition, sediments that are the \_\_\_\_\_ in size will be carried the greatest distances before being deposited.
15. Because of the way they form, crystalline limestone and chert are classified as \_\_\_\_\_ sedimentary rocks.
16. In an undisturbed sequence of sedimentary rocks, the oldest rocks would be at the \_\_\_\_\_ of the sequence.
17. Most \_\_\_\_\_ rocks form under conditions found a few kilometers under Earth's surface.
18. Large-scale folding of rocks during the process of mountain building is characteristic of a(n) \_\_\_\_\_ metamorphism setting.
19. A(n) \_\_\_\_\_ is a hot, water-rich fluid that is associated with a cooling magma body.

Name: \_\_\_\_\_

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20. Metamorphic rocks that are composed of only one mineral, and that form large interlocking crystals, often have a(n) \_\_\_\_\_ texture.
21. The parent rock of the nonfoliated metamorphic rock called \_\_\_\_\_ is commonly a quartz sandstone.

### Short Answer

22. What is a rock?
23. What are the **three major types** of rocks?
24. Which type of rock in the rock cycle can only be formed at depths of **a few kilometers below** Earth's surface?
25. What two **sources** of energy drive the processes that form rocks in the rock cycle?
26. What is the **difference** between extrusive igneous rocks and intrusive igneous rocks?
27. What **factor** most influences the size of mineral crystals in igneous rocks?
28. List and briefly describe the **two characteristics** used to classify igneous rocks.
29. What are the **major erosional agents** that can **pick up, transport, and deposit** the products of weathering?
30. What are the **two main groups** of sedimentary rocks?

31. What are fossils **and** why are they useful?
  
32. **Where** does most metamorphism take place?
  
33. What type of metamorphism occurs during mountain building, resulting in the formation of high-grade metamorphic rocks?
  
34. What are the **three agents** of metamorphism?
  
35. **Compare and contrast** the metamorphic rocks marble and gneiss.
  
36. How would a fine-grained foliated metamorphic rock be **classified**?

### Essay

37. Explain the rock cycle by describing how an igneous rock can become a sedimentary rock, then a metamorphic rock, and then an igneous rock again.
38. What are the most common minerals in clastic sedimentary rocks, and why are these minerals so abundant?