

# Note-taking Worksheet

## Rocks

### Section 1 The Rock Cycle

- A. \_\_\_\_\_—mixture of minerals, volcanic glass, organic matter, or other material
- B. \_\_\_\_\_—model showing processes that create and change rock
1. \_\_\_\_\_ rock can be changed by heat and pressure into metamorphic rock.
  2. \_\_\_\_\_ rock can melt and cool to form igneous rock.
  3. \_\_\_\_\_ rock can be broken into fragments that may later form sedimentary rock.
- C. Conservation of \_\_\_\_\_—rock cycle never destroys elements of rocks but merely redistributes them
- D. \_\_\_\_\_ recognized the rock cycle in 1788 by observing Siccar Point, Scotland.

### Section 2 Igneous Rock

- A. \_\_\_\_\_ form from magma found deep under Earth's surface.
1. Magma reaching the surface flows from a volcano as \_\_\_\_\_.
  2. Magma trapped below the surface forms large-grained \_\_\_\_\_ igneous rock when it cools.
  3. Magma cooling at or near Earth's surface forms small-grained \_\_\_\_\_ igneous rock.
  4. \_\_\_\_\_ igneous rocks are dark-colored and dense.
    - a. Contain \_\_\_\_\_ and \_\_\_\_\_ but very little silica
    - b. Basaltic lava flows \_\_\_\_\_ from a volcano.
  5. \_\_\_\_\_ igneous rocks are lower density and lighter color.
    - a. Contain more \_\_\_\_\_ and less iron and magnesium
    - b. Granitic magma is \_\_\_\_\_ and \_\_\_\_\_.
  6. \_\_\_\_\_ rocks have a more balanced composition of minerals and density than basaltic or granitic rocks.
  7. Crystal \_\_\_\_\_, large or small, can help identify an igneous rock as intrusive or extrusive.
  8. Volcanic glass rocks \_\_\_\_\_ so quickly that few crystals form.
  9. Some rocks have \_\_\_\_\_ formed around once-trapped air and other gases.
- B. Igneous rocks are \_\_\_\_\_ in two ways.
1. Where they formed—\_\_\_\_\_ (under the Earth's surface) or \_\_\_\_\_ (at or near the Earth's surface)

A. Metamorphic rocks—changed by \_\_\_\_\_, \_\_\_\_\_, and hot fluids

1. \_\_\_\_\_ and \_\_\_\_\_ result from one layer of rock on top of another layer.
  - a. Sometimes temperature and pressure are great enough to \_\_\_\_\_ rock, forming magma.
  - b. Sometimes pressure \_\_\_\_\_ mineral grains in rocks without melting them.
  - c. As pressure and temperature continue to increase over time, one type of rock can change into \_\_\_\_\_ metamorphic rocks.
2. Hot, water-rich \_\_\_\_\_ can move through rock, chemically changing it.

B. Classification of metamorphic rocks—by composition and \_\_\_\_\_

1. \_\_\_\_\_ texture—mineral grains flatten and line up in parallel layers or bands
2. \_\_\_\_\_ texture—mineral grains grow and rearrange but do not form layers

## Section 4 Sedimentary Rocks

A. \_\_\_\_\_ rocks—mostly found on the exposed surface of Earth

1. Rock fragments, mineral grains, and bits of plants and animal remains moved by wind, water, ice or gravity are called \_\_\_\_\_.
2. Sedimentary rocks form in \_\_\_\_\_.

B. Sedimentary rocks—\_\_\_\_\_ by what they were made of and how they were formed

C. \_\_\_\_\_ sedimentary rocks—made from broken fragments of other rocks

1. When layers of small sediments stick together because of pressure, \_\_\_\_\_ occurs.
2. When water and other minerals move through open spaces between larger sediments, gluing them together, \_\_\_\_\_ occurs.
3. Detrital rocks often have a \_\_\_\_\_ texture.
  4. Rocks are named according to \_\_\_\_\_ and \_\_\_\_\_ of sediments.
    - a. Sediment size can be large like \_\_\_\_\_ or small like \_\_\_\_\_.
    - b. Sediments can be \_\_\_\_\_ or have \_\_\_\_\_ angles.

D. Chemical sedimentary rocks—non-clastic rocks formed when dissolved \_\_\_\_\_ came out of solution

1. Limestone forms from \_\_\_\_\_, which was calcium carbonate in solution.
2. Rock salt forms from \_\_\_\_\_, which was salt in solution.

E. Organic sedimentary rocks—made from \_\_\_\_\_ of once-living plants or animals

1. \_\_\_\_\_—made of microscopic calcite-shell remains of animals
2. \_\_\_\_\_—made of plant remains, chemically changed by microorganisms and compacted over millions of years

F. Rock cycle—a \_\_\_\_\_ and dynamic process



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

Date: \_\_\_\_\_

ROCKS AND MINERALS



# The Rock Cycle

## DIAGRAM LABELING

**DIRECTIONS:** Rocks can undergo three types of changes over millions of years as they move through the **rock cycle**. For each transition between types of rocks, describe the change that occurs. Label the arrows in the diagram below by writing each phrase from the word bank in the correct blank. Each phrase will be used twice.

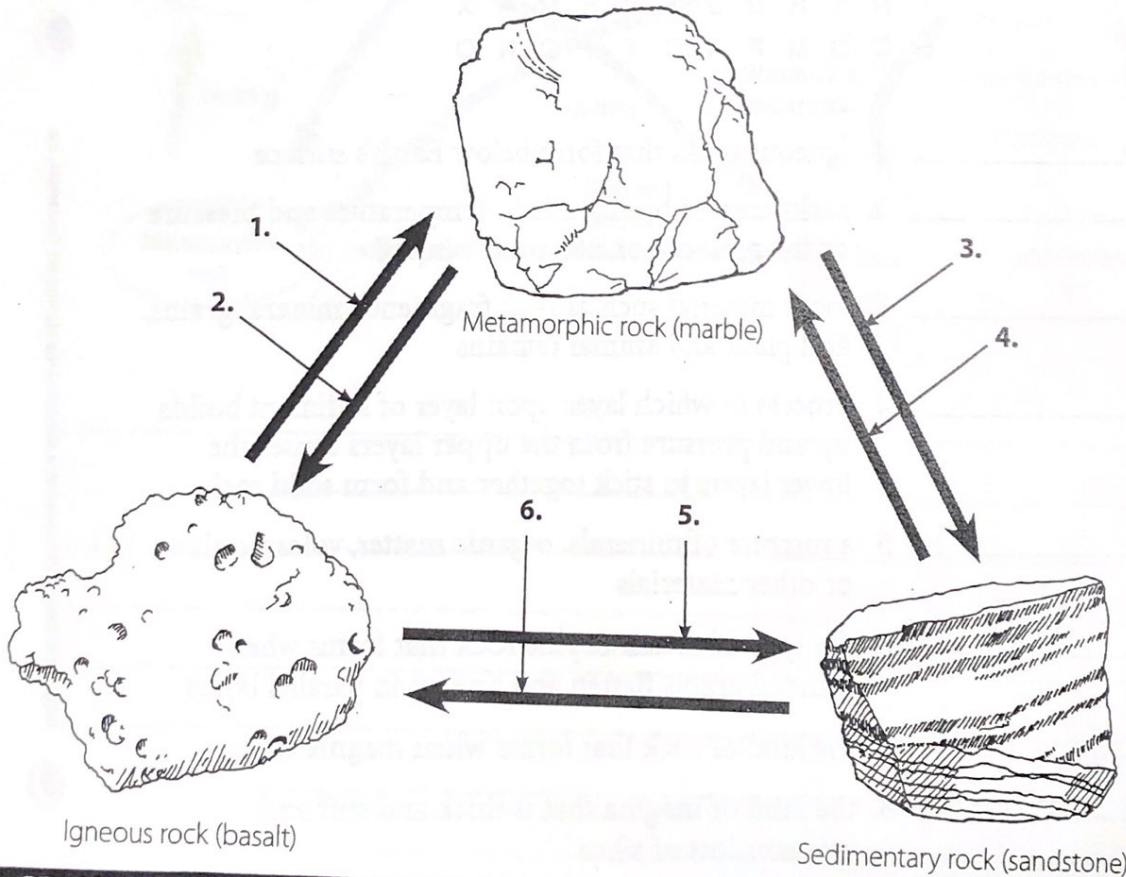
### WORD BANK

melting and crystallization

sedimentation and compaction

heating and pressure

- |          |          |
|----------|----------|
| 1. _____ | 4. _____ |
| 2. _____ | 5. _____ |
| 3. _____ | 6. _____ |







## Key Terms

### Rocks

**Directions:** Write the terms below next to their definitions on the lines provided. Then circle the terms in the puzzle.

compaction  
intrusive

foliated  
metamorphic

granitic  
sediment

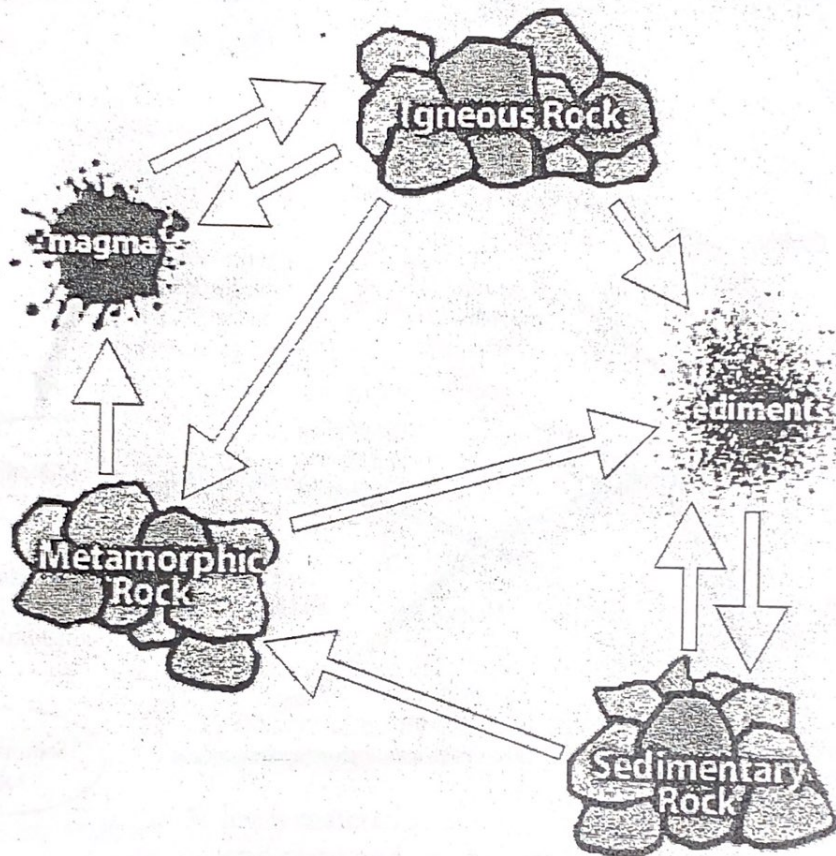
igneous  
rock

A G N T U R M Z D J S W  
R D R D O Z E A T N E V  
H F O L I A T E D V D U  
W B C L G R A N I T I C  
O I K S N S M B R L M G  
F Q M S E Y O F X C E J  
C K E K O F R E J M N Q  
B T H I U A P O K I T C  
P Y P Q S T H I P P G N  
I N T R U S I V E M H X  
E C O M P A C T I O N O

- \_\_\_\_\_ 1. igneous rocks that form below Earth's surface
- \_\_\_\_\_ 2. rocks created by changes in temperature and pressure or the presence of hot, watery liquid
- \_\_\_\_\_ 3. loose material such as rock fragments, mineral grains, and plant and animal remains
- \_\_\_\_\_ 4. process in which layer upon layer of sediment builds up and pressure from the upper layers causes the lower layers to stick together and form solid rock
- \_\_\_\_\_ 5. a mixture of minerals, organic matter, volcanic glass, or other materials
- \_\_\_\_\_ 6. the type of metamorphic rock that forms when mineral grains flatten and line up in parallel layers
- \_\_\_\_\_ 7. the kind of rock that forms when magma cools
- \_\_\_\_\_ 8. the kind of magma that is thick and stiff and contains lots of silica







Color the arrows by the given color-code:

Weathering and erosion- green

Heat and pressure- yellow

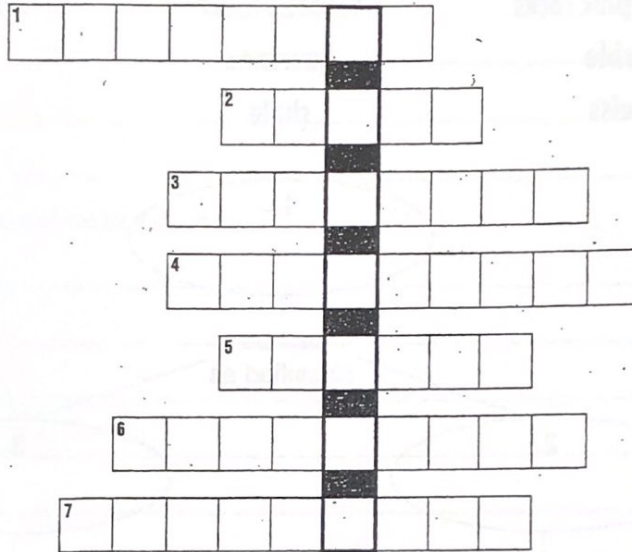
Melting- red

Cooling- blue

Compaction and cementation- purple

## Igneous Rocks

**Directions:** Write the term that matches each description below on the spaces provided. The boxed letters should spell the kind of rocks that form from magma.



1. Igneous rocks that are dense and dark-colored. They form from magma that is rich in iron and magnesium and poor in silica.
2. Thick, gooey, molten material inside a volcano or deep inside Earth
3. Igneous rocks that are light-colored and have a lower density. They form from thick, stiff magma that contains lots of silica and lesser amounts of iron and magnesium.
4. Igneous rocks that have mineral compositions between those of granitic and basaltic rocks
5. One kind of volcanic glass that has holes caused by pockets of gas
6. The kind of igneous rock that forms below Earth's surface
7. The kind of igneous rock that forms on or near Earth's surface
8. Magma forms this kind of rock. \_\_\_\_\_





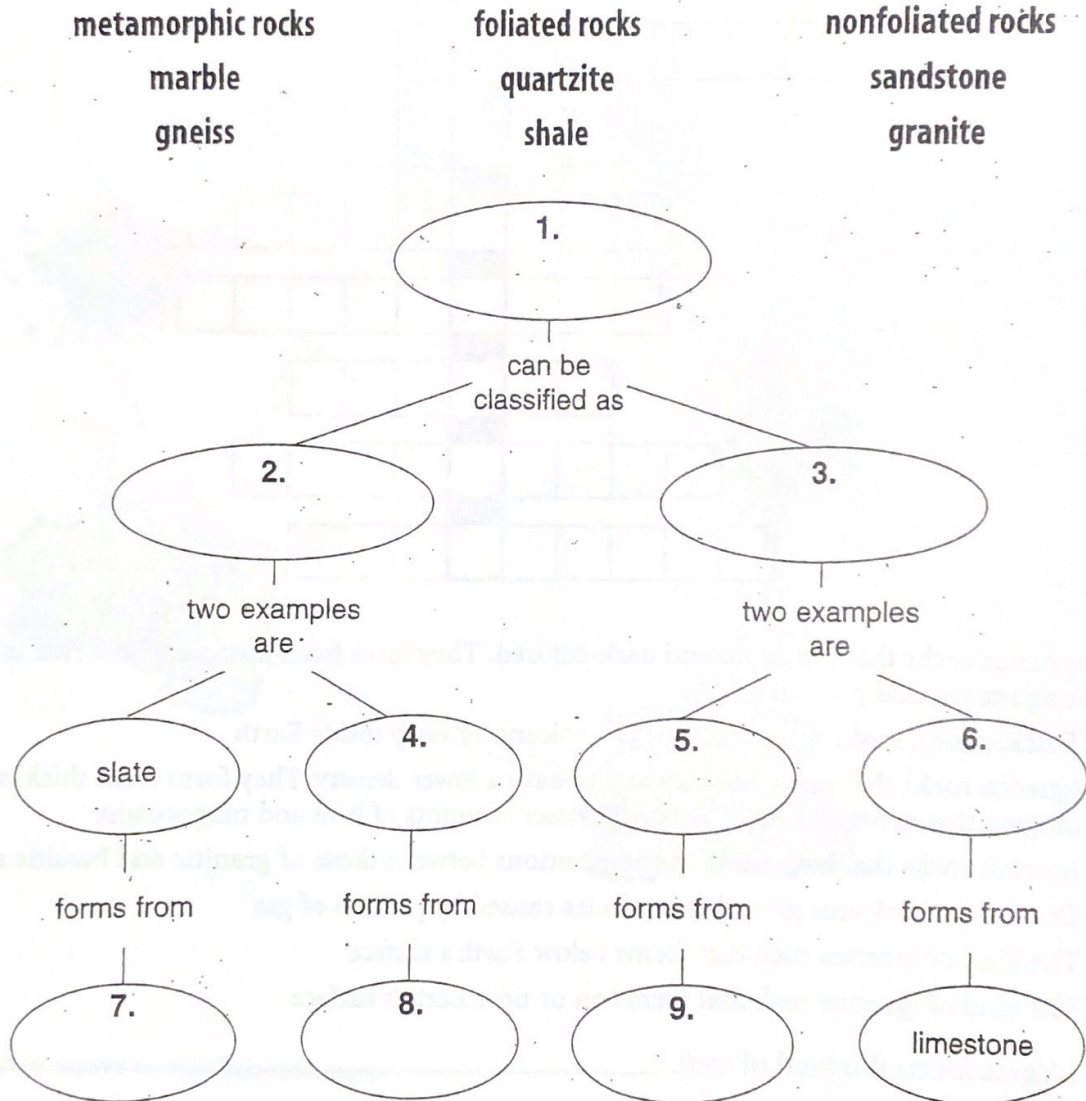
## SECTION

## 3

## Reinforcement

## Metamorphic Rocks

Directions: Complete the concept map using the terms below.



Directions: Write **T** if the statement is true. Write **F** if the statement is false.

- \_\_\_\_\_ 10. Metamorphic rocks form only from igneous rocks.
- \_\_\_\_\_ 11. An igneous rock like granite can be formed into a metamorphic rock like gneiss.
- \_\_\_\_\_ 12. Heat and pressure have no effect on rocks.
- \_\_\_\_\_ 13. One type of rock, such as shale, can change into several different kinds of metamorphic rock.



Directions: Complete the outline by filling in the blanks.

### Sedimentary Rocks

#### I. Materials that make up sediments

A. \_\_\_\_\_

B. \_\_\_\_\_

C. \_\_\_\_\_

#### II. Ways sedimentary rocks can form

A. \_\_\_\_\_

Definition: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

B. \_\_\_\_\_

Definition: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

C. \_\_\_\_\_

Definition: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

#### III. Classification of sedimentary rocks

A. \_\_\_\_\_

Examples: \_\_\_\_\_

B. \_\_\_\_\_

Examples: \_\_\_\_\_

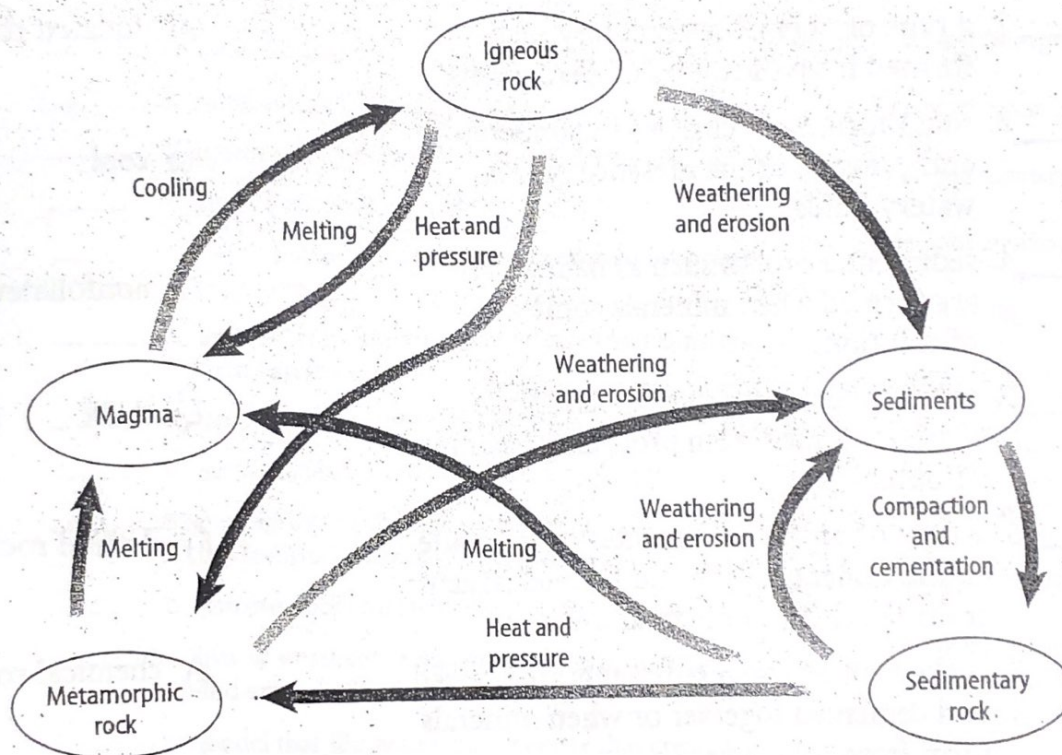
C. \_\_\_\_\_

Examples: \_\_\_\_\_

Directed Reading for  
Content Mastery

Section 1 ■ The Rock Cycle  
Section 2 ■ Igneous Rocks

Directions: Study the following diagram. Then answer the questions below.



- The diagram shows the three types of rock and the processes that form them. This process is called the \_\_\_\_\_.
- Lava and \_\_\_\_\_ can cool to become igneous rocks.
- Heat and pressure can turn sedimentary or \_\_\_\_\_ rocks into metamorphic rocks.
- Metamorphic rock can \_\_\_\_\_ and then cool to become igneous rock.
- Weathering and erosion break igneous and other types of rock into smaller pieces called \_\_\_\_\_.



Name \_\_\_\_\_

Date \_\_\_\_\_

Class \_\_\_\_\_

**Directed Reading for  
Content Mastery**
**Section 3 ■ Metamorphic Rocks  
Section 4 ■ Sedimentary Rocks**

**Directions:** Draw a line from the description on the left to the correct term on the right.

- |   |                          |
|---|--------------------------|
| _____ 1. a type of metamorphic rock in which mineral grains grow and rearrange but do not form layers                       | A) metamorphic rocks     |
| _____ 2. a type of organic sedimentary rock formed from the pieces of dead plants   | B) foliated rock         |
| _____ 3. rocks formed by changes in temperature and pressure or the presence of hot, watery fluids                          | C) coal                  |
| _____ 4. sedimentary rocks such as halite that are formed when minerals come out of solution                                | D) nonfoliated rock      |
| _____ 5. sedimentary rocks such as sandstone that are formed from broken fragments of other rocks                           | E) chalk                 |
| _____ 6. a type of organic sedimentary rock made of the mineral calcite and formed largely from the shells of ocean animals | F) detrital rocks        |
| _____ 7. rocks formed when sediments are pressed and cemented together or when minerals form from solutions                 | G) chemical rocks        |
| _____ 8. a type of metamorphic rock in which mineral grains flatten and line up in parallel layers                          | H) stacked rocks         |
| _____ 9. sedimentary rock in which the older rocks, unless disrupted, are on the bottom                                     | I) sedimentary rocks     |
| _____ 10. an organic sedimentary rock made of microscopic shells  | J) fossil-rich limestone |

## Chapter Review

# Rocks

### Part A. Vocabulary Review

**Directions:** Match the terms in Column II with the descriptions in Column I. Write the letter of the correct term in the blank at the left.

#### Column I

- \_\_\_\_\_ 1. rocks formed by changes in heat and pressure or the presence of hot, watery fluids
- \_\_\_\_\_ 2. rocks formed from molten material
- \_\_\_\_\_ 3. rocks formed from sediments
- \_\_\_\_\_ 4. igneous rocks formed on or near Earth's surface
- \_\_\_\_\_ 5. layered metamorphic rocks
- \_\_\_\_\_ 6. process by which sediments are pressed together to form rock
- \_\_\_\_\_ 7. light-colored igneous rocks with a lower density than basaltic rocks
- \_\_\_\_\_ 8. dense, dark-colored igneous rocks
- \_\_\_\_\_ 9. metamorphic rocks that don't have layers
- \_\_\_\_\_ 10. process by which large sediments are glued together by dissolved minerals to form rock
- \_\_\_\_\_ 11. igneous rocks formed below Earth's surface
- \_\_\_\_\_ 12. bits of weathered rock, minerals, grains, plants, and animals that have been eroded
- \_\_\_\_\_ 13. model that illustrates the processes that create and change rocks
- \_\_\_\_\_ 14. magma that reaches Earth's surface and flows from volcanoes
- \_\_\_\_\_ 15. a mixture of minerals, organic matter, volcanic glass, or other materials

#### Column II

- a. granitic
- b. metamorphic rocks
- c. rock cycle
- d. sedimentary rocks
- e. cementation
- f. basaltic
- g. rock
- h. extrusive
- i. sediments
- j. igneous rocks
- k. compaction
- l. intrusive
- m. foliated
- n. lava
- o. nonfoliated



## Part B. Concept Review

**Directions:** Answer the following questions using complete sentences.

1. Suppose you found an igneous rock that had almost even amounts of silica, iron, and magnesium. How would you classify this rock? Why?

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2. How do detrital, chemical, and organic sedimentary rocks differ from one another?

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3. Your friend challenges you to tell what you know about a rock without seeing it. You are given a one-word hint: clastic. What can you tell your friend about the rock?

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4. What makes the rock cycle a "cycle"?

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5. What is cementation?

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# 1. Testing Concepts

NAME \_\_\_\_\_

Directions: For each of the following, write the letter of the term that best completes the statement.

- \_\_\_\_\_ 1. Magma that cools below Earth's surface forms \_\_\_\_\_ rock.  
a. extrusive metamorphic                      c. intrusive metamorphic  
b. extrusive igneous                              d. intrusive igneous
- \_\_\_\_\_ 2. The processes involved in the rock cycle include all of the following EXCEPT \_\_\_\_\_.  
a. condensation      b. erosion              c. weathering              d. compaction
- \_\_\_\_\_ 3. Foliated rocks are distinguished by \_\_\_\_\_.  
a. large pores                                      c. the enlargement of mineral grains  
b. layers    d. the shape and size of the sediments
- \_\_\_\_\_ 4. Lava that cools quickly forms \_\_\_\_\_ rocks.  
a. extrusive metamorphic                      c. intrusive metamorphic  
b. extrusive igneous                              d. intrusive igneous
- \_\_\_\_\_ 5. Metamorphic rocks can be formed from all of the following EXCEPT \_\_\_\_\_.  
a. the formation of minerals from solutions  
b. the presence of hot, watery fluids  
c. temperature  
d. pressure
- \_\_\_\_\_ 6. Quartz is a mineral; granite is \_\_\_\_\_.  
a. also a mineral      b. a rock                      c. glass                      d. mica
- \_\_\_\_\_ 7. A classification of metamorphic rocks would include whether they are \_\_\_\_\_.  
a. chemical or organic                              c. foliated or nonfoliated  
b. intrusive or extrusive                              d. basaltic or granitic
- \_\_\_\_\_ 8. Sedimentary rocks are \_\_\_\_\_.  
a. formed below Earth's surface as magma  
b. a type of foliated igneous rock  
c. formed by great heat  
d. formed from already existing rocks that are weathered and eroded
- \_\_\_\_\_ 9. Andesitic rocks have mineral compositions between those of \_\_\_\_\_ and basaltic rocks.  
a. conglomerate                                      c. granitic  
b. metamorphic                                      d. organic
- \_\_\_\_\_ 10. The changes that take place in the rock cycle \_\_\_\_\_.  
a. create matter  
b. destroy matter  
c. create and destroy matter  
d. never create nor destroy matter

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Assessment

True / False \_\_\_\_\_

\_\_\_\_\_ 6. Metamorphic rocks can form from igneous but not from sedimentary rocks.  
\_\_\_\_\_  
\_\_\_\_\_



- \_\_\_\_\_ 11. Detrital rocks are \_\_\_\_\_.
- a. made of fragments of other rocks
  - b. formed from magma
  - c. precipitated from solution
  - d. all of these
- \_\_\_\_\_ 12. The rock cycle indicates that each type of rock can \_\_\_\_\_.
- a. provide materials to make other rocks
  - b. form other types of rocks
  - c. be changed by natural processes
  - d. all of the above
- \_\_\_\_\_ 13. Pumice, obsidian, and scoria are kinds of \_\_\_\_\_.
- a. granite
  - b. volcanic glass
  - c. intrusive rocks
  - d. andesitic rocks
- \_\_\_\_\_ 14. A rock is \_\_\_\_\_.
- a. always made of molten material
  - b. a mixture of minerals, organic matter, volcanic glass, or other materials
  - c. a pure mineral
  - d. either igneous or sedimentary
- \_\_\_\_\_ 15. The crystals that form in slowly cooling magma are generally \_\_\_\_\_.
- a. nonexistent
  - b. invisible
  - c. tiny
  - d. large
- \_\_\_\_\_ 16. Detrital rocks are named according to \_\_\_\_\_.
- a. their ages
  - b. their locations
  - c. the size and shape of the sediments
  - d. the color of the sediments
- \_\_\_\_\_ 17. Sedimentary rocks are usually classified as \_\_\_\_\_.
- a. intrusive or extrusive
  - b. foliated or nonfoliated
  - c. basaltic, granite, or andesitic
  - d. detrital, chemical, or organic

## II. Understanding Concepts

**Directions:** *Identify each statement as true or false. Rewrite false statements to make them correct.*

- \_\_\_\_\_ 1. The composition of a sedimentary rock depends upon the composition of the rocks and living things its sediments came from.
- \_\_\_\_\_ 2. All igneous rocks have the same mineral compositions.
- \_\_\_\_\_ 3. Nonfoliated rocks have very narrow layering.
- \_\_\_\_\_ 4. Sedimentary rock can be formed from changes in igneous rock, but igneous rock cannot be formed from changes in sedimentary rock.
- \_\_\_\_\_ 5. Metamorphic rocks can form from other metamorphic rocks.