

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

## Study Guide for Test : Minerals, Rock Cycle & Mining

Copy of Class Notes at <http://feldmannscience.weebly.com> Access website by computer or mobile device!  
Tutoring offered after school on Wednesday November 19<sup>th</sup>

### Test on Thursday November 20<sup>th</sup>

\*\*Turn in your completed study guide on the day of test to receive extra credit points on your test\*\*

#### 11-10-14 Introduction to Minerals (Additional Reference: Textbook Pages 77-83)

1. Main Idea: Minerals are naturally occurring, inorganic \_\_\_\_\_ with a specific \_\_\_\_\_ composition and a definite \_\_\_\_\_ structure.

2. Crystal Structure has an ordered pattern of \_\_\_\_\_.

3. The most common elements in Earth's crust are:

_____	O	46.6%
_____	Si	27.7%
_____	Al	8.1%
_____	Fe	5.0%

4. Silicates are minerals that contain \_\_\_\_\_ and \_\_\_\_\_ and they make up 96% of the minerals found in Earth's crust.

#### 11-12-14 Properties of Minerals (Additional Reference: Textbook Pages 84-91)

Main Idea: Minerals can be identified by their crystalline structure, color, luster, streak color, hardness, cleavage/fracture and density.

5. Using the word bank, match the following terms to their appropriate descriptions.

Minerals	Streak Color	Color	Crystal	Luster
Density	Cleavage	Moh's Scale	Hardness	Fracture

	Naturally occurring, inorganic solid with a specific chemical composition and a definite crystalline structure.
	The solid form of a mineral in which the atoms are arranged in repeating patterns.
	Typically used in Earth Science to describe the characteristic outer color of a mineral.
	How light is reflected off the surface of the mineral. Examples: Glassy, Shiny, Metallic, Dull
	The color of the powder of a mineral by scratching the mineral along a white porcelain plate.
	In Geology, the ability of a mineral to resist scratches.
	A series of ten minerals used as a scale of hardness, from 1 softest to 10 hardest.
	The ability of a mineral to break along preferred planes. A "smooth" break.
	When a mineral does not break in a predictable pattern. Opposite of cleavage. A more "rough" break.
	Calculated by: = $\frac{\text{mass (in grams)}}{\text{volume (in milliliters)}}$

Mineral Name	Luster	Streak Color	Hardness	Cleavage or Fracture?	Magnetic?
Pyrite	Metallic	Black	6	Fracture	No
Carnotite	Earthy/Dull	Yellow	2	Cleavage	No
Halite	Glassy	White	2 to 3.5	Cleavage	No
Anatase	Metallic	White	5.5 -6	Cleavage	No
Calcite	Glassy	White	3	Cleavage	No
Chromite	Metallic	Brown	5.5	Fracture	Yes
Magnetite	Metallic	Black	5.5 – 6.5	Fracture	Yes
Inesite	Glassy	Pale Pink	6	Cleavage	No
Quartz	Glassy	White	7	Fracture	No

6. Use the table above. If a student has a mineral that has a glassy luster, streak color of white and fractures, what mineral does the student have? \_\_\_\_\_

7. Use the table above. If a student has a mineral that has a metallic luster and a streak color of black, which additional test will he need to do to identify the mineral? \_\_\_\_\_

**11-13-14 Finding and Mining Ore / Effects of Mining on the Environment** (Textbook Pages 89 -91; 716-717)

Main Idea: Mining provides people with many resources they need, but mining can be hazardous to people and the environment.

8. Using the word bank, match the following terms to their appropriate descriptions.

Rock	Gem	Underground Mining
Surface Mining	Ore	Reclamation

	A natural piece of the solid Earth usually composed of one or more minerals.
	Mineral that contains a valuable substance that can be mined at a profit
	Rare, precious, highly prized mineral that can be cut, polished, and used for jewelry.
	Process in which a mining company restores land used during mining operations to its original contours and replants vegetation.
	The earth is blasted open, and rocks are taken to a refinery.
	Miners dig tunnels deep into the earth to get to the rocks.

Be familiar with the following ways in which mining activities affect the environment and land surface:

- Land Deforestation - Mining requires large areas of forest area to be cleared so that the land could be dug into by the miners.
- Loss of Biodiversity - The forests that are cleared for mining purposes are home to a large number of organisms, plants, trees, birds and animals that dwell in the forests.
- Air Pollution - Various activities at coal mines release dust and gas into the air.
- Water and Land Pollution - Chemicals like mercury, cyanide, sulfuric acid, arsenic and methyl mercury are used in various stages of mining. Most of the chemicals are released into nearby water bodies, and are responsible for water pollution since the chemicals are poisonous, they make the soil unsuitable for plants to grow. Also, the organisms that live in the soil find the polluted environment hostile for their survival.

**11-17-14 The Rock Cycle** (Additional Reference: Textbook pages 98-113; 121-148)

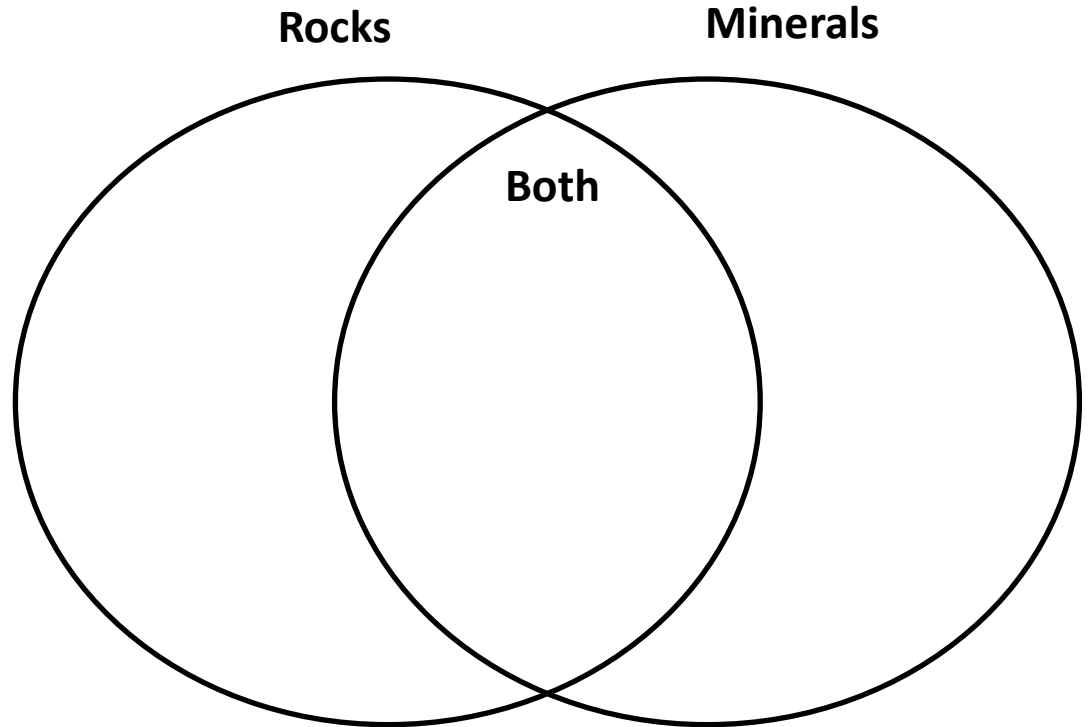
Be able to distinguish between rocks and minerals:

**Rock** - A natural piece of the solid Earth usually composed of one or more minerals.

**Minerals** - Naturally occurring, inorganic solid with a specific chemical composition and a definite crystalline structure.

9. Add the following information to the correct places within the Venn Diagram below:

- Solid
- Found in the Earth's crust
- Has a definite chemical composition
- Does **not** have a definite chemical composition
- Has a defined crystalline structure
- Does **not** have a defined crystalline structure
- Examples include gold and quartz
- Examples include granite and sandstone



10. Label the following types of rocks:

<p>Rock formed by the cooling and hardening of molten rock (magma or lava).</p>	<p>Rock formed by the compression and cementation of particles of sediment.</p>	<p>A sedimentary or igneous rock that has been changed in texture or composition by heat or pressure, or both, without melting.</p>
<p>(A)</p>	<p>(B)</p>	<p>(C)</p>

11. Complete the definitions by filling in the blanks:

**Weathering** - Chemical or physical process that breaks down and changes rocks on or near Earth's \_\_\_\_\_ and whose rate is influenced by factors such as \_\_\_\_\_ and temperature.

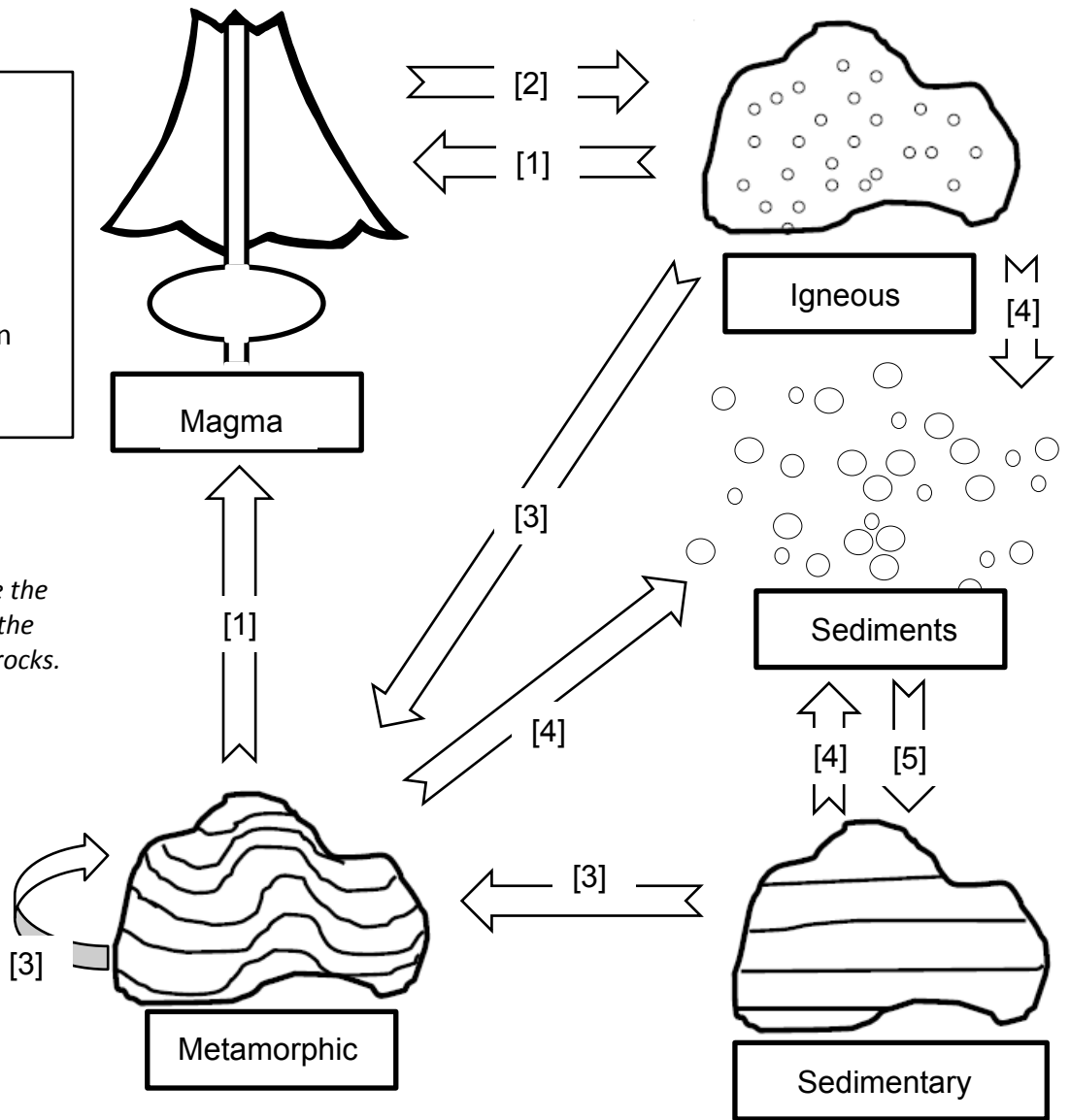
**Erosion** - Movement of weathered materials from one location to another by agents such as \_\_\_\_\_, \_\_\_\_\_, glaciers, and gravity.

**Lithification** - Transformation of sediments into rock through \_\_\_\_\_ and \_\_\_\_\_.

# The Rock Cycle

**KEY**

- [1] Melting
- [2] Cooling
- [3] Heat & Pressure
- [4] Weathering & Erosion
- [5] Lithification



Be able to completely describe the rock cycle. Including applying the process to predict changes in rocks.

12. Using the word bank, match the following terms to their appropriate descriptions. For the test be able to apply these terms within rock scenarios.

Bedding	Deposition	Intrusive Igneous Rocks	Foliation
Extrusive Igneous Rocks	Sediments	Conglomerate	Strata

	Solid particles deposited on Earth's surface that can form sedimentary rocks by lithification are created by weathering and erosion.
	Rocks formed from lava that solidifies quickly at Earth's surface.
	Rocks that crystallize slowly inside the Earth.
	Occurs when sediments are laid down on the ground or sink to the bottom of a body of water.
	Arrangement of sedimentary rocks in strata.
	Layers or beds of rock, usually sedimentary.
	A sedimentary rock composed of cemented gravel, pebbles, or cobbles.
	The alignment or segregation of minerals in a metamorphic rock, giving it a layered wavy appearance.

13. Identify which of the following processes goes with each scenario.



Heat & Pressure



Melting



Weathering & Erosion



Cooling



Compacting & Cementing

- \_\_\_\_\_ Process that turns pebbles and sand (sediment) into sandstone (sedimentary rock).
- \_\_\_\_\_ Process that turns limestone (sedimentary rock) into marble (metamorphic rock)
- \_\_\_\_\_ Process that turns obsidian (igneous rock) into sediment
- \_\_\_\_\_ Process that turns gneiss (metamorphic rock) into magma
- \_\_\_\_\_ Process that turns magma into granite (igneous rock)

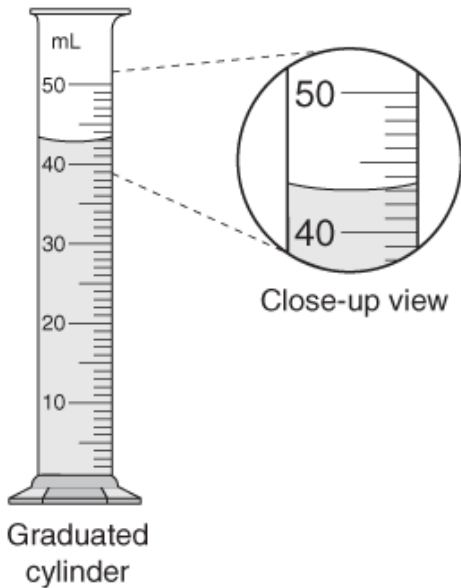
Receive additional online practice at: <http://www.learner.org/interactives/rockcycle/index.html>

11/12 and 11/14 Lab Skills

KNOW THIS FORMULA FOR DENSITY!!

$$\text{Density} = \frac{\text{mass (grams)}}{\text{volume (milliliters)}}$$

14. What is the volume of water in this graduated cylinder? Note that units are in milliliters, mL.



15. a) What is the volume of the rock? (Note that volume units are in milliliters, mL)

b) If the rock has a mass of 20 grams, what is the density of the rock?

