

## Elements, Rocks, Minerals, Soils – Unit 3 Review Sheet

- Know the role of elements in rocks, minerals, soils
- Know how each of the rocks form, and the identifying characteristics of each rock type
- Know how to interpret the rock cycle, including sedimentation, lithification, compaction, etc.
- Explain the difference between a rock and mineral
- Know the different type of tests you can do to determine the identity of a mineral
- Know mineral properties and what they are (cleavage, fracture, hardness, streak, etc)
- Be ready to answer questions about the soil pyramid
- Know the types of soil such as humus, sand, silt, clay...horizons, soil profile
- Be able to recognize different types of mass movement
- Explain the difference between weathering and erosion
- Know the types of weathering such as chemical/physical
- What are the conditions that will make rocks weather to soil the fastest?
- Know the sustainable farming practices

### 1. Fill out the chart on the type of rocks.

Type of Rock	How is it formed?	What are the characteristics?	How are the rocks classified? (ex. foliated, clastic, extrusive)
Igneous Rock	cooling magma * crystallizes	* Hardest rock * made of crystals	Intrusive - (Magma) Inside the Earth. Extrusive - (Lava) Earth's surface
Metamorphic Rock	heat & pressure * Buried	* commonly have layers.	Foliated - banded/ layers Non-foliated - no layers
Sedimentary Rock	weathered rocks that are compacted & cemented.	* may contain layers. * may contain fossils.	Clastic sedimentary - Large weathered rock pieces.

### 2. Fill out the chart on how to classify minerals.

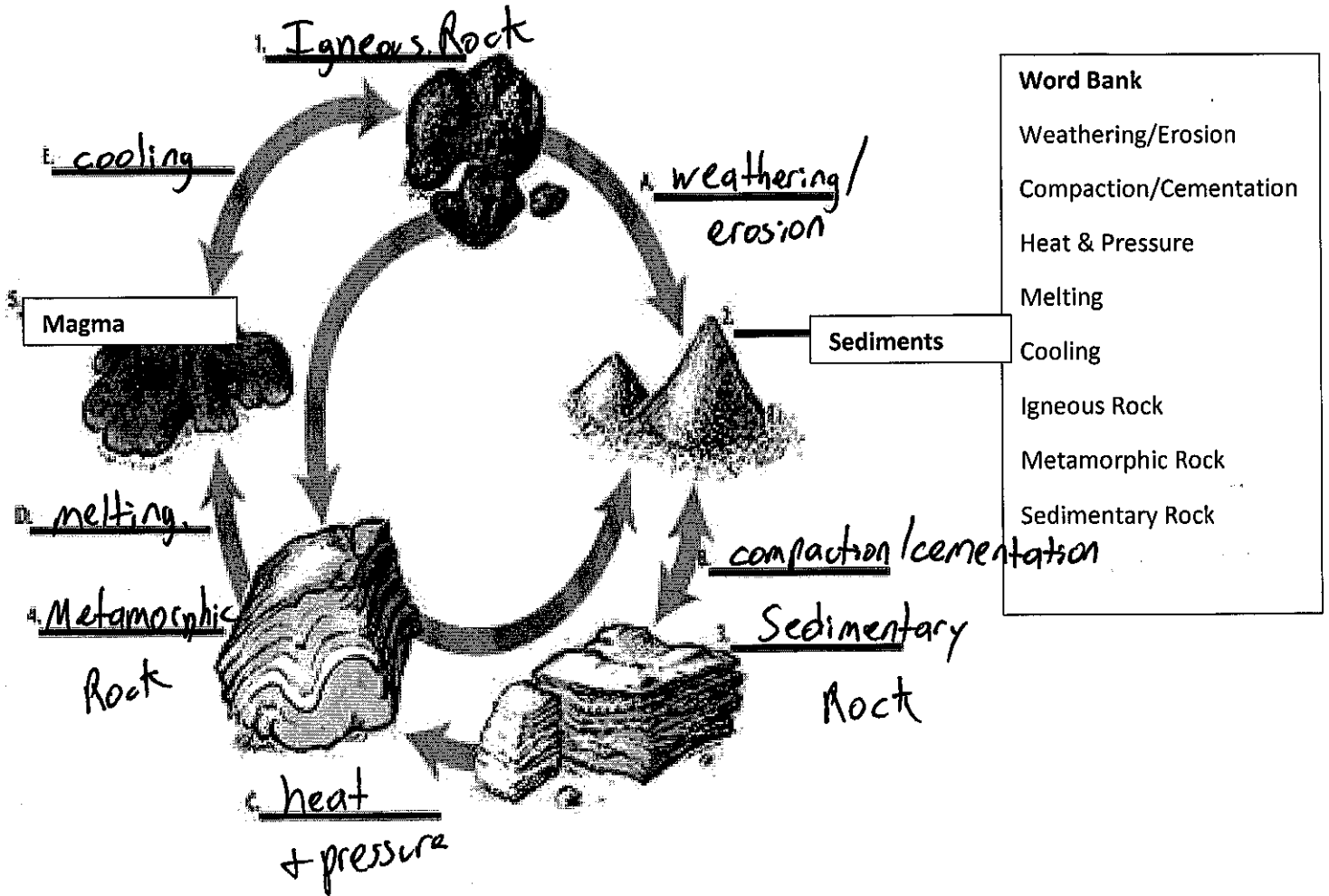
Color	* small amounts of elements give it color.	Ex. Black
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Fracture	The tendency to break unevenly.	Ex. uneven break
Streak Color	color of the mineral in powdered form	Ex. Yellow
Luster	The ability to reflect light.	Ex. Metallic / Non-metallic
Hardness	* resistance to scratching	Ex. Mohs Scale is 6 because it can be scratched by glass.
Cleavage	even or flat breaks	Ex. flat break.
Density	* how heavy it is.	Ex. A quartz is heavier than talc.

3. What are some unusual characteristics of minerals? (Hint: Halite & Magnetite)

Magnetic + taste

4. Fill out the blanks found on the rock cycle.



5. What is the difference between a rock and a mineral?

- a. Rock: solid, organic/inorganic, made of minerals
- b. Mineral: solid, inorganic, made of crystals  
definite chemical composition.





6. Determine if the descriptions are examples of mechanical or chemical weathering.

- a. Limestone dissolved by carbonic acid chemical
- b. The oxidation of minerals that contain iron chemical
- c. A large rock falling from a cliff and then breaking mechanical
- d. Tree roots cracking the concrete foundation of a house mechanical
- e. Formation of potholes in streets during severe winters mechanical  
(frost wedging).

7. Match the terms to their definitions.

- |   |                  |
|---|------------------|
| <u>G</u> a. Physical weathering caused by the action of freezing water            | A. chemical      |
| <u>C</u> b. Physical weathering caused by roots.                                  | B. weathering    |
| <u>D</u> c. When carbon dioxide and water combine chemically                      | C. root wedging  |
| <u>F</u> d. Type of weathering without change in chemical composition             | D. carbonic acid |
| <u>A</u> e. Type of weathering with a change in chemical composition              | E. leaching      |
| <u>E</u> f. Process in which minerals are dissolved in water and carried downward | F. physical      |
| <u>B</u> g. The breaking down of rocks  | G. frost wedging |
| <u>I</u> h. The removal and transport of worn rocks and sediment.                 | H. Deposition    |
| <u>H</u> i. The deposit or stopping point for worn rocks and sediment.            | I. Erosion       |

8. Explain each type of mass movement. What is responsible for mass movement?

- a. Slump: slow moving land  
 - breaks off in large slabs  
like a stair case
- b. Creep: slow moving land  
 - causes leaning telephone poles
- c. Rockslide/landslide: fast moving  
 - caused by heavy rain + gravity
- d. Mudflow: fast moving  
 - started by heavy rain.

9. Circle the correct answer in each statement about the rate of erosion.

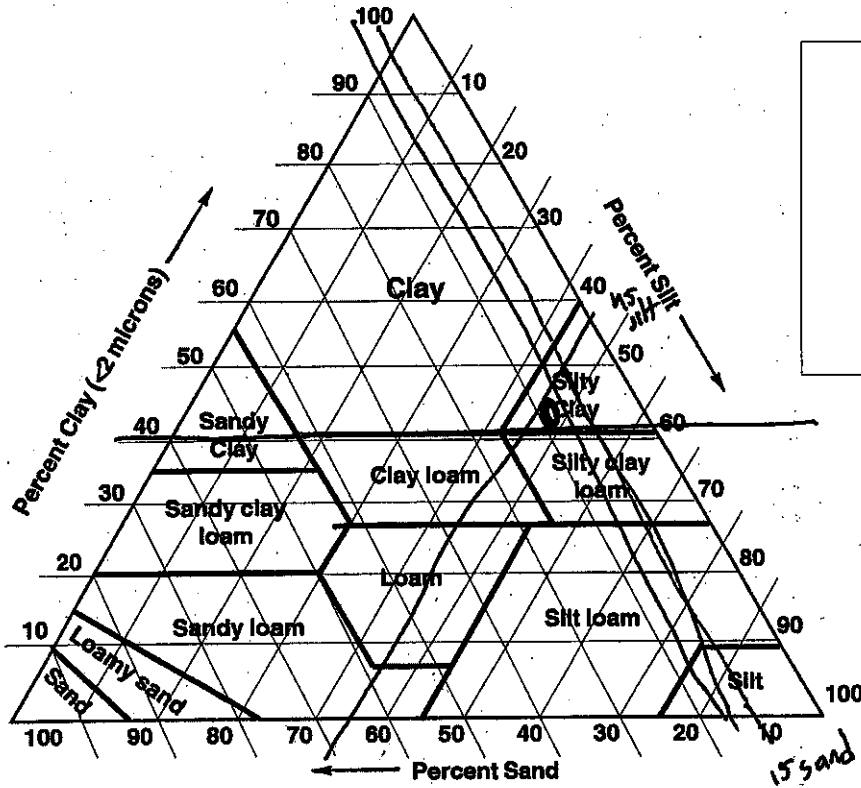
- a. Rocks weather fastest in hot / cold) as well as wet / dry) climates.
- b. Rocks weather slowest on a (flat area / slopped area).
- c. Rocks weather fastest when a larger / smaller) surface area is exposed.

10. Fill out the chart on soil texture.

Soil Type	Particle Size	Texture	Water filtration or leaching ability
Clay	Small	sticky	Low leaching ability water doesn't move through easily

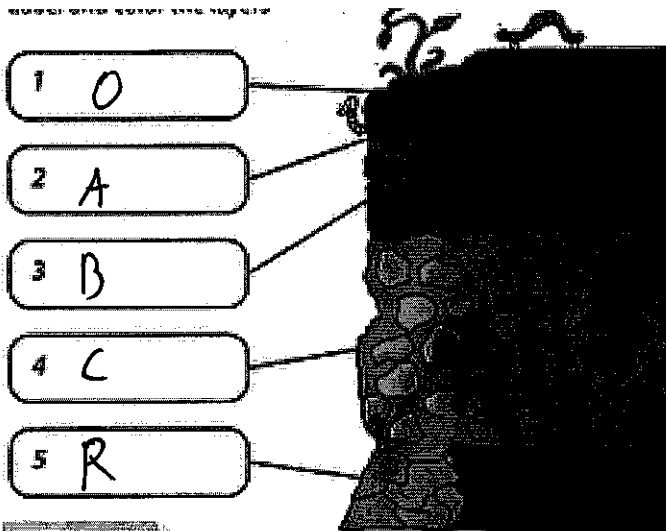
Sand	large	grainy	* ↑ leaching b/c water moves through easily
Silt	medium	smooth	* OK leaching b/c water moves through some

11. Use the soil triangle to answer the questions.



- a. What is the range of percentages of clay in the clay loam?  
25% - 40%
- b. What is the soil type for 15% sand, 45% silt, and 40% sand?  
Silty clay

12. Be able to identify and describe each soil horizon.



- Word Bank & Descriptions:
- A Horizon: Topsoil  
- sand, silt, + clay
  - B Horizon: Subsoil  
- rock pieces + clay
  - O Horizon: Organic layer  
- humus
  - C Horizon: Parent Rock  
- rocks + soil
  - R Horizon: Bedrock (hard rock).

13. Fill out the chart on agriculture.

Type of Agriculture	What is it?	Pros	Cons
Organic Farming	* Not using chemicals such as fertilizer + pesticides on plants	* Better for environment	* Cost
Crop Rotation	* Alternating roots plants each year to avoid depleting soil.	* keeps soil healthy	* Planning.
Terracing /Contour	* Creating slopes to plant on	* prevents erosion	* More time required

14. What is sustainable farming?

Production of plants & animals w/ farming techniques that protect the environment.

15. Give examples of sustainable farming practices.

- organic farming
- reducing tillage (digging up of ground)
- rotating crops.