

Senior High School

Department of Education
National Capital Region

**SCHOOLS DIVISION OFFICE
MARIKINA CITY**

Earth & Life Science

First Quarter-Module 4 Exogenic Processes

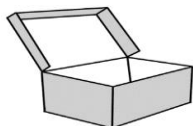


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What I Need to Know

This module was designed and written with you in mind. It is here to help you master the nature of Exogenic Processes. The scope of this module permits it to be used in many different learning situations. The language used recognizes the diverse vocabulary level of students.

The module has one lesson which is exogenic processes.

After going through this module, you are expected to

1. explain how the products of weathering are carried by erosion and deposited elsewhere (S11/12ES-Ib-12);
2. identify the different agents of erosion and deposition; and
3. describe characteristics surface features and landforms created and the processes that contributed to their formation.



What I Know

Read each question carefully and encircle the letter of the correct answer.

1. Which among the following processes is the principal source of the inorganic constituents of soil where most vegetation could not grow?
A. Disintegrating
B. Mass wasting
C. Transporting
D. Weathering
2. Which of the following processes is described as the breaking free of individual mineral grains from a rock?
A. Exfoliation
B. Oxidation
C. Hydration
D. Granular disintegration
3. Which of the following is **TRUE** about “soil flow”?
A. Avalanche
B. Creep
C. Fall
D. Solifluction
4. Which of the following processes is involved in the formation of various types of carbonates in rocks?
A. Carbonation
B. Exfoliation
C. Block disintegration
D. Frost weathering



5. Which process is the successive expansion and contraction of the outer layers of the rock peeling off from the main rock?
 - A. Exfoliation
 - B. Hydration
 - C. Oxidation
 - D. Solution
6. Which of the following **DOES NOT** belong to the group?
 - A. Deposition
 - B. Mass wasting
 - C. Transportation
 - D. Tectonic uplift
7. Which of the following **DOES NOT** belong to glaciers or area of accumulation?
 - A. Discharge
 - B. Ice sheets
 - C. Ice shelves
 - D. Valley or Alpine
8. Which of the following processes **DOES NOT** belong to the same group as the other three?
 - A. Contraction
 - B. Exfoliation
 - C. Expansion
 - D. Oxidation
9. Which of the following streams transport its sediment load?
 1. Bed load
 2. Dissolved load
 3. Overload
 4. Suspended load
 - A. 1 and 2 only
 - B. 2 and 4 only
 - C. 1, 2 and 4 only
 - D. All of the above
10. Which of the following choices is **NOT** made of shoreline erosion processes?
 - A. Abrasion
 - B. Beach drift
 - C. Corrosion
 - D. Hydraulic
11. Which of the following statements is **TRUE** about deflation result?
 - A. Blowout
 - B. Desert pavement
 - C. Yield ventifacts and yardangs
 - D. Downslope movement



12. Which of the following waves are classified based on generation force?
1. Seiches
 2. Tides
 3. Tsunamis
 4. Wind-generated waves
- A. 1 and 2 only
B. 3 and 4 only
C. 2, 3 and 4 only
D. All of the above
13. Which is best described for exfoliation under physical weathering?
- A. It stripped the outer layers of rocks due to intense heating.
 - B. It is caused by successive heating and cooling that causes the expansion and contraction of rocks.
 - C. It alternated freezing and thawing of water inside the joints of the rocks, causing them to split into small particles of fragments.
 - D. The high diurnal range of temperature of day and night cause successive expansion and contraction of the rocks.
14. Which of the following **DOES NOT** belong to the group?
- A. Carbonation
 - B. Hydration
 - C. Oxidation
 - D. Block disintegration
15. The increase in pollution results in an increased amount of weathering agents in soil, water, and wind. Which is the most responsible for this problem?
1. Animals
 2. Humans
 3. Microbes
 4. Plants
- A. 1 and 2 only
B. 2 and 3 only
C. 2, 3 and 4 only
D. All the above



Lesson

Exogenic Processes



What's In

In the previous lesson, you learned that our planet Earth is composed of rocks and minerals as part of the geosphere. Remember that geosphere is the solid portion of Earth that includes the lithosphere. The lithosphere is the outermost layer of the Earth which is composed of the crust and the upper mantle. In this lesson, you will learn about exogenic processes that play important roles in the formation variety of landscapes on this planet.



What's New

Weathering, erosion or transportation, and deposition are exogenic processes that bring about changes in the configuration of Earth's surface.

Activity 1. Sediments

Find a tray inside your house and put some sand on it. Challenge yourself in finding different ways to move the sand from one end of the tray to the other.



What Is It

Exogenic processes take place at or near the earth's surface that makes the surface wear away. Exogenic processes are very destructive. They are responsible for degradation and sculpting the earth's surface.

a. Weathering –is the process that breaks down rock into smaller pieces.

- *Physical weathering* happens when rock is physically broken into smaller pieces. Some factors that affect physical weathering are ice wedging, release of pressure, growth of plants, animals, and abrasion.

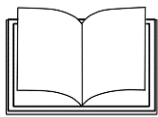


- *Chemical weathering* is the process of breaking down rock through chemical changes.

Some factors that affect chemical weathering are water, oxygen, carbon dioxide, living organisms, and acid rain.

- b. Erosion** – rock particles are carried away by wind, ice, and gravity. Weathering causes the rocks to break down. Erosion (water) or transportation moves the sediments downhill to other places.
- c. Sedimentation/ Deposition** – is a natural process in which a material is carried to the bottom of bodies of water and forms to solid.
- d. Mass wasting** – is the downward movement of a rock, soil and regolith due to the action of gravity. It is triggered by the following factors: over-steepened slope, water, earthquake, and vegetation removal.

Some of the classifications of mass wasting are slump, solifluction, earthflow, mudflow, debris slide, debris flow, rock fall, and soil creep.



What's More

Generally, the disintegration and decomposition processes act together, but one may be dominant over the other depending on the climate. In addition, the weathered material lies on top of the layer of rock that is not weathered.

Activity 2. Which is which?

Classify the following words as **PW** for Physical Weathering, **CW** for Chemical Weathering, or **BW** for Biotic Weathering. Give a brief description, a short explanation, or an example for each number.

- ___ 1. Carbonation-_____
- ___ 2. Plants-_____
- ___ 3. Block disintegration-_____
- ___ 4. Hydration-_____
- ___ 5. Exfoliation-_____
- ___ 6. Animals-_____
- ___ 7. Solution-_____
- ___ 8. Humans-_____
- ___ 9. Oxidation-_____
- ___ 10. Frost weathering-_____





What I Have Learned

Complete the following statements below based on what you have learned about exogenic process.

1. Name five examples of agents of erosion and give a brief description for each agent.
 - a. _____
 - b. _____
 - c. _____
 - d. _____
 - e. _____
2. Differentiate the following:
 - a. Physical weathering vs. chemical weathering
 - b. Weathering vs. erosion



What I Can Do

Humans play a very important role in the weathering and erosion of rocks. Suggest some ways to be considered to lessen weathering and erosion. Focus on the types of motion that could be generally classified as a fall, a slide, or a flow.



Assessment

Read each question carefully and encircle the letter of the correct answer.

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 - A. Contraction
 - B. Exfoliation
 - C. Expansion
 - D. Oxidation

9. Stream can transport solid particles. It is described by competence and capacity. Which of the following streams transport its sediment load?
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 - D. All the above



Additional Activities

It is important that everyone is aware of the source of and effects of weathering or erosion. List down two sources and effects of these concerns.

1. _____
2. _____



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