



**Section 1 - Weathering**

Directions: Complete the following paragraph using the terms listed below.

- |          |             |            |          |               |
|----------|-------------|------------|----------|---------------|
| roots    | ice wedging | moisture   | oxygen   | carbonic acid |
| chemical | oxidation   | tropical   | minerals | caliche       |
| climate  | deserts     | mechanical | cracks   | rock          |

Weathering is the surface processes that work to break down

- \_\_\_\_\_ There are two main types of weathering.
- \_\_\_\_\_ weathering occurs when rocks are broken apart by physical processes. When water enters cracks in rocks and freezes, expanding and breaking the rock apart, it is called 3. \_\_\_\_\_. In another type of mechanical weathering, plant 4. \_\_\_\_\_ seeking water and nutrients sometimes grow into 5. \_\_\_\_\_ in the rock and break the rock apart. 6. \_\_\_\_\_ weathering occurs when chemical reactions dissolve the 7. \_\_\_\_\_ in rocks or change them into different minerals. When water mixes with carbon dioxide gas in the air or soil, a weak acid, called 8. \_\_\_\_\_, forms. This acid dissolves minerals, such as 9. \_\_\_\_\_. When minerals containing iron are exposed to water and the 10. \_\_\_\_\_ in air, the iron may form a new mineral that is like rust. This process is called 11. \_\_\_\_\_. The rate of mechanical and chemical weathering is affected by 12. \_\_\_\_\_. Chemical weathering occurs more quickly in 13. \_\_\_\_\_ areas such as parts of South America. In 14. \_\_\_\_\_, chemical weathering is slower due to lack of 15. \_\_\_\_\_.

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**Weathering**

Weathering includes mechanical weathering and chemical weathering. Mechanical weathering occurs when rocks are broken apart by physical processes but the chemical makeup of the rock stays the same. Chemical weathering occurs when chemical reactions dissolve the minerals in rocks or change them into different minerals.

Directions: Identify each statement below as an example of mechanical or chemical weathering. Write M for mechanical or C for chemical in the blank at the left.

- \_\_\_\_\_ 1. the wedging of tree roots along natural joints in granite
- \_\_\_\_\_ 2. limestone dissolved by carbonic acid
- \_\_\_\_\_ 3. the oxidation of minerals that contain iron
- \_\_\_\_\_ 4. animal burrows dug in rock that let in water and air
- \_\_\_\_\_ 5. repeated freezing and thawing of water that cracks rock
- \_\_\_\_\_ 6. the action of water, salt, and air on car fenders
- \_\_\_\_\_ 7. acids from plants roots that break up rocks
- \_\_\_\_\_ 8. formation of potholes in streets during severe winters
- \_\_\_\_\_ 9. raised sections of sidewalk along tree-lined streets
- \_\_\_\_\_ 10. a small rock falling from a cliff
- \_\_\_\_\_ 11. feldspar mixing with water and producing clay minerals
- \_\_\_\_\_ 12. halite in rocks dissolving in water
- \_\_\_\_\_ 13. decaying plants dissolving minerals in rocks
- \_\_\_\_\_ 14. tree roots cracking the concrete foundation of a house
- \_\_\_\_\_ 15. iron lawn furniture rusting outside
- \_\_\_\_\_ 16. more rapid in tropical climates
- \_\_\_\_\_ 17. carbonic acid weathering limestone
- \_\_\_\_\_ 18. leaves decaying in the forest

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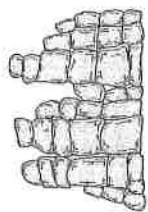
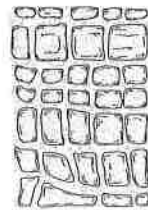
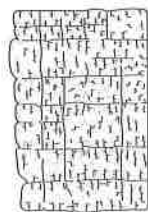
**SECTION 1**  
**Enrichment**

**The Forming of Tors**

From afar, they resemble a family of huge robots standing in a field. Even as you get closer, they look like statues made of stone. Up close, you can see that they are rocks of different sizes stacked upon one another. This kind of landform is called a tor. Tors are usually formed by the weathering of granite.

**Tor Formation**

These blocks of granite once formed a solid wall. Cracks in the rocks and spaces between the rocks (even though they were small) allowed water to seep in and begin the weathering process. In some cases, the acidic water dissolved the minerals in the rocks and wore the edges of the rocks away.



In other cases, the water seeped between the rocks and then froze and thawed, which caused pieces of the rocks to crumble and split. And sometimes the minerals in the rocks absorbed the water, expanded, and split the rocks. The pieces that weathered eventually fell to the ground. The rocks that were closest together and the smaller rocks broke down first. What remained were large blocks of granite resting upon each other.

Sometimes the blocks look like figures, huddled together in a group. Sometimes they form a rocky mound. Usually the tors are no higher than 4.5 meters. They are found in different parts of the world—for example, England, Tanzania, and New Zealand.

**Directions:** Remember that there are two kinds of weathering, mechanical and chemical, and that sometimes both kinds occur together. Below, fill in the action involved in forming tors that matches the type of weathering listed.

Types of weathering	Action
1. Chemical and mechanical	
2. Chemical	
3. Mechanical	

4. Do you think there is any difference in height between the original rock formation and the tor? Explain your answer.

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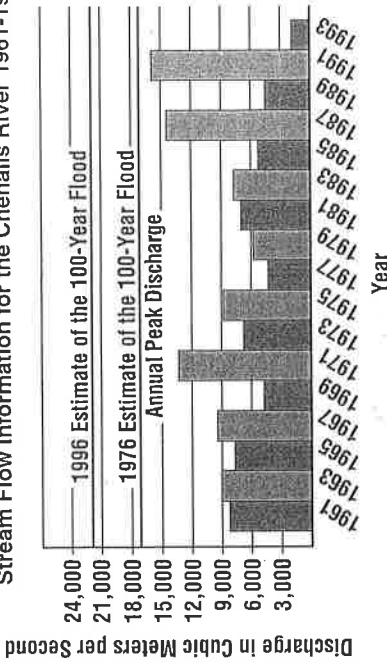
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**Assessment**  
**Transparency/Activity**

**Weathering and Soil**

**Directions:** Carefully review the graph and answer the following questions.

**Stream Flow Information for the Chehalis River 1961-1993**



- According to the graph, the year which experienced the second highest amount of annual peak discharge was \_\_\_\_.  
 A 1990                      C 1972  
 B 1991                      D 1987
- According to the information in the graph, all of the following decades had at least one year in which the annual peak discharge was over 12,000 cubic meters per second EXCEPT \_\_\_\_.  
 F 1960s                      H 1980s  
 G 1970s                      J 1990s
- According to the information in the graph, which decade experienced both the lowest and highest amounts of annual peak discharge?  
 A 1960s                      C 1980s  
 B 1970s                      D 1990s