

Name \_\_\_\_\_

## WEATHERING & EROSION

**Purpose:** To investigate the processes of weathering & erosion.

**Background Information:** Weathering involves two processes that often work together to decompose rocks. Both processes occur in place. No movement is involved in weathering.

**Chemical weathering** involves a chemical change in some of the minerals in a rock.

**Mechanical weathering** involves physically breaking rocks into fragments without changing the chemical make-up of the minerals within it.

As soon as a rock particle (loosened by one of the two weathering processes) moves, we call it **erosion** or mass wasting. Mass wasting is simply movement down slope due to gravity. Rock falls, slumps, and debris flows are all examples of mass wasting. We call it erosion if the rock particle is moved by some flowing agent such as air, water or ice.

### **Materials:**

12 Stations – materials & task cards at each station

### **Procedure:**

1. There are 12 stations in the classroom. Each station is numbered. Each station has all of the materials you will need to investigate one aspect of weathering and erosion. Each station also has a TASK CARD with instructions for completing the investigation.
2. Rotate through each station on at a time. You may go to the stations in any order.
3. Read the TASK CARD at each station. Read it again. Make sure you understand the instruction.
4. Follow the procedure on the task card. Record your observations and data on this sheet.

**NO MORE THAN 3 people at a time at any station.**

## Station # 1 – Wind Erosion

Observations	
Wind	
Sandpaper on rocks	

What would a very strong wind do to the sand?

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What would happen if the sand hit clay?

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What would happen if the sand hit rock?

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How is rubbing sandpaper across a rock like windblown sand hitting a rock?

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## Station # 2 – Splash Erosion

As water falls, it is a source of potential energy. The greater the height at which the water falls, the greater the potential energy. Falling raindrops strike the earth at about 20 mph. The effect of one drop is little but many drops can tear apart the surface of the soil.

Describe what happened to the surface of the sand.

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What do you think will happen to the surfaces of mountains that have large amounts of rainfall?

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How do you think the material that makes up different types of rock will affect how easily each type is worn away?

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What difference did the height of the water make?

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### **Station # 3 – Dissolving Rock**

Observations:

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Describe what you think has happened to the water that collects in the bottom of the tray.

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Describe what has happened to the surface of the "rock".

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What do you think happens to rock that has been dissolved?

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## Station # 4 – Mechanical Weathering

Observations:

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List one natural situation that is similar to the process used in this investigation.

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## Station # 5 – Chemical Weathering

Observations:

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How might this process occur in nature?

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## Station # 6 – Wave Action

Observations:

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<b>Beach Sketch BEFORE WAVES</b>	<b>Beach Sketch AFTER WAVES</b>
Height in cm _____	Height in cm _____

## Station # 7 – Preventing Erosion

Observations:

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What would happen if the plant was not in the pot, but in the ground and water was running over it?

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## Station # 8 – Soil Erosion

Observations:

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Which particles moved first? Second? Last?

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How does the size of the particles affect the rate of erosion?

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Would the amount of water affect the rate of erosion? Explain your answer.

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Would the hardness of the rain affect the rate of erosion? Explain your answer.

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If you wanted to control erosion on a hill, what type of particles would be best? Explain your answer.

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### **Station # 9 – More Soil Erosion**

Observations:

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Do the bottle caps affect the rate of erosion? Explain your answer.

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How could you prevent erosion on a dirt hill?

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### **Station # 10 – Computer Review**

No written observations or questions.

### **Station # 11 – More Chemical Weathering**

Observations:

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How are the bags the same? How are they different?

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What caused the changes in the wet steel wool?

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Explain how this kind of weathering could happen to a rock.

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## **Station # 12 – Slope & Erosion**

Observations:

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Does the steepness of the slope affect the changes caused by water? Explain your answer.

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How does a rock affect water flow?

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