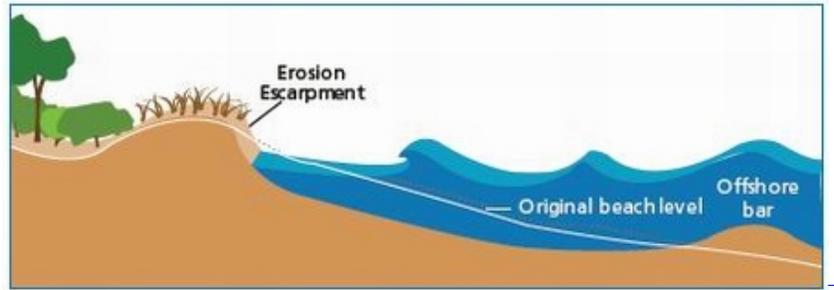


### G3.1 Coastal Erosion Lab



**Problem:**

- What effect do waves have on sand and soil?
- How can this explain how erosion wears down the Earth’s surface?

**Background Information:**

Coastal erosion is the wearing away of land and the removal of beach or dune sediments by wave action, tidal currents, wave currents, or drainage. Waves, generated by storms, wind, or fast moving motor craft, cause coastal erosion, which may take the form of long-term losses of sediment and rocks, or merely the temporary redistribution of coastal sediments; erosion in one location may result in buildup in an offshore bar.

**Materials:**

- (2) Pans
- Sand (enough to tightly pack 1/3 of the pan)
- (2) Pebbles
- Water
- Sponge
- Soil (enough to tightly pack 1/3 of pan)

**Procedures:**

1. Pack sand into 1/3 of the pan and place pebbles in the sand on the raised side of the pan to form a “beach.”
2. Pour enough water into the bottom of the pan so that it reaches the “beach.”
3. Put a sponge into the end of the pan with the water.
4. Push down on the sponge repeatedly to make small waves.
5. Observe and record the effect that the waves have on the sand and pebbles.
6. Repeat this activity using soil.

**Hypothesis:** *Re-read the problem!!*

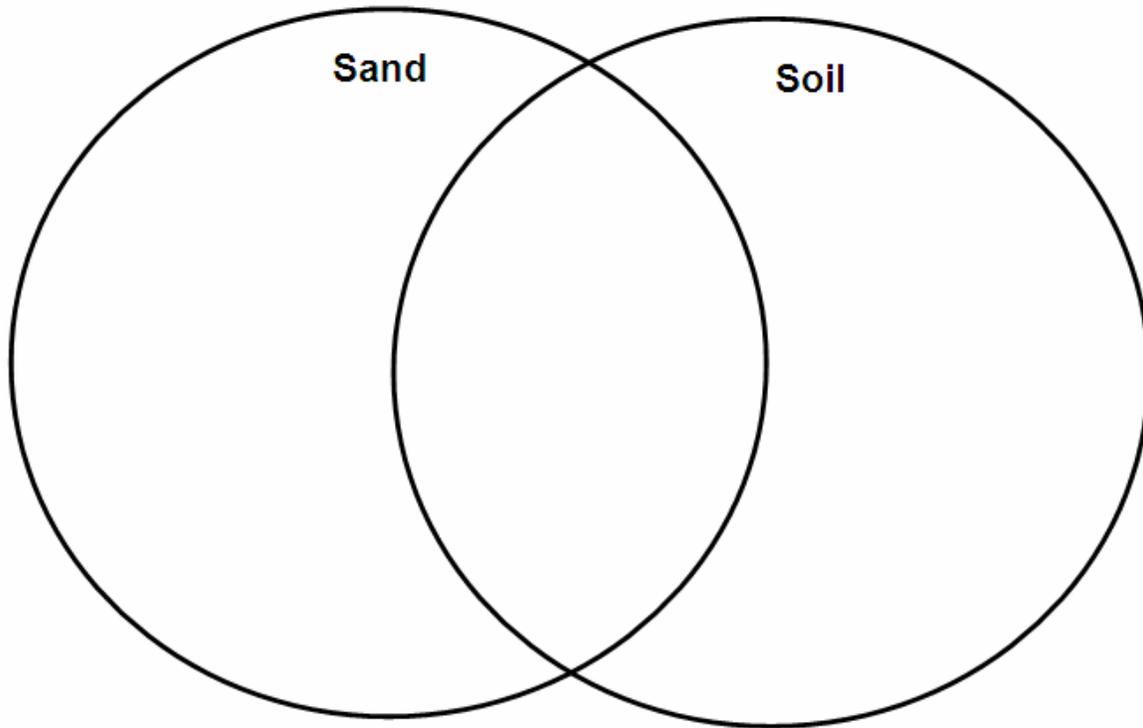
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**Data:**

Use the Venn Diagram to compare and contrast the effect of the simulated waves on the sand and the soil. What are some of the similarities and differences between the soil and the sand?

## Erosion Venn Diagram



**Explain:** *Use complete sentences!!*

Describe the effect of the simulated waves on the sand.

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Describe the effect of the simulated waves on the soil.

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What are some of the commonalities between the soil and the sand?

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Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

**Conclusions:** *Use complete sentences!!*

1. How do your results compare to those of your classmates?

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2. Describe the relationship between this activity and actual beach erosion.

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3. Why are most waterfront areas made of sand and gravel instead of soil?

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## **G2.1 Weathering Directed Reading A**

### **Section: Weathering**

1. What is the process of weathering?

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#### **MECHANICAL WEATHERING**

- \_\_\_\_\_ 2. Mechanical weathering is the breakdown of rock into smaller pieces by
- a. warm weather.
  - b. cold weather.
  - c. chemical processes.
  - d. physical means.
- \_\_\_\_\_ 3. Ice, wind, water, gravity, plants, and animals can all be agents of
- a. mechanical weathering.
  - b. chemical weathering.
  - c. chemical processes.
  - d. abrasion.
- \_\_\_\_\_ 4. The alternate freezing and thawing of soil and rock is called
- a. frost action.
  - b. abrasion.
  - c. oxidation.
  - d. chemical processes.
- \_\_\_\_\_ 5. Ice wedging occurs when water filling a crack in a rock
- a. flows out and then freezes.
  - b. freezes and contracts.
  - c. freezes and expands.
  - d. flows out and causes abrasion.
6. The grinding and wearing away of rock surfaces through the mechanical action of other rocks or sand particles is called \_\_\_\_\_.
7. Rocks that have been shaped by blowing sand are called \_\_\_\_\_.

**Directed Reading A continued**

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**Match the correct description with the correct term. Write the letter in the space provided.**

- |   |            |
|---|------------|
| _____ 8. one rock falling against another rock          | a. wind    |
| _____ 9. pebbles bumping against each other in a stream | b. gravity |
|   | c. water   |

\_\_\_\_\_ 10. wind blowing sand against rock

11. Explain how a plant can break a rock.

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12. In what way can an animal cause mechanical weathering?

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**CHEMICAL WEATHERING**

- \_\_\_\_\_ 13. The process by which rocks break down as a result of chemical reactions is called
- a. abrasion.
  - b. mechanical weathering.
  - c. chemical weathering.
  - d. acid precipitation.

- \_\_\_\_\_ 14. Rain, sleet, or snow that contains a high concentration of acids is called
- a. mechanical weathering.
  - b. acid precipitation.
  - c. chemical weathering.
  - d. abrasion.

- \_\_\_\_\_ 15. Compounds formed by the burning of fossil fuels combine with water in the atmosphere to form
- a. phosphoric acids.
  - b. acetic acids.
  - c. carbon monoxide.
  - d. weak acids.

Directed Reading A continued

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- \_\_\_\_\_ 16. Acid precipitation can result from
- a. ventifacts.
  - b. abrasion.
  - c. burning of fossil fuels.
  - d. mechanical weathering.

17. Over a long period of time, acids in the groundwater can cause chemical weathering of limestone. This weathering can form a cavern, which is a type of \_\_\_\_\_

18. Explain how lichens cause chemical weathering.

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19. The chemical reaction in which an element, such as iron, combines with oxygen to form an oxide is called . \_\_\_\_\_

20. When oxygen in the air reacts with metal, oxidation occurs and causes the metal to . \_\_\_\_\_