5-Minute Refresher: WEATHERING AND EROSION
Weathering and Erosion - Key Ideas

- Weathering is the wearing away of the surface of rock, soil, and minerals into smaller pieces.
- Example of weathering: Wind and water cause small pieces of rock to break off at the side of a mountain.
- Weathering can occur due to chemical and mechanical processes.
- Erosion is the movement of particles away from their source.
- Example of erosion: Wind carries small pieces of rock away from the side of a mountain.
Weathering- Chemical and Mechanical Processes

• **Chemical Weathering:**
  – Decomposition of rock and soil due to chemical reactions.
  – Examples: acid rain wears away statues and buildings, oxidation causes metals to rust

• **Mechanical Weathering:**
  – Decomposition of rock and soil due to mechanical forces (pushes and pulls).
  – Examples: wind, water, ice/frost, gravity, compression and contraction of materials due to heat
Weathering and Erosion - Effects

Effects of weathering and erosion:

- Cause changes in the slopes and texture of rock structures, hills, and valleys
- Can cause landslides
- Cause buildings, statues, and roads to wear away
- Can wash soil, pollutants, and harmful sediment from the roads and farms into waterways
- Cause metals to oxidize (rust)
- Reduce the area of a beach or shoreline
Weathering and Erosion- Learning Objectives for Grades K - 3

• Different things in the environment around us can cause changes to the way objects look or feel.
• Water, wind, and ice can make objects, such as rocks, break into small pieces.
• Water, wind, and ice can also move pieces of rock or land to new places.
Weathering and Erosion- Learning Objectives for Grades 4 - 6

• The wearing away of a surface of rock or soil is called weathering.
• Weathering breaks things down into smaller pieces.
• The movement of pieces of rock or soil to new locations is called erosion.
• Weathering and erosion can cause changes to the shape, size, and texture of different landforms (such as mountains, riverbeds, beaches, etc).
• Weathering and erosion can also play a role in landslides and the formation of new landforms.
Weathering and Erosion - Prior Knowledge for Grades K - 3

• Students have most likely experienced the forces from different natural processes before. For example, they have probably felt a strong wind blow, or they may have felt a current in a river or ocean. Students can think about what effect these forces would have on other objects, such as rocks.

• Most students have observed the effects of wind and water on objects around them. Examples: sandcastles being washed away by the ocean, leaf piles blown away by wind, snowman melting in the rain, etc.
Weathering and Erosion - Prior Knowledge for Grades 4 - 6

• Students should understand the difference between physical and chemical reactions.
• Students should have a general understanding of various landforms, such as mountains, rivers, and beaches.
• Most students have observed the effects of physical and chemical weathering before. Examples: rust on a bicycle, chalk washing away on a side walk, stones smoothed in a river, etc.
Weathering and Erosion - Common Misconceptions

• Weathering is the same as erosion.
  - **Reality:** Weathering is related to the breaking down and loosening of rock or soil into smaller pieces, but the weathered pieces remain in place. Erosion is related to the *movement* of weathered (and sometimes non-weathered) pieces away from the source.

• Erosion is the process by which weathered particles are deposited into a new location.
  - **Reality:** Erosion is the movement or transport of particles, but it does not involve the settling and accumulation of particles in a new location. The process by which particles accumulate in a new location is called deposition. Deposition is responsible for creating sand dunes and some mountains.
Weathering and Erosion - Additional Information

For more information about weathering and erosion, watch the video at the following link:

http://siemensscienceday.com/activities/weathering_cubes.cfm