

# Mechanical Weathering

## Mechanical Weathering

**Mechanical Weathering** (aka physical weathering) breaks rock into smaller pieces. Rock changes physically, without changing its composition. Smaller pieces have the same minerals in the same proportions as the original rock.

Here are some forms of mechanical weathering:

### Study Tip

Remember that mechanical weathering has 2 main causes: natural forces (wind, water, ice, and gravity) and life (plants, animals, and humans).

- **Ice Wedging:** main form of mechanical weathering in any climate that regularly cycles above and below the freezing point.



Water seeps into cracks and fractures in rock.



When the water freezes, it expands about 9% in volume, which wedges apart the rock.



With repeated freeze/thaw cycles, rock breaks into pieces.

### Ice Wedging

- Breaks apart large amounts of rock
- Common in Earth's polar regions and mid-latitudes, and at higher elevations
- **Abrasion:** one rock bumps against another rock; smoothens sharp or jagged rocks
  - Caused by gravity as a rock tumbles down a mountainside or cliff
  - Caused by moving water as particles in the water collide and bump against one another
  - Caused by strong winds carrying pieces of sand which can sandblast surfaces
  - Caused by ice in glaciers which carries many bits and pieces of rock. Rocks embedded at the bottom of the glacier scrape against the rocks below
- **Organisms:** plants and animals can cause mechanical weathering
  - E.g. plant's roots grow into a crack or fracture in rock and gradually grow larger, wedging open the crack
  - E.g. burrowing animals can break apart rock as they dig for food or make living spaces for themselves
- **Humans:** digging or blasting into rock to build homes, roads, subways; quarrying stone

## Concept Check

- Describe the process of ice wedging.
- Describe the process of abrasion.
- How do plants and animals cause mechanical weathering?