

How do you think potholes form in paved roads?

Write a paragraph that describes how water contributes to the formation of potholes.



[How do potholes form?](#)

Weathering Objectives

- **Describe** how ice, water, wind, gravity, plants, and animals cause mechanical weathering.
- **Describe** how water, acids, and air cause chemical weathering of rocks.

I. Mechanical Weathering

A. Ice The alternate freezing and thawing of soil and rock, called *frost action*, is a form of mechanical weathering.

B. Abrasion Abrasion is the grinding and wearing away of rock surfaces through the mechanical action of other rock or sand particles.

C. Wind, Water, and Gravity When rocks roll along the bottom of swiftly flowing rivers, they bump into and scrape against each other. When wind blows sand against rock, the sand eventually wears away the rock's surface. Abrasion also occurs when rocks fall on one another.



I. Mechanical Weathering

D. Plants You may not think of plants as being strong, but some plants can easily break rocks with their roots.

E. Animals Almost any animal that burrows causes mechanical weathering. Ants, worms, mice, coyotes, and rabbits are just some of the animals that contribute to weathering.

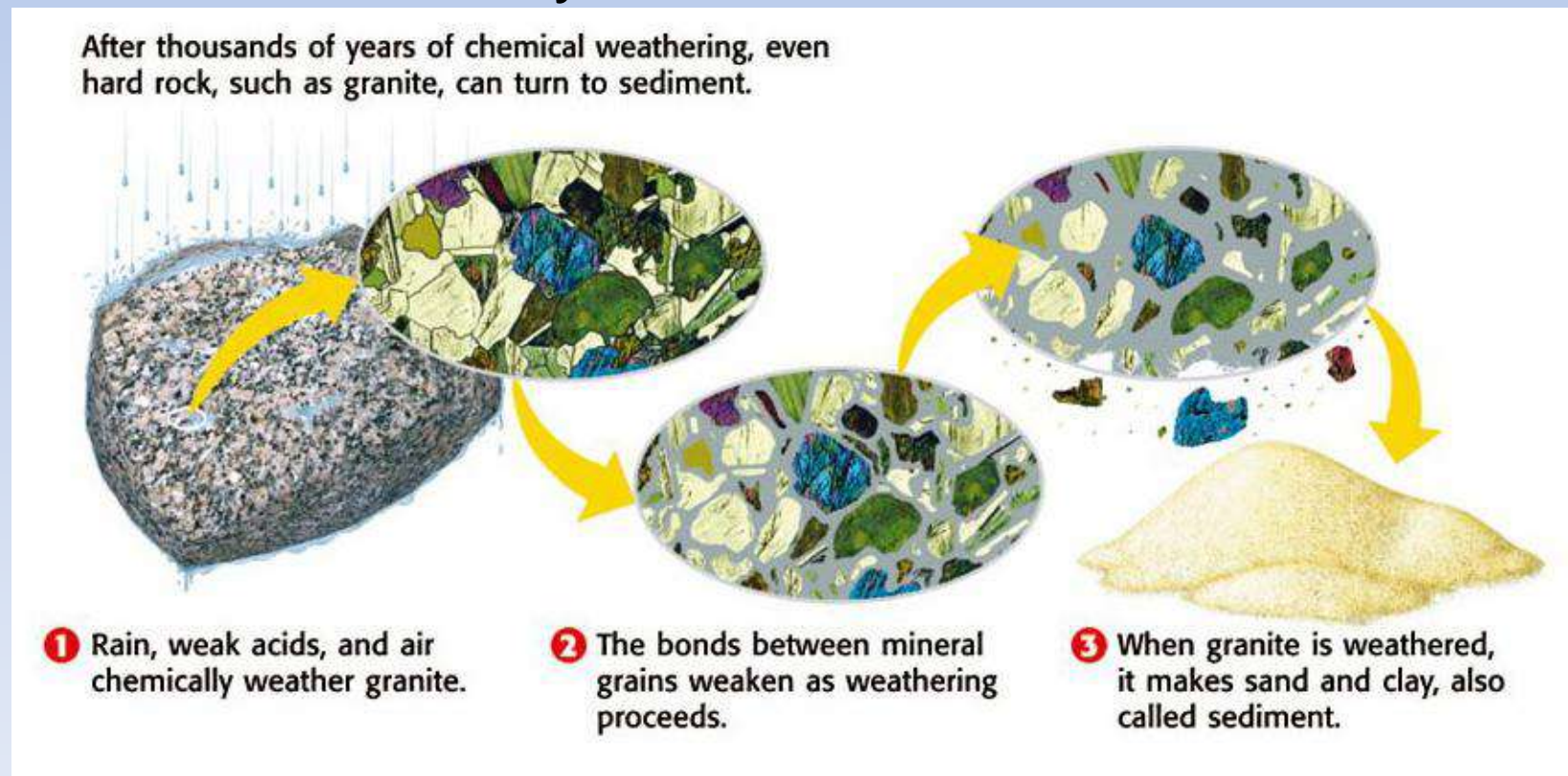


Critical Thinking Time

- List two ways that humans can cause weathering.
- Farming
- Building
- Driving
- Making tunnels or roads
- Mining
- Walking

II. Chemical Weathering

A. Water If you drop a sugar cube into a glass of water, the sugar cube will dissolve after a few minutes. This process is an example of chemical weathering. Even hard rock, such as granite, can be broken down by water.



II. Chemical Weathering

B. Acid Precipitation The high level of acidity in acid precipitation can cause very rapid weathering of rock.

Acid Rain Effects on
Buildings



Nat. Geo. 160(5)665(1981)

Acid dissolves
limestone and marble

C. Ophardt, c. 2003

Acid Rain Effects on Sculptures



E. M. Winkler, Stone, Schmidt-Thomsen

1908



1969

C. Ophardt, c. 2003

II. Chemical Weathering

C. Acids in Groundwater In certain places groundwater contains weak acids, such as carbonic or sulfuric acid. These acids can weather certain kinds of rock.

D. Acids in Living Things Lichens and some other living things produce acids that can slowly break down rock.

E. Air Oxidation is a chemical reaction in which an element, such as iron, combines with oxygen to form an oxide. Oxygen is in air. This common form of chemical weathering is what causes rust.



Critical Thinking Time

- Identify the following as either mechanical or chemical weathering.
 1. A rock falls on a mountainside
 2. A rusty bridge
 3. Lichens and mosses growing on a boulder
 4. An alpine glacier advancing down a valley