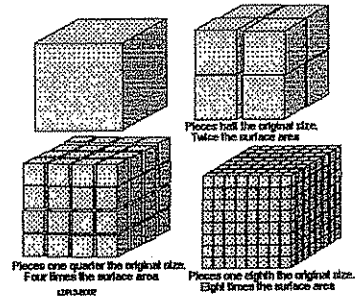


## WEATHERING SMART BOARD NOTES

**WEATHERING:** The physical and chemical processes that break down rock on earth's surface.

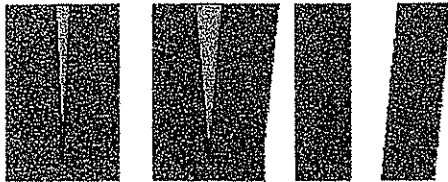
**PHYSICAL/ MECHANICAL WEATHERING** – rocks are broken up into \_\_\_\_\_ pieces so that they weather faster. (rocks are smaller)

**PHYSICAL WEATHERING INCREASES SURFACE AREA**  
More surface area exposed leads to faster weathering



### TYPES OF PHYSICAL WEATHERING

#### Frost Wedging



Water-filled crack      Freezes to ice      Breaks Rock

**1. FROST ACTION** - WATER ENTERS CRACKS IN ROCKS, FREEZES, EXPANDS, CRACKS WIDEN AND EVENTUALLY PIECES BREAK OFF

**IMPORTANT IN OUR CLIMATE** – \_\_\_\_\_  
**FREEZE/THAW**

**2. PLANT ROOTS (ALSO ANIMALS BURROWING)**  
**PLANT ROOTS SPLIT ROCK**



**3. ABRASION** – RUBBING BY OTHER ROCKS DURING \_\_\_\_\_

Sediment made smaller and rounder



ANGULAR      MEDIUM      ROUNDED

**4. EXFOLIATION** – PEELING AWAY OF ROCK

A. Unloading – due to reduced pressure at earth's surface rocks will expand but they will crack because they are brittle



B. Fluctuating Temperatures will cause rocks to contract and expand causing cracks Examples: deserts and mountains

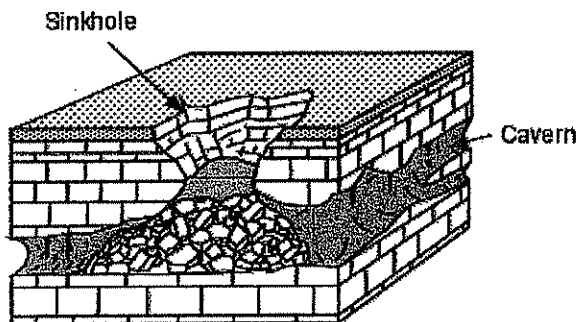
**CHEMICAL WEATHERING** – Chemical reactions **CHANGE** mineral composition - MAKING THEM WEAKER AND MORE EASILY WEATHERED.

## TYPES OF CHEMICAL WEATHERING

1. **OXIDATION** when free oxygen combines chemically with metallic elements (usually iron)

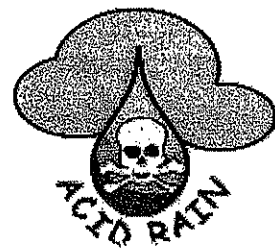
AKA \_\_\_\_\_

## 2. CARBONATION



Water containing carbonic acid dissolves minerals (all rain water is slightly acidic)

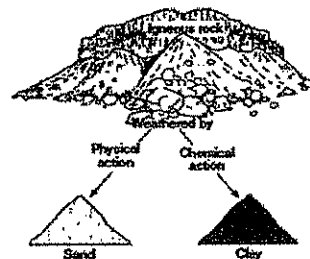
Most strongly affected are calcite minerals: \_\_\_\_\_ and \_\_\_\_\_



CAVES OF LIMESTONE AND SINKHOLES

## 3. HYDRATION

When **Water** combines with minerals – most often in granite (mica and feldspars) to form \_\_\_\_\_



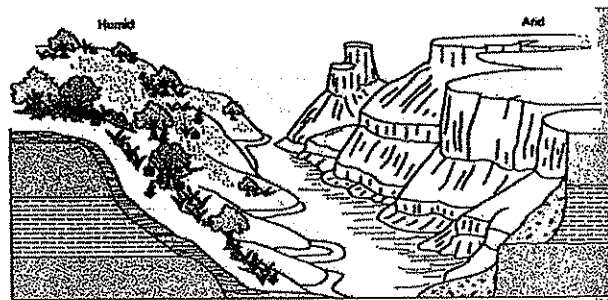
## CLIMATE CONTROLS WEATHERING

● **PHYSICAL WEATHERING:**  
**COLD AND \_\_\_\_\_**  
**ALTERNATE FREEZE / THAW**

● **CHEMICAL WEATHERING:**  
**WARM AND \_\_\_\_\_**

**IN BOTH CASES – \_\_\_\_\_ IS THE PRIMARY INGREDIENT THAT PROMOTES WEATHERING**

**Humid climates – landforms more \_\_\_\_\_**  
**Arid climates – landforms more angular**

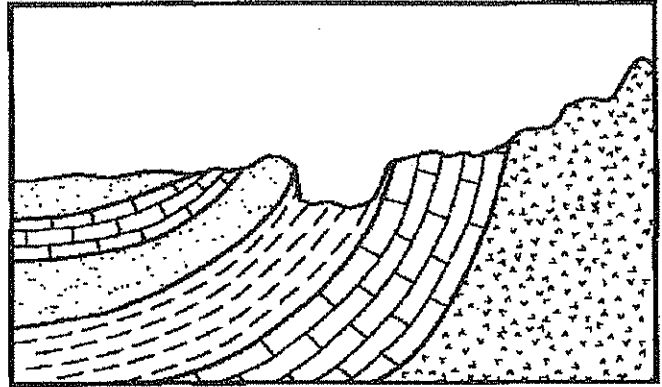


## COMPOSITION OF ROCK

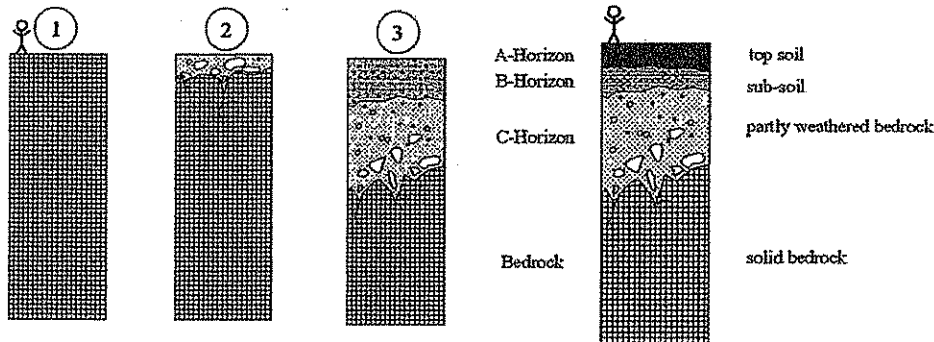
Landforms that are composed of minerals **MORE RESISTANT** to weathering will weather and erode less.

LABEL MORE RESISTANT LAYER

LABEL LESS RESISTANT LAYER



**SOIL – PRODUCT OF \_\_\_\_\_** - a combination of sediment, rock minerals, and humus (decayed organic material- animals and plants – biologic activity). Soil production increases with gentle slope, biologic activity, hot/moist climate, less resistant rock, and time.



## 2 TYPES OF SOIL

**TRANSPORTED SOIL:** SOIL CARRIED BY EROSION AND DEPOSITED ON THE BEDROCK THAT IS MOST OFTEN DIFFERENT (MOST SOIL IS TRANSPORTED)

**BEDROCK BENEATH ≠ SOIL ABOVE**

**RESIDUAL SOIL:** SOIL FORMED BY THE WEATHERING OF THE BEDROCK DIRECTLY BENEATH IT

**BEDROCK BENEATH = SOIL ABOVE**

