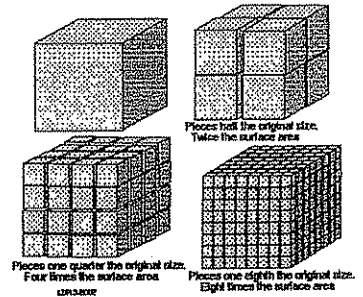


WEATHERING SMART BOARD NOTES

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

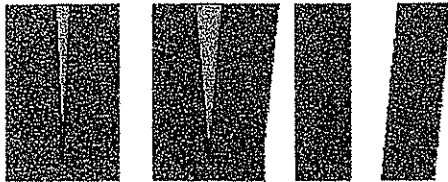
PHYSICAL/ MECHANICAL WEATHERING – rocks are broken up into _____ pieces so that they weather faster. (rocks are smaller)

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



TYPES OF PHYSICAL WEATHERING

Frost Wedging

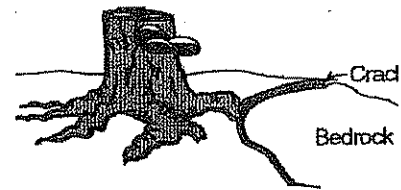


Water-filled crack Freezes to ice Breaks Rock

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



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

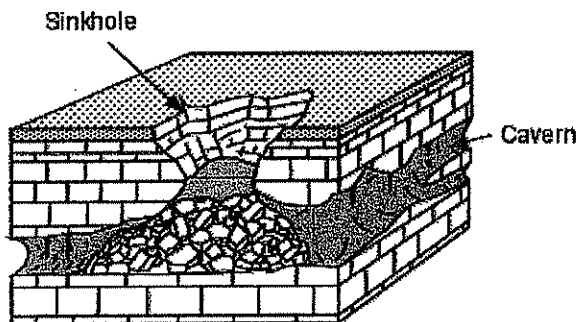
CHEMICAL WEATHERING – Chemical reactions **CHANGE** mineral composition - MAKING THEM WEAKER AND MORE EASILY WEATHERED.

TYPES OF CHEMICAL WEATHERING

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

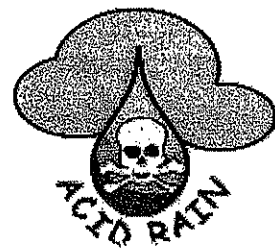
AKA _____

2. CARBONATION



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

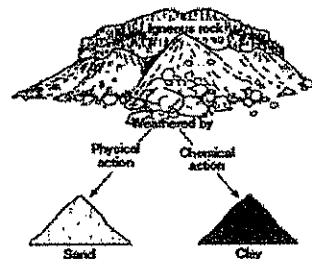
Most strongly affected are calcite minerals: _____ and _____



CAVES OF LIMESTONE AND SINKHOLES

3. HYDRATION

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



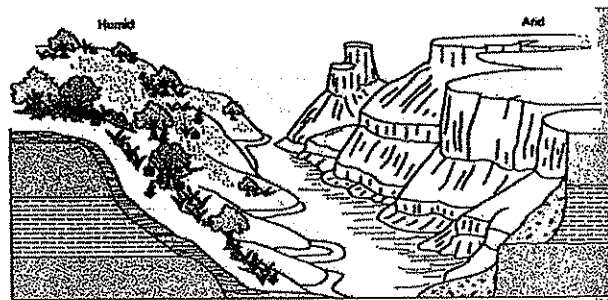
CLIMATE CONTROLS WEATHERING

● **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

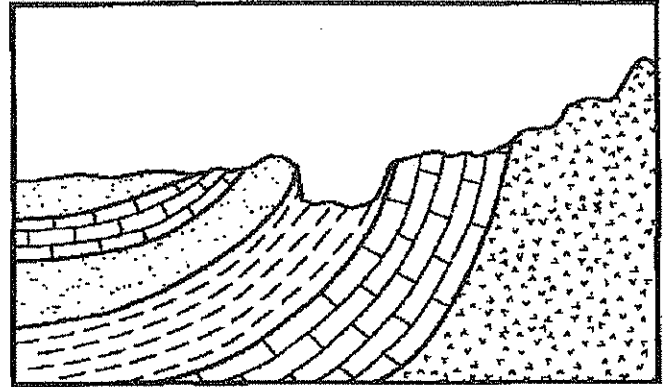


COMPOSITION OF ROCK

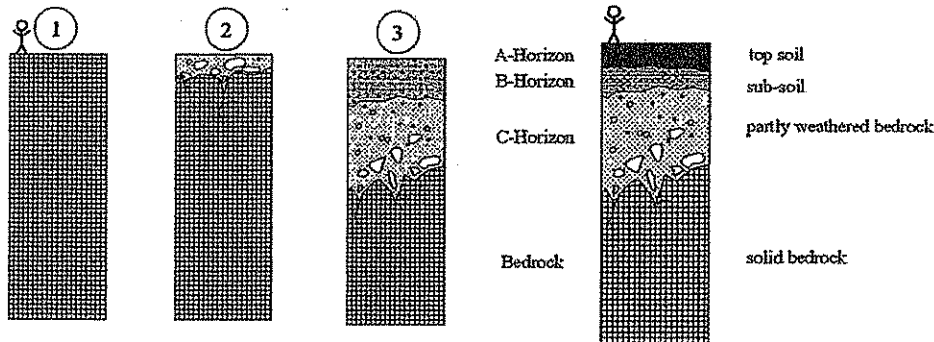
Landforms that are composed of minerals **MORE RESISTANT** to weathering will weather and erode less.

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

