Weathering - breakdown of rocks.

**Physical** - does not change composition
- ex: frost wedging, abrasion, plants and animals

**Chemical** - changes composition
- ex: hydrolysis, oxidation

Rate and Types of Weathering - temperature and precipitation

warm and humid - most chemical weathering
Rate of weathering affected by:

1. temperature and precip.
2. mineral composition
3. surface area.

Erosion - the transport of weathered material.

Force of erosion = gravity

Agents of erosion = wind, water, ice
Factors that affect rate of erosion of a stream

1. stream discharge
2. stream velocity
3. stream slope
4. meanders

Landform Development:

Affected by:
1. rock type (resistant or non resistant)
2. rate of uplift and erosion
3. climate (dry - angular, humid - rounded)
4. structural features (faults and folds)
Where is the velocity of the stream the greatest?  
Where is the velocity of the stream the least?  
Where does the most erosion occur?  
Where does the least erosion occur?  

Outside of curve  
Inside of curve  
(most deposition)  

Straight - middle / Outside of the curve
DEPOSITION

Sorted - streams, wind

unsorted - glaciers, mass movement.
Porosity: the amount of water rock or soil can hold

\[
\frac{\text{total volume of empty space}}{\text{total volume of soil}} = \text{porosity}
\]

What materials would you need to calculate the porosity of a sample?

- Water
- Graduated cylinder

- Particle size alone does not determine porosity.
- Identically shaped samples of increasing particle size will have the same porosity.

Which is more porous, a container of:

a. Round particles or angular particles
b. Tightly packed particles or loosely packed particles
c. Well-sorted particles or unsorted particles

- Large beads or small beads

Permeability: the rate at which water can pass through rock or soil

Which column would allow water to flow through the fastest? Why?

A larger pore space - easier for water to flow through

If the sediment in column A and column D were combined in a 5th Column, would the new columns permeability be greater, less or the same as that of A? Why? Less

Which is more permeable?

- Small particles or large particles
- Frozen ground or unfrozen ground
**Capillarity:** (capillary action) water rises from the water table (water molecules are attracted to soil particles)

- Solids with smaller size particles can draw water from the zone of saturation higher than those with larger size particles.

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Factors Affecting Runoff and Stream Discharge:

Runoff: precipitation not absorbed by soil

Which will result in greater runoff and stream discharge?

a. An area that is vegetated
b. An area that has a steep slope
c. Ground that is frozen
d. Ground that is saturated

or

a. an area that is barren
b. an area that is flat
c. ground that is unfrozen
d. ground that is unsaturated.