**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period\_\_\_\_\_Date\_\_\_\_\_\_\_\_\_\_**

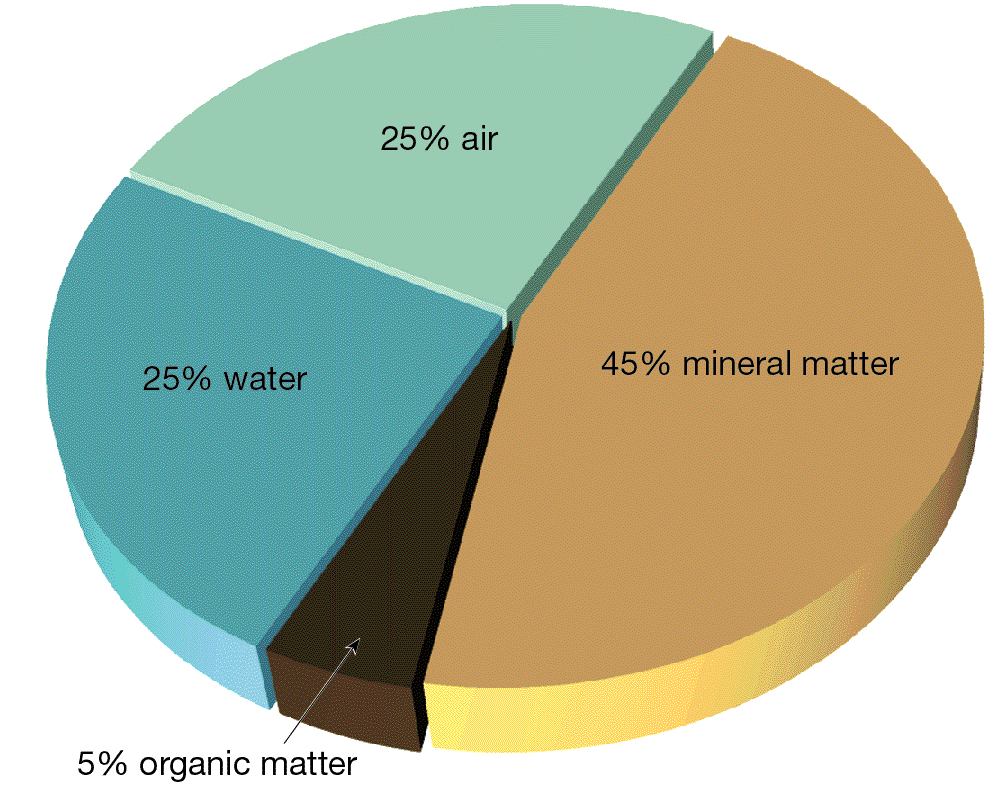
**Geology Unit 12 Notes**

**Soils & Mass Movements**

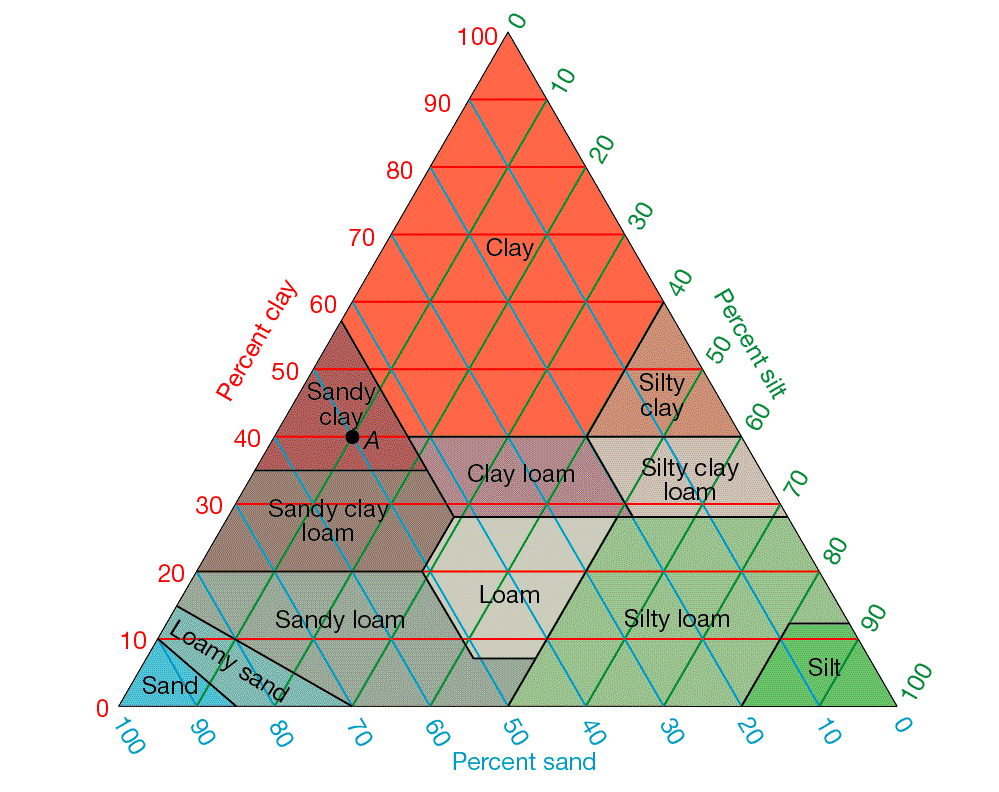
Text Reference: Ch 5 133-149

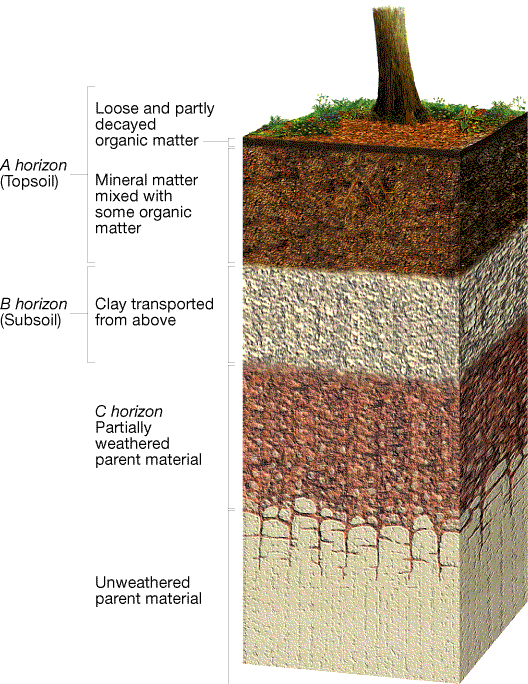
**PART I: SOIL**

* Importance of Soil
  + An important product of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Covers most land \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + One of earths \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_resources
* Characteristics of Soil
  + Soil is part of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that supports the growth of \_\_\_\_\_\_\_\_\_\_
    - Regolith: the layer of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that covers most of earth’s land surface
    - Includes Soil Composition, Texture, Structure, Formation
* Soil Composition
  + Soil has \_\_\_\_\_\_\_\_\_\_ major components
  1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-broken down rock
  2. Organic Matter (\_\_\_\_\_\_\_\_\_\_\_\_\_)- the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ remains of organisms
  3. \_\_\_\_\_\_\_\_\_\_\_\_: provides the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ for chemical reactions to occur to sustain life
  4. \_\_\_\_\_\_\_\_\_\_\_\_: source of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plants use to produce sugar during \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Composition by volume of good quality soil



* Soil Texture
  + Texture refers to the proportions of different particle sizes. \_\_\_\_\_\_\_\_(large size), silt, \_\_\_\_\_\_\_\_(small size)
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ( a mixture of all \_\_\_\_\_ sizes) is best suited for plant life
  + Sandy soils may \_\_\_\_\_\_\_\_\_\_ and dry \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Clay rich soils drain \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



* Soil Structure
  + Soil particles \_\_\_\_\_\_\_\_\_\_ together to give soil its structure
  + Determines how quickly soil can be \_\_\_\_\_\_\_\_\_\_\_\_\_ and how susceptible it is to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Affects how easily \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_penetrates soil
* Soil Formation
  + The most important factors in soil formation are: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - Parent Material
      * Source of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
      * Residual soil: parent material is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
      * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ soil: parent material has been carried from elsewhere and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ by gravity, wind, water or ice
      * Influences on Soil: affects the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of soil formation, affects soil fertility(\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
    - Time
      * The \_\_\_\_\_\_\_\_\_\_\_\_ a soil has been forming the \_\_\_\_\_\_\_\_\_\_\_ it becomes
      * Parent material mostly determines characteristics of \_\_\_\_\_\_\_\_\_\_\_ soils
      * As time and weathering continues, the influence of parent material \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - Climate
      * \_\_\_\_\_\_\_\_\_\_\_\_\_ effect on soil formation
      * Different \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ affect rate, depth, and type of weather
      * In the same amount of time: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: thick layer of chemically weathered soil and a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: thin layer of mechanically weathered soil
      * Amount of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_influences soil fertility and the rate at which nutrients are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from soil
      * Affects types of organisms that can live \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the soil
    - Organisms
      * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ affect soil’s physical and chemical properties
      * \_\_\_\_\_\_\_\_\_\_\_ are main type of organic matter in soil. Contributes to soil \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. (remember the humus layer of soil)
      * Microorganisms \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ dead plants and animals
      * Burrowing animals \_\_\_\_\_\_- the organic and mineral matter and help \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ penetrate into the soil
    - Slope
      * One a steep slope: erosion has \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, often have \_\_\_\_\_\_\_\_\_\_\_\_\_ developed soils because little \_\_\_\_\_\_\_\_\_ can soak in and can’t hold moisture for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-\_\_
      * Flat areas: \_\_\_\_\_\_\_\_\_ erosion and poor \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
      * Optimum slope: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_upland surfaces
* The Soil Profile
  + Soil varies in composition, texture, structure, and color and different \_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are zones or layers of soil. A soil \_\_\_\_\_\_\_\_\_\_\_ is a vertical section through all the soil horizons
    - The \_\_\_\_\_ horizon is commonly known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - The \_\_\_\_ horizon is \_\_\_\_\_\_\_\_\_\_ and contains clay particles washed out from the \_\_\_\_\_ horizon
    - The \_\_\_\_ horizon is between B horizon and unaltered \_\_\_\_\_\_\_\_\_\_\_\_\_ material
* Soil Types: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ common are \_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Pedalfer
    - Best developed under \_\_\_\_\_\_\_\_\_\_\_ vegetation
    - Usually forms in the temperate areas that receive >\_\_\_\_\_\_cm of rain per year (mostly \_\_\_\_\_\_\_\_\_\_ US states)
    - Accumulation of \_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_-rich clays in the \_\_\_ horizon
    - Remember \_\_\_\_\_\_=aluminum and \_\_\_\_\_\_=iron on periodic table
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in color
  + Pedocal
    - Accumulates \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - Associated with \_\_\_\_\_\_\_\_\_\_\_ grasslands
    - Found in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ US states
    - Contains \_\_\_\_\_ clay than pedalfers because of \_\_\_\_\_\_\_climate and \_\_\_\_\_\_ chemical weathering
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in color
  + Laterite
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_climates
    - Intense \_\_\_\_\_\_\_\_\_\_\_\_\_ weathering
    - Large amounts of \_\_\_\_\_\_\_\_\_\_\_\_\_ removes most of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are left behind
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in color
* Soil Erosion
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Erodes soil
  + Rates of Erosion
    - Human activities that remove natural vegetation such as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ have greatly accelerated erosion
    - Between wind and water, \_\_\_\_\_\_\_\_ erodes more quickly
  + Sediment Deposition
    - Another problem caused by excessive soil \_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_ fill with sediment
    - Sediments are contaminated by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Controlling Erosion
  + Planting rows of trees called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Terracing hillsides
  + Plowing along the \_\_\_\_\_\_\_\_\_\_\_of hills
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**PART II: MASS MOVEMENTS**

* Transfer of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ due to \_\_\_\_\_\_\_\_ is called mass movement
* Among the factors that commonly trigger mass movements are the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The role of Gravity

* + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_is the force of gravity acting on an object on a slope
    - Always pulls \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - Objects move \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Resistance to movement
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of an object to move downhill; \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - Cohesion, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of particles
    - Plat roots, cementation,etc

The role of water

* \_\_\_\_\_\_\_\_\_\_\_may act to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Types of Mass Movements
  + Geologist classify mass movements based on the kind of material that moves, \_\_\_\_\_ it moves, and the \_\_\_\_\_\_\_\_\_\_\_\_ of movement
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - A rockfall occurs when rocks or rock fragments \_\_\_\_\_\_\_\_\_\_\_\_ through the air
    - Sometimes trigger other mass movements
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - In a slide, a block of material moves \_\_\_\_\_\_\_\_\_\_\_\_ along a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ surface
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - A slump is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ movement of a block of material along a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ surface
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can trigger slumps
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are mass movements of material containing a large amount of \_\_\_\_\_\_\_\_\_\_
    - \_\_\_\_\_\_\_\_\_\_\_\_\_ move quickly and carry a mixture of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that has a consistency of wet concrete
    - \_\_\_\_\_\_\_\_\_\_\_\_\_move relatively \_\_\_\_\_\_\_\_ and carry \_\_\_\_\_\_\_-rich sediment