**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