**Types of Soil**

**\*\*\*Read in the Textbook Eureka pages 307-310 and then answer the following questions and fill in the blanks to complete your notes on Types of Soil\*\*\***

Land and Soil are two different things.....

Soil is **the surface layer of matter that, enables plants to grow**

and is created from the mixture of components of the **lithosphere**, **hydrosphere**, and

**atmosphere**. Soil is a vital element because **it fulfills the needs of plants**.

**What would happen without soil in our Earth?**

**No Life, it is essential to human survival (no harvest or animal farming)**

**Explain the two formation processes of soil** (**1.** **The alteration of the bedrock** and **2.** **The influx of organic material from living things**) while defining **bedrock**, **acid**, and **humus**.

1. The Alternation of the bedrock – **Bedrock is Intact rock (lying under the soil)**

- Water can infiltrate fissures in the bedrock. When it does, freezing temperatures can cause water to expand, exerting pressure on the fissure walls casing them to break.

- Acid (substance with pH<7) in the water will also disintegrate bedrock.

2. The influx of Organic Material from Living Things -

- **Debris from plants** (leaves, fruit, bark, dead roots etc.) **and animals** (feathers, hair, excrement, carcasses etc.) **decompose forming humus** (decomposed organic matter).

**- Micro-organism are added as well.**

**Soil Profile**

The deeper you dig in the soil, the bigger the elements you find.

There are different layers of composition and structure called the soil’s **Horizons.**

The soil profile is generally formed from three horizons A, B, and C. Using your textbook and the diagram below **explain the main points of each horizon below**:



A

* **Found at the surface**
* **Plant and animal matter is converted to humus**
* **Thickness of horizon A & the speed of decomposition affects the amount of humus**
* **It can be low in minerals, when rain carries them to horizon B**

B

* **Many Minerals**
* **Rocks are less fragmented than horizon A**

C (Subsoil)

* **Provides raw materials for upper layers**
* **Contains degraded bedrock & various minerals**

**What is leaching? A process by which a substance is dissolved and then carried off by water**

**Soil Texture and Structure**

The texture of soil depends on the size of particles composing it and these sizes vary from gravel to microscopic bits of clay. Soil is usually a mix of 3 particle types: **Sand, Silt,** & **Clay**.

What are the most fertile soils and what are they made up of? Why are they the most fertile?

**- Argilloarenaceous Silts – Made of clay & sand – They contain enough fine particles to retain water and allow minerals to adhere (stick).**

**Label the following from smallest to biggest particles and include the size of the particles.**

 **Biggest Medium Smallest**



Silt

Clay

Sand

**Explain the following sentence** using the term **soil porosity**: The structure of the soil is an indication of how the elements are arranged. **(deposited loosely or tightly packed)**

* **Soil porosity determines the % of free space in a given volume of soil**
* **Porosity is directly related to soil structure**
* **It determines how much water and air circulates in the soil**
* **It determines the development of animal & plant life**
* **Large pores allow gases and water to circulate**
* **Small pores retain a portion of the water**

Soil Inhabitants

The soil houses an unbelievable quantity and variety of living organisms. **Use Figure 22 to explain how these organisms can determine the properties of the soil where they are found.** (hint: use drawings and words to explain this concept)

* ***Earthworms* – aerate the soil when they dig and secret mucus that hold soil particles together**
* ***Bacteria* – transform atmospheric nitrogen allowing plants to assimilate it**
* ***Plants Roots* – extract water and minerals dissolved in soil, and hold soil in place, reducing the effects of erosion**