**Exploring Geologic Time Guided Notes**

*Objectives of Presentation*

* *To outline the history of how we understand geologic time*
* *To describe how the geologic time scale is organized*

What is Geologic Time?

* The events of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ through time as they relate to the rocks that make up our planet
* Each rock on the earth formed at a particular \_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What do each of the following reveal to scientists about what the prehistoric world was like?

| Fossils-  Chemical composition-  Structures in the rock-  Uranium/Lead content- |
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How did humans in antiquity think about the age of the Earth?

| Aristotle:  Cultures and religions in antiquity:  Hinduism  Bishop Ussher |
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Who was Blessed Nicholas Steno (1638-1686)?

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What did Bl. Nicholas Steno do?

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Stratigraphy: the study of rock layers and their relative ages

* Involves determining whether a rock layer is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than another

Example of Stratigraphic Concept: Law of Superposition

| W |
| --- |
| L |
| A |
| F |

According to the law of superposition, which layer in the illustration to the above is oldest, and which is the youngest?

| Oldest:  Youngest: |
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Example of Stratigraphic Concept: Law of Faunal Succession

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can be used to put rock layers in sequence.

| Example of the Law of Faunal Succession: |
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The Concept of Geologic Time

Steno and the science of stratigraphy allowed scientists to put rock layers in sequence, but what allowed scientists to *assign actual ages* to rock layers and events in earth history?

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The Geologic Time Scale

**What are the major Eons in order from Oldest to youngest?**

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**What are the eras of the Phanerozoic from oldest to youngest?**

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**Provide the correct era to the categories below:**

| **“Time of Mammals”:**  **“Early Life”**  **“Time of Dinosaurs”** |
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**Question to Ponder:**

What do you think causes a scientist to place a boundary in a particular place on the time scale?

In other words: why do you think scientists decided to start and end the various Eons, Eras, Periods, and Epochs at the boundary dates listed on the right side of the time scale?

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So how did scientists determine when intervals of geologic time begin and end?

| Provide examples of how each of these would be recognized in a rock:   * Changes to environments: * Changes to chemicals: * Changes to Fossils: |
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How old is the earth? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

How old is the universe? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Why is it important to recognize that our universe is so old?

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When and how do humans fit into all of this?

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**Summary Points:**

* The geologic time scale organizes and depicts the events of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Rocks provide the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for the history of our planet
* In the 17th century, Blessed Nicholas Steno founded the science of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_that uncovered this geologic history
* The scientists of the 20th century crafted the modern geologic time scale and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to geological eons, eras, periods, epochs
* The geologic time scale is divided up into times \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that happened in Earth’s history