**Fossil Evidence:**

**Unit 2: Earth’s History**

**Mini-Unit:** Fossils

**Goal 2**:The student will demonstrate the ability to explain how artifacts and events of Earth’s past are dated.

**Objectives – The student will be able to:**

* Describe the principles used to determine relative age, including Law of Superposition, Principle of Horizontality, Principle of Crosscutting Relationships, Law of Included Fragments, unconformities, intrusions, rock layer correlation, and fossil correlation
* Describe the principles used to determine absolute age, including radioactive dating, index fossils, fossil correlation, and the principle of Uniformitarianism

**Goal 3:** The student will demonstrate the ability to use geologic dating principles to determine a sequence of events make up a core sample, rock column, or cross-section

* Describe how progressive changes in fossil evidence can be used to document the evolution of life

**Textbook:** Unit 3, Chapter 8, p. 197

Fossils:

Fossils: The trace or remains of an organism that lived long ago, most commonly preserved in sedimentary rock, can be used to identify the relative or absolute age of a rock

Paleontology: The study of fossils

Modes of Fossilization:

1. Mummification – typically occur in dry places where bacteria can’t survive
2. Amber – organisms trapped in ancient tree sap
3. Tar Seeps – thick petroleum that comes to the surface and is covered by water
4. Freezing – low temperatures protect an organism from bacteria
5. Petrification – minerals in water seep in and replace original organic materials
6. Imprints – Carbonized imprints left behind after the organic matter decays
7. Molds and casts – molds are empty impressions filled by rock while casts are replica of the original organism
8. Gastroliths – smooth stones in the digestive systems of dinosaurs to help grind up and digest food

Trace Fossil: A fossilized mark that formed in sedimentary rock by the movement of an animal on or within a soft sediment (i.e. a footprint)

Using Fossils to Establish Age:

Index Fossils: A fossil that is used to establish an age of a rock because it is distinct, abundant, and widespread, and only existed for a short span of geologic time, can be used to determine the absolute age of a rock layer

Evidence of Plate Tectonics: Fossils of marine life on mountain tops and of shallow water organisms in deep water prove crustal movement

Key Beds: Rock layers that contain distinctive characteristics (such as volcanic ash) or fossil content that allow one to correlate rock layers in different areas