|  |  |  |  |
| --- | --- | --- | --- |
| **Score 4.0** | **In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.**  **I can:**  •   connect surface features to the processes responsible for their formation | |  |
| **Score 3.0** | **I can:**  •  understand the effects of heat flow and movement of materials within Earth. |
| **Score 2.0** | I can recognize or recall specific vocabulary, such as:    •  inner core, outer core, mantle, asthenosphere, lithosphere, convection, law of superposition, radioactive dating, radioactive decay, isotopes, relative dating, absolute dating, dense metallic liquid | |  |
| **Score 1.0** | **With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.**  I can:  •define key vocabulary |  | | |
|  |  | |  |

***Learning Objectives:***

By the end of this unit, I will understand and explain:

1. The composition and layers of the solid Earth include the lithosphere, mantle, metallic liquid and solid core.

2. The patterns within the rock cycle include plate tectonics, erosion, weathering, and mountain building.

3. How Geologists apply radioactive data and the law of superposition to explain the age of the Earth.

4. How heat flows within Earth causing movement such as earthquakes and volcanic eruptions, and creates mountains and ocean basins.

5. The evidence supports the theory of plate tectonics, that Earth’s crustal plates cause slow and rapid changes in Earth’s surface.

***Vocabulary:***

inner core, outer core, mantle, asthenosphere, lithosphere, convection, sedimentary, metamorphic, igneous, mantle, heat, pressure, law of superposition, radioactive dating, radioactive decay, isotopes, C14, relative dating, absolute dating, earthquakes, volcanoes, mountains, ocean basins, lava, magma, fault, Pangaea, convection, theory of continental drift, theory of plate tectonics.

***State Standards:***

**SC.7.E.6.1**Describe the layers of the solid Earth, including the lithosphere, the hot convecting mantle, and the dense metallic liquid and solid cores.

**SC.7.E.6.2**Identify the patterns within the rock cycle and relate them to surface events (weathering and erosion) and sub-surface events (plate tectonics and mountain building).

**SC.7.E.6.3**Identify current methods for measuring the age of Earth and its parts, including the law of superposition and radioactive dating.

**SC.7.E.6.4**Explain and give examples of how physical evidence supports theories that Earth has evolved over geologic time due to natural processes.

**SC.7.E.6.5**Explore the scientific theory of plate tectonics by describing how the movement of Earth's crustal plates causes both slow and rapid changes in Earth's surface, including   volcanic eruptions, earthquakes, and mountain building.

**SC.7.E.6.7**Recognize that heat flow and movement of material within Earth causes earthquakes and volcanic eruptions, and creates mountains and ocean basins.

Unit F: Earth Structures: Layers of the Solid Earth and Plate Tectonics

***Essential Question:***

*What are the internal and external sources of energy that have continuously altered the features of the Earth?*