

Unit 2: Earth's Composition & Structure

_____ - The study of the Earth, inside and out

Early Earth:

- A large planetesimal that was made up of _____ throughout
- Begins to heat up and Earth becomes _____.

What causes it to heat up?

1. _____ is transformed into heat energy during collisions with comets, asteroids, and other planetesimals
2. Decay of _____.

Giant Impact Hypothesis

- About _____ Billion Years ago ; 50 million years after _____ was formed
- A giant _____ hit the molten Earth
- The collision knocked off pieces, which clumped together to form the _____
- Evidence is based on _____ and compositional analysis of _____.

Materials of Earth

- Earth consists of 8 elements that are produced by _____ in _____ and _____ explosions.

_____ elements make up 90% of Earth's mass! They include: _____

_____.

As Earth continues to heat up:

- _____ melts and sinks to the center
- This process is called _____.
 - _____ elements sink to the center
 - _____ elements to the middle
 - _____ elements float toward the surface

Internal Layering Develops!

Earth can be divided into 3 main layers, based on the materials that make up each layer

- 1.
- 2.
- 3.

Crust

- Outermost Layer
- Like the shell of an _____.
- Solid, consisting of a variety of rocks
- Brittle, it can _____.
- Rocks are composed mainly of silicon and oxygen compounds called _____, and _____, _____, and _____.

2 Types of Crust:

_____ Crust – underlies the sea floor, heavier, sinks, 7 – 10 km thick

_____ Crust – underlies the continents, lighter, floats, 25 – 40 km thick

Mantle

- Middle layer, intermediate density
- Solid but _____ - meaning that it is so hot that it is able to flow and change shape
- The largest part of the Earth by volume ; _____ % of Earth's Volume
- Made mostly of _____, _____, and _____.
- Temperature and pressure _____ as you go down
- Separated into 3 layers:
 - _____ - cool, rigid rock, includes crust and upper mantle, 100 km thick
 - _____ - softer and weaker, moves like taffy
 - _____ - strong and stiff, includes the bottom of mantle to the core

Core

- Inner layer of the Earth
- Composed of _____ and _____.
- _____ times more pressure than at the surface
- _____ °C
- 2 Layers:
 - _____ - high temperatures, metal is _____, earth's rotation allows the iron alloy to flow which produces an _____ and creates Earth's _____.
 - _____ - High pressure packs atoms together, so that it is _____.