

# Unit 1: Layers of the Earth Study Guide

## Summary:

- The **ATMOSPHERE**, **OCEAN**, and the body of the Earth are divided into layers by **DENSITY**, **TEMPERATURE**, **PRESSURE**, and **COMPOSITION**. During the Earth's formation 4.5 billion years ago, the heavier, denser materials sank to the center and the lighter, less dense materials floated to the top.
- Scientists have never drilled or visited the interior of the Earth past the crust, as both **TEMPERATURE** and **PRESSURE** increase the further down you go. Scientists have learned about the Earth's interior through collected **ROCK SAMPLES** and studying **SEISMIC WAVES** as they change **SPEED** and **DIRECTION** while traveling through the Earth.

**Key Terms:** seismic waves, pressure, density, temperature, composition, mechanics, crust, mantle, core, lithosphere, asthenosphere, mesosphere, outer core, inner core, basalt, granite

## Layers of Earth:

COMPOSITIONAL (CHEMICAL) LAYERS	MECHANICAL (PHYSICAL) LAYERS
<b>CRUST:</b> oceanic crust made mostly of basalt and is 5-7 km deep, continental crust made mostly of granite and is 10-70 km deep, very thin layer only 1% of Earth's volume	<b>LITHOSPHERE:</b> 10-200 km deep, includes crust & uppermost mantle, solid & rigid rock, broken into tectonic plates, floats on asthenosphere
<b>MANTLE:</b> 84% of Earth's volume, made mostly of silicate rocks, convection currents move heat from core to crust, crust-mantle boundary called the Moho	<b>ASTHENOSPHERE:</b> 660 km deep, solid & plastic rock that flows very slowly, some regions melted into magma
	<b>MESOSPHERE:</b> 2,700 deep, solid & rigid rock, also called lower mantle
<b>CORE:</b> composed of iron & nickel metal, in the center it is as hot as the Sun's surface, core generates magnetosphere (magnetic field), 15% of Earth's volume	<b>OUTER CORE:</b> liquid & fluid metal, convection currents move heat from inner core to mantle, rotates west (opposite inner)
	<b>INNER CORE:</b> solid & rigid metal due to extreme pressure, rotates east (opposite outer), slowly growing larger as outer core cools, <b>NEW:</b> may be further divided into inner-inner core and outer-inner core by polarity

