CHAPTER 9

Layers of the Earth

The Earth is made up of four layers:

- Inner Core
- Outer Core
- Mantle
- Crust
The crust is the layer of Earth that we live on. It is the thinnest and outermost layer.

Continental Crust is the thicker part of the crust that forms large land masses.

Oceanic Crust is the thinner part of the crust that is found under the ocean.

The crust and the top part of the mantle (solid hot rock) form what is called the **lithosphere**.
MANTLE

• **Convection Currents**: Cooler rock flows down and hotter rock flows up.

• High temperatures provide the energy needed for these currents to move.

• Lithosphere floats on top of these currents.
Core

- Made up of two parts (inner and outer)
- Mostly made out of iron
- Outer Core: The liquid in the outer core flows in currents, creating Earth’s magnetic field.
- Inner Core: Solid
Scientists learn about Earth’s layers in many ways:

- They can study the mantle material pushed up through Earth’s cracks in the crust.
- Measure different kinds of vibrations from the vibrations change of speed and direction. They go through different layers.
- Using a Seismograph, or an instrument used to record earthquake waves.
- Using laboratory experiments to test materials thought to be inside the Earth.
The **lithosphere** covers all of Earth like a thin shell, but it is not a solid sheet of material.

**Plate**: A section of the lithosphere.

**Plate boundaries**: Edges of the plates.

**Plates moves for two reasons**:
- Gravity pulls plates down into the mantle
- Convection currents push and pull on plates
3 Types of Plate Movements

- **Converging**: Converging plate boundaries (subduction) is when two plates collide. This movement causes mountains to form.

- **Spreading**: Spreading Plate Boundaries (divergent) causes plates to move apart. This results in rift valleys on the ocean floor.
• Sliding: Sliding plate boundaries (transform) cause plates to move past each other in opposite direction.
Volcanoes

• Can be destructive or constructive.
• Constructive volcanoes can form islands (Hawaii)
• Most volcanoes form near converging plate boundaries.
• Magma: Mantle material found underground.
• Lava: Mantle material found above ground.
Earthquakes

- Destructive process that causes landslides (on land) and tsunamis (under the ocean)

- Occur at faults along plate boundaries

- **Fault**: A crack in the Earth's crust

- Instead of moving smoothly, plates jam and suddenly move to a new location, causing vibrations.