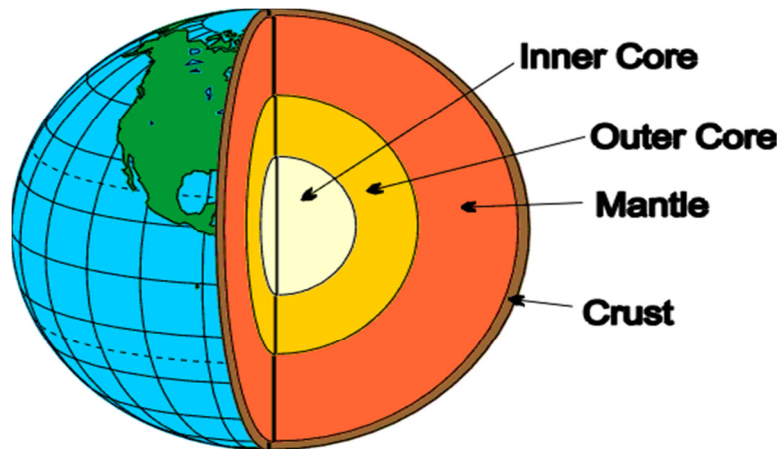


Layers of the Earth

From the surface to the very center of the earth is about 6500 km. The 4 major layers of the earth include the:

- Crust
- Mantle
- Outer Core
- Inner Core



1. **Crust:** outer solid rock layer (The crust is the first layer of the earth).

- **Continental crust – 50 km thick (average)**
Made from a less dense type of rock called *granite*

- **Oceanic crust – 10 km thick**
Made from a dense rock called *basalt*.

The crust doesn't even make up 1% of the earth!

2. **Mantle:** Approx. **2900 km thick**
85% of the total mass of the Earth.

- **Lithosphere:** Solid *Crust + Upper-Upper Mantle*

- **Asthenosphere:** Molten *Upper Mantle*

3. **Outer core:** Approx. **2200 km thick**
Made from *liquid iron and nickel*

4. **Inner core:** Approx. **1300 km thick**
Made from mostly *iron and nickel*, the tremendous pressure keeps it *solid*.
Heat from Earth's core helps produce convection currents and hot-spot activity.

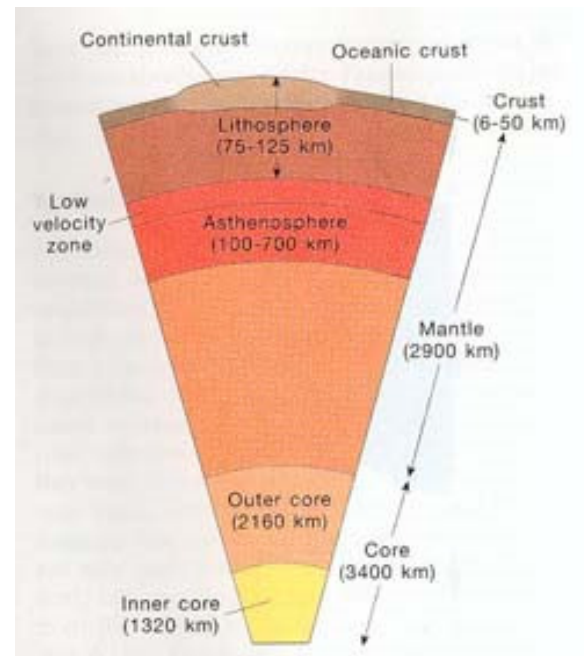
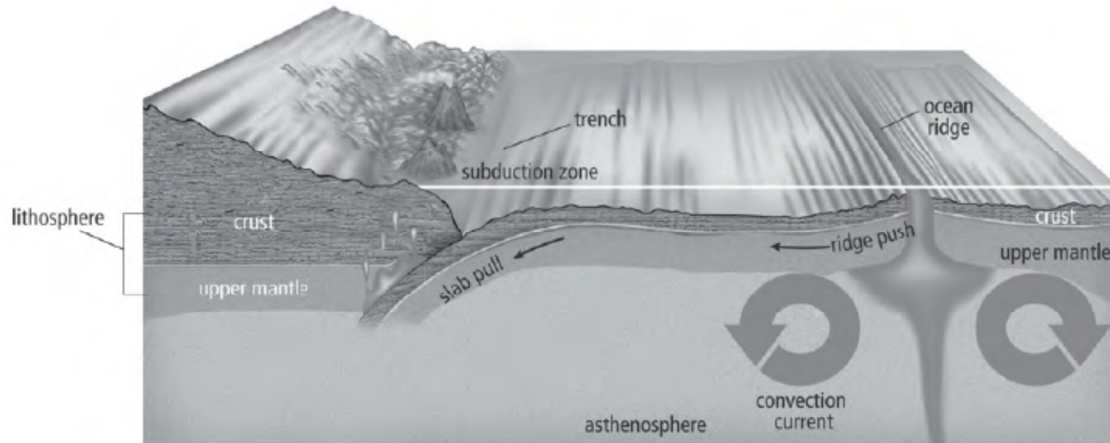


Plate Motion



1. Tectonic plates make up the lithosphere, which floats on the asthenosphere
 - The **lithosphere** is the crust and upper portion of the mantle.
 - The **asthenosphere** is the molten layer of the upper mantle.
2. There are about 12 major tectonic plates and many smaller ones.
 - Tectonic plates are all moving at the same time.
3. **Mantle convection** is thermal energy transfer in the mantle where hot, light magma rises and cold, dense lithospheric plate material sinks.
 - Heat to keep the asthenosphere molten comes from radioactive elements.
4. Continents, attached to the tectonic plates, float on the magma of the asthenosphere.
5. Rising magma can reach the surface at spreading ridges (in the oceans) or **rift valleys** (on land).
 - The magma cools when it reaches the surface, solidifies, and is pushed aside as new magma pushes from below.
 - In a process called **ridge push**, the spreading mid-ocean ridge pushes the rest of the tectonic plate it is on away from the ridge.
6. **Subduction** is the action of one tectonic plate pushing below another tectonic plate
 - A more dense oceanic plate subducts under a lighter continental plate.
 - The dense, subducting plate material pulls the rest of the attached plate toward the subduction zone and down into the mantle, a process called **slab pull**.
7. Along with convection currents and ridge push, slab pull helps keep tectonic plates in motion.
8. A **plate boundary** is the location where two plates meet and move relative to each other.

Name: _____
Pd: ___ Date: _____

Quick Check #3

1. Name the four layers of Earth, in order from the inside out.

(a) _____ (b) _____
(c) _____ (d) _____

2. What is the difference between the densities of oceanic crust and continental crust?

3. What is the source of energy for convection currents and hot-spot activity in Earth's mantle?

4. In terms of the crust and the mantle, describe:

(a) the lithosphere

(b) the asthenosphere

5. What is a mantle plume?

6. How does a rift valley form?

7. What happens in subduction?

