

## CRUST

What comes to mind when you think of the word crust? Perhaps it is the time old saying, "Eat your crust!" The earth's crust is a little different than the crust on a piece of bread. It is not soft and chewy, but it hard and composed of different minerals. The thin, outermost layer of the earth is called the crust. It makes up only one percent of the earth's mass. The continental crust is thicker than the oceanic crust. It can range from 25 km thick at the edges to 70 km thick near the center. The oceanic crust on the other hand is only about 7 km thick and considerably denser. The crust and the uppermost part of the mantle make up the *lithosphere*, a solid region that is broken into plates. It is about 65 to 100 km thick.

1. The Crust is made of continental and oceanic crusts, which one is denser?
2. Oceanic crust is \_\_\_\_\_ thick, and continental crust is \_\_\_\_\_ thick.
3. What is the lithosphere layer made up of? How thick is it?

## MANTLE

The mantle is the layer below the crust. It makes up almost two thirds of the earth's mass and is about 2900 km thick. The mantle is divided into two regions, the upper and lower sections. Directly below the upper section is the *asthenosphere*. Heat and pressure cause a small amount of melting to occur in the asthenosphere. While still solid, the asthenosphere is able to flow. The ability of a solid to flow is called *plasticity*. Since the asthenosphere is more liquid than the rest of the mantle, the broken lithosphere plates are able to "float" on it. When the material in the asthenosphere is heated, it becomes less dense and rises. While the cooler material is denser tends to sink. Circulating currents carry the warmer material up and the cooler material down. These circular currents in the asthenosphere are called *convection currents*. The circulating convection currents cause the plates to move.

1. The mantle makes up 2/3 of the Earth's mass and is about \_\_\_\_\_ thick.
2. What consistency is the mantle? Is it solid, liquid, gas, other?
3. How does the mantle create convection currents?

## CORE

Below the mantle is the core, the center of the earth. It makes up nearly one third the mass of the earth. The core is also divided into two regions, the inner core and the outer core. From seismic or earthquake waves, scientists believe the outer core is a liquid and the inner core is a solid. The outer core is made of iron and is very dense. Scientists hypothesize that the circulation of the outer core causes the magnetic field around the earth. It is believed to be circulating in the counter-clockwise direction giving us the North Pole in its present location. It switches about every million years. A record of this "switching" is recorded in the rocks both on land and in the ocean crust. The inner core is made of solid iron and nickel. Many scientists believe it is kept in the solid state because of the extreme pressure from the other layers.

1. The core takes up nearly \_\_\_\_\_ the mass of the Earth.
2. What is believed to cause the magnetic field around our earth?
3. The inner core is made of \_\_\_\_\_ and \_\_\_\_\_, how can these elements stay solid in such high temperature?