

Modeling Earth's Interior

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If you could dig a hole straight down, would you really get to China? Sorry, but the answer is, No. Use a globe to find out where you would be if you could go straight through our planet: _____

But you really couldn't dig a hole right through the Earth. Geologists have discovered using earthquake (seismic) energy waves that our planet has several layers beneath the surface, or **CRUST**. The deepest layer is the **CORE**, which actually consists of two parts. The **INNER CORE** is solid and composed almost entirely out of iron and nickel. The **OUTER CORE** is also mostly iron and nickel, but **molten** or liquid. Wrapped around the core is the **MANTLE**, which consists of rocks made of olivine, pyroxene, and other dense minerals. Compared to the mantle, outer core, and inner core, the crust is thinner than the skin is to the apple!

To understand these better, let's make a simple scale model. You'll need a drawing compass, paper, and the following information.

1. Earth's center is approximately 6,400 km beneath your feet, so we'll use a scale of 1 cm = 1,000 km. Start by using the drawing compass to make a circle 6.4 cm in radius. This would represent the crust, so label it.
2. The boundary between the inner core and outer core is approximately 5,200 km deep. How wide on your scale would the inner core be? _____ cm. Use the same point for the center of the Earth and draw the inner core. Label it.
3. The boundary between the outer core and mantle is about 2,900 km deep. How wide would the outer core be on this scale? _____ cm. Draw another circle at the appropriate distance from the center to represent this *interface* (boundary.) Label the outer core and mantle.
4. Use a textbook or other source (such as the NYS *Earth Science Reference Tables* to add information about the composition, phase, and other important information about each of these layers. How might you also want to represent the **ATMOSPHERE** surrounding the solid **LITHOSPHERE**?
5. Challenge: Find a way to represent the boundary between the mantle and the oceanic and continental crusts. What is the name for this boundary?
