

NOTES - Earth's Interior – Layers of the Earth –guided notes

The Four Layers

The Earth is composed of four different layers. The _____ is the layer that you live on, and it is the most widely studied and understood. The _____ is much hotter and has the ability to flow. The _____ and _____ are even hotter with pressures so great you would be squeezed into a ball smaller than a marble if you were able to go to the center of the Earth!

The Crust

The Earth's **Crust** is like the _____. It is very thin in comparison to the other three layers. The crust is only about _____ (8 kilometers) thick under the oceans (_____) and about _____ (32 kilometers) thick under the continents (_____).

The Lithospheric Plates

The **crust** of the Earth is broken into many pieces called _____. The plates "float" on the soft, semi-rigid _____.

The Lithosphere

The **crust and the** _____ together make up a zone of rigid, brittle rock called the _____.

The Crust

The **crust** is composed of two rocks. The _____ **crust** is mostly _____. The _____ **crust** is _____. Basalt is much denser than the granite. Because of this the _____ continents ride on the denser oceanic plates.

The Mantle

The _____ is the largest layer of the Earth. The _____ is composed of very hot dense rock that flows like asphalt under a heavy weight. The movement of the middle mantle (_____) is the reason that the crustal plates of the Earth move.

Convection Currents

The middle mantle " _____ " (Plastic Like) because of convection currents. **Convection currents** are caused by the very hot material at the deepest part of the mantle _____, then cooling and _____ again --repeating this cycle over and over.

Convection Currents

The next time you heat anything like soup or water in a pan you can watch the **convection currents** move in the liquid. When the convection currents flow in the _____ they also move the crust. The crust gets a free ride with these currents, like the **cork** in this illustration.

The Outer Core

The core of the Earth is like a ball of very hot metals. The _____ is so hot that the metals in it are all in the _____ state. The outer core is composed of the melted metals of _____ **and** _____.

The Inner Core

The _____ of the Earth has _____ and _____ so great that the metals are squeezed together and are not able to move about like a liquid, but are forced to vibrate in place like a _____.

Interior gets warmer with depth

- _____ – some mines reach 50 degrees C (120 degrees F)
- Mantle is hotter, temps exceed _____ degrees C (2280 degrees F); reason for plasticity
- Core even hotter, temps. Exceed _____ degrees C (10, 800 degrees F)
- Pressure of mantle and crust stop metals from boiling and they remain a liquid

Radioactive Elements

- Earth's interior contains _____ isotopes (U, Th, K)
- They release Heat and energy as their nuclei break up. (_____)
- This energy contributes to the high internal temps of Earth

Discussion Question: Have do we know that part of the Mantle and Core is partly a liquid and partly a solid? Explain.