Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Test Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period\_\_\_\_\_\_\_\_\_\_

**Layers of the Earth Study Guide**

**Word Bank**

33 67 Africa change climate Composition continental convection crust Densest

earthquakes egg fossils freshwater geologists gravity increase iron layers

lava least lithosphere magnetic Mesosphere Mesosaurus molten movement

Pangaea plate tectonics pressure seismic softer solid surface

tectonic plates thinnest tropical upper Wegener

**Layers of the Earth**

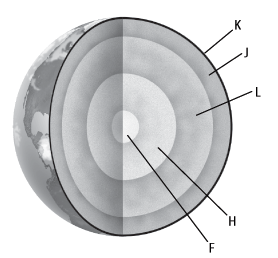
Earth is made of several layers which are made of different elements. Because the \_\_\_\_\_\_\_\_\_\_\_\_\_ elements were pulled to the center by \_\_\_\_\_\_\_\_\_\_\_\_\_\_, the elements with lower density stayed near the \_\_\_\_\_\_\_\_\_\_\_. This tells us that density determines how the \_\_\_\_\_\_\_\_\_\_\_\_\_ were formed when Earth was very young. Scientists use \_\_\_\_\_\_\_\_\_\_\_\_\_ waves to study the inside of Earth. Seismic waves are the vibrations from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

When you describe the layers based on their chemical \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (element ingredients), there are three major layers:

* \_\_\_\_\_\_\_\_\_\_\_\_\_ – This is where we live. It is the \_\_\_\_\_\_\_\_\_\_\_\_, outer-most layer. It is made of oxygen, silicon, and aluminum, so it’s the \_\_\_\_\_\_\_\_\_\_\_\_ dense layer. The two types of crust are oceanic and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Mantle – This is the layer below the crust. It makes up \_\_\_\_\_% of Earth’s mass. It is hotter than the crust.
* Core – this is the densest layer because it is made of mostly \_\_\_\_\_\_\_\_\_ and some nickel. It is 1/3 or \_\_\_\_\_% of the Earth’s mass!

When you describe the inside of the Earth by its physical characteristics, then there are 5 smaller layers:

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – This layer is made of the crust and the rigid (hard) upper part of the mantle. It is broken up into large pieces called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Even though this layer is made of the crust and the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ part of the mantle, it is still very thin. If you compare the thickness of the lithosphere to the radius of the Earth, it would be just like the thickness of an \_\_\_\_\_\_\_shell compared to the radius of the egg!
* Asthenosphere – This is the \_\_\_\_\_\_\_\_\_\_\_\_\_, lower part of the mantle. Its consistency is plastic (bendable) like silly putty or play doh. Heat from the core causes the soft rock material here to move in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ currents. The slow \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the asthenosphere causes the tectonic plates to move on top of this layer. This is where magma comes from. During a volcano eruption, magma rises to the surface and becomes \_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can study it to learn more about the inner Earth.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – This is the strong, lower part of the mantle between the asthenosphere and the outer core.
* Outer core – This is the outer, liquid part of the core. Because it is so hot here, the rock is \_\_\_\_\_\_\_\_\_. The movement of this liquid rock creates Earth’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ field. Because of the magnetism in the outer core, we can use compasses.
* Inner core – This is the \_\_\_\_\_\_\_\_\_\_\_, dense center of the planet. It is made of very dense iron and some nickel. It is about 13,000⁰ F. Even though it is so hot here, it is solid because the \_\_\_\_\_\_\_\_\_\_\_\_\_ from the other layers is so great. As you go deeper into the Earth, the temperature and pressure both \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.



**Label the layers here:**

(these words are not

in the word bank)

**Continental Drift**

Alfred \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ did research that helped him develop the theory of continental drift. He noticed that similar \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ were found on opposite sides of the Atlantic Ocean. For example, Mesosaurus fossils were found in South America and \_\_\_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ was a reptile that lived in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ponds, so it could not have swum across the ocean. He also found evidence of different \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ conditions that made him think the land had moved. Glossopteris was a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plant, but its fossils were found in land that is Antarctica today. Wegener thought that all the continents were once together in a supercontinent called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Most other scientists at the time did not believe Wegener’s idea, and they thought he was crazy! They would \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ their minds when \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and layers of the earth would be discovered.