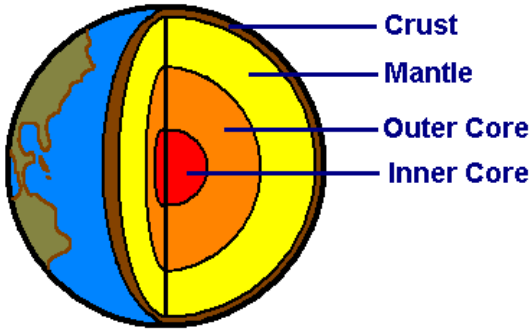
Name:_____

Per:_____Date:_____

Earth Layers Lab

Introduction: Scientists who study the earth's layers are called geologists. Since they cannot see the inside of the earth, they use geographical clues to help them. These clues are gathered from activities such as volcanoes and earthquakes. From these clues, geologists make inferences about what the inside of the earth actually looks like.



Geologists believe the earth is a made up of different layers known as the crust, mantle, and inner/outer core. These layers vary in depth, pressure, and temperature. Since pressure and temperature affect density, each layer has a different density as well. The density of each layer determines its position in the earth.

Earth Layer	Density
Crust	2.6 g/cm^3
Mantle	4.0 g/cm^3
Outer Core	10.2 g/cm^3
Inner Core	13.1 g/cm^3

Analysis:

1) What layer of Earth is least dense?_____
2) What layer of Earth is most dense?_____
3) What is the relationship between the density and position of each Earth layer?

   _____

   _____

   _____

4) If you were to make a model of Earth using the materials listed below, what should you use to represent the crust?_____the inner core?_____

Material	Density
Clay	2.0 g/cm^3
A Marble	2.4 g/ cm^3
Aluminum Foil	1.2 g/ cm^3

Models: A model is a tool used by scientists to represent another object that is either too large or too small to study on its own. For instance, since atoms are too small to see, scientists use models to illustrate the structure of each atomic part. Similarly, since the earth is so large, scientists construct models to represent the Earth on a much smaller scale. In this activity, you will help to create a model of Earth that is 22.2 million times smaller than the actual earth.

Procedures:

1) Carefully, cut out your 'slice' of the earth model
2) Put your name on the back
3) Use a calculator to determine the depth (in centimeters) each layer should be on your slice of the earth. Record your data below.

Earth Layer	Actual Depth	Scale Multiplier	Depth on Model (in cm)
Crust	30 km	.0045 cm/km	
Mantle	2890 km	.0045 cm/km	
Outer Core	2260 km	.0045 cm/km	
Inner Core	1220 km	.0045 cm/km	

4) Use a ruler to mark off the location of each layer on your slice
5) Use a pencil to label each layer of earth on your slice
6) Color your slice according to the following key:
    a. Crust- brown
    b. Mantle- yellow
    c. Outer Core- orange
    d. Inner Core- red

Conclusion:

The earth is made out of layers that separate according to their _____. The density of each layer is affected by the _____ of the material and the amount of _____ it is under. The thinnest and least dense layer is known as the _____. The layer under the most pressure is known as the _____. Such high amounts of pressure cause this layer to remain in a _____ state of matter even though the nickel and iron are at such a high temperature. On the other hand, the outer core remains in a _____ state of matter even though it is made out of the same material as the inner core since there is not enough _____ to change it to a solid.