

Parent Signature: _____

My child studied for 15 minutes.

Density and the Structure of the Earth

Name _____

REMEMBER: The earth's rocks and sediment are always sorted by SIZE and DENSITY!!!!!!!!!!

Calculate the Density of common earth materials:

Substance	Mass in grams	Volume in cubic centimeters	Density in grams/cubic centimeters	Density Layers? # with 1 being on the bottom and 6 on the top.
1. Gold	193.2g	10 cm ³		
2. Oxygen	1.33g	100 cm ³		
3. Water	10.0g	10 cm ³		
4. Helium	1.663g	10,000 cm ³		
5. Mercury	67.75g	5 cm ³		
6. Copper	224g	25 cm ³		

Rock and Sediment

When you observe rocks in a stream or river, you often find they share common characteristics. The fast moving water moves rocks downstream. As the water slows down, the rocks slowly stop moving. Typically the largest rocks stop moving first while the smaller sized rocks continue moving until the water slows down even more.

Below are pictures of six different-sized particles. Imagine that you can put them in a large container filled with water and then shake the container vigorously. The particles are labeled A, B, C, D, E and F. Look closely at each and determine the order you would arrange them in based on how they would settle out ... from bottom to top.



List the order _____

Rock and Sediment Sizes

Clay less than .00015 inches

Silt is .00015 to .00025 inches

Sand .00025 to .079 inches

Gravel .079-1.5 inches

Pebbles 1.5-2.5 inches

Cobble 2.5-10.1 inches

Boulder bigger than 10.1 inches



If I stand on the edge of a fast flowing river with a bucket of earth debris (Boulders, gravel, sand, silt, clay, pebbles, cobbles), which will sink to the bottom first?

Which will travel downstream the furthest?

If I stand on a dock of a lake with the same bucket of earth debris, which will sink to the bottom first?

What will sink last?

Where am I going to find the most pebbles and gravel in a lake? The shore or in the middle?



Draw a picture of the layers of rock and sediment if I put them in water and shook them up. Clay, silt, sand, gravel, pebbles, cobbles, boulders. Use 8 different colors.

**If this were a river, then which layer would wash away first?
If I shake this jar, what type of activity am I modeling in Nature?**

Explain why in your house, your upstairs has a warmer temperature than your basement.

Earth's Structure - Science Language

Atmosphere The layers of air that surround Earth. The most dense atmospheric layers are closer to Earth and the least dense layers are far away from Earth.

Inner Core The most dense, solid layer of the earth. Under extreme heat and pressure. Made of Nickel and Iron

Outer Core Surrounds the inner core. The earth's only liquid layer. It's spinning causes Earth's magnetism.

Crust The solid outermost layer of Earth. This is the least dense layer of solid earth.

Density A comparison of the mass of a substance with its volume. Mathematically, density is calculated as: $\text{Density} = \frac{\text{Mass}}{\text{Volume}}$
An object or liquid tends to sink in a liquid with less density than the object.

Mantle Middle and largest section of the earth. The top section is fluid-like which causes plate tectonic movement, earthquakes and volcanoes.

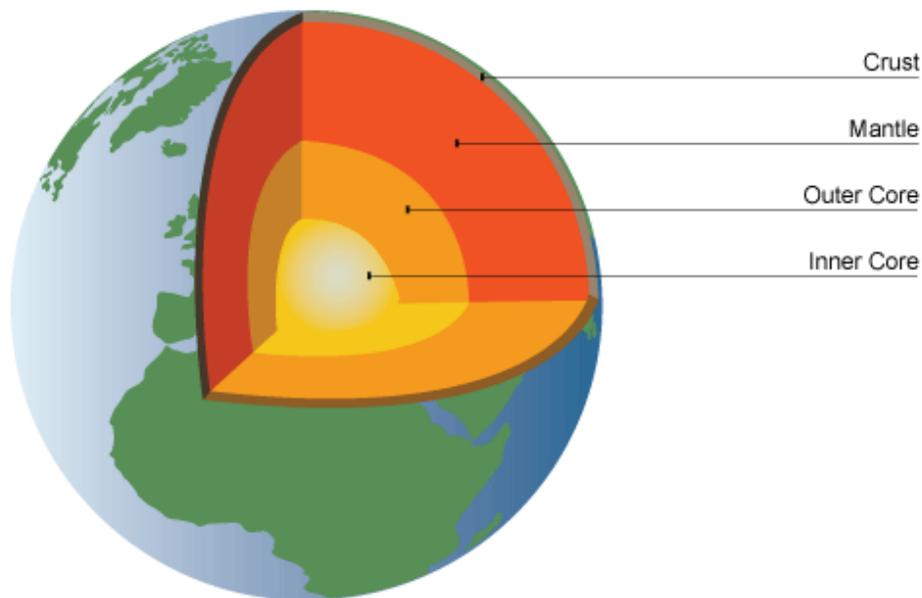
Mass A measure of the amount of matter in an object. Mass is usually measured in grams with a scale or balance

Matter Anything that has mass and takes up space.

Model A larger or smaller representation of an item.

Temperature A measure of the amount of kinetic energy of a particle. Objects with a high amount motion have a higher temperature than those with a lower amount of motion.

Volume The amount of space taken up by a substance. Use a graduated cylinder for liquids, a ruler (l \times w \times h) for cubic solids and water displacement for irregular solids



Layers from most dense to least dense are :

Inner Core---Outer Core---Mantle---Crust---Water---Atmosphere