Measuring Mass & Volume Review

Mass - the amount of matter in an object - (similar to weight but measurement **NOT affected** by gravity)

** is measured with balance

** **unit** is **grams**

Volume - the amount of space something takes up

*__liquids__ are measured in a **graduated cylinder**

** **unit** is **milliliter** (mL)

*__solids__ **- unit** is **cm^3**

* regular rectangular solid - l x w x h

* irregular solid water displacement method - submerge object in a graduated cylinder with water, the amount the water rises is equal to the volume of the irregular solid (unit will still be cm^3)

Density the amount of mass in a certain volume

*does not vary if the size of the substance changes!!

If you have a piece of wood that is split in half, the single half will have half the mass and half the volume of the original, but its density will be the same.

** Think of density as a fraction, mass over volume. If both the numerator and the denominator are both divided by 2, the new fraction created is equal to the original.

OR

**Think of density as the mass in each little cm^3 of that wood. If the wood is broken, or divided in any way, does that affect the mass of each little section? - NO! Density remains the same!

Matter that is more dense will sink through matter that is less dense.* Including water!! **Water's density is 1 g/mL- If object's density <1float; >1sink**

Density considers both the mass and the volume.

If you have two substances with the same volume, but one is more massive than the other, the one with more mass is more dense. Think about copper and aluminum cubes - equal size, but the copper had more mass. That means that there is more mass in each little cubic centimeter of the copper compared to the aluminum.

Density Review! 5 steps to calculate!!

1. Write the formula $D = \frac{\text{Mass}}{\text{Volume}}$

2. Plug in the numbers and units from the problem.

***Remember - **gram** is a unit of **mass**

cm^3, mL, L are units of volume

3. Box out the units - keep them as a fraction (just make it a diagonal fractional line) **Be sure to write the units on the answer line

4. Do the math - numerator divided by denominator - move quotient to the answer line!

Try it! - Circle your answer

1. A girl has 20 mL of a liquid with a mass of 22 grams. What is the density of the liquid?

2. A boy has 50 grams of a metal with a volume of 25 cm^3. What is the density of the metal?