Section 4\_2 Notes: Measuring Matter

Mass: the quantity of matter in an object (note, weight depends on gravity, mass is independent of gravity)

Volume: the amount of space an object/matter takes up (depends on pressure, and maybe the volume of the container that it is in – gas)

All matter have these two characteristics.

Measuring Mass

Use Kilograms (1000 grams) aka kg. 1 kg = 1000 g

“kilo” means “one thousand”

“milli” means “one one thousandth” notice the ‘th’ at the end? That means it is a smaller bit. “milligram” = 1/1000 of a gram. (0.001 g)

Measuring Volume

Use Litres (1L = 1000 cc or ‘cubic centimeters’ ) \*\*1 cc = the size of 1 die\*\*

Think of a 1 L milk container, that hold 1000 cc!! how many cc in 1 cubic meter??

1cc = 1 mL (1 cubic centimeter = 1 cubic milliliter)

Volume = l \* w \* h

RULE

When you plop a solid object into the water, *if it floats*, the amount of water (liquid) that is moved out of the way (displaced) will equal the mass of the object!

RULE

When you plop a solid object into water, *if it sinks*, the amount of water displaced will equal its VOLUME.

How do you take the mass of a chunk of stuff, that has a specific volume, and use this information to help identify it as a specific type of matter? You find its DENSITY:

D = m / v

Examples;

Pure water, mass of 1 kg, volume will be 1 L

D = m/v

D = 1 / 1

D = 1

Pure water has a density of 1.

Any object with a density greater than 1 will sink in water. Any object with a density less than water (lower than 1) will float in water.

Does ice have a density greater than or less than 1? What about a chunk of limestone? Wood?

Density of gas works the same, the less dense gas will rise higher in another gas….

Questions!!! Page 119 for models of the math.