

Class Notes: The Mole

- Chemistry is: analyzing and measuring samples of matter
- Three ways to measure:
 - a. Count
 - b. Mass =mole = an amount of substance
 - c. Volume
- The Mole = the amount of a substance with
 6.02×10^{23} representative particles
- Representative Particles = the nature of a substance's commonly occurring unit: for elements
–atoms for compounds –formula
units/molecules/ions

Class Notes: Molar Mass and Mole Mass Conversions

- Atomic Mass: the mass of an atom in amu
 - found on the periodic table
 - round off to two decimal places
- Ex. C = H = O =
- But, amu are difficult to measure so ...
 - Gram Atomic Mass = the number of grams that is equal to the atomic mass (1 g for each amu)
 - ** = the mass of 1 mole of atoms (6.02×10^{23})
- Ex. How much does one mole of ? weigh?
- C = Mg = Hg =

- *To calculate:
- Gram formula mass (gfm) = add the gram atomic masses of each of the atoms in the formula of the compound; = the mass (g) of one mole of the compound
- **gram formula mass = gram molecular mass = molar mass
- Memorize: diatomic molecules: N_2 , O_2 , F_2 , Cl_2 , Br_2 , I_2 , H_2

Class Notes: Molar Volume

- The volume of a mole of liquids and solids may vary but the volume of any gas is 22.4 L at STP
- STP = standard temperature and pressure
- = 0°C, 1 atmosphere (760 mmHg)
- 22.4 L = 1 mole of gas at STP = the gfm (grams)

= 6.02 x 10²³ particles