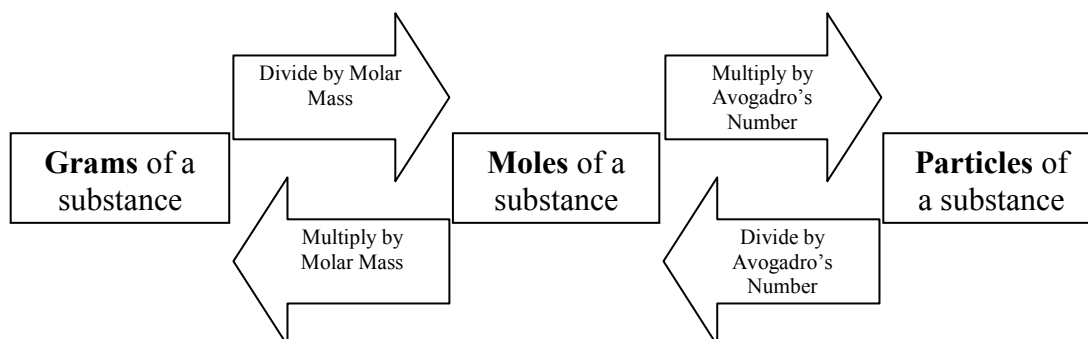


Chemistry

Helpful Stoichiometry Relationships

Stoihelper.doc



$$\text{Avogadro's Number} = 6.022 \times 10^{23}$$

Avogadro's number represents the number of carbon atoms in exactly 12.0g of the Carbon-12 isotope.

If the "particle" listed in the above table is a compound, to find the number of atoms of a particular element you must multiply the subscript of that element by the total number of particles.

A "**mole**" of something is 6.022×10^{23} units of that something (atoms, molecules, baseballs, etc.)

The **atomic mass** of an atom is the mass of the atom expressed in amu's (atomic mass units) where 1 amu is the mass of a proton or neutron.

The **molar mass** of a substance is the mass (usually expressed in grams) required to obtain 6.022×10^{23} (Avogadro's number) units of that substance.

The atomic mass and molar mass are numerically the same; however the units are *very different*.

Never use coefficients of a balanced equation to determine the molar mass of a substance. **Only** use coefficients to compare mole ratios or reactants and products.

When **balancing equations**, **never** change the subscripts of a compound and never place coefficients in the middle of a compound. **Only** use coefficients placed in front of the entire compound.

A **limiting reagent** is the substance that you run out of first in a reaction. It should always be used to calculate the amount of product produced since it will determine the extent of the reaction (i.e. the other reactant(s) will have some leftovers).

Percent composition = (mass represented by a particular element)/(mass of the whole compound)

Percent yield = (actual grams of product formed)/(theoretical grams of product that could be formed)

Molecules refer to covalently bonded compounds only.