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Module 8 Math Notes for Stoichiometry

Stoichiometry is defined as

The quantitative relationships of reactants and products
in a chemical reaction.

We must understand mathematically how

everything in a chemical equation
relates to each other.

We must understand what coefficients mean:

- How they relate to each other
- What information can be derived from them
- How to manipulate them mathematically

We can look at coefficients as related to an amount of particles or as a ratio.

The coefficients of any chemical equation actually give the ratio of reactants to products in the reaction. They work for us because the ratios remain constant.

The coefficients can represent molar ratios.

There are 3 types of calculations:

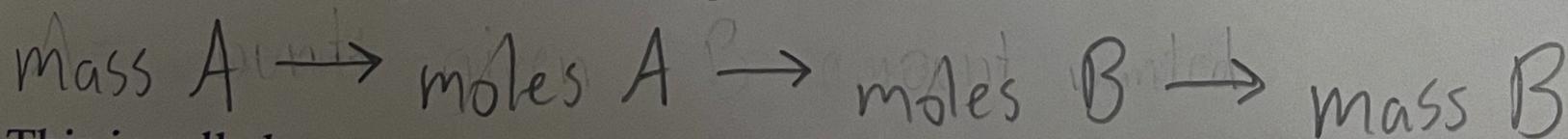
1. mole-mole calculations
2. mass-mass calculations
3. other stoichiometric calculations

You write down what you have and multiply it by the coefficient ratio.

Write down the form for the central calculation of any stoichiometry problem:



Write down the map for converting from Mass A to Mass B:



This is called mass to mass stoichiometry.

It is a dimensional analysis.

You basically multiply all the numbers in
the numerator and dividing everything in the
denominator.

Stoichiometry is a straightforward way for the chemist to
determine how much product will form in the
reaction or how much of one reactant is needed
to react with some quantity of the other reactant.

WE CANNOT DO STOICHIOMETRY WITHOUT
coefficients **SO WE WILL NEED TO**
balance **OUR CHEMICAL EQUATION**
FIRST !!

Identify what is given and what is wanted.
Make sure everything cancels out.
Multiply what is on top and then divide by what is
on bottom.

Other types of stoichiometry include p particle
and v volumes conversions.