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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 Coeffecients **mean:**

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

We can look at Coeffecients **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 coeffecient **ratio.**

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

moles A ⟶ moles B

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

mass A ⟶ moles A ⟶ moles B ⟶ 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 coeffecients **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.