THINGS YOU NEED TO BE ABLE TO DO FROM 1ˢᵗ SEMESTER IN ORDER TO DO STOICHIOMETRY

☐ **Know charges on ions from periodic table**
- Based on the pattern of columns
  - 1A = +1
  - 2A = +2
  - 3A = +3
  - 4A = +/- 4
  - 5A = -3
  - 6A = -2
  - 7A = -1
  - 8A = no charge

☐ **Know polyatomic ions and their charges**
- The list is in your notebook! Memorize them!

☐ **Write formulas for ionic and covalent compounds**
- Ionic – cation and anion (usually metal and nonmetal) - cross over
- Covalent – usually two nonmetals - use prefixes

☐ **Identify the type of reaction when given the reactants**
- Synthesis – combining things into fewer products than reactants
- Decomposition – breaking things into more products than reactants
- Combustion – hydrocarbon and water always makes carbon dioxide and water
- Single Replacement – element and an ionic compound make a new element and a new compound
- Double Replacement – two ionic compounds make two new ionic compounds

☐ **Predict the products based on the patterns of the type of reaction**
- Remember to cross over when making new ionic formulas – do not "steal subscripts!"
  - Take one of each ion with their charges, and cross over to find subscripts
- Your formulas should always be neutral

☐ **Balance a reaction**
- Law of Conservation of Matter
  - We cannot create or destroy matter!

☐ **Identify your "known – A" and your "unknown – B"**

☐ **Write out a pathway**
- Mole highway has all the pathways!
- Remember – you won't have access to your mole highway!

☐ **Identify which conversion factor to use for each step of the pathway**
- Mole highway has all the conversion factors!
- Remember – you won't have access to your mole highway!
- Avogadro's number never changes!
- Molar mass number is based off the formula
- Mole ratio is from the coefficients in the balanced equation
- The number of atoms in a molecule is based on the formula of the molecule

☐ **Calculate molar masses**
- Using the formula of the compound and the periodic table

☐ **Find mole ratio**
- Based on coefficients from the balanced equation
  - Always ends up "moles B over moles A" so that your units cancel out correctly

☐ **Set up dimensional analysis to do the steps your pathway laid out**

☐ **Cancel your units to check your work**
- Remember "one unit on the top cancels with one unit on the bottom"

☐ **Use your calculator to get a numerical answer**
- Don't forget to use parenthesis to keep the denominator numbers on the denominator!

☐ **Put units AND formula on your final answer**
- A unit isn't specific enough, you need to tell people which molecule it is too!