

## **CHM1025 Review Topics Module 9:**

1. Determination of molar mass of a substance. The same as the atomic/molecular or formula mass but expressed in grams instead of amu.
2. Determination of % of an element (composition) in a compound, amount in grams of an element given the amount in grams of a compound and the % composition of that element or the amount of a compound given the amount in grams of an element in the compound and the % composition of that element. Remember to assume you have 100 grams of the compound and the % of the element becomes the grams of the element.
3. Calculation of amount of moles from grams of a substance and vice versa by using the molar mass.
4. Calculation of the number of particles (atoms, molecules or formula units) of a substance given the moles and vice versa using Avogadro's number ( $6.02 \times 10^{23}$ ).
5. Calculation of amount of grams given amount of particles of a substance and vice versa by using two conversion factors. (You must first convert to moles).
6. Calculation of amount in either grams or moles of a specific element in a compound given the formula for the compound and the amount in either grams or moles of the compound or the amount of a compound given the amount of a specific element and the formula.
7. Determination of empirical formula given molecular formula.
8. Determination of empirical formula given either grams of each element or given % (make the % be the grams) of each element. The grams of each element needs to be converted to moles and then each moles divided by the smallest moles. If each division does not come to within +/- 0.1 of a whole number you will have to find a multiplier for all the numbers that will give you whole numbers or +/- 0.1 of a whole number.
9. Determination of molecular formula given the empirical formula and the molar mass. Divide the molar mass by the empirical formula weight and then multiply each subscript by what you get which should be a whole number or very close to a whole number so you can round.