

CHAPTER 3 LEARNING OBJECTIVES

To satisfy the minimum requirements for this course, you should be able to:

Perform calculation involving the masses of atoms and molecules. Examples include:

- calculate the average atomic mass (in amu) or molar mass (in g/mol) of an element given the abundances and masses of its isotopes
- calculate the molecular mass or formula mass (in amu) and molar mass (in g/mol) of a substance from its chemical formula
- interconvert number of molecules, number of moles, and mass of a substance
- determine the percent composition by mass of its component elements given the molecular or empirical formula of a compound
- determine the empirical formula for a compound given its percent composition by mass
- determine the molecular formula of a compound given the empirical formula and molecular weight

Understand the concept of stoichiometry and be able to:

- write balanced chemical equations including states
- calculate the amount (in moles or grams) of a particular substance produced or used in a chemical reaction
- identify the limiting and excess reagents in a reaction mixture and determine the amount (in moles or grams) of excess reagent(s) remaining at the end of a reaction

calculate the theoretical yield, actual yield, and percent yield for a chemical reaction