Basic Concepts and Skills in Chemistry Expected of Students Entering Chemistry 1450

Text = *Chemistry: A Molecular Approach* (3rd ed.) N. J. Tro ©Prentice Hall 2013

Concept/Skill	Text Sections	Example Chapter Problems
Use factor label method (conversion factors) in calculations.	Sec. 1.8	1.60-63
Know the names and symbols of first 36 elements, plus those of Au, Ag, Hg, Pb, Sn, Br, I	Sec. 2.6-2.7	2.61,62
Know the difference between atoms, molecules and ions.	Sec. 2.4-2.6	2.41,42,47,48
Know the nature of basic components of an atom—electrons, protons, and neutrons.	Sec. 2.8	2.54,62,58
Understand the distinction between an isotope's mass number and the average atomic weight (mass) of an element; understand the distinction between amu and gram molar mass.	Sec. 3.3-3.6	2.71,73,77
Know the difference between an ionic compound and a covalent one.	Sec. 3.3-3.6	3.29-32
Use the periodic table to predict element combinations that yield ionic compounds and those that combine to form covalent compounds.	Sec. 3.3-3.6	3.33,34,38,39
Write the formulas and names of chemical compounds.	Sec. 3.3-3.6	3.44,45,47-50
Calculate the molar mass of a compound	Sec. 3.8	3.59,60
Convert grams to moles and moles to grams for elements and compounds.	Sec. 3.8	3.63-64
Write and balance chemical equations	Sec. 3.11	3.103-106, 109
Do stoichiometric calculations based on a balanced chemical equation.	Sec. 4.2-4.3	4.30-32
Write correct dissociation equations for ionic solutes in water.	Sec. 4.7	4.79,80
Classify reactions into four general types: combination, decomposition, single replacement, and double replacement.	Sec. 4.5-4.8	4.75,89,97
Distinguish between strong and weak acids.	Sec. 4.8	
Understand what neutralization is and how acids and bases react in this way.	Sec. 4.8	4.83-86
Understand what oxidation and reduction are; be able to determine the oxidation number (state) of an element in a compound or in an ion	Sec. 4.9	4.96
Understand the qualitative aspects of the kinetic molecular theory of matter	Sec. 5.8	5.19,81,82
Understand the basics of energy, heat flow, and calorimetry. Know the relationship(s) of these to temperature.	Sec. 6.2,6.6,6.7	6.12,45,47,48
Write proper Lewis dot structures for atoms, molecules and polyatomic ions. Know how to determine the number of valence electrons.	Sec. 9.7-9.9	9.50-52,59,60