

## Chapter Two Outline

Homework: 14, 18, 28, 36, 60, 72, and 88.

### Dalton's Atomic Theory

- Postulates of Dalton's theory

- Law of conservation of matter (or mass)

- Law of multiple proportions

- Law of definite proportions (or constant composition)

### Simplified modern atomic theory

- The nucleus

  - Protons

  - Neutrons

- The shells—the electrons

- Atomic number and mass number

- Charge

### Periodic law part 1

- Groups, families, and periods

- Types of elements

  - Metals

  - Non-metals

  - Semimetals or metalloids

- Some periodic properties, especially ionic charges

### Inorganic Compounds

- Ionic compounds

  - Properties

  - Nomenclature

  - Formulae

- Molecular compounds

  - Properties

  - Nomenclature

  - Formulae

- Acids and bases

  - Properties

  - Nomenclature

  - Formulae

- Hydrates

  - Properties

  - Nomenclature

  - Formulae

### Organic Compounds

The mole

Atomic weight

Formula weight

The mole

Calculating number of particles

Mole/mass relationship

Percent composition by mass

From experiment

From the periodic table

Empirical and molecular formulae from mass percent

## Chapter 2 Objectives

Understand the correct meaning and usage for each of the following terms: element, compound, atom, Law of Conservation of Matter, Law of Definite Composition, Law of Multiple Proportions, proton, neutron, electron, nucleus, atomic number, mass number, isotope, ionic charge, metal, non-metal, metalloid, period, group, family, alkali elements, alkaline earth elements, halogens, noble gases, chemical formula, molecular formula, empirical formula, ionic bond, ionic compound, molecular bond, molecular compound, acid, base, hydrate, and mole, atomic weight, formula weight, molar mass, empirical formula.

Explain Dalton's Atomic Theory and give its historical context including major experimental advances that corroborated this theory.

Determine the numbers of subatomic particles for an atom or ion if given its mass number and charge. Identify the mass number and charge if given the numbers of subatomic particles.

Write complete atomic symbols for atoms or ions.

Label the parts of the periodic table.

Identify elements as being metals, non-metals, or semi-metals.

Differentiate among atoms, ions, and molecules.

Determine the valence of an element and the charge of common monatomic ions based on their position on the periodic table.

Identify compounds as being ionic, or molecular. Identify the common inorganic acids and bases.

Name compounds if given the formulae, and write correct formulae if given names for ionic compounds (including bases and hydrates), binary molecular compounds, and acids.

Use Avogadro's Number to find number of particles or mass in either amu or grams.

Calculate the formula weight or molar mass of a compound in either amu or grams.

Find percent composition of a compound using either experimental data or the atomic weights.

Find the empirical formula and molecular formula from mass percent or combustion data.