

**CP Chemistry I**  
**Lincoln High School**  
**Mrs. Cameron**

**Name:** \_\_\_\_\_

**Period** \_\_\_\_\_

**Chapters 6 and 9.1-9.2– Chemical Composition (The Mole),  
Introduction to Stoichiometry**

*Lincoln High School Core Values:*

- Resiliency and perseverance in the face of obstacles are keys to student success
- Students will be thoughtful communicators who read, write, listen and speak effectively in preparation for careers and/or post-secondary education
- Students will be creative and practical problem solvers

Next Generation Science Standards Addressed

**HS-PS1-2.** Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties.

**HS-PS1-4.** Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy.

**HS-PS1-5.** Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs.

**HS-PS1-6.** Refine the design of a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium.\*

**HS-PS1-7.** Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.

**Objectives:**

Upon completion of this unit the student will be able to:

1. Write the definition of a mole and explain its importance.
2. Explain the meaning of Avogadro's number.
3. Define molar mass and explain how it relates the mass of a substance to the number of particles in that substance.
4. Distinguish between molar mass and formula mass.
5. Convert among the number of particles, moles and mass of a substance.
6. Define the molar volume of a gas.
7. Explain how to determine the number of particles in a given volume of gas at STP.

8. Calculate the percentage composition from a given chemical formula.
9. Calculate the empirical formula of a compound, having been given or by calculating appropriate analytical data such as elemental percentages.
10. Recognize and explain the differences between molecular and empirical formulas.
11. Define stoichiometry and explain its significance.
12. Explain the relationship between stoichiometry and balanced chemical equations.
13. Calculate the mass of a particular substance produced or used in a chemical reaction (mass-mass problem.)
14. Calculate the volume of a gas produced or used in a chemical reaction. (Mass-volume, volume-mass, or volume-volume problems.)
15. Interconvert and calculate the number of moles, mass in grams and number of atoms, ions or molecules in conjunction with the stoichiometry of a chemical reaction.
16. Define and use all key terms found on page 209 of the text book.