

**Unit 4 - An Introduction to Chemical Reactions and Equations**

**(Chapter 2.8-2.9, Class Notes)**

*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-PS1-7. 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. Describe the characteristics of a chemical reaction.
2. Explain the Law of Conservation of Matter
3. Distinguish between reactants and products.
4. Explain how a chemical equation describes what happens in a chemical reaction.
5. Interpret and utilize the different symbols in a chemical equation that indicate states of matter and reaction conditions.
6. Distinguish between and describe the role of numerical coefficients and subscripts in chemical formulas and equations.
7. Explain how a balanced chemical equation illustrates the law of conservation of matter.
8. Write and balance chemical equations.
  - A. Use the "Trial and Error" method to balance equations
  - B. Use the algebraic method to balance equations.
9. Name the five general types of chemical reactions (combination or synthesis, decomposition, combustion, single-replacement or double replacement).
10. Describe the five general types of chemical reactions.
11. Classify chemical reactions as one of the five general types.
12. Predict the products of a chemical reaction based on the reactants and reaction type.
13. Define and use the key terms for this unit.

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**Key terms:**

Chemical Equation	Combination (synthesis) Reaction	Double-replacement reaction
Reactant	Decomposition Reaction	Hydrocarbon
Product	Combustion Reaction	Acid
Law of Conservation of Matter	Single-replacement reaction	Base
Coefficient		Salt

