

Chemistry - Mrs. Bauck, PHUHS

Unit 6: The Mole Concept and Chemical Reactions - Chapters 8, 9, (18 - Chem 1H only)

State Standards (***) = Chem 1H only)

Topic 1: Chemical Equations

SC.912.P.8.8 (AA) Characterize types of chemical reactions, for example: redox, acid-base, synthesis, and single and double replacement reactions.

SC.912.P.8.9 Apply the mole concept and the law of conservation of mass to calculate quantities of chemicals participating in reactions.

*** SC.912.P.8.10 Describe oxidation-reduction reactions in living and non-living systems.

*** SC.912.P.10.2 Explore the Law of Conservation of Energy by differentiating among open, closed, and isolated systems and explain that the total energy in an isolated system is a conserved quantity.

Topic 2: Mole Concept

SC.912.P.8.9 Apply the mole concept and the law of conservation of mass to calculate quantities of chemicals participating in reactions.

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| 4.0 | Extensions/Applications | <p>Students will be able to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Explain in detail how redox reactions work. <input type="checkbox"/> Explain how stoichiometry is an extension of chapter 9. |
| 3.0 | Learning Goal (Derived from State Standard) | <p>Students will be able to:</p> <p>CHAPTER 8 & 18:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Determine the type of chemical reaction given the chemical equation. <input type="checkbox"/> Balance a chemical equation. <input type="checkbox"/> Complete a chemical equation if no products are given. <input type="checkbox"/> Relate the law of conservation of mass to balancing a chemical equation. <p>Chem 1H – CHAPTER 18:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Describe how “redox” reactions work. <input type="checkbox"/> (Chem 1H – CHAPTER 18) Define oxidation and reduction, and be able to and be able to identify substances that are oxidized and reduced in an equation. <input type="checkbox"/> Define and be able to identify oxidizing agents and reducing agents in chemical equations. <input type="checkbox"/> Define and be able to identify oxidizing agents and reducing agents in chemical equations. <input type="checkbox"/> Be able to determine the oxidation number of an element in a compound or polyatomic ion. <p>CHAPTER 9:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Define a mole as a unit used for counting atoms, molecules and formula units. <input type="checkbox"/> Differentiate between atoms, ions, molecules, and formula units. <input type="checkbox"/> State the value of Avogadro’s number. <input type="checkbox"/> State the value of the molar volume of a gas at STP. <input type="checkbox"/> Calculate molar mass of an element or a compound. <input type="checkbox"/> Define the conditions for STP. <input type="checkbox"/> Calculate molar mass of an element or a compound. <input type="checkbox"/> Convert between moles, particles, mass, and volumes (of gases) in a sample of substance in one-step math problems. <input type="checkbox"/> Convert between moles, particles, mass, and volumes (of gases) in a sample of substance in two-step math problems. <input type="checkbox"/> Be able to calculate gas density problems. <input type="checkbox"/> Be able to calculate percent composition/percent by mass. <input type="checkbox"/> Be able to calculate empirical formulas. <input type="checkbox"/> Be able to calculate molecular formulas. |

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| 2.0 | Required Skills or Background Knowledge to accomplish Learning Goal | <p>Students will be able to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Use the periodic table to identify metals and nonmetals. <input type="checkbox"/> Determine the charge of a monatomic ion based on its placement in periodic table. <input type="checkbox"/> Identify selected polyatomic ions and name them, and vice versa. <input type="checkbox"/> Be able to name and wrote chemical formulas for ionic compounds (BI, TI, OTHER). <input type="checkbox"/> Be able to name and wrote chemical formulas for covalent compounds (BM). <input type="checkbox"/> Be able to round to the proper number of significant figures in all calculations. <input type="checkbox"/> Be able to identify major acids, write their chemical formulas, and dissociate/"uncrisscross" them as needed: hydrochloric, acetic, nitric, carbonic, sulfuric, and phosphoric acids. <input type="checkbox"/> (Chem 1H) Be able to name binary acids and oxyacids. |
| 1.0 | With help from the teacher, student has partial success with the goal | <p>With help from a teacher, students will be able to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Achieve partial success with 2.0 and/or 3.0. |
| 0.0 | Even with help, the student has no success with the goal | <ul style="list-style-type: none"> <input type="checkbox"/> Even with help, student is unable to understand or complete any of the skills in scales 1.0 through 4.0. |