

Chemistry I - Mrs. Bauck, PHUHS

Unit 8: Fluids (Ch. 11, 12, 13)

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

Topic 1: Behavior of Gases

SC.912.P.12.10 Interpret the behavior of ideal gases in terms of kinetic molecular theory.

Topic 2: Phase Transitions

SC.912.P.12.11 Describe phase transitions in terms of kinetic molecular theory.

SC.912.P.10.5 Relate temperature to the average molecular kinetic energy.

Topic 3: Intra and Intermolecular Forces

SC.912.P.8.6 Distinguish between bonding forces holding compounds together and other attractive forces, including hydrogen bonding and van der Waals forces. (also covered first semester)

SC.912.L.18.12 Discuss the special properties of water that contribute to Earth's suitability as an environment for life: cohesive behavior, ability to moderate temperature, expansion upon freezing, and versatility as a solvent.

4.0	Extensions/Applications	Students will be able to: CHAPTER 12 <ul style="list-style-type: none"><input type="checkbox"/> Design an experiment to illustrate one of the gas laws.<input type="checkbox"/> Investigate how the mathematics would be different with real gases vs, ideal gases.<input type="checkbox"/> Research properties of plasma CHAPTER 13 <ul style="list-style-type: none"><input type="checkbox"/> Give specific, scientific and nonscientific examples of homogeneous mixtures.<input type="checkbox"/> Give specific, scientific and nonscientific examples of heterogeneous mixtures.<input type="checkbox"/> Research and demonstrate how surfactants work to clean up an oil spill.
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3.0	Learning Goal (Derived from State Standard)	<p>Students will be able to:</p> <p>FIRST SEMESTER; CHAPTER 11</p> <ul style="list-style-type: none"> <input type="checkbox"/> Predict charge distribution based on electronegativity values and location of element on the periodic table <input type="checkbox"/> Compare the strengths of intermolecular attractions with the strengths of ionic and covalent bonds <input type="checkbox"/> Explain the difference between intermolecular and intramolecular forces. <p>CHAPTER 11</p> <ul style="list-style-type: none"> <input type="checkbox"/> Explain main points of the Kinetic Molecular Theory (KMT). <input type="checkbox"/> Describe, compare, and contrast elastic and inelastic collisions. <input type="checkbox"/> Describe phase transitions (changes) in terms of KMT. Contrast the following: <ul style="list-style-type: none"> <input type="checkbox"/> BOILING vs. EVAPORATION vs. CONDENSATION <input type="checkbox"/> FREEZING vs. MELTING <input type="checkbox"/> SUBLIMATION vs. DEPOSITION <input type="checkbox"/> Define the relationship between the temperature in kelvin and the average kinetic energy of particles. <input type="checkbox"/> Determine the phase of a substance using a heating curve (time vs. temp) or a phase diagram. <input type="checkbox"/> Compare the motion of particles in different phases. <input type="checkbox"/> Compare and contrast true/crystalline and amorphous solids. <input type="checkbox"/> Identify the conditions under which phase changes occur. <input type="checkbox"/> Mathematically convert from one pressure unit to another, using values for standard pressure. <p>CHAPTER 12</p> <ul style="list-style-type: none"> <input type="checkbox"/> Identify the factors that affect the behavior of gases. Identify the relationships between temperature, pressure, volume, and moles using the gas laws. Correctly work algebraic gas law problems: <ul style="list-style-type: none"> <input type="checkbox"/> BOYLE'S LAW <input type="checkbox"/> CHARLES' LAW <input type="checkbox"/> GAY-LUSSAC'S LAW <input type="checkbox"/> COMBINED GAS LAW <input type="checkbox"/> IDEAL GAS LAW <input type="checkbox"/> DALTON'S LAW OF PARTIAL PRESSURES <input type="checkbox"/> Identify numerical values for standard pressure and standard temperature. <input type="checkbox"/> Define and give examples of directly proportional relationships. <input type="checkbox"/> Define and give examples of indirectly proportional relationships. <input type="checkbox"/> Explain the conditions under which a real gas deviates from an ideal gas. <p>CHAPTER 13</p> <ul style="list-style-type: none"> <input type="checkbox"/> Explain how the interactions between water molecules accounts for the unique properties of water. <input type="checkbox"/> Relate different properties of water with their importance to life on Earth. <input type="checkbox"/> Identify the types of substances that will dissolve in water. <input type="checkbox"/> Explain the saying "like dissolves like." <input type="checkbox"/> Be able to work molarity problems, solving for M, moles, or g.
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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"/> Explain the concept of electronegativity. <input type="checkbox"/> Describe a crystal lattice. <input type="checkbox"/> Be able to use the molar volume of a gas at STP in calculations. <input type="checkbox"/> Be able to name and write chemical formulas for ionic compounds (BI, TI, OTHER). <input type="checkbox"/> Be able to name and write chemical formulas for covalent compounds (BM). <input type="checkbox"/> Name hydrates. <input type="checkbox"/> Be able to round to the proper number of significant figures in all calculations.
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.