

FRANKLIN-SIMPSON HIGH SCHOOL

Course Name: AP Chemistry

Unit Name: Gasses

Days: 10

AP Chemistry Objectives:

II. States of Matter (20%)

A. Gases

1. Laws of ideal gases

- a. Equation of state for an ideal gas
- b. Partial pressures

2. Kinetic molecular theory

- a. Interpretation of ideal gas laws on the basis of this theory
- b. Avogadro's hypothesis and the mole concept
- c. Dependence of kinetic energy of molecules on temperature
- d. Deviations from ideal gas laws

V. Laboratory (5–10%)

The differences between college chemistry and the usual secondary school chemistry course are especially evident in the laboratory work.

The AP Chemistry Exam includes some questions based on experiences and skills students acquire in the laboratory:

- making observations of chemical reactions and substances
- recording data
- calculating and interpreting results based on the quantitative data obtained
- communicating effectively the results of experimental work

Purpose of the Unit:

Students will review the gas laws from first year chemistry and expand their use to more advanced gas stoichiometry problems. The application of the kinetic theory of matter will also be expanded to include gasses and deviations from ideal behaviors. Then they will apply this expanded knowledge to an experimental application.

Prerequisites:

Students will need an understanding of:

- Charles's, Boyle's, Avogadro's, and Gay-Lussac's Laws
- Ideal gas law and combined gas laws
- Stoichiometry
- Kinetic theory of matter

Daily Lesson Guide

Day	Lesson Content and Objectives	Focus Questions	Critical Thinking (High Yield / Literacy /LTF/etc.)	Engagement	Assessment and/or Accommodations
1-2	Kinetic theory of matter & gas laws II.A.1, 2	* What is the kinetic theory of matter? * How can the kinetic theory be used to explain the properties of gasses? * How can I apply the gas laws?	* Summarizing and note taking * I Do – We Do – You Do * Analysis/ Application * Learning with others	* ACT bell ringer * Take notes on modeled notes * Solve problems within notes solo and in small groups (formative)	* Evaluate student sample problems for understanding

3-4	Gas stoichiometry II.A.1, 2	<ul style="list-style-type: none"> * What are the formulas I need to solve gas stoichiometry problems? * How are the like/different from regular stoichiometry problems? 	<ul style="list-style-type: none"> * Summarizing and note taking * I Do – We Do – You Do * Analysis/ Application * Learning with others 	<ul style="list-style-type: none"> * ACT bell ringer * Take notes on modeled notes * Solve problems within notes solo and in small groups (formative) 	<ul style="list-style-type: none"> * Evaluate student sample problems for understanding
5-6	Laboratory: AP required lab 05: Determining the Molar Volume of a Gas II.A.1, 2 V.	<ul style="list-style-type: none"> * How can I experimentally determine: the molar volume of a gas? 	<ul style="list-style-type: none"> * Learning with Others * Generating and testing Hypotheses * Authenticity * Novelty and Variety * Analysis/ Applications/ Synthesis 	<ul style="list-style-type: none"> * ACT bell ringer * Work in small lab groups to solve a lab problem * Use data collected to calculate the molar volume of a gas (summative) 	<ul style="list-style-type: none"> * Evaluate lab reports * Students can check themselves by verifying their results among other lab groups
7-8	Gasses FRQs and MC questions II.A.1, 2 V.	<ul style="list-style-type: none"> * How will I be tested over gasses on the AP Chemistry Exam? * How does everything I just learned fit together with what I already know? 	<ul style="list-style-type: none"> * Learning with others * Choice * Clickers 	<ul style="list-style-type: none"> * ACT bell ringer * Work independently, then in small groups, then as whole class to solve and grade FRQ's with AP rubrics * Use clickers and Turning Point to answers MC Questions from retired AP exams (summative) 	<ul style="list-style-type: none"> * Evaluate student responses and provide immediate feedback on FRQ's and MC's with rubrics and keys

9-10	Unit Exam II.A.1, 2 V.	* Can I use my knowledge to take an AP-like exam covering gasses?	* Evaluation * Analysis * Application * Synthesis * Authenticity	* ACT bell ringer * Solve retired AP Chemistry MC and FR Questions * Graded by AP standards and rubrics (summative)	* Evaluate exam
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