Unit 5: Gases, Solutions & Colligative Properties

Content Area: **Template**
Course(s):
Time Period:
Length:
Status: **Published**

State Mandated Topics Addressed in this Unit

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N/A	N/A

Unit 5: Gases, Solutions & Colligative Properties

Learning Objectives

- Apply solubility rules to predict precipitation.
- Calculate molarity and prepare standard solutions.
- Describe colligative properties and calculate freezing-point depression.
- Explain the Kinetic Molecular Theory for gases.
- Relate gas behavior to changes in temperature and pressure.
- State and apply the gas laws (Boyle's, Charles's, Gay-Lussac's, Ideal Gas Law).

Essential Skills

- How do real gases deviate from ideal behavior?
- How do solutes alter solvent freezing and boiling points?
- How does particle behavior explain gas-law relationships?
- In what ways do gas-law and solution problems use similar mathematical reasoning?
- What variables affect the pressure and volume of a gas?
- Why is molarity a convenient concentration unit?

Standards

SCI.HS-PS3-4	Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics).

9-12.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.

Instructional Tasks/Activities

- Essential Question Concept Mapping
- Freezing-Point Depression Experiment
- Gas Law “Mystery Gas” Lab
- Gas Mixture Partial Pressure Analysis
- Kinetic Molecular Theory Demo and Lesson
- Molarity Measurement Lab
- Real-Life Gas Law Applications
- Review Activity
- Solubility Rule Scavenger Hunt
- Solution Dilution “Mix & Match” Stations
- Unit 5 Test
- Unit 5 Test Review

Assessment Procedure

- Classroom Total Participation Technique
- Classwork
- DBQ
- Essay
- Exit Ticket/Entrance Ticket/Do Now
- Flashcards and/or drill and practice
- Inquiry based activities with reflective discussion
- Journal / Student Reflection
- Kahoot
- Laboratory groups
- Lecture with note taking or guided notes
- Online models and simulators
- Other named in lesson
- Peer Review
- Performance
- Power Point Presentation
- Problem Correction
- Project
- Quiz

- Rubric
- Teacher Collected Data
- Test
- Whole and small group discussions
- Worksheet

Recommended Technology Activities

- Appropriate Content Specific Online Resource
- Chromebook
- Copy/Paste Content Specific Link Here
- Copy/Paste Content Specific Link Here
- Copy/Paste Content Specific Link Here
- Gimkit
- GoGuardian
- Google Classroom
- Google Docs
- Google Forms
- Google Slides
- Kahoot
- MagicSchool AI
- Other- Specified in Lesson
- Quiziz
- Screencastify

Accommodations & Modifications & Differentiation

Accommodations and Modifications should be used to meet individual needs. Their IEP and 504 plans should be used in addition to the following suggestions.

Gifted and Talented

- Compare & Contrast
- Conferencing
- Debates
- Jigsaw
- Peer Partner Learning
- Problem Solving

- Structured Controversy
- Think, Pair, Share
- Tutorial Groups

Instruction/Materials

- alter format of materials (type/highlight, etc.)
- color code materials
- eliminate answers
- extended time
- extended time
- large print
- modified quiz
- modified test
- Modify Assignments as Needed
- Modify/Repeat/Model directions
- necessary assignments only
- Other (specify in plans)
- other- named in lesson
- provide assistance and cues for transitions
- provide daily assignment list
- read class materials orally
- reduce work load
- shorten assignments
- study guide/outline
- utilize multi-sensory modes to reinforce instruction

Environment

- alter physical room environment
- assign peer tutors/work buddies/note takers
- assign preferential seating
- individualized instruction/small group
- modify student schedule (Describe)
- other- please specify in plans
- provide desktop list/formula

Honors Modifications

Resources

- Resource 1
- Resource 2
- Resource 3
- Resource 4
- Resource 5