Units 10 - What a Gas?

Content Area: **Science**
Course(s): **Chemistry CP**
Time Period: **May**
Length: **6 weeks**
Status: **Published**

Transfer Skills

The behavior and properties of gases according to the Kinetic Molecular Theory have an affect on many worldly occurrences.

Enduring Understandings

The gas laws can predict, analyze, and explain the properties of gases.

Math formulas can be used to predict the outcome of an experiment involving gases.

Intermolecular forces affect the properties of all states of matter.

Temperature affects the properties and behavior of matter

Essential Questions

How can we predict the behavior of gases?

To what extent can a gas be classified as ideal?

Content

partial pressure, ideal gas

Skills

Describe general characteristics and properties of gases.

Determine the relationship between volume, temp, and pressure through analyzing experimental data.

Relate the Kinetic molecular theory to pressure, temperature and volume relationships and effusion properties

of an ideal gas.

Calculate pressure-volume changes using Boyles Law.

Calculate temperature-volume changes using Charles Law.

Calculate temperature-pressure changes using Gay-Lussacs Law.

Use Dalton's Law of partial pressure to calculate the pressure of a gaseous mixture.

State and use the ideal gas law to calculate pressure, volume, temperature, or amount of gas when various quantities are known.

Use Grahams Law of diffusion experimentally or theoretically to determine relative speed of diffusion and molecular mass of an unknown gas.

Resources

Standards

SCI.9-12.5.1.12.B.1	Design investigations, collect evidence, analyze data, and evaluate evidence to determine measures of central tendencies, causal/correlational relationships, and anomalous data.
SCI.9-12.5.1.12.B.2	Build, refine, and represent evidence-based models using mathematical, physical, and computational tools.
SCI.9-12.5.1.12.B.3	Revise predictions and explanations using evidence, and connect explanations/arguments to established scientific knowledge, models, and theories.
SCI.9-12.5.1.12.B.4	Develop quality controls to examine data sets and to examine evidence as a means of generating and reviewing explanations.
SCI.9-12.5.2.12.A.2	Account for the differences in the physical properties of solids, liquids, and gases.
SCI.9-12.5.2.12.C.1	Use the kinetic molecular theory to describe and explain the properties of solids, liquids, and gases.
SCI.9-12.5.2.12.C.b	Heating increases the energy of the atoms composing elements and the molecules or ions composing compounds. As the kinetic energy of the atoms, molecules, or ions increases, the temperature of the matter increases. Heating a pure solid increases the vibrational energy of its atoms, molecules, or ions. When the vibrational energy of the molecules of a pure substance becomes great enough, the solid melts.