Concept Definition

Study the primary definition of this concept, broken into general, basic, and advanced English definitions. Also see the mathematical definition and any requisite background information, such as conditions or previous definitions.

General Science

Pressure (P), volume (V), temperature (T), and the number of moles (n) of particles (N) are all interrelated.

Advanced

The number of particles of a sample of gas can be determined by utilizing the relationship between the pressure, volume, and temperature of the sample.

Mathematical Definition

(gas constant)

(Boltzmann constant)

Background Information

Ideal Gas

An "ideal gas" is a gas in which:

- All collisions are totally elastic (particles always bounce off each other)
- There are no intermolecular attractions (a particle can only change direction when it collides with another particle)
- The molecule is infinitely small (particles will come all the way together before they collide)

What does this mean? An ideal gas is a collection of super-small bouncy-balls that never stop bouncing.

Real World Application
Discover processes or disciplines in the natural or man-made worlds that employ the concept.

The Ideal Gas Law provides important information regarding reactions, like the combination of gases; stoichiometry, like the gas produced in a reaction; physical processes, like the mixing of gases; and thermodynamic processes, like the movement of matter toward disorder.

The Ideal Gas Law is used in engineering to determine the capacity of storage containers. It is also helpful in determining the efficiency and standard operation of equipment.

Vocabulary
Learn important vocabulary for this concept, including words that might appear in assessments (tests, quizzes, homework, etc.) that indicate the use of this concept.
Important Vocabulary   (Avogadro's number)

Computer Animations
Experience computer simulators or animations that illustrate the concept discussed here. Many simulators or animations come with

worksheets for use in class.

http://phet.colorado.edu/simulations/sims.php?sim=Gas_Properties

http://intro.chem.okstate.edu/1314F00/Laboratory/GLP.htm

Summary

Read a summary of the concept, indicating the enduring understanding students should retain after class.

Summary

The number of particles of a sample of gas can be determined from the Ideal Gas Law by measuring the pressure, volume, and temperature of the gas.