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, volume, and temperature are all related. This is a combination of Boyle's Law, Charles' Law, and Gay-Lussac's Law.

Basic

In a sealed container, changing two of the variables--pressure, temperature, or volume--will change the third according to the formula in Mathematical Definition.

Mathematical Definition

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.

These depend on the Combined Gas Law:

- Car (combustion) engines
- Breathing
- Projectiles (guns, cannons)
- Cooking
- Balloons

For more on how each one depends on gas laws, see the individual gas law pages.

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://www.bqlearning.org/ospdb/ospSearch.php?physlet_id=168
http://physics-animations.com/Physics/English/adia_tmp.htm
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

Changing two of the three variables--pressure, temperature, or volume--has an effect on the third which can be explained and predicted by combining other gas laws.