

Participation Assignment

CHEM 1090-General Chemistry I

Name:

#20

Section: 32, MWF

Due Date: Wednesday 3/7/2018

Kinetic Molecular Theory

A gas consists of tiny particles, either atoms or molecules, moving about at random.

The volumes of the particles themselves is negligible compared with the total volume of the gas.

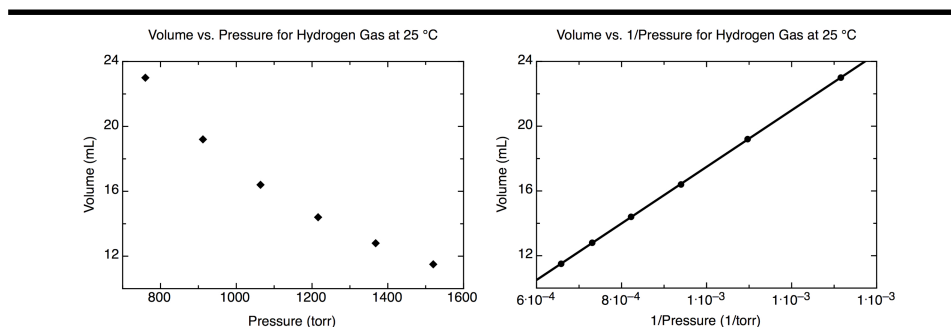
The gas particles act independently of one another; there are no attractive or repulsive forces between particles.

Collisions of the gas particles, either with other particles or with the walls of the container, are elastic (constant temperature).

The average kinetic energy of the gas particles is proportional to the absolute (kelvin) temperature of the sample.

Gas Laws

Boyle's Law



$$V \propto \frac{1}{P}$$

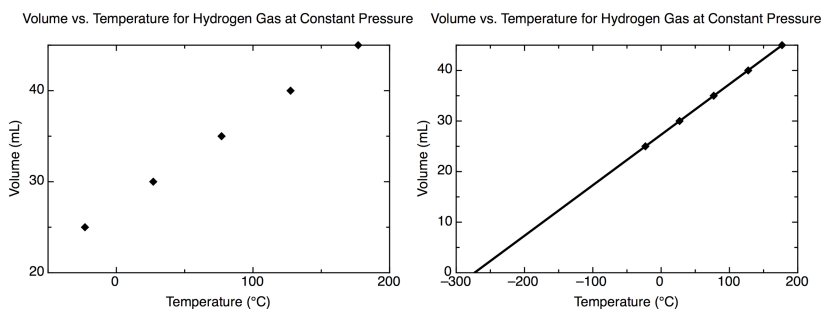
Constant: n (moles)
T (temperature)

Example:

$$PV = k$$

Gas Laws

Charles's Law



$$V \propto T$$

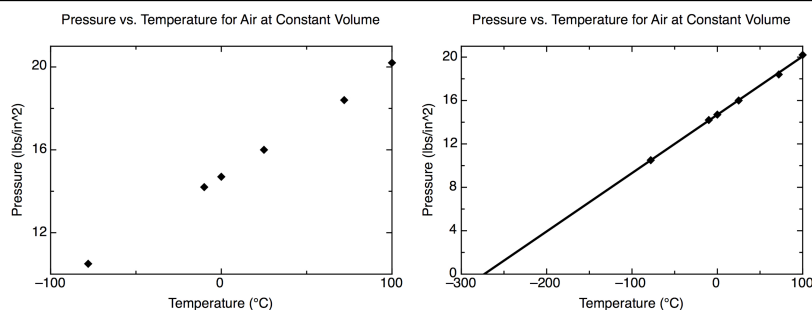
Constant: n (moles)
P (pressure)

Example:

$$\frac{V}{T} = k$$

Gas Laws

Pressure-Temperature Law



$$P \propto T$$

Constant: n (moles)
V (volume)

Example:

$$\frac{P}{T} = k$$

1. A weather balloon is filled with helium to a volume of 960.0 L at 15.00 °C and 1.000 atm. The balloon ascends to approximately 5000 m (16404 ft) where the balloon's volume changes to 1597.0 L at a temperature of -17.47 °C. What is the helium gas pressure, in atm, in the balloon at this altitude?