

# Participation Assignment

## CHEM 1050-Chemistry and the Citizen

Name:

#12

Section: 03, MW

Due Date: Monday 2/22/2016

### 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.

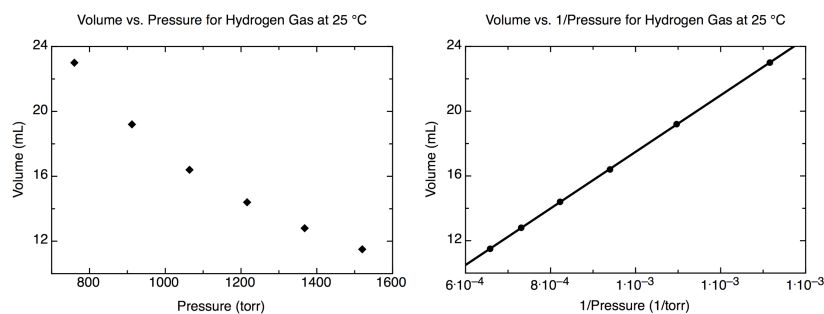
The gas particles act independently of one another; there are no attractive or repulsive forces between particles.

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)

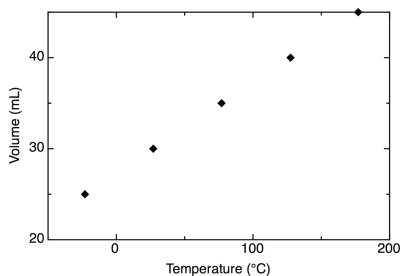
**Example:**

$$PV = k$$

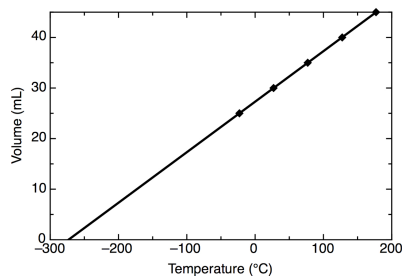
# Gas Laws

## Charles's Law

Volume vs. Temperature for Hydrogen Gas at Constant Pressure



Volume vs. Temperature for Hydrogen Gas at Constant Pressure



$$V \propto T$$

**Constant:** n (moles)  
P (pressure)

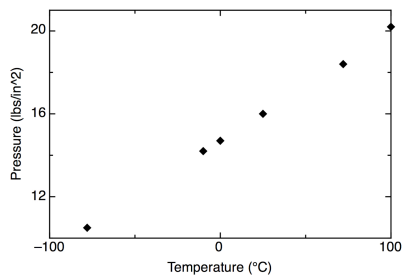
**Example:**

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

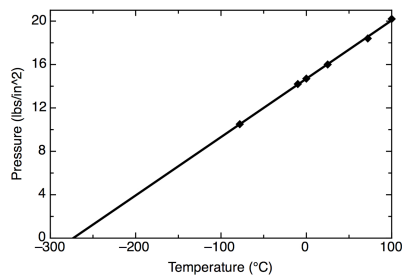
# Gas Laws

## Pressure-Temperature Law

Pressure vs. Temperature for Air at Constant Volume



Pressure vs. Temperature for Air at Constant Volume



$$P \propto T$$

**Constant:** n (moles)  
V (volume)

**Example:**

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