BR: January 21st

1. If the pressure is held constant, what will happen to the volume of a gas if the temperature is increased? Why?

T↑, V↑

- T↑, gas particles move faster
- particles will collide w/sides of cont more
- more collision w/cont, cont.'s V↑

Jan 21-9:04 AM

Monday, January 21st

Objective: Determine how to calculate fordifferent properties of gases using the ideal gas law.

1. Bellringer
2. Gas Law Demo Relationships
3. Ideal Gas Law Notes

QUIZ ON TUESDAY!

DUE: Gas Law Demos
HW: Ideal Gas Law HW

Jan 21-8:46 AM

Gas Law Demos: Relationships

Variables	Symbol	Unit	Relationship to pressure	multiply /divide	Why?
			D/I		
Pressure	P	Pa	N/A	N/A	N/A
Volume	V	L	I	M	Smaller V= larger P
Temp.	T	K	D	D	more KE= more collisions more P

Jan 21-9:32 AM

Ideal vs. Real Gases

> But, gases behave ideally at
- high temp and
- low pressure

Jan 28-8:32 AM

Ideal Gas Law

- The ideal gas law is theequation of state of a hypothetical ideal gas.
- Good way to predict the behavior of many gases.
- Has limitations.

Jan 28-8:36 AM

Ideal Gas Law

EQUATION: $PV = nRT$

P = pressure (atm)

V = volume (L)

n = number of moles

R = constant (0.0821 L x atm/K x mol)

T = temperature (K)

Jan 25-12:30 PM

Ideal Gas Law Practice

What is the pressure of 1.93 moles of gas at 300K in a 6.35 L container? (show all your work)

PV = nRT R = constant (0.0821 L x atm/K x mol)

P = ?
V = 6.35 L
n = 1.93 mol
T = 300 K

$P(6.35) = (1.93)(0.0821)(300)$

$\frac{P(6.35)}{6.35} = \frac{47.5}{6.35}$

P = 7.48 atm

Jan 28-8:37 AM

Ideal Gas Law Practice

What is the mass of helium in a 2.75 L container at 56 C and 1.5 atm? (show all your work)

PV = nRT R = constant (0.0821 L*atm/K*mol)

P = 1.5 atm
V = 2.75 L
n = ? → g
T = 56 + 273 = 329 K

$1.5(2.75) = n(0.0821)(329)$

Jan 28-8:37 AM

Check for Understanding

What is the volume of 3.8 moles of gas at 750 K and 2.2 atm? (show all your work)

PV = nRT R = constant (0.0821 L*atm/K*mol)

P = 2.2 atm
V = ? L
n = 3.8 mol
T = 750 K

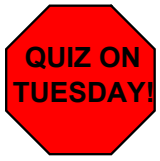
$2.2(x) = 3.8(0.0821)(750)$

$\frac{2.2x}{2.2} = \frac{233.98}{2.2}$

V = 106.35 L

Jan 28-8:38 AM

Worktime: Ideal Gas Law



Ideal Gas Law HW due Tues.

Jan 23-8:55 AM