

Name _____ Period _____

College Prep Chemistry of the Earth

Assignment 7P – Unit 7 Review

20 Points

Complete the following problems based on the Combined Gas Law

<i>Boyle's Law Forms</i>	$P_1 = \frac{P_2 V_2}{V_1}$	$V_1 = \frac{P_2 V_2}{P_1}$	$P_2 = \frac{P_1 V_1}{V_2}$	$V_2 = \frac{P_1 V_1}{P_2}$
--------------------------	-----------------------------	-----------------------------	-----------------------------	-----------------------------

<i>Charles' Law Forms</i>	$V_1 = \frac{V_2 T_1}{T_2}$	$T_1 = \frac{V_1 T_2}{V_2}$	$V_2 = \frac{V_1 T_2}{T_1}$	$T_2 = \frac{V_2 T_1}{V_1}$
$V_1 T_2 = V_2 T_1$				

<i>Gay-Lussac's Law Forms</i>	$P_1 = \frac{P_2 T_1}{T_2}$	$T_1 = \frac{P_1 T_2}{P_2}$	$P_2 = \frac{P_1 T_2}{T_1}$	$T_2 = \frac{P_2 T_1}{P_1}$
$P_1 T_2 = P_2 T_1$				


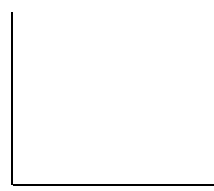

<i>Combined Gas Law Forms</i>	$P_1 = \frac{P_2 V_2 T_1}{V_1 T_2}$	$V_1 = \frac{P_2 V_2 T_1}{P_1 T_2}$	$T_1 = \frac{P_1 V_1 T_2}{P_2 V_2}$
$\frac{P_1 V_1 T_2}{P_2 V_2 T_1}$	$P_2 = \frac{P_1 V_1 T_2}{V_2 T_1}$	$V_2 = \frac{P_1 V_1 T_2}{P_2 T_1}$	$T_2 = \frac{P_2 V_2 T_1}{P_1 V_1}$

<i>Ideal Gas Law Forms</i>	$P = \frac{nRT}{V}$	$V = \frac{nRT}{P}$	$n = \frac{PV}{RT}$	$T = \frac{PV}{nR}$
$PV = nRT$				

<i>Ideal Gas Constant [R]</i>	$R = 0.0821 \frac{\text{L}\cdot\text{atm}}{\text{mol}\cdot\text{K}}$	$1 \text{ atm} = 760 \text{ mmHg} = 101.3 \text{ kPa}$	$1 \text{ L} = 1000 \text{ mL}$
	$\text{K} = ^\circ\text{C} + 273.15$	$^\circ\text{C} = \text{K} - 273.15$	

<i>Ideal Gas Constant [R]</i>	$R = 0.0821 \frac{\text{L}\cdot\text{atm}}{\text{mol}\cdot\text{K}}$	<i>Dalton Law</i>	$P_{\text{Total}} = P_1 + P_2 + P_3$	$P_1 = P_{\text{Total}} - P_2 - P_3$
-------------------------------	--	-------------------	--------------------------------------	--------------------------------------

For each gas law, define the variables involved, determine the relationship between variables, and draw a line showing the relationship on the graph

Gas Law	Boyle's Law	Charles' Law	Gay-Lussac's Law
Variables			
Relationship			
Graph			

Convert the following measurements to the new measurement given

Convert 2.82atm to mmHg	
P =	mmHg

Convert 142.83°C to K	
T =	
T =	K

Solve the following equations based on the fundamental gas laws

$P_1 = \underline{\hspace{1cm}} \text{ L}, T_1 = 421.29\text{K}$ $P_2 = 0.92\text{L}, T_2 = 371.29\text{K}$	
$P_1 =$	
$P_1 =$	

$V_1 = 1.42\text{L}, P_1 = 3.28\text{atm}, T_1 = \underline{\hspace{1cm}} \text{ K}$ $V_2 = 3.74\text{L}, P_2 = 1.39\text{atm}, T_2 = 372.41\text{K}$	
$T_1 =$	
$T_1 =$	

Complete the following problems based on the ideal gas law

$P = 2.37\text{atm}, V = 12.84\text{L},$ $n = \underline{\hspace{1cm}} \text{ mol}, T = 284.23\text{K}$	
$n =$	
$n =$	

$P = 4.29\text{atm}, V = \underline{\hspace{1cm}} \text{ L},$ $n = 1.74\text{mol}, T = 341.84\text{K}$	
$V =$	
$V =$	

Complete the following problem based on conversions with the ideal gas law

$P = 4.71\text{atm}, V = 6.27\text{L},$ $n = \underline{\hspace{1cm}} \text{ mol HF}, T = 294.39\text{K}$	
$n =$	
$n =$	molHF

$n = \underline{\hspace{1cm}} \text{ mol HF}, \text{mass} = \underline{\hspace{1cm}} \text{ g HF}$ Molar Mass HF = 20.01g/mol	
mass HF =	
Mass HF =	gHF

