UNIT B: Gas Laws - Review Booklet

Name: _____

1) At a pressure of 95.0 kPa a sample of gas has a volume of 415.0 mL. What is the volume of the gas at 110 kPa?

2) A sample of oxygen has a volume of 15. 0L at 125 kPa. What will the volume of the oxygen gas be at a pressure of 75 kPa?

3) A sample of gas has a volume of 1.73 L at a pressure of 860 mmHg. What must the pressure be on this sample for the volume to change to 2.40 L?

4) A sample of oxygen has a volume of 315ml at STP. What is the volume of the gas at 35°C?

5) At 23°C, a sample of hydrogen gas has a volume of 29.00 L. To what temperature must this gas be heated to change the volume to 64.00 L?

6) 27.5 L of chlorine gas at 109 kPa and 23°C is changed to 84.0kPa and 40.0°C. What is the new volume?

7) A gas sample has a volume of 35.0 L at 790 mmHg and 22.0°c, What is the volume at STP (745 mmHg)?

8) A sample of fluorine gas with a volume of 45.0 L at STP is changed to 117 kPa and 30.0°C. What is the new volume of the gas?

9) Find the molar mass of the following molecules:

a) NO_3^-	d) $Al_2(SO_4)_3$
b) CH_3COOH	e) $(NH_4)_3PO_4$
c) $PbSO_4$	

10) Find the molar mass of the following molecules:

a) 0.705 mol of CO_2 at STP	b) 18.4 mol of $Ni(OH)_2$

11) Calculate the number of moles of the following:

a) 0.115 kg of CuS	b) 4046 mg of Au at STP

12) Calculate the volume of 28.897 g of butane gas C_4H_{10} at 21.000°C and 134.000 kPa?

13) What is the molar mass of 0.475 g of an ideal gas that has a volume of 450 ml at 175 kPa and 15.0°C.

14) Explain how you change Celsius to Kelvin.

15) Explain the difference between SATP and STP.

16) Describe the difference between real and ideal gases

Real Gases	Ideal Gases

17) Explain the Kinetic Molecular Theory and its applications to this unit.

Formulas, Constants, and Conversion Factors

$P_1V_1 = P_2V_2$

$\frac{V_1}{T_1} = \frac{V_2}{T_2}$

$\frac{P_1}{T_1} = \frac{P_2}{T_2}$

$\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2}$

$PV = nRT$

$PM = dRT$

$d = \frac{m}{V}$

m = Mn

$T_K = T_{°C} + 273.15$

R = 8.314 (L*kPa)/(K*mol)

STP = 0.00 °C, 101.325 kPa

SATP = 25.00 °C, 100.00 kPA

760.000 mmHg (Torr) = 101.325 kPa = 1.00000 atm

10^6	10^3	10^0	10^{-3}	10^{-6}	10^{-9}
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M	k	-	m	μ	n