ANSWER KEYS TO - GAS UNIT ASSIGNMENTS

Exercises on Pressure and Volume

1. 3.75 L
2. 348 L
3. 99.8 L
4. 17.5 mL
5. 1.1 L

Pressure-Volume Relationship in Gases- II

1. The gas occupies less space (due to the inverse relationship). V= 0.90 L
2. V=15L
3. P= 133 kPa
4. V= 0.110 L
5. V= 3.00 L
6. It will double; 300 kPa
7. It now occupies 25 L. The pressure of the gas now is 150 kPa.
8. P= 150 mmHg
9. V= 62.5

Problems on the Gas Laws

1. V= 440 cm^3
2. V= 2.2 L
3. P= 216.8 kPa
4. V= 1.2 L
5. T= 300K (27C)
6. 300kPa
7. P= 566,7 kPa
8. P= 90 kPa

Dalton's Law of Partial Pressure

1. CO_2= 406.25 kPa, O_2= 243.75 kPa
2. H_2= 29.31 kPa, N_2= 73.29 kPa
3. P_{N2} = 503.75 kPa, P_{CO2} = 406.25 kPa
4. P_T= 194.4 kPa, P_O= 116.4 kPa
5. H_2 = 149.34 kPa, O_2 =30.107 kPa, CH_4= 600.48 kPa
6. 3 moles of O_2
7. O_2 = 60 kPa, NO_2 = 60 kPa, CH_4 = 90 kPa, SO_2 = 30 kPa, P_T = 180 kPa
8. 0.0256 moles
9. a) CO_2= 96.99 kPa
   b) m= 0.43 g
10. V= 46.6 L

Behaviour of Gases Test

Matching

1. C
2. H
3. B
4. G
5. F
6. A
7. C
8. D

Multiple Choice

9. D
9. B
9. A
9. C
9. D
9. B
9. C
9. B
9. C
9. C
9. D
9. B
9. B

Problems

22. P= 393 kPa
22. V= 10.9 L
22. V= 0.15 L (15 mL)
22. T= 677.07 K
22. P= 137 kPa
22. V= 203 mL
23.

Boyle's Law	P ? 1/V	n, T	P, V	V1P1 = V2P2
Charles' Law	V ? T	P, n	T, V	(V1/T1) =(V2/T2)

Avogadro's Principle	V ? n	P, T	n, V	(V1/n1)=(V2/n2)
Combined Gas Law	$\frac{1}{V}$? P ? T	n	V, P, T	(V1P1/T1)=(V2P2/T2)

22. V_{O2} = 0.23 L

Molar Volume Practice: I

GAS	**Molar volume at S.T.P (Litres)**	**Volume at S.T.P. (Litres)**	**Moles**	**Mass (grams)**	**Molar Mass (grams)**	**# of molecules**
NO2	22.4	22.4	1.00	46.01	46.01	6.02 x 10^23
NH3	22.4	22.4	1.00	17.03	17.03	6 x 10^23
SO2	22.4	11.2	0.5	32.033	64.065	3.01 x 10^23
N2	22.4	44.8	2.00	56.04	28.02	1.20 x 10^23
CH4	22.4				16.042	6 x 10^23
O2	22.4	67.2	3.0	96.00	32.00	1.81 x 10^23
H2S	22.4	2.24	0.1	3.408	34.081	6.02 x 10^23

Molar Volume Practice: II

1. a) 134.15L O_2

   b) 75 L

   c) 89.6 L

   d) 54.0 g

   e) 268.8 L

   f) 7.47 L

   g) 1.67 mol

h) 7.44 L

i) 7.22 x 10^24 molecules

j) 58 L

2. 67.14 L

Molar Volume Practice: III

1. a) 4.48 L

b) 111.11 L

c) 4.47 L

2. 24.5 L

3. a) 12.8 L

b) 89.52 L

4. a) 44.7 L

b) 99.1 L

c) 532.14 L

5. 205.5 L

Gas Laws Problems IV

1. 1.75 mol

2. 35 mL

3. 2.35 L

4. 56.4 gmol-

5. C2H6SO

6. 2.79 L

7. a) 850 kPa

b) H2: 242 kPa He: 608 kPa