

CHAPTER 11 REVIEW

Gases**SECTION 3: Gas Volumes and the Ideal gas Law.**

1. _____ The molar mass of a gas at STP is the density of that gas
(a) multiplied by the mass of 1 mol. (c) multiplied by 22.4 L.
(b) divided by the mass of 1 mol. (d) divided by 22.4 L.

2. _____ For the expression $V = \frac{nRT}{P}$, which of the following will cause the volume to increase?
(a) increasing P (c) increasing T
(b) decreasing T (d) decreasing n

3. Two sealed flasks, A and B, contain two different gases of equal volume at the same temperature and pressure.

_____ a. The two flasks must contain an equal number of molecules. True or False?

_____ b. The two samples must have equal masses. True or False?

4. Use the data in the table below to answer the following questions.

Formula**Molar mass (g/mol)**

N ₂	28.02
CO	28.01
C ₂ H ₂	26.04
He	4.00
Ar	39.95

(Assume all gases are at STP.)

_____ a. Which gas contains the most molecules in a 5.0 L sample?

_____ b. Which gas is the least dense?

_____ c. Which two gases have virtually the same density?

_____ d. What is the density of N₂ measured at STP?

SECTION 3 *continued*

5. _____

- How many moles of methane, CH_4 are present in 5.6 L of the gas at STP?
- How many moles of gas are present in 5.6 L of any ideal gas at STP?
- What is the mass of the 5.6 L sample of CH_4 ?

6. _____

- A large cylinder of He gas, such as that used to inflate balloons, has a volume of 25.0 L at 22°C and 5.6 atm. How many moles of He are in such a cylinder?
- What is the mass of the He calculated in part a?

7. When C_3H_8 combusts at STP, 5.6 L of C_3H_8 are consumed according to the following equation:

$$\text{C}_3\text{H}_8(g) + 4\text{O}_2(g) \rightarrow 3\text{CO}_2(g) + 2\text{H}_2\text{O}(l)$$

- How many moles of C_3H_8 react?
- How many moles of O_2 , CO_2 , and H_2O are either consumed or produced in the above reaction?
- How many grams of C_3H_8 are consumed?
- How many liters of CO_2 are produced?
- How many grams of H_2O are produced?