

Show all work.Introduction

- 1) Which is not a property of a gas?
 - a) Density varies with temperature
 - b) Assumes the shape and volume of its container
 - c) Are compressible
 - d) Density is larger than that of a liquid
 - e) Form homogeneous mixtures with one another

- 2) Hydrogen gas exerts a pressure of 466 torr in a container. What is this pressure in atmospheres (1 atm = 101,325 Pa = 760 torr)? (**Ans: 0.613 atm**)

Gas Laws

- 3) A sample of a gas occupies 1.40×10^3 mL at 25°C and 760 mmHg. What volume will it occupy at the same temperature and 380 mmHg? (**Ans: 2800 mL**)

- 4) A sample of a gas has an initial pressure of 0.987 atm and a volume of 12.8 L. What is the final pressure if the volume is increased to 25.6 L? (**Ans: 0.494 atm**)

- 5) A sample of nitrogen gas has a volume of 32.4 L at 20°C . The gas is heated to 220°C at constant pressure. What is the final volume of nitrogen? (**Ans: 54.5 L**)

Combined and Ideal Gas Law

6) If $600. \text{ cm}^3$ of H_2 at 25°C and $750. \text{ mm Hg}$ is compressed to a volume of $480. \text{ cm}^3$ at 41°C , what is the new pressure? (Ans: 988 mmHg)

7) At a particular temperature and pressure, 15.0 g of CO_2 occupy 7.16 liters . What is the volume of 12.0 g of CH_4 at the same temperature and pressure? (Ans: 15.7 L)

8) How many liters of methane are there in 8.00 grams at STP? (Ans: 11.2 L)

Application of Gas Laws

9) Calculate the density of chlorine gas at STP. (Ans: 3.17 g/L)

10) What is the molar mass of a gas if 7.00 grams occupy 6.20 liters at 29°C and $760. \text{ mm Hg}$ pressure? (Ans: 28.0g/mol)