## Chapter 13: Review Worksheet

- 1. A sample of gas in a 25.0-L container exerts a pressure of 3.20 atm. Calculate the pressure exerted by the gas if the volume is changed to 45.0-L at constant temperature.
- 2. A sample of gas in a 21.5-L container at 45°C is cooled at constant pressure to a temperature of -37°C at constant pressure. Determine the volume of the cooled gas.
- 3. A 32.8 g sample of hydrogen gas occupies a volume of 21.6 L at a particular temperature and pressure. What volume does 12.3 g of hydrogen gas occupy at the same pressure and temperature?
- 4. A sample of gas at 38°C occupies a volume of 2.97 L and exerts a pressure of 3.14 atm. The gas is heated to 118°C and the volume is decreased to 1.04 L. Determine the new pressure exerted by the gas.
- 5. What mass of oxygen gas exerts a pressure of 475 mm Hg in a volume of 1.25 L at a temperature of -22°C?
- 6. A 12.5 g sample of oxygen gas is added to a 25.0 g sample of nitrogen gas in a 25.0-L container at 28°C. Calculate the partial pressure of each gas and the total pressure of the mixture.
- 7. A sample containing 0.80 mol of oxygen gas is collected over water at 30.0°C. The total pressure is 1.10 atm and the water vapor pressure at 30.0°C is 31.8 torr. Determine the volume of the oxygen gas.
- 8. Zinc metal reacts with hydrochloric acid according to the following unbalanced equation:  $Zn(s) + HCl(aq) \rightarrow ZnCl_2(aq) + H_2(g)$

A 10.0-g sample of zinc is reacted with 0.200 mol of HCI. Determine the volume occupied by the hydrogen gas collected at 755 mm Hg and 22°C.

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ANSWERS -
$1. P_2 = 1.78 atm$
2. V <sub>2</sub> = 16.0 L
3. V <sub>2</sub> = 8.10 L
4. $P_2 = 11.3$ atm

5. 1.21 g O<sub>2</sub> 6. P<sub>O2</sub> = .386 atm, P<sub>N2</sub> = .881atm, P<sub>total</sub> = 1.267 7. V = 18.8 L 8. V = 2.44 L