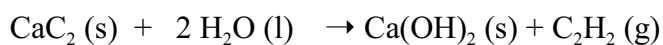


Worksheet 1

1. A sample of air occupies 3.8 L when the pressure is 1.2 atm. What volume does it occupy at 6.6 atm? What pressure is required in order to compress it to 0.075 L?

2. a) Calculate the density of sulfur hexafluoride gas at 678 torr and 28.0 °C. b) Calculate the molar mass of a vapor that has a density of 7.135 g/L at 12.0 °C and 743 torr.

3. Acetylene gas, C₂H₂ (g), can be prepared by the reaction of calcium carbide with water:



Calculate the volume of C₂H₂ that is collected over water at 26 °C by a reaction of 0.887 g CaC₂. The total pressure of acetylene and water is 726 torr. The vapor pressure of water is tabulated in Appendix B of your book).

4. A mixture of gases contains 10.25 g of N_2 , 2.50 g of H_2 , and 7.63 g of NH_3 . If the total pressure of the mixture is 2.35 atm, what is the partial pressure of each component?

5. a) Place the following gases in order of increasing average molecular speed at 300 K: CO , SF_6 , H_2S , Cl_2 , HBr . b) Calculate and compare the rms speeds of CO and Cl_2 molecules at 300 K.