

Appendix B Exercises

1. What volume does 0.50 moles of CO_2 occupy at 725 mm Hg and 25°C ?
2. How many moles of He occupy a 2.50-L flask whose pressure is 945 mm Hg at 75°C ?
3. What is the pressure exerted by 28.8 g of N_2 contained in a 4.25 L-flask at 0°C ?
4. What volume does 5.8 moles of O_2 occupy at 285 mm Hg and -78°C ?
5. What is the temperature of 5.0 moles of N_2 contained in a 20.0 L-tank at a pressure of 7.5 atm?
6. What volume does 6.32 g of NH_3 occupy at 745 mm Hg and 25°C ?
7. How many moles of CH_4 occupy a 10.0-L tank whose pressure is 3.5 atm at 30°C ?
8. What volume does 0.45 g of Ar occupy at 1.25 atm and 27°C ?
9. What is the pressure exerted by 3.5 moles of H_2 contained in a 2.0-L tank at 27°C ?
10. What volume does 0.75 moles of N_2 occupy at 760 mm Hg and 0°C ?
11. What is the temperature of 7.65 g of He contained in a 6.25 L flask at a pressure of 1.75 atm?
12. How many moles of HCl gas occupy a 4.5 L tank whose pressure is 1875 mm Hg at 27°C ?
13. For this question, note that $M_m = \text{g/mol}$ and density, $d = \text{mass/volume}$.
 - a) What is the density of helium in g/L at 1.00 atm and 27°C ?
 - b) What is the density of nitrogen in g/L at 1.00 atm and 27°C ?

ANSWERS:

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| 1. 13 L | 6. 9.26 L | 11. 69.7 K = -203°C |
| 2. 0.109 mol | 7. 1.4 mol | 12. 0.45 mol |
| 3. 5.42 atm | 8. 0.22 L | 13. a) 0.163 g/L |
| 4. 2.5×10^2 L | 9. 43 atm | 13. b) 1.14 g/L |
| 5. 365 K = 92°C | 10. 17 L | |