

The Mole Part 1: Review

January 23, 2018 12:17 PM

90 Th 232.0377	63 E 151.964	12 Mo 95.94	115 Lr (263)	63 E 151.964
75 Re 186.207	23 V 50.9415	53 I 126.90447	63 E 151.964	74 W 183.84

- What is the volume occupied by each of the following gases at STP?
 - 10.0g of $\text{H}_2\text{S}_{(g)}$
 - 15.0mg of $\text{SbH}_{3(g)}$
 - 5.0×10^{20} molecules of $\text{BrF}_{(g)}$
 - 8.5×10^{25} molecules of $\text{B}_2\text{H}_{6(g)}$
- What is the mass of each of the following?
 - 1 atom of Au
 - 1.5×10^{15} molecules of AgCl
 - 250.0mL of $\text{C}_3\text{H}_{6(g)}$ at STP
 - 2.00L of $\text{SF}_{6(g)}$ at STP
- How many moles are in each of the following?
 - 5.00g of C_{10}H_8
 - 525mg of K_3PO_4
 - 6.00L of $\text{NO}_3\text{F}_{(g)}$ at STP
 - 1.00mL of O_3 at STP
 - 4.55×10^{12} atoms of Pt
 - 6.022×10^{16} molecules of PCl_5
- What is the molar mass of each of the following?
 - A protein molecule having a mass of 1.25×10^{-17} g
 - 0.179 mol of a substance having a mass of 74.0g
 - a molecule of anthracene having a mass of 2.96×10^{-22} g
 - $\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$
 - 0.0229 mol of a substance having a mass of 2.13g
 - $\text{Co}_2\text{Fe}(\text{CN})_6$
- Answer the following questions showing all your work.
 - What is the density of $\text{PH}_{3(g)}$ at STP? (remember density is in g/mL)
 - What is the molar volume of gold (density = 19.31g/mL)
 - How many moles are contained in 1.25mL of $\text{CS}_{2(l)}$? (density = 1.26g/mL)
 - What is the density of liquid octane, C_8H_{18} , if 0.100 mol of octane has a volume of 16.2mL?
 - What volume is occupied by 0.0875 mol of silver, if silver has a density of 10.5g/mL?
 - What is the density of $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$, if 0.0275 mol of $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ has a volume of 3.01mL?
 - How many moles are contained in 7.50L of $\text{C}_2\text{H}_5\text{OH}_{(l)}$? (density = 0.789g/mL)
 - If 750.0mL of gaseous fluoromethane has a mass of 1.14g at STP, what is the molar mass of fluoromethane?
 - What is the volume occupied by 0.0155 mol of NaCl? (density = 2.17g/mL)
 - If 1.25 L of disilane gas has a mass of 3.47g, what is the molar mass of disilane at STP?
 - What is the molar volume of lithium? (density = 0.534 kg/L)

6. Answer the following questions showing all your work.
- How many atoms are there in 2 molecules of $\text{Hg}(\text{IO}_3)_2$?
 - What is the volume occupied by 1.45×10^{30} molecules of COF_2 at STP?
 - How many molecules are there in 64.0g of $\text{FeS}_{(s)}$?
 - How many moles are in 25.0mL of $\text{HCN}_{(g)}$ at STP?
 - What is the volume occupied by 43.5g of ClF_3 at STP?
 - How many moles are in 2.75×10^{23} atoms of Fe?
 - How many molecules are there in 125mL of $\text{NOCl}_{(g)}$ at STP?
 - What is the mass of 3.011×10^{22} atoms of Pt?
 - What is the molar mass of $\text{HClO}_4 \cdot 2\text{H}_2\text{O}$?
 - What is the density of $\text{CH}_2\text{F}_{2(g)}$ at STP?
 - What is the mass of 25.0mL $\text{Kr}_{(g)}$ at STP?
 - What is the molar volume of iridium metal, Ir? (density = 22.42g/mL)
 - What is the molar mass of 0.0139 mol of a substance having a mass of 0.888g?
 - What is the density of acetic acid, CH_3COOH , if 0.250 mol of CH_3COOH has a volume of 14.3mL?
 - How many moles are in 85.0mg of CuSCN ?
 - What is the volume occupied by 0.145 mol of ruby, Al_2O_3 , if ruby has a density of 3.97g/mL?
 - What is the molar mass of an atomic particle with a mass of 9.11×10^{-28} g?
 - If 135L of cyanogens has a mass of 313g at STP, what is the molar mass of cyanogens?
 - If the density of HgS is 8.10g/mL, how many moles are in a cylinder filled with 50.0mL of HgS ?