

Molar Mass 2

Directions: Answer the following questions on a separate piece of paper and *attach it to this worksheet*.

Part I – Molar Mass

1. The _____ of a substance is the mass (in grams) of 1 mol of the substance.
2. The molar mass of a substance can be obtained by _____ the atomic masses of the component atoms.
3. Calculate the molar mass for each of the following substances:
 - a. methane, CH_4
 - b. calcium nitrate, $\text{Ca}(\text{NO}_3)_2$
 - c. ammonium sulfate, $(\text{NH}_4)_2\text{SO}_4$
 - d. ethyl alcohol, $\text{C}_2\text{H}_5\text{OH}$
 - e. iron(III) sulfate, $\text{Fe}_2(\text{SO}_4)_3$
 - f. chlorine dioxide, ClO_2
 - g. iron(II) sulfate, FeSO_4
 - h. strontium nitrate, $\text{Sr}(\text{NO}_3)_2$
 - i. barium hydride, BaH_2

Part II – Molar Mass Calculations

4. Calculate the number of *moles* of the indicated substance in each of the following samples.
 - a. 4.25g of phenol, $\text{C}_6\text{H}_6\text{O}$
 - b. 4.25g of acetylene, C_2H_2
 - c. 4.01g of lithium hydroxide, LiOH
 - d. 10.0g of sodium chloride, NaCl
 - e. 2g of ammonium chloride, NH_4Cl
5. Calculate the mass in *grams* for each of the following samples.
 - a. 1.91×10^{-3} mol of benzene, C_6H_6
 - b. 1.91×10^{-3} mol of acetylene, C_2H_2
 - c. 2.27 mol of calcium nitrate, $\text{Ca}(\text{NO}_3)_2$
 - d. 1.50 mol aluminum iodide, AlI_3
 - e. 4.00 mol of glucose, $\text{C}_6\text{H}_{12}\text{O}_6$
6. Calculate the number of *molecules* present for each of the following samples.
 - a. 4.29 mol of nitrogen dioxide, NO_2
 - b. 4.29g of nitrogen dioxide, NO_2
 - c. 1.95×10^{-10} mol of hydrogen fluoride, HF
 - d. 1.95×10^{-10} g of hydrogen fluoride, HF
 - e. 4.61 g of ammonia, NH_3
7. Calculate the *volume* for each of the following samples in their gas phase at STP (standard temperature and pressure).
 - a. 2.00 mol of neon
 - b. 2.00 g of neon
 - c. 5.00 mol of nitrogen dioxide
 - d. 5.00 mol of nitrogen monoxide
 - e. 5.00 g of nitrogen monoxide