

Problem Set 3.1
Stoichiometry Part I (atomic mass, Molar mass, mole)

1. The atomic mass of Cl is 35.5 amu, and the atomic mass of Al is 27 amu. What are the masses in grams of 3 Al atoms and 2 Cl atoms?
2. Calculate the **Molar mass** of each of the following:
(a) $\text{Sr}(\text{OH})_2$ (b) N_2O_3 (c) NaClO_3 (d) Cr_2O_3
3. Calculate each of the following quantities:
 - a. Mass in grams of 0.68 mol of KMnO_4
 - b. Number of mole in 8.18 g of $\text{Ba}(\text{NO}_3)_2$
 - c. Number of O atom in 7.3×10^{-3} g of $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$
 - d. Mass in grams of 8.35 mol of copper(I) carbonate
 - e. Mass in grams of 4.04×10^{20} molecules of dinitrogen pentaoxide
 - f. Number of moles and formula units in 78.9 g of sodium perchlorate
4. Oxygen is required for the metabolic combustion of foods. Calculate the number of molecules in 38.0 g of oxygen gas.
5. What is the mass in grams of 1.00×10^{12} lead (Pb) atoms?
6. How many atoms are present in 3.14 g of copper
7. Which of the following has more atoms: 1.10 g of hydrogen atoms or 14.7 g of chromium atoms?
8. *Urea [$(\text{NH}_2)_2\text{CO}$] is used for fertilizer and many other things. Calculate the number of N, C, and O atoms in 1.68×10^4 g of urea.
9. *Cisplatin [$\text{Pt}(\text{NH}_3)_2\text{Cl}_2$], is used in the treatment of certain cancers. Calculate the number of hydrogen atoms in 0.98 mol of cisplatin.
10. แก๊สไนโตรเจนไดออกไซด์ จำนวน 6.02×10^{20} โมเลกุล มีมวลและปริมาตรที่ STP เท่าใด
 1. 0.046 กรัม 0.022 ลิตร 2. 0.092 กรัม 0.045 ลิตร
 3. 0.460 กรัม 0.224 ลิตร 4. 0.920 กรัม 0.448 ลิตร