

Vocabulary: Fill in the blanks with the most appropriate term.

_____ is also called Avogadro's number. The mass of one mole of any pure substance is called the _____ mass. For any element, this mass is equal to the atomic mass with the unit _____/_____.

The _____ formula of a compound is the simplest whole number ratio of atoms, while the _____ formula of a compound represents the actual number of each atom in the compound.

_____ are compounds that crystallize from a water solution with water molecules clinging to the crystal particles.

Problems: Work each of the following problems showing all work. These problems are representative of each type of problem worked in this unit. For more practice on a given type of problem, refer back to Note Taking Guides, worksheets, and quizzes.

1. Calculate the molar mass for ethane, C_2H_6 .

2. Convert 45 g Se to moles of Se.

3. Convert 4.77×10^{24} molecules of SO_2 to grams.

4. What is the percentage composition of sodium hydroxide, NaOH?
5. A compound is found to contain 63 % manganese, Mn, and 37 % oxygen. What is the compound's empirical formula?
6. What is the empirical formula for a substance if a 1.000 g sample of it contains 0.262 grams of nitrogen, 0.075 grams of hydrogen, and 0.663 grams of chlorine?
7. What is the molecular formula for a compound with an empirical formula of NO_2 and a molar mass of 92.0 g/mol?
8. What is the formula for a hydrate that contains 6.4 g CuSO_4 and 3.6 g H_2O ?