

Calculations Practice

1. A solution contains 14.56 grams of sodium chloride in every 675 mL of solution.
 - a. What volume of solution contains 50.0 grams of sodium chloride?
 - b. What mass of sodium chloride is in 7.50 L of the solution?
2. The mineral calcite is 40.0% calcium by mass. 25.5% of a 345 gram rock is found to be pure calcite. What is
 - a. The mass of calcium in the rock, assuming no sources of calcium other than calcite?
 - b. The percent (by mass) of calcium in the rock?
3. A 77.4 g mixture of the compounds potassium bromide and sodium sulfide is 74.7 % by mass potassium bromide. The compound sodium sulfide is 58.9 % by mass sodium. Calculate the mass (g) of
 - a. sodium in the mixture
 - b. sulfur in the mixture (from sulfide ion)
4. A mixture of the compounds aluminum sulfide and sodium chloride contains 5.46 g of aluminum and is 52.3 % by mass aluminum sulfide. The compound aluminum sulfide is 64.1 % by mass sulfur. The compound sodium chloride is 60.7 % by mass chlorine. Calculate the mass (g) of sodium in the mixture.
5. A 34.9 mL aqueous solution of acetic acid ($\text{CH}_3\text{CO}_2\text{H}$) has a density of 1.05 g/mL and contains 15.0 g of acetic acid. Calculate the percent by mass of acetic acid in the solution.
6. 43.6 grams of a salt dissolves in water to make 450.0 mL of solution. The density of solution is found to be 1.045 g/mL.
 - a. What is the percent (by mass) of this salt in the solution?
 - b. Suppose that we wanted to prepare 3.00 liters of this solution. How many grams of (i) the salt and (ii) water would be required to produce this solution?
7. 25.00 grams of water (H_2O) contains 8.352×10^{23} water molecules.
 - a. How many (i) water molecules, and (ii) hydrogen atoms are there in 5.00 micrograms of water?
 - b. What volume of water (in Liters) contains 1.00×10^{25} hydrogen atoms, given that the density of water is 0.997 g/mL?