

Atomic Structure and Properties
1.3 Elemental Composition of Pure Substances
1.4 Composition of Mixtures
Worksheet

- 1) Two separate pure samples of carbon dioxide were analyzed. Both samples were found to contain 27.29% carbon by mass. Justify these findings on the basis of atomic molecular theory.
- 2) Two separate 250.0 g pure samples of sodium chloride were analyzed. Both samples were found to contain 39.3 % sodium and 60.7 % chlorine by mass. Use what you have learning about atomic molecular theory to explain why the same results would be obtained from both samples.
- 3) A 150.0 g pure sample of Ilmenite, FeTiO_3 , was analyzed and it was found to contain 36.81 % Fe by mass. Would you expect this percentage to be the higher, lower, or the same in a 450.0 g pure sample of FeTiO_3 ? Justify your answer.
- 4) Calculate the mass percent of each element in a pure sample of Na_2SO_4 .
- 5) A vitamin C tablet from a certain company contains 70.0 mg of ascorbic acid (Vitamin C). The entire tablet, however, has a mass of 0.825 g. Calculate the mass percent of vitamin C in the tablet.
- 6) A sample of sodium bicarbonate (NaHCO_3) is known to contain some impurities. It is found that Na^+ makes up 18.00 % of the entire mass of the sample. All of the Na^+ comes from the NaHCO_3 compound. Find the mass percent of NaHCO_3 in the sample. (Hint: use ratios and cross multiply)
- 7) A sample of potassium chlorate (KClO_3) is known to contain some impurities. It is found that K^+ makes up 9.50 % of the entire mass of the sample. All of the K^+ comes from the KClO_3 compound. Find the mass percent of KClO_3 in the sample.