Percentage Composition: Review Questions

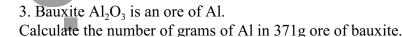
1. $H_3PO_{4 \text{ (aq)}}$ is a colourless, syrupy liquid used in detergents, fertilizers, toothpastes, and in carbonated beverages for a "tangy" flavour.

Calculate the percent composition by mass of H, P, and O in this compound.

[Ans:
$$\%$$
 H = 3.086%, $\%$ P = 31.61, $\%$ O = 65.31%]

2. Chalcopyrite (CuFeS₂] is a principal ore of copper. Calculate the number of kilograms of Cu in 3.71 x 10³ kg of chalcopyrite.

[Ans:
$$\#$$
 of kg = 1.28 x 10^3 kg]



[Ans: 196g]

- 4. All of the following substances listed below are fertilizers that contribute nitrogen to the soil. Which of the following is the richest source of nitrogen on a mass percentage basis?
- a) Urea, (NH₂)₂CO
- b) Ammonium nitrate, NH₄NO₃
- c) Guanidine, HNC(NH₂)₂
- d) Ammonia, NH₃

[Ans: Ammonia = 82.27]

5. Tin (II) fluoride, SnF₂, is often added to toothpaste as an ingredient to prevent tooth decay. What is the mass of F in grams in 24.6g of the compound?

6. The aluminum sulfate hydrate $Al_2(SO_4)_3 \cdot xH_2O$ contains 8.20% Al by mass. Calculate x that is the number of H_2O molecules associated with each $Al_2(SO_4)_3$ unit.

[Ans: 18]