

WKS 3-5 – Chem Honors
% Composition & Empirical Formula

Name _____
Period _____ Date _____

Part I Given the chemical formulas, calculate the percent composition for the following compounds:

1. What is the percent by mass of sulfur in H_2SO_3 and $\text{H}_2\text{S}_2\text{O}_8$?

2. Fe_2O_3

3. $\text{Ca}_3(\text{PO}_4)_2$

4. Given the % P in #3, what mass of P would be present in 58.2 g $\text{Ca}_3(\text{PO}_4)_2$?

Part II Given the following mass analyses, calculate the percent composition for the following compounds:

5. 52.96 g Hg, 7.37 g N, 25.37 g O

6. 9.91 g P, 30.67 g Cl

Part III Find the empirical formulas of the following samples.

7. An unknown compound was found to have a percent composition as follows: 17.98% Li, 26.75% P, and 55.27% O.

8. Rubbing alcohol was found to contain 60.0 % carbon, 13.4 % hydrogen, and the remaining mass was due to oxygen.

9. Isobutylene is a raw material for making synthetic rubber. A sample with a mass of 0.6481 grams was found to contain 0.5555 grams of carbon; the rest was hydrogen.

10. Determine the empirical formula for a compound that contains 35.98% aluminum and 64.02% sulfur.

11. *Propane is a hydrocarbon, a compound composed only of carbon and hydrogen. It is 81.71% carbon and 18.29% hydrogen.

Answers: 1) H_2SO_3 ; 39.07% S, $\text{H}_2\text{S}_2\text{O}_8$; 33.04% S 2) 69.94% Fe, 30.06% O; 3) 38.75% Ca, 19.97% P, 41.26% O; 4) 11.6 g P; 5) 61.80% Hg, 8.60% N, 29.60% O; 6) 24.42% P, 75.58% Cl; 7) Li_3PO_4 ; 8) $\text{C}_3\text{H}_8\text{O}$; 9) CH_2 ; 10) Al_2S_3 ; 11) C_3H_8