

Honors Empirical formula worksheet

Name \_\_\_\_\_ Block \_\_\_\_\_

Example

A 5.438 gram sample of ludlamite, a greyish-blue mineral sometimes used in ceramics, was found to contain 2.549 grams of iron, 1.947 grams of oxygen, and 0.9424 grams of phosphorus. What is its empirical formula?

$$2.549 \text{ grams of Fe} \times \frac{1 \text{ mole of Fe}}{55.85 \text{ g Fe}} = 0.0456 \text{ moles of Fe}$$

$$1.947 \text{ grams of O} \times \frac{1 \text{ mole of O}}{16.00 \text{ g O}} = 0.1217 \text{ moles of O}$$

$$0.9424 \text{ grams of P} \times \frac{1 \text{ mole of P}}{30.97 \text{ g P}} = 0.0304 \text{ moles of P}$$

Therefore the formula is  $\text{Fe}_{0.0456}\text{O}_{0.1217}\text{P}_{0.0304} = \text{Fe}_{1.5}\text{O}_{4.0}\text{P}_1 = \text{Fe}_3\text{O}_8\text{P}_2$

1) Calomel is the common name of a white powder once used in the treatment of syphilis. Its composition is 84.98% mercury and 15.02% chlorine. What is its empirical formula?

2) A sample of an unknown compound with a mass of 2.571 grams was found to contain 1.102 grams of C and 1.469 grams of oxygen. What is its empirical formula?

3) When a sample with a mass of 2.448 grams of compound present in liquified petroleum gas was analyzed, it was found to contain 2.003 grams of carbon and 0.4448 grams of hydrogen. What is its empirical formula?

4) Barium carbonate, a white powder used in paints, enamels, and ceramics, has the following composition: Ba, 69.58%; C, 6.090%; O, 24.32%. What is its empirical formula?