

Empirical Formula, Molecular Formula and Hydrates Worksheet

1. Write the Empirical Formula for Each of the Following:

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| a. P_4O_6 _____ | e. $C_6H_8O_6$ _____ |
| b. C_6H_9 _____ | f. $C_{10}H_{22}$ _____ |
| c. CH_2OHCH_2OH _____ | g. $Cu_2C_2O_4$ _____ |
| d. $BrCl_2$ _____ | h. Hg_2F_2 _____ |

2. Write the empirical formula for each of the following (show your work):

- a. A compound composed of: 72% iron (Fe) and 27.6% oxygen (O) by mass. _____
- b. A compound composed of: 9.93% carbon (C), 58.6% chlorine (Cl), and 31.4% fluorine (F).
_____ (This compound is commonly known as Freon)
- c. A compound composed of: 0.556g carbon (C) and 0.0933g hydrogen (H). _____

3. Write the molecular formula for each of the following: (amu – atomic mass units, for our purposes it is equivalent to molecular mass of the compound).

- a. A compound with a molecular mass of 70.0 amu and an empirical formula of CH_2 .

- b. A compound with a molecular mass of 46.0 amu and an empirical formula of NO_2 .

4. Can the molecular formula of a compound ever be the same as the empirical formula for the compound? Explain your answer.