

### Empirical Formula, Molecular Formula and Hydrates Worksheet

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

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.