









Empirical and Molecular Formula Worksheet ANSWER KEY

Write the empirical formula for the following compounds.

- 1) C_6H_6
- 6) C_8H_{18}
- 7) WO_2
- 8) $C_2H_6O_2$
- 9) $X_{39}Y_{13}$
- 6) A compound with an empirical formula of C_2OH_4 and a molar mass of 88 grams per mole. What is the molecular formula of this compound?
- 7) A compound with an empirical formula of C_4H_4O and a molar mass of 136 grams per mole. What is the molecular formula of this compound?
- 8) A compound with an empirical formula of $CFBrO$ and a molar mass of 253.8 grams per mole. What is the molecular formula of this compound?
- 9) A compound with an empirical formula of C_2H_8N and a molar mass of 46 grams per mole. What is the molecular formula of this compound?
- 10) A well-known reagent in analytical chemistry, dimethylglyoxime, has the empirical formula C_2H_4NO . If its molar mass is 116.1 g/mol, what is the molecular formula of the compound?
12. A certain blue solid contains 36.84% N and 63.16% O. What is the empirical formula of this compound?
13. A sample of indium chloride weighing 0.5000 g is found to contain 0.2404 g of chlorine. What is the empirical formula of the indium compound?
14. An unknown compound was found to have a percent composition as follows: 47.0 % potassium, 14.5 % carbon, and 38.5 % oxygen. What is its empirical formula? If the true molar mass of the compound is 166.22 g/mol, what is its molecular formula?
15. Rubbing alcohol was found to contain 60.0 % carbon, 13.4 % hydrogen, and the remaining mass was due to oxygen. What is the empirical formula of rubbing alcohol?

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Write the empirical formula for the following compounds.

- 1) C_6H_6 **CH**
- 6) C_8H_{18} **C_4H_9**
- 7) WO_2 **WO_2**
- 8) $C_2H_6O_2$ **CH_3O**
- 9) $X_{39}Y_{13}$ **X_3Y**
- 6) A compound with an empirical formula of C_2OH_4 and a molar mass of 88 grams per mole. What is the molecular formula of this compound? **$C_4O_2H_8$** 
- 7) A compound with an empirical formula of C_4H_4O and a molar mass of 136 grams per mole. What is the molecular formula of this compound? **$C_8H_8O_2$** 
- 8) A compound with an empirical formula of $CFBrO$ and a molar mass of 253.8 grams per mole. What is the molecular formula of this compound? **$C_2F_2Br_2O_2$** 
- 9) A compound with an empirical formula of C_2H_8N and a molar mass of 46 grams per mole. What is the molecular formula of this compound? **C_2H_8N** 
- 10) A well-known reagent in analytical chemistry, dimethylglyoxime, has the empirical formula C_2H_4NO . If its molar mass is 116.1 g/mol, what is the molecular formula of the compound? **$C_4H_8N_2O_2$** 
12. A certain blue solid contains 36.84% N and 63.16% O. What is the empirical formula of this compound? **The ratios are $N_{1.00}O_{1.50}$. Since 1.50 is not close to a whole number, we multiply *both* subscripts by 2. The empirical formula is thus N_2O_3 . (The name is dinitrogen trioxide.)** 
13. A sample of indium chloride weighing 0.5000 g is found to contain 0.2404 g of chlorine. What is the empirical formula of the indium compound? **$InCl_3$** 
14. An unknown compound was found to have a percent composition as follows: 47.0 % potassium, 14.5 % carbon, and 38.5 % oxygen. What is its empirical formula? If the true molar mass of the compound is 166.22 g/mol, what is its molecular formula? **$K_2C_2O_4$** 
15. Rubbing alcohol was found to contain 60.0 % carbon, 13.4 % hydrogen, and the remaining mass was due to oxygen. What is the empirical formula of rubbing alcohol? **C_3H_8O** 