

## Empirical and Molecular Formula Worksheet

**SHOW WORK ON A SEPARATE SHEET OF PAPER.**

Write the empirical formula for the following compounds.

- 1)  $C_6H_6$
- 2)  $C_8H_{18}$
- 3)  $WO_2$
- 4)  $C_2H_6O_2$
- 5)  $X_{39}Y_{13}$
- 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. Nitrogen and oxygen form an extensive series of oxides with the general formula  $N_xO_y$ . One of them is a blue solid that comes apart, reversibly, in the gas phase. It contains 36.84% N. What is the empirical formula of this oxide?
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?