

Percent Composition and Molecular Formula Worksheet

1. What's the empirical formula of a molecule consisting 55.7% carbon, 5.7% hydrogen, and 38.6% oxygen?
2. If the molar mass of the compound is 108.1 g/mol, what's the molecular formula?
3. What's the empirical formula of a molecule consisting 55.7% carbon, 5.7% hydrogen, and 38.6% oxygen?
4. If the molar mass of the compound is 108.1 g/mol, what's the molecular formula?

Write the molecular formula of the following compounds:

5. A compound with an empirical formula of C_2H_4O and a molar mass of 88 g/mol.
6. A compound with an empirical formula of C_2H_4O and a molar mass of 176 g/mol.
7. A compound with an empirical formula of C_2H_4O and a molar mass of 176.1 g/mol.
8. A compound with an empirical formula of C_2H_4O and a molar mass of 88 g/mol.

Answer the following questions:

9. The percentage composition of a certain acid is found to be 39.7% C, 4.7% H, and 55.6% O. Determine the empirical formula of this acid.
10. The molar mass of a certain acid was determined by experiment to be 102 g/mol. What is the molecular formula?
11. A white, waxy material for candles, paraffin, consists of C, H, and N. Combustion of such compounds yields CO_2 , H_2O , and N_2 as products. If the combustion of 0.71 g of paraffin yields 0.90 g CO_2 and 0.46 g H_2O , what is its empirical formula?
12. The molar mass of paraffin is 102 g/mol. What is its molecular formula?
13. Calculate the mass percent of carbon, hydrogen, and oxygen in sucrose, $C_{12}H_{22}O_{11}$.
14. 0.165 g sample of a compound made from glucose and ribitol is decomposed. Analysis of the products shows that 0.170 g of glucose was also produced. What is the empirical formula of the compound?
15. When 1.000 g of an oxide of nitrogen (NO_x) is decomposed into the elements by heating, 0.400 g of nitrogen are produced. What is the empirical formula?
16. The compound nitrous acid has the following percent composition. What is the empirical formula?
N = 36.6% H = 5.0% O = 58.4% N = 33.0% H = 4.7% O = 62.3%
17. A compound of gases called water has an approximate molar mass of 18 g/mol. If the percent composition is as follows, what is the empirical and molecular formula of water?
O = 89.0% H = 11.1% O = 88.8% H = 11.2% O = 88.9% H