Calculating Molecular Formulas from Empirical Ones **Name**_____

1) The molar mass of a particular compound was determined to be 34.02 g/mol and it's empirical formula is HO. What is the molecular formula?

2) The empirical formula of dioxane is C_2H_4O. The molar mass of dixoane is 88.12 g/mol. What is the molecular formula?

3) The empirical formula for cyclohexane is CH_2 and its molar mass is 84.18 g/mol. What is its molecular formula?

4) The empirical formula for sugar is $C_{12}H_{22}O_{11}$ and its molar mass is 342.3 g/mol. What is the molecular formula?

5) An sample of an unknown compound was determined to be made from 8.56 g of carbon and 1.44 g of hydrogen. The molar mass of the compound was found to be 28.03 g/mol. What is the molecular formula?

6) A compound was found to have the following percent composition:
Carbon = 40.0%; Hydrogen = 6.7%; Oxygen = 53.3%
The molar mass was found to be 60.06 g/mol. What is the molecular formula?

7) The empirical formula of gasoline was found to be C_4H_9, and it was also found that 0.357 moles of this substance had a mass of 40.78 g. What is the molecular formula for gasoline?

8) (bonus) A sample of an unknown hydrocarbon was burned in a combustion reaction, reacting with oxygen to produce carbon dioxide and water. 3.25 g of carbon dioxide were produced and 0.665 g of water were produced. The molar mass of the hydrocarbon was 78.11 g/mol. What is the molecular formula?

Answers:

1) H_2O_2
2) $C_4H_8O_2$
3) C_6H_{12}
4) $C_{12}H_{22}O_{11}$
5) C_2H_4
6) $C_3H_6O_3$
7) C_8H_{18}
8) C_6H_6