

Name _____

Empirical and Molecular Formulas

Empirical formulas:

- 1) Determine the empirical formula of a compound that contains 0.852g mercury and 0.068g oxygen.
HgO
- 2) Determine the empirical formula of a compound that contains 2.24g sodium, 0.098g hydrogen, 1.173g carbon, and 4.685g oxygen.
NaHCO₃
- 3) Determine the empirical formula for a compound containing 69.95% iron and 30.05% oxygen.
Fe₂O₃
- 4) Determine the empirical formula for a compound containing 34.47% Zn, 14.75% N, and 50.77% O.
Zn(NO₃)₂
- 5) Determine the empirical formula for a sample containing 2.44g Al, 4.36g S, and 8.70g O.
Al₂(SO₄)₃
- 6) Copper (8.72g) reacts with nitrogen to form 10.0g of the copper nitride. What is the charge on the copper cation in this copper nitride?
Cu²⁺

Molecular formulas:

- 7) A compound is known to have a molar mass of 30.08g/mol. Find the molecular formula of a compound if 6.42g of the compound contains 5.130g carbon and 1.293g hydrogen.
C₂H₆
- 8) Heptane, a compound of hydrogen and carbon, has a molar mass of 86.20g/mol. If one mole of the compound contains 14.14g hydrogen, then what is the molecular formula of the compound.
C₇H₁₆
- 9) A compound is known to have a molar mass of 180.18g/mol. Find the molecular formula of the compound if it is found to contain 91.38g C, 15.38g H, and 121.74g O in a 228.50g sample.
C₆H₁₂O₆
- 10) A compound is known to have a molar mass of 118.22g/mol. Find the molecular formula of the compound if a 4.22g sample of compound contains 1.715g C, 0.5047g H, and the rest is found to be nitrogen.
C₄H₁₄N₄