

Empirical & Molecular Formula Practice

For each compound, first determine the empirical formula. Then use the molar mass to determine the molecular formula.

Atomic masses

C = 12 | H = 1 | O = 16 | N = 14 | P = 31

1. A compound contains 40.00% carbon, 6.67% hydrogen, and 53.33% oxygen by mass. Its molar mass is 180 g/mol.

Empirical formula: _____ Molecular formula: _____

2. A compound contains 85.71% carbon and 14.29% hydrogen by mass. Its molar mass is 56 g/mol.

Empirical formula: _____ Molecular formula: _____

3. A compound contains 92.31% carbon and 7.69% hydrogen by mass. Its molar mass is 78 g/mol.

Empirical formula: _____ Molecular formula: _____

4. A compound contains 30.43% nitrogen and 69.57% oxygen by mass. Its molar mass is 92 g/mol.

Empirical formula: _____ Molecular formula: _____

5. A compound contains 5.88% hydrogen and 94.12% oxygen by mass. Its molar mass is 34 g/mol.

Empirical formula: _____ Molecular formula: _____

6. A compound contains 54.55% carbon, 9.09% hydrogen, and 36.36% oxygen by mass. Its molar mass is 88 g/mol.

Empirical formula: _____ Molecular formula: _____

7. A compound contains 53.33% carbon, 11.11% hydrogen, and 35.56% oxygen by mass. Its molar mass is 90 g/mol.

Empirical formula: _____ Molecular formula: _____

8. A compound contains 44.44% carbon, 3.70% hydrogen, and 51.86% nitrogen by mass. Its molar mass is 54 g/mol.

Empirical formula: _____ Molecular formula: _____

9. A compound contains 43.66% phosphorus and 56.34% oxygen by mass. Its molar mass is 284 g/mol.

Empirical formula: _____ Molecular formula: _____

10. A compound contains 37.50% carbon, 12.50% hydrogen, and 50.00% oxygen by mass. Its molar mass is 64 g/mol.

Empirical formula: _____ Molecular formula: _____