

Pre-AP Chemistry
Unit #8—Chemical Quantities

Molecular Formulas

- Step 1 Convert mass to moles of given elements
- Step 2 Determine ratios of each element in formula
- Step 3 If ratios are not whole numbers.....
- Step 4 Write empirical formula
- Step 5 Calculate the molar mass of empirical formula
- Step 6 Determine the ratio for the molecular formula
- Step 7 Using the ratio, distribute to the empirical formula
- Step 8 Write the molecular formula

Succinic acid is a substance produced by lichens. Chemical analysis indicates it is composed of 40.68% carbon, 5.08% hydrogen, and 54.24% oxygen. It has a molar mass of 118.1 g/mol. Determine the empirical and molecular formulas.

- Step 1 Convert mass to moles of given elements. Round answers to 4th decimal.

- Step 2 Determine ratios of each element in the formula. Round answers to 1st decimal.

- Step 3 If ratios are not whole numbers.....

- Step 4 Write the empirical formula

- Step 5 Calculate molecular mass/molar mass of the empirical formula

- Step 6 Determine the ratio for the molecular formula

- Step 7 Using the ratio, distribute to the empirical formula

- Step 8 Write the molecular formula