

4. The percent composition of lycopene, which gives tomatoes, pink grapefruit and watermelons their red color, is 89.47% C and 10.53% H by mass. The potential of lycopene as a cancer-fighting agent has been extensively studied. Determine the empirical formula of lycopene.
5. Yellow ochre, a type of clay, has been used as a pigment since prehistoric times. A sample of yellow ochre was found to contain : 6.29 g Fe_2O_3 , 0.71 g H_2O . Determine the empirical formula of yellow ochre and give the systematic name the hydrate.
6. Guaifenesin is an expectorant found in over-the-counter cough and cold medicines such as Robitussin. By loosening phlegm and increasing lubrication in the lungs, it can allow for a productive cough and decreased chest congestion. A sample of guaifenesin was found to contain 9.09 g C, 1.07 g H, and 4.84 g O by mass. Guaifenesin has a gfm of 198 g/mol. Find the empirical formula and the molecular (true) formula for the compound.
7. A compound consists of 37.82% carbon, 6.36% H and 55.82% Cl. The gram formula mass of the compound is 127 g/mol.
- Find the empirical formula and the molecular (true) formula for the compound.
 - Draw at least 3 different structural isomers of this compound and name the compounds you drew.