



Method #1

$$\begin{array}{r} 85.35 \\ - 83.85g \\ \hline 1.5g CO_2 \end{array} \quad \begin{array}{r} 37.96 \\ 37.55g \\ \hline 0.41g H_2O \end{array}$$

Carbon

$$\% C \text{ in } CO_2 \quad \frac{12.01}{44.01} = 0.273 (1.5) = 0.40934 g C$$

Hydrogen

$$\% H \text{ in } H_2O \quad \frac{2.016}{18.016} = 0.1119 (0.41) = 0.04588 g H$$

Oxygen

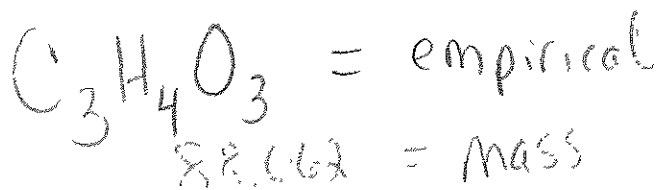
$$1.00 - 0.40934 - 0.04588 = 0.54478 g O$$

Now Empirical

$$0.40934 g C \times \frac{1 \text{ mol}}{12.01 g} = 0.03408 / 0.03405 = 1 \times 3 = 3$$

$$0.04588 g H \times \frac{1 \text{ mol}}{1.008 g} = 0.0455 / 0.03405 = 1.33 \times 3 = 4$$

$$0.54478 g O \times \frac{1 \text{ mol}}{16 g} = 0.03405 / 0.03405 = 1 \times 3 = 3$$



88.66% = mass

