

Empirical Formula Practice

Find the molecular formula for each...

1. 40.0% C; 6.71% H; 53.29% O

MM = 60

$$C: \frac{40.0}{12.0} = \frac{3.33}{3.33} = 1$$

$$H: \frac{6.71}{1.0} = \frac{6.71}{3.33} = 2$$

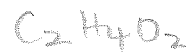
$$O: \frac{53.29}{16.0} = \frac{3.33}{3.33} = 1$$

Empirical Formula



$\xrightarrow{\times 2}$

Molecular formula



30.0 g/mol

$\xrightarrow{\times 2}$

60.0 g/mol

$$C: 1(12.0) = 12.0$$

$$H: 2(1.0) = 2.0$$

$$O: 1(16.0) = 16.0$$

30.0

$$\frac{60.0}{30.0} = 2$$

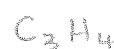
2. 89.94% C; the rest is H

MM = 120.2

$$C: \frac{89.94}{12.0} = \frac{7.495}{7.495} = 1 \xrightarrow{\times 3} 3$$

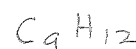
$$H: \frac{10.06}{1.0} = \frac{10.06}{7.495} = 1.34 \xrightarrow{\times 3} 4$$

Empirical



$\xrightarrow{\times 3}$

Molecular



40.0

$\xrightarrow{\times 3}$

120.2

$$\frac{120.2}{40} = 3$$

3. ^{56.34}53.34% P; 43.66% O

MM = 219.90

$$P: \frac{56.34}{31.0} = 1.81 = 1 \times 2 = 2$$

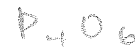
$$O: \frac{43.66}{16.0} = 2.72 = 1.5 \times 2 = 3$$

Emp



$\xrightarrow{\times 2}$

Molec



110.0

$\xrightarrow{\times 2}$

219.9

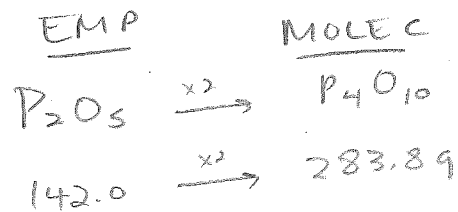
$$\frac{219.9}{110.0} = 2$$

4. 43.64% P; 56.36% O

MM = 283.89

$$P: \frac{43.64}{31.0} = 1.408 = 1 \xrightarrow{\times 2} 2$$

$$O: \frac{56.36}{16.0} = 3.5225 = 2.5 \xrightarrow{\times 2} 5$$



$$\begin{array}{r} P: 2(31.0) = 62.0 \\ O: 5(16.0) = 80.0 \\ \hline 142.0 \end{array}$$

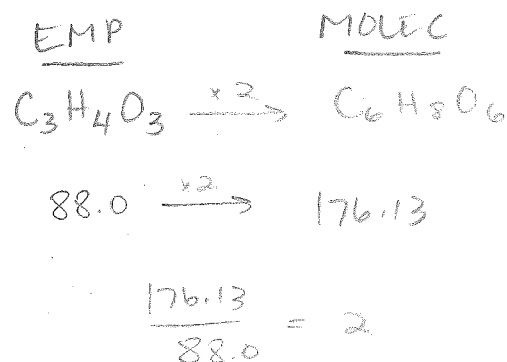
5. 40.9% C; 4.58% H; 54.5% O

MM = 176.13

$$C: \frac{40.9}{12.0} = \frac{3.4083}{3.40625} = 1 \xrightarrow{\times 3} 3$$

$$H: \frac{4.58}{1.0} = \frac{4.58}{3.40625} = 1.34 \xrightarrow{\times 3} 4$$

$$O: \frac{54.5}{16.0} = \frac{3.40625}{3.40625} = 1 \xrightarrow{\times 3} 3$$



6. 24.0% C; 3.0% H; 16.0% O; 57.0% F

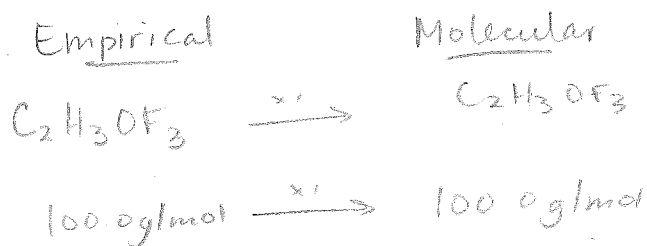
MM = 100

$$C: \frac{24.0}{12.0} = 2.0$$

$$H: \frac{3.0}{1.0} = 3.0$$

$$O: \frac{16.0}{16.0} = 1.0$$

$$F: \frac{57.0}{19.0} = 3.0$$



$$\begin{array}{r} C: 2(12.0) = 24.0 \\ H: 3(1.0) = 3.0 \\ O: 1(16.0) = 16.0 \\ F: 3(19.0) = 57.0 \\ \hline 100.0 \end{array}$$