MOLE HW #3 key

$$\frac{302\ L\,N_2}{1} \times \frac{1\ mole\ N_2}{22.4\ L\,N_2} = 13.5\ mole\ N_2$$

$$\frac{13.5\ moles\ N_2}{1} \times \frac{28g\ N_2}{1\ mole\ N_2} = 338 grams$$ (3 SF)

N_2 is a HONCIBRIF twin.

$C_{12}H_{22}O_{11}$

C $12 \times 12 = 144$

H $22 \times 1 = 22$

O $11 \times 16 = 176$

342g/mole

% comp

C $\frac{144}{342} \times 100\% = 42\%$

H $\frac{22}{342} \times 100\% = 6\%$

O $\frac{176}{342} \times 100\% = 51.5\%$

99.5%

Rounding error

185g Sugar x .42 = 78g Carbon

185g x .515 = 95.3g oxygen

Empirical formulas

$C_6H_{12} \longrightarrow CH_2$

$C_{10}H_{22} \longrightarrow C_5H_{11}$

$CH_4 \longrightarrow CH_4$

$C_{10}H_8 \longrightarrow C_5H_4$

$C_3H_6 \longrightarrow CH_2$

$C_3H_4 \longrightarrow C_3H_4$

$C_{22}H_{44} \longrightarrow CH_2$

$C_2H_5OH \longrightarrow C_2H_5OH$

$C_{32}H_{66} \longrightarrow C_{16}H_{33}$

empirical formulas are math-written like a formula.

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mole HW #5

NH_4HSO_4 (NH_4^{+1} HSO_4^{-1})

NH_4HSO_4

N	$1 \times 14 = 14$	
H	$5 \times 1 = 5$	
S	$1 \times 32 = 32$	
O	$4 \times 16 = 64$	
		115 g/mole

% comp by mass

N	$\frac{14}{115} \times 100\% =$	12%
H	$\frac{5}{115} \times 100\% =$	4%
S	$\frac{32}{115} \times 100\% =$	28%
O	$\frac{64}{115} \times 100\% =$	56%
		100% ✓

Cr^{+3} $C_2H_3O_2^{-1}$

$Cr(C_2H_3O_2)_3$

Cr $1 \times 52 = 52$

C $6 \times 12 = 72$

H $9 \times 1 = 9$

O $6 \times 16 = 96$

229 g/mole

% comp by mass

Cr $52/229 \times 100\% = 23\%$

C $72/229 \times 100\% = 31\%$

H $9/229 \times 100\% = 4\%$

O $96/229 \times 100\% = 42\%$

100% ✓

$Al(OH)_3$

Al $1 \times 27 = 27$

O $3 \times 16 = 48$

H $3 \times 1 = 3$

78 g/mole

% comp by mass

Al $27/78 \times 100\% = 35\%$

O $48/78 \times 100\% = 62\%$

H $3/78 \times 100\% = 4\%$

101%

34.6%
61.5%
3.8%
99.9%

Check ← Close enough

$Mg(ClO_2)_2$

Mg $1 \times 24 = 24$

Cl $2 \times 35 = 70$

O $4 \times 16 = 64$

158 g/mole

% comp by mass

Mg $24/158 \times 100\% = 15\%$

Cl $70/158 \times 100\% = 44\%$

O $64/158 \times 100\% = 41\%$

100% ✓