5.23g glucose = ____ atoms Oxygen.

(3) ⇒ #, unit, substance

1 mol $C_6H_{12}O_6$

MOLE RATIO

| 5.23g $C_6H_{12}O_6$ | 1 mole $C_6H_{12}O_6$ | 6 moles O | $6\times10^{23}$ atoms O |
|---|---|---|---|
| | 180 g $C_6H_{12}O_6$ | 1 mole glucose | 1 mole O |

$= 1.046\times10^{23}$ atoms O

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$2\,H_{2(g)} + O_{2(g)} \rightarrow 2H_2O_{(g)}$

If we have 5L of $O_{2(g)}$, how many grams of $H_{2(g)}$ are needed for all 5L to react?

| 5L $O_{2(g)}$ | 1 mol $O_2$ | 2 mol $H_2$ | 2 g $H_2$ |
|---|---|---|---|
| | 22.4 L | 1 mol $O_2$ | 1 mol $H_2$ |

$= 0.893$ g

Sep 20-8:05 AM

# Empirical Analysis

1:2:1

$CH_2O$

$C_3H_6$ molec.

$CH_2$ → emp

"Simplified"

Empirical formula → Lowest ratio

$C_6H_{12}O_6$

Molecular formula → not simplified

Tells exact # present.

ORGANIC #C

Sep 20-8:11 AM

# Emp Analysis

$C_xH_yO_z$ $C_3H_yO_3$

40.92% C, 4.58% H, 54.50% O

g g g

Divide by smallest #

C $\frac{40.92\text{ g C}}{12\text{ g C}} \cdot \frac{1\text{ mole C}}{} = \frac{3.41\text{ mole C}}{3.41} = 1 * 3 = 3$

H $\frac{4.58\text{ g H}}{1\text{ g H}} \cdot \frac{1\text{ mole H}}{} = \frac{4.58\text{ mole H}}{3.41} = 1.34 * 3 = 4$

O $\frac{54.50\text{ g O}}{16\text{ g O}} \cdot \frac{1\text{ mole O}}{} = \frac{3.41\text{ mole O}}{3.41} = 1 * 3 = 3$

Sep 20-8:17 AM

Last step

0.33 or 0.66 (× 3)

0.5 (× 2)

0.25 or 0.75 (× 4)

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## Combustion Analysis

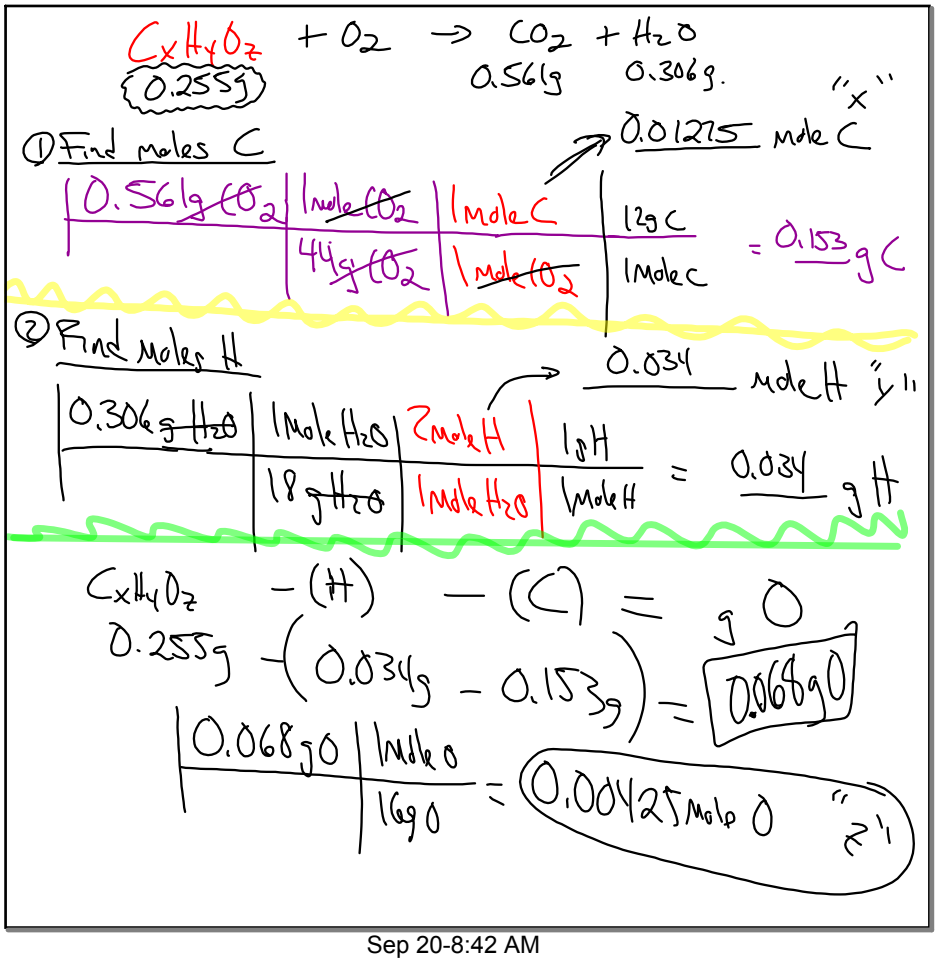
$C_xH_yO_z + O_2 \rightarrow CO_2 + H_2O$

0.255g HC → 0.561g $CO_2$, 0.306g $H_2O$

Isopropanol $C_xH_yO_z$

Find empirical formula

Sep 20-8:31 AM

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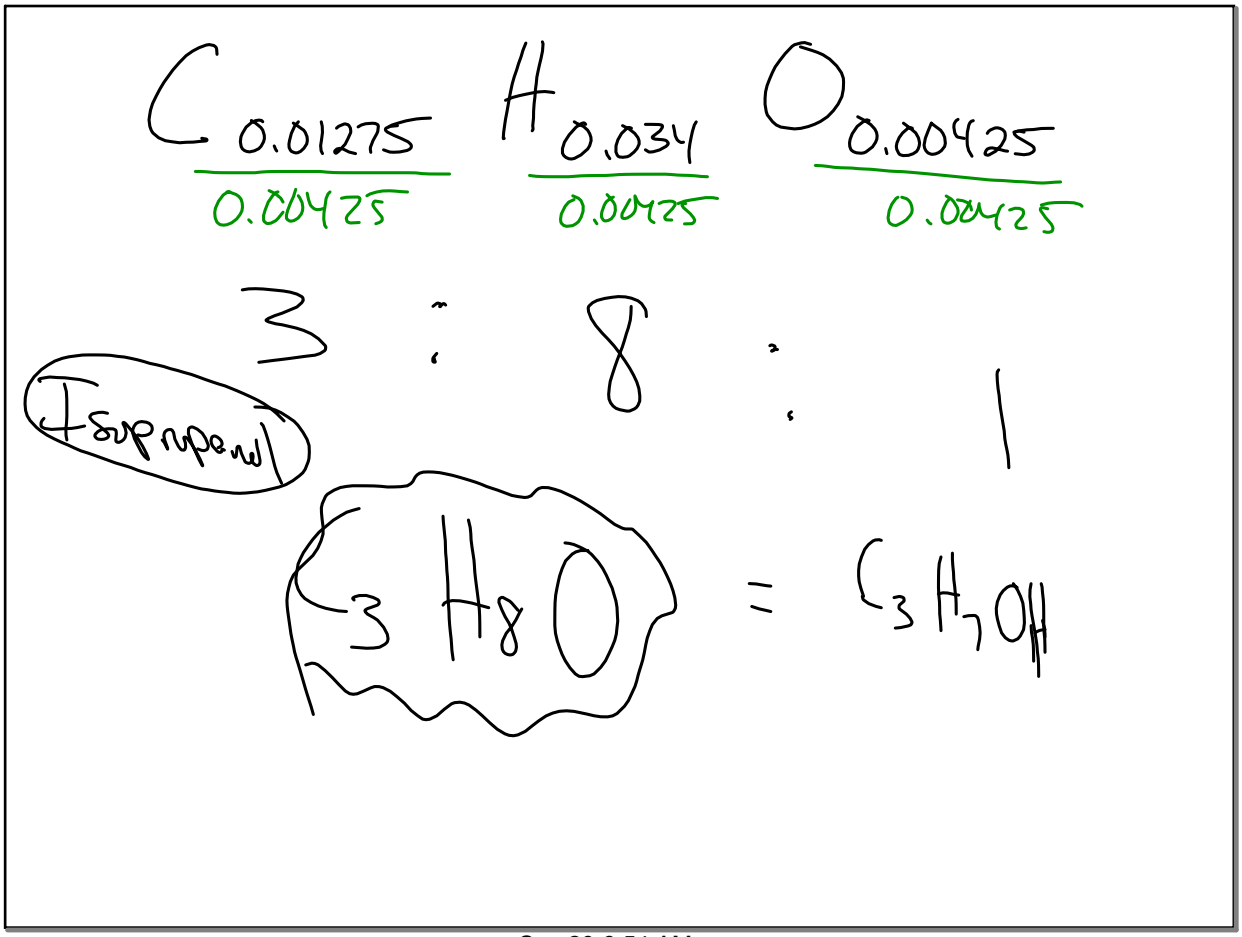


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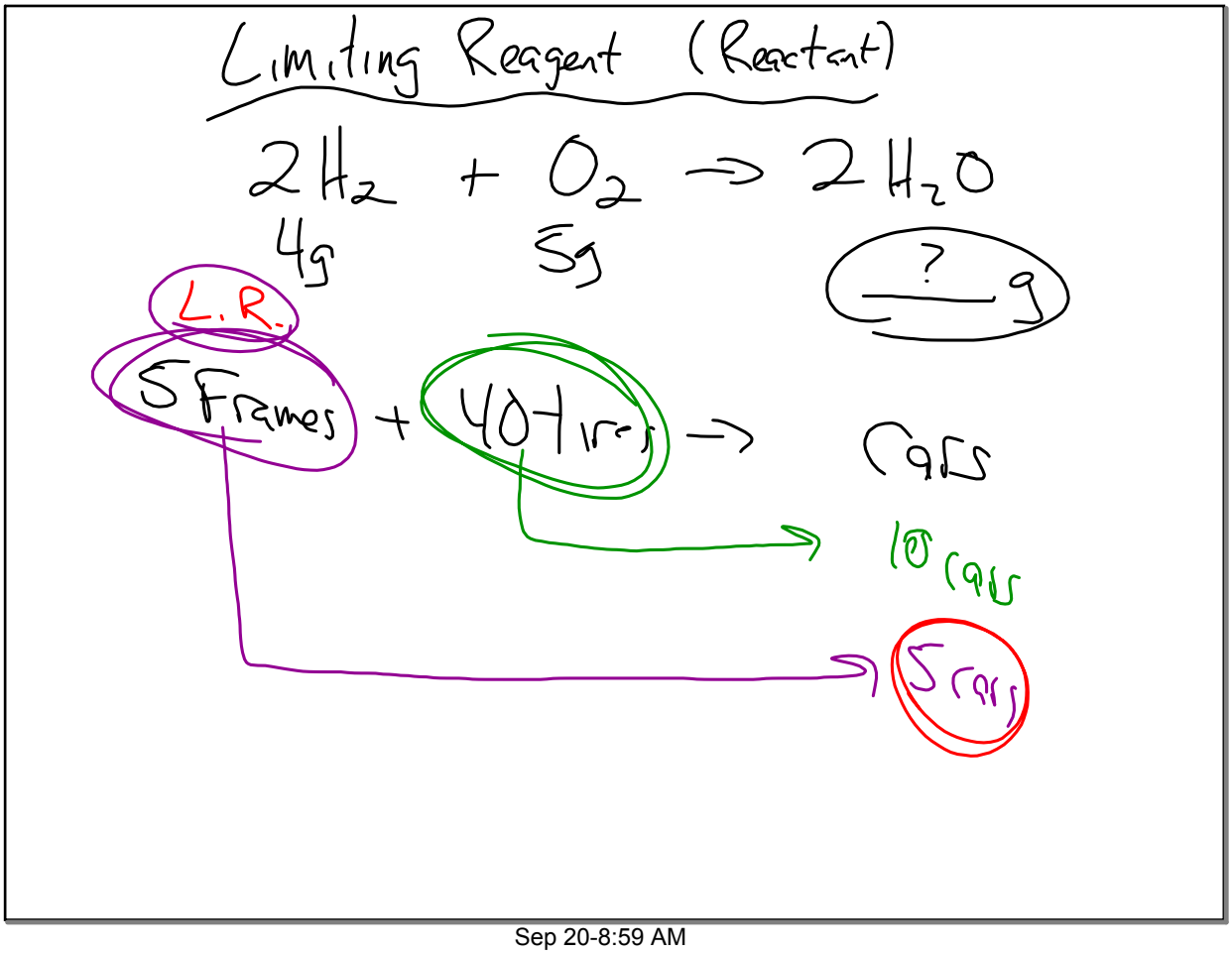


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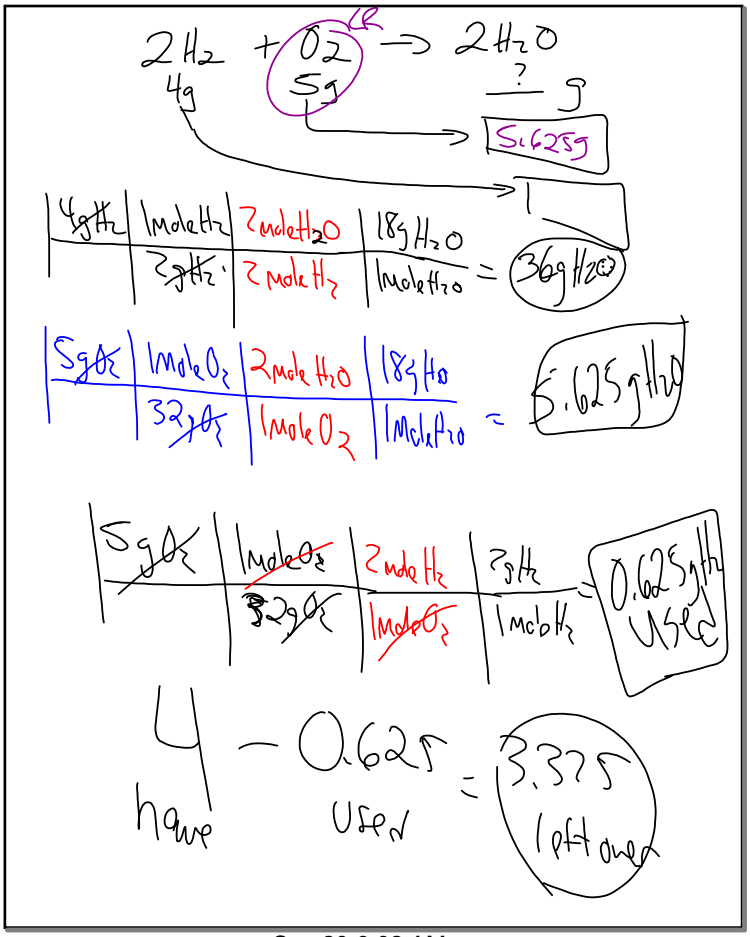


Sep 20-9:02 AM