

$250g$ \rightarrow $C_{13}H_{18}O_2$
 $13(12) + 18(1) + 2(16) = 256$
 $20g/mole$ $\times 2$
 $MW = 412 g/mole$
 $C_{26}H_{36}O_4$ $\times 2$
 $\% \rightarrow$ empirical formula
 check with mass
 $emp \approx MW$
 Molecular

Sep 25-8:06 AM

Combustion Analysis $C_xH_yO_z + O_2 \rightarrow CO_2 + H_2O$
 $0.255g$ $0.56g$ $0.306g$
 $0.867g$

① Find moles of each (subscript)

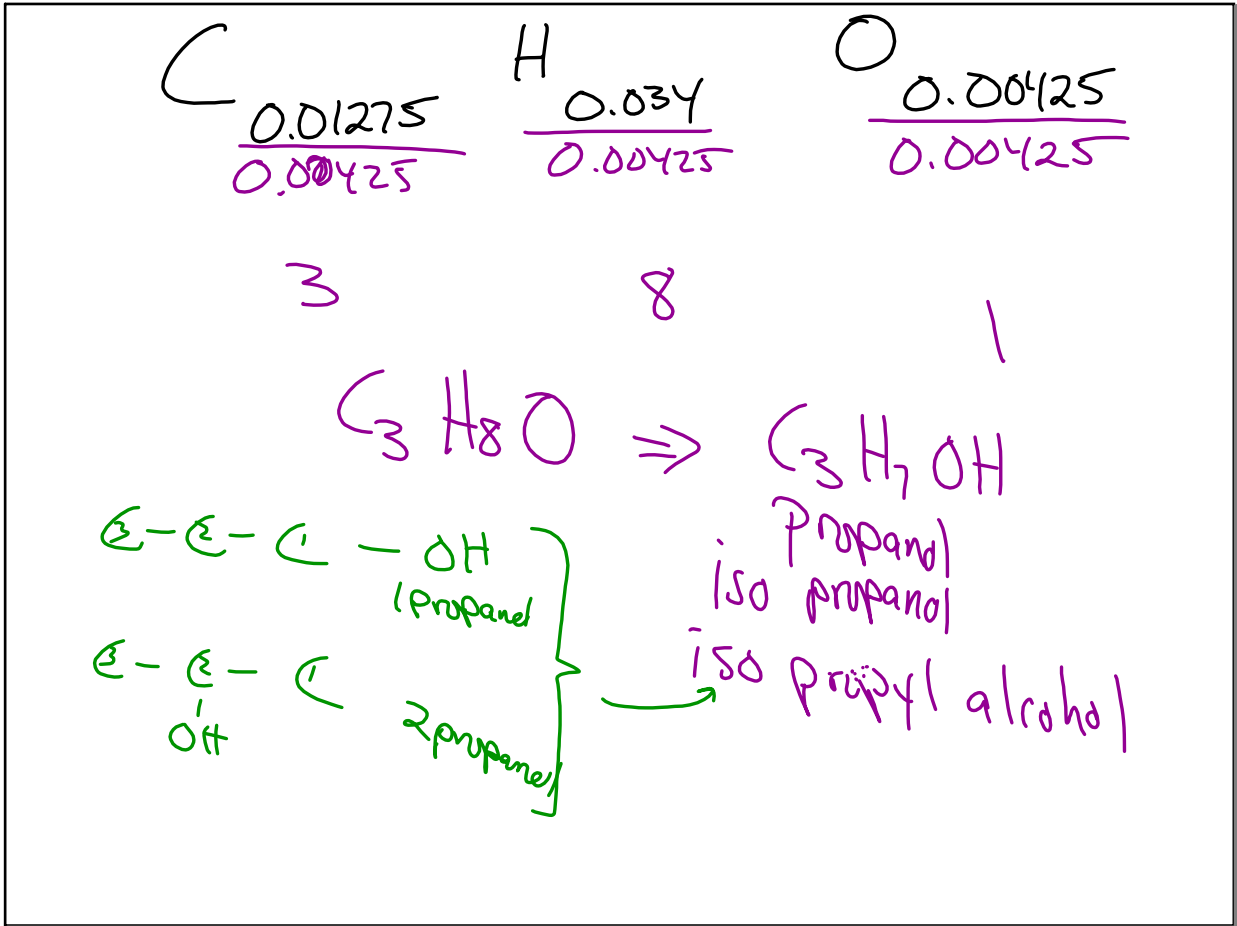
C $\frac{0.56g CO_2}{44g CO_2} \frac{1 mole CO_2}{1 mole CO_2} = 0.01275 mole C$ ($0.153g C$)

H $\frac{0.306g H_2O}{18g H_2O} \frac{2 mole H}{1 mole H_2O} = 0.034 mole H$ ($0.034g H$)

O Total mass compound $0.255g - (0.153g C + 0.034g H) = 0.068g O$

$\frac{0.068g O}{16g O} = 0.00425 mole O$

Sep 25-8:20 AM



Sep 25-8:42 AM

Limiting Reactant/Reagent

$$\begin{array}{ccc}
 \underline{1} \text{ Car frames} & + \underline{4} \text{ Tires} & \rightarrow \underline{1} \text{ Car} \\
 \text{(10)} & \text{(30)} & \text{(7)} \\
 \text{need 40} & &
 \end{array}$$

← Used up can't make any more product.

Sep 25-8:51 AM

$2 \text{H}_2(\text{g}) + 1 \text{O}_2(\text{g}) \rightarrow 2 \text{H}_2\text{O}(\text{g})$

5g 8g ^{used!}_{up} 9g

Do each separately and see who produces least amount of product.

①

5g H ₂	1 mole H ₂	2 mole H₂O	18g H ₂ O
	2g H ₂	2 mole H₂	1 mole H ₂ O

 = 45g H₂O

②

8g O ₂	1 mole O ₂	2 mole H ₂ O	18g H ₂ O
	32g O ₂	1 mole O ₂	1 mole H ₂ O

 = 9g H₂O <P

How much H₂ is left over?

8g O ₂	1 mole O ₂	2 mole H ₂	2g H ₂
	32g O ₂	1 mole O ₂	1 mole H ₂

 = 1g H₂ Used

5g H₂ start - 1g H₂ used = 4g H₂ left over!

Sep 25-8:56 AM

Theoretical yield

how close to actual

$$\frac{\text{get exp}}{\text{Actual}} \times 100$$

$$\frac{4}{5} \times 100 = 80\%$$

Success rate

% Error

How close to actual value

$$\% = \frac{|\text{Actual} - \text{experimental}|}{\text{Actual}} \times 100$$

(ex) Actual = 5g
You get 4g

$$\frac{5-4}{5} \times 100 = 20\%$$

Error rate.

Sep 25-9:16 AM

3.77 $C_6H_6 + Br_2 \rightarrow C_6H_5Br + HBr$

30g C_6H_6 (LR) 65g Br_2 (LR) $\xrightarrow{\text{Theoretical yield}}$ 157g C_6H_5Br (LR)

Actual = 42.3g

30g C_6H_6	1 mole C_6H_6	1 mole C_6H_5Br	157g C_6H_5Br	60.38g C_6H_5Br (LR)
	78g C_6H_6	1 mole C_6H_6	1 mole C_6H_5Br	

65g Br_2	1 mole Br_2	1 mole C_6H_5Br	157g C_6H_5Br	63.78g C_6H_5Br
	160g Br_2	1 mole Br_2	1 mole C_6H_5Br	

$\frac{60.38}{42.3} = 142\%$ 42% error

Sep 25-9:21 AM

PS 3-1
 # 1-25 ODD
 and #10

Sep 25-9:30 AM