DA RULZ

Empirical Analysis

% → empirical formula (Reduced #'s)

↓

Molecular formula (Not Reduced.)

✓ ① % → grams.
NO CALC

✓ ② (Math) g → moles

③ Divide by smallest # moles you calc.

④ LCF

0.33 / 0.66	0.5	0.25 / 0.75
*3	*2	*4

Sep 22-7:36 AM

3.50 c ① 59% C g, 7.1% H g, 26.2% O g, 7.7% N g

Molecular mass = 180 g

$\frac{59\,g\,C}{} \cdot \frac{1\,mole\,C}{12\,g\,C} = \frac{4.92\,mole\,C}{0.55} = 8.95$ (9)

$\frac{7.1\,g\,H}{} \cdot \frac{1\,mole\,H}{1\,g\,H} = \frac{7.1\,mole\,H}{0.55} = 12.9$ (13)

$\frac{26.2\,g\,O}{} \cdot \frac{1\,mole\,O}{16\,g\,O} = \frac{1.64\,mole\,O}{0.55}$ 2.98 (3)

$\frac{7.7\,g\,N}{} \cdot \frac{1\,mole\,N}{14\,g\,N} = \frac{0.55\,mole\,N}{0.55} = 1$ (1)

emp. formula

$C_9H_{13}O_3N$

emp. mass

9(12)+13(1)+3(16)+14

183

Sep 22-7:57 AM

Propane C_3H_8 → Emp + Molecular

Pentene → C_5H_{10} → Molecular 70

→ CH_2 → emp. (14) *5

$$\frac{70}{14} = 5$$

Sep 22-8:06 AM

3.50g 75.69%C, 8.8%H, 15.51%O, MM = 206 g/mole

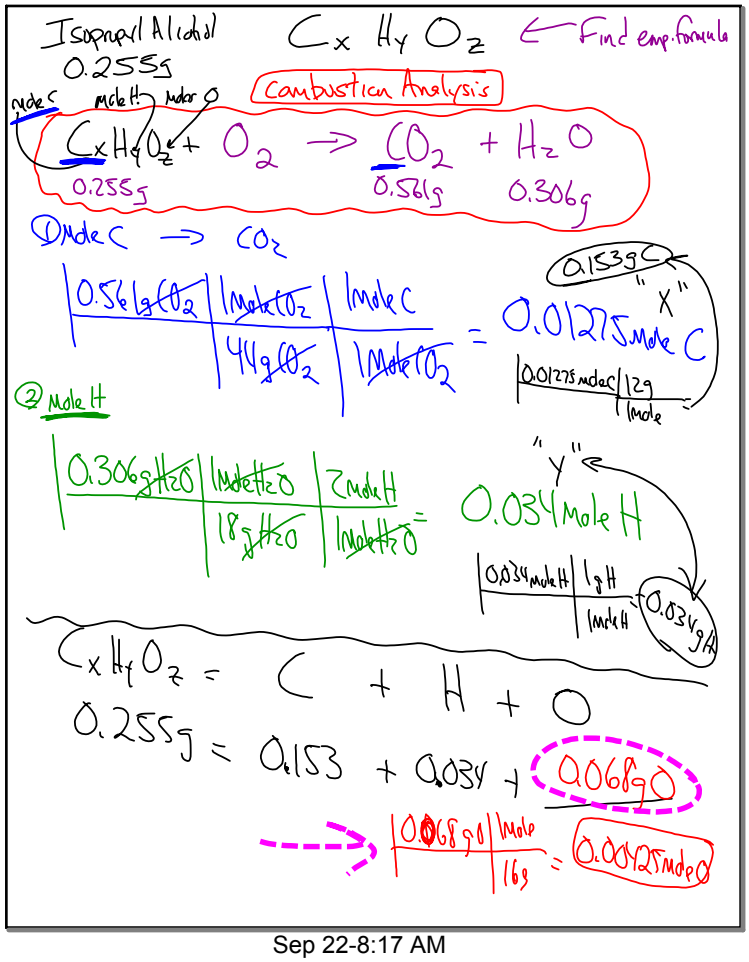
$$\frac{75.69\text{g C}}{12\text{g C}} \left|\frac{1\text{ mole C}}{}\right. = \frac{6.3\text{ mole C}}{0.97} = 6.5 * 2 = 13$$

$$\frac{8.8\text{g H}}{1\text{g H}} \left|\frac{1\text{ mole H}}{}\right. = \frac{8.8\text{ mole H}}{0.97} = 9.\cancel{0} * 2 = 18$$

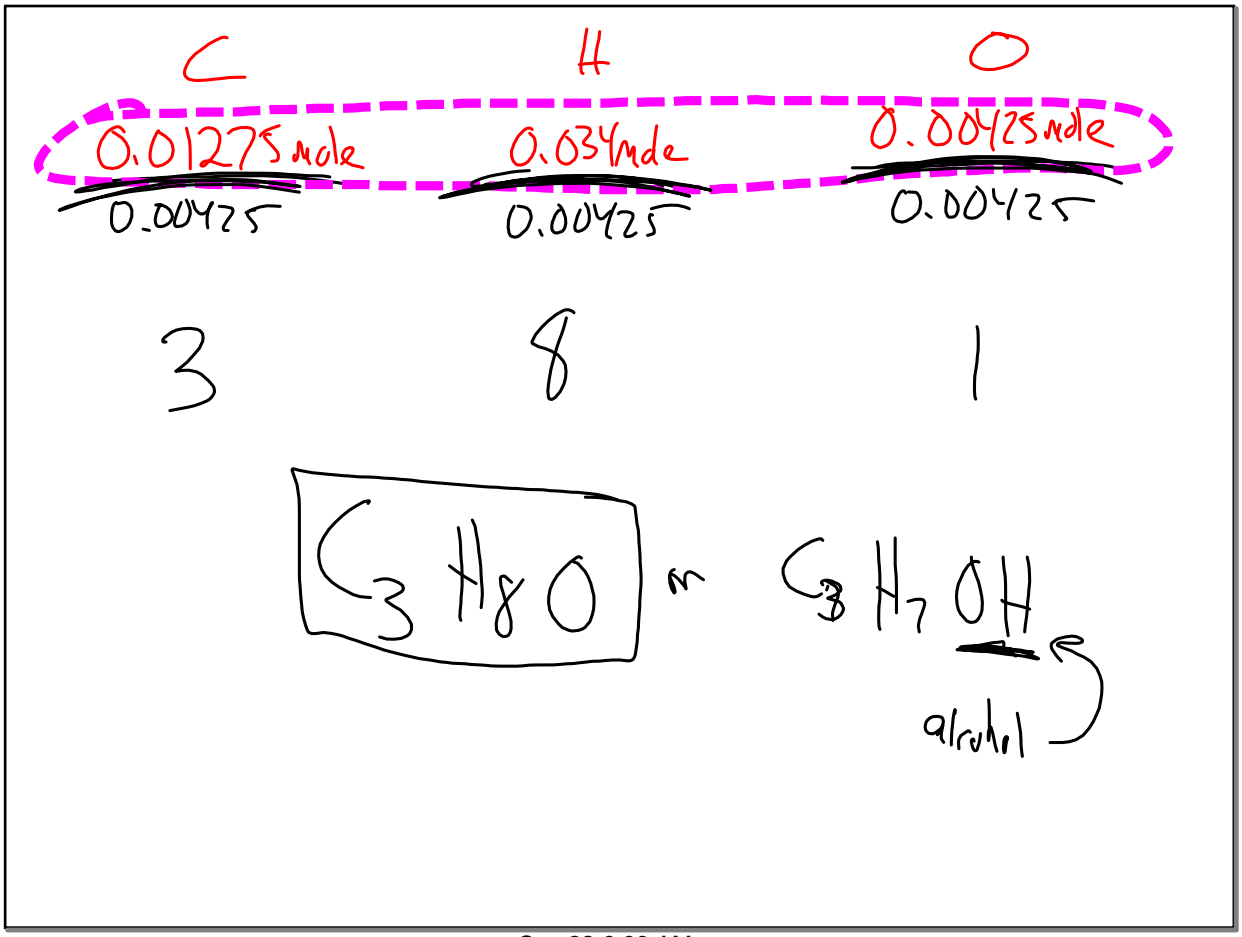
$$\frac{15.51\text{g O}}{16\text{g O}} \left|\frac{1\text{ mole O}}{}\right. = \frac{0.97\text{ mole O}}{0.97} = 1 * 2 = 2$$

emp. formula $C_{13}H_{18}O_2$ (206) ← molecular formula

Sep 22-8:10 AM



Sep 22-8:17 AM



Sep 22-8:33 AM

$C_6H_{12}O_6 + 6\,O_2 \Rightarrow 6\,CO_2 + 6\,H_2O$

1g (LR) 10g — g

$\left|\frac{1\,g\,C_6H_{12}O_6}{1}\right|\left|\frac{1\,mole\,C_6H_{12}O_6}{180\,g\,C_6H_{12}O_6}\right|\left|\frac{6\,mole\,H_2O}{1\,mole\,C_6H_{12}O_6}\right|\left|\frac{18\,g\,H_2O}{1\,mole\,H_2O}\right| = 0.6\,g\,H_2O$ (LR)

$\left|\frac{10\,g\,O_2}{1}\right|\left|\frac{1\,mole\,O_2}{32\,g\,O_2}\right|\left|\frac{6\,mole\,H_2O}{6\,mole\,O_2}\right|\left|\frac{18\,g\,H_2O}{1\,mole\,H_2O}\right| = 5.625\,g\,H_2O$

Sep 22-8:43 AM

Limiting Reagents (Limiting Reactant)

↳ INFO ON BOTH Reactants.

1 Car frame + 4 Car tires → 1 Car

20 32 (LR) ? 8

Do each one separately

$\left|\frac{20\,car\,frames}{1}\right|\left|\frac{1\,car}{1\,car\,frame}\right| = 20\,cars$

$\left|\frac{32\,car\,tires}{1}\right|\left|\frac{1\,car}{4\,car\,tires}\right| = 8\,cars$ L.R.

Sep 22-8:53 AM

$C_6H_{12}O_6 + 6\,O_2 \Rightarrow 6\,CO_2 + 6\,H_2O$

1g (LR) 10g — g

How much O_2 is left over?

$$\frac{1\,g\,C_6H_{12}O_6}{} \left| \frac{1\,mole\,C_6H_{12}O_6}{180\,g\,C_6H_{12}O_6} \right| \frac{6\,mole\,O_2}{1\,mole\,C_6H_{12}O_6} \left| \frac{32\,g\,O_2}{1\,mole\,O_2} \right| = 1.07\,g\,O_2 \text{ used}$$

$10 - 1.07 = 8.93\,g\,O_2$ left over.

Sep 22-9:09 AM

HW 3.74

Sep 22-9:13 AM