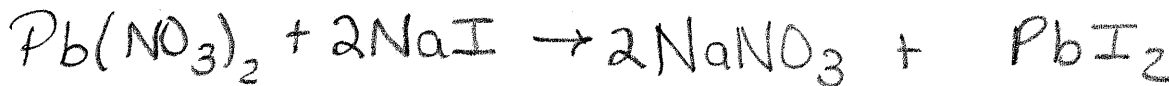


Limiting Reactant Worksheet

Using your knowledge of stoichiometry and limiting reagents, answer the following questions:

- 1) Write the balanced equation for the reaction of lead (II) nitrate with sodium iodide to form sodium nitrate and lead (II) iodide:



- 2) If you start with 25.0 grams of lead (II) nitrate and 15.0 grams of sodium iodide, how many grams of sodium nitrate can be formed?

MM
 $\text{Pb}(\text{NO}_3)_2$
 207.2
 28.0
 96.0
 331.2 g
 NaNO_3
 23
 14
 48
 85g

$$\frac{25.0 \text{ g Pb}(\text{NO}_3)_2}{331 \text{ g Pb}(\text{NO}_3)_2} \times \frac{1 \text{ mol Pb}(\text{NO}_3)_2}{1 \text{ mol Pb}(\text{NO}_3)_2} \times \frac{2 \text{ mol NaNO}_3}{1 \text{ mol Pb}(\text{NO}_3)_2} \times \frac{85.0 \text{ g NaNO}_3}{1 \text{ mol NaNO}_3} = 12.8 \text{ g NaNO}_3$$

$$\frac{15.0 \text{ g NaI}}{150 \text{ g NaI}} \times \frac{1 \text{ mol NaI}}{1.50 \times 10^2 \text{ g NaI}} \times \frac{2 \text{ mol NaNO}_3}{2 \text{ mol NaI}} \times \frac{85.0 \text{ g NaNO}_3}{1 \text{ mol NaNO}_3} = 8.50 \text{ g NaNO}_3$$

- 3) What is the limiting reagent in the reaction described in problem 2?

Since the NaI produces less NaNO_3 - NaI is limiting.

- 4) How much of the non-limiting reagent will be left over from the reaction in problem #2?

$$\frac{8.50 \text{ g NaNO}_3}{85.0 \text{ g NaNO}_3} \times \frac{1 \text{ mol NaNO}_3}{1 \text{ mol NaNO}_3} \times \frac{1 \text{ mol Pb}(\text{NO}_3)_2}{2 \text{ mol NaNO}_3} \times \frac{331 \text{ g Pb}(\text{NO}_3)_2}{1 \text{ mol Pb}(\text{NO}_3)_2} = 16.55 \text{ g Pb}(\text{NO}_3)_2$$

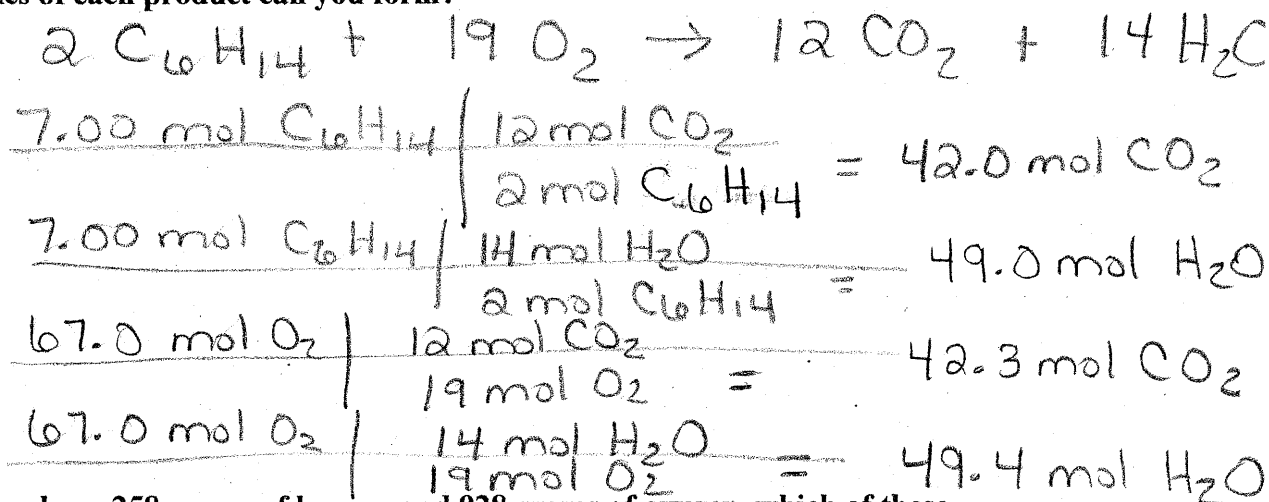
$$25.0 - 16.55 = 8.5 \text{ g of Pb}(\text{NO}_3)_2 \text{ remains}$$

SI Chemistry
Limiting Reactant - Worksheet II

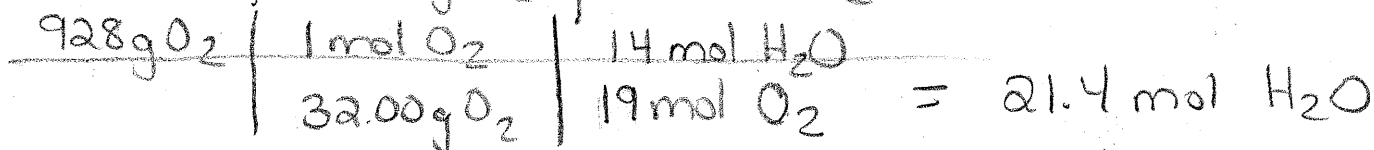
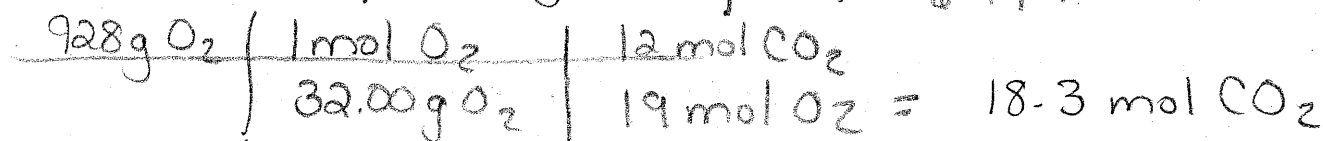
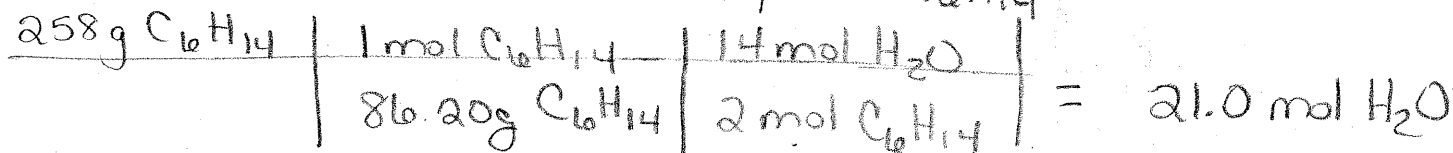
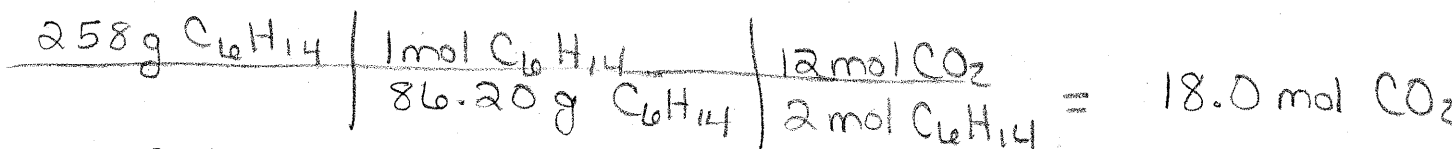
SHOW ALL WORK!

1. If you have 7.00 moles of hexane and 67.0 moles of oxygen and a combustion reaction "goes to completion", which of these reactants is limiting? How many moles of each product can you form?

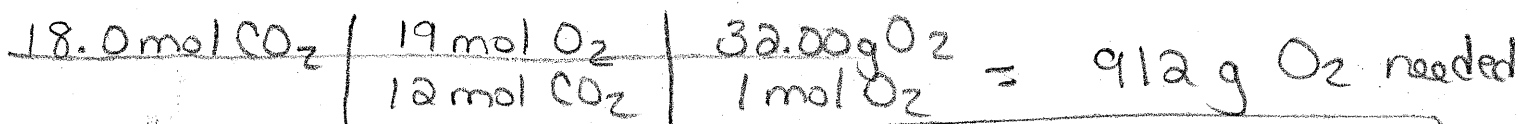
∴
C₆H₁₄
is
limiting
and you
can produce
42.0 mol CO₂
49.0 mol H₂O



2. If you have 258 grams of hexane and 928 grams of oxygen, which of these reactants is limiting? How many moles of each product can you form? How much of the excess reactant is used in the reaction? How many grams of excess reactant will remain?

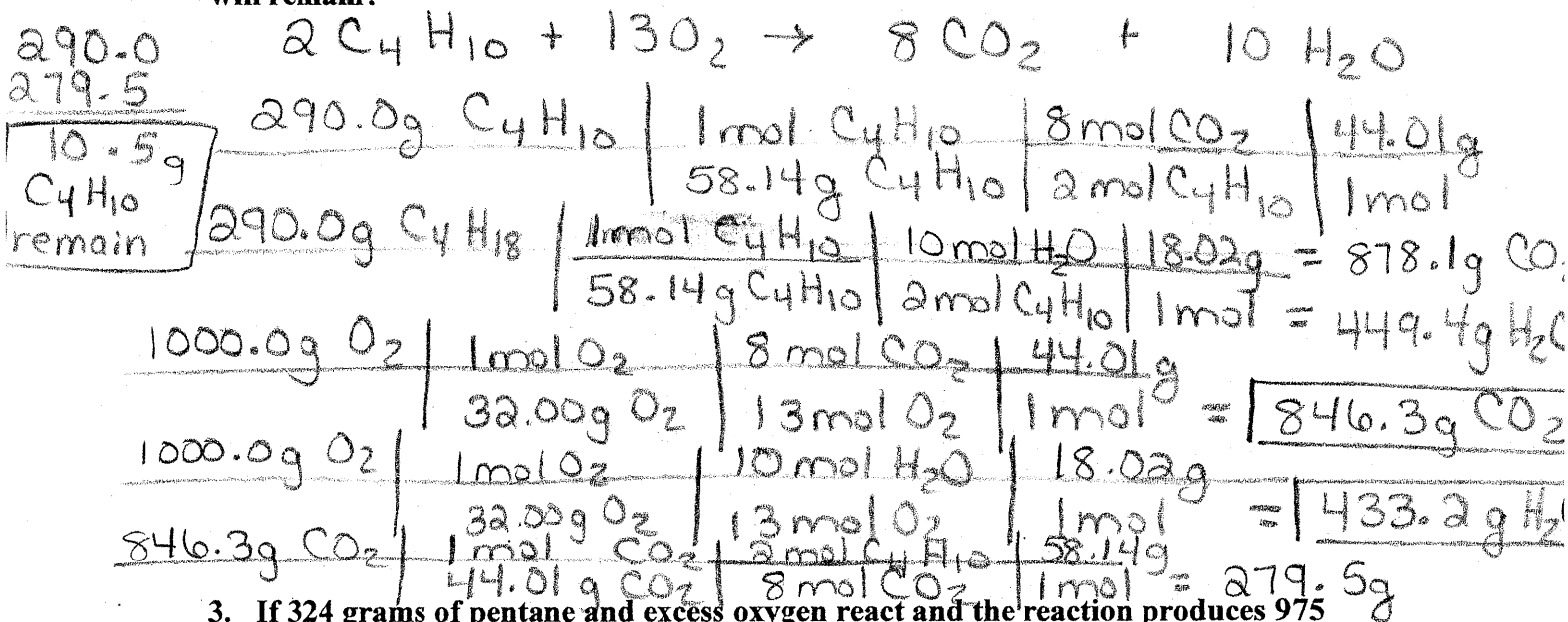


C₆H₁₄ is limiting - you can produce 18.0 mol CO₂ and 21.0 mol H₂O

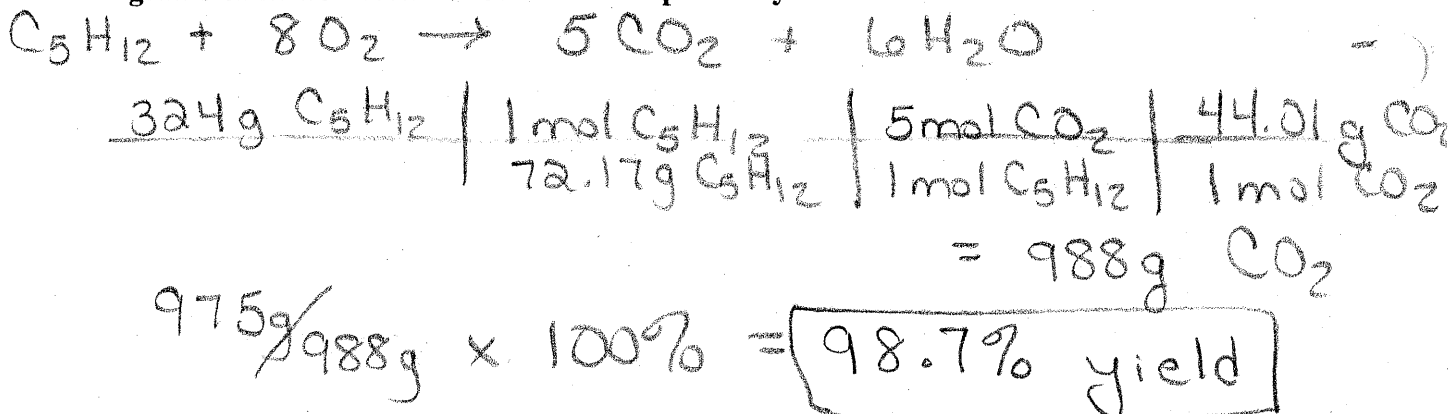


928 g - 912 g = 16 g O₂ remain

3. If you have 290.0 grams of butane and 1000.0 grams of oxygen, which reactant limits the amount of products produced in a complete combustion reaction? How many grams of each product can you form? How many grams of the excess reactant will remain?



3. If 324 grams of pentane and excess oxygen react and the reaction produces 975 grams of carbon dioxide. Calculate the percent yield of carbon dioxide.



5. If you have 11.3 moles of pentane and excess oxygen and you produce 55.0 moles of carbon dioxide, what is the percent yield? What is the theoretical yield? How much water would this reaction yield?

