(#6-2)

Chemistry

Stoichiometry

Particles, Limiting and Excess #1

Review

1. $PbS + 4H_2O_2 \rightarrow PbSO_4 + 4\ H_2O$

500 molecules ? ? ?

I.	500	excess	0	0
S.	-500	-2000	+500	+2000
E.	0			

$500^{PbS} \cdot \frac{4\ H_2O_2}{1\ PbS} = 2000\ H_2O_2$

$500^{PbS} \cdot \frac{1}{1} = 500\ PbSO_4$

For the following problems determine the "?", limiting and excess. Balance and determine products as needed. **(Show all work)**

2. $2\ Al + 3S \rightarrow Al_2S_3$ (Al: LR)

250 atoms 700 atoms ?

I.	250	700	0
S.	-250	-375	
E.	0	+325	+125

$250^{Al} \cdot \frac{3\ S}{2\ Al} = 375$ S needed (S)

Al → Al_2S: $250 \cdot \frac{1\ Al_2S}{2\ Al} = 125$

3. $2CH_3OH + 3\ O_2 \rightarrow 2\ CO_2 + 4H_2O$ (O_2: LR)

99,000 molecules 15,000. molecules

I.	99000	15000		
S.	-10000	-15000	+10000	+20000
E.	+89000	0		

$15000^{O_2} \cdot \frac{2\ CH_3OH}{3\ O_2} = 10000$

$15000 \cdot \frac{4}{3} = 20000$

4. $2\ NH_3 + CuO + O_2 \rightarrow N_2 + 3\ H_2O + Cu$ (NH_3: LR)

3000 molecules Excess 2700molecules ? ? ?

I.	3000	excess	2700			
S.	-3000	-1500	-1500	+1500	+4500	+1500
E.	0		1200			

$3000^{NH_3} \cdot \frac{1\ O_2}{2\ NH_3} = 1500$

$3000 \cdot \frac{3}{2} = 4500$

LR — Balance me ☺

5. $2AgNO_3 + Na_2CrO_4 \rightarrow 2NaNO_3(aq) + Ag_2CrO_{4(s)}$

250 440

I.	250	440		
S.	-250	-125	+250	+125
E.	0	315		

$250 \cdot \frac{1}{2} = 125$