

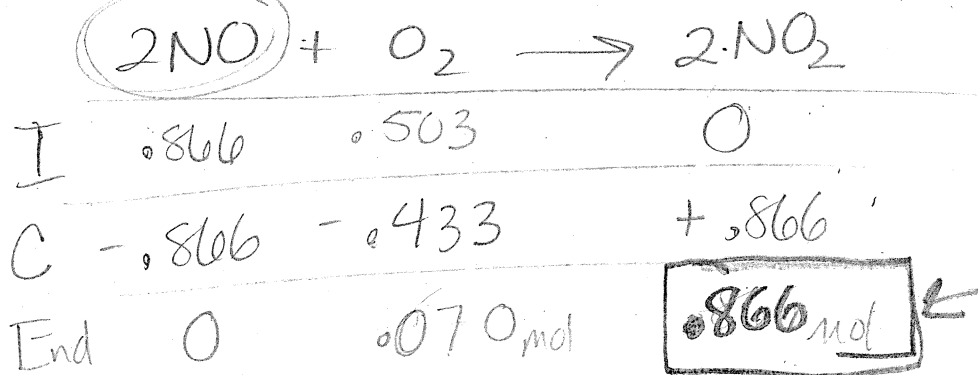
## Limiting Reagents Worksheet

1. Nitric oxide (NO) reacts with oxygen gas to form nitrogen dioxide (NO<sub>2</sub>), a dark brown gas:

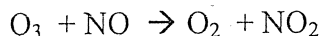


In one experiment 0.866 mol of NO is mixed with 0.503 mol of O<sub>2</sub>.

- Determine the limiting reagent **NO**
- Calculate the number of moles of NO<sub>2</sub> produced.

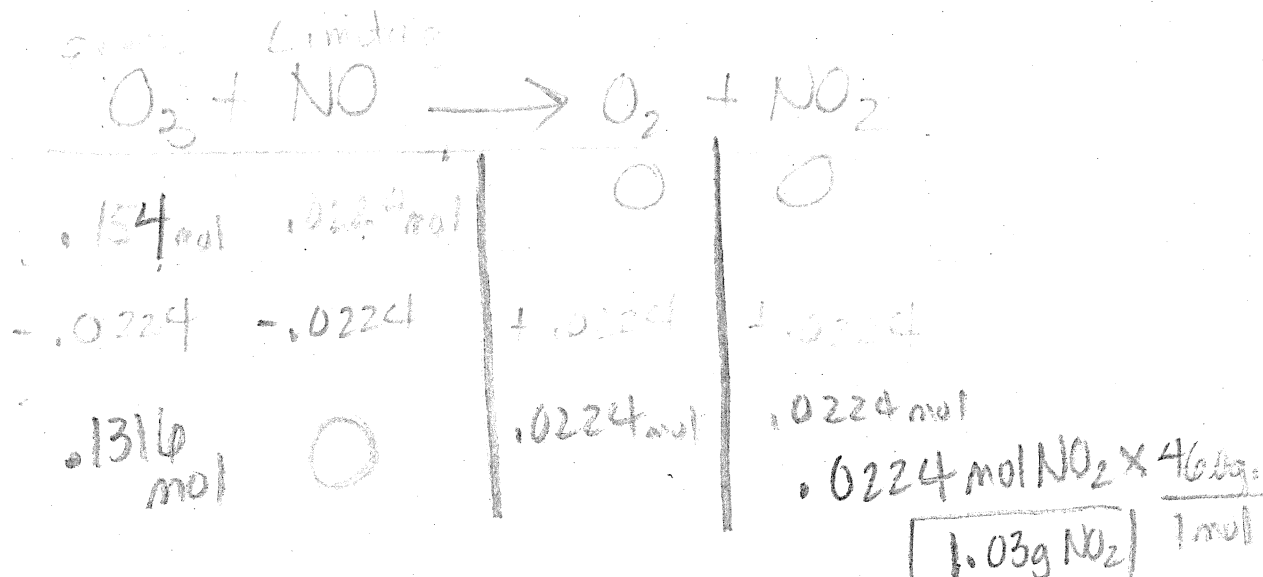


2. The depletion of ozone (O<sub>3</sub>) in the stratosphere has been a matter of great concern among scientists in recent years. It is believed that ozone can react with nitric oxide (NO) that is discharged from high altitude planes. The reaction is

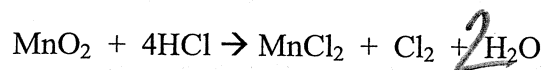


If 7.40 g of O<sub>3</sub> reacts with 0.670 g of NO,

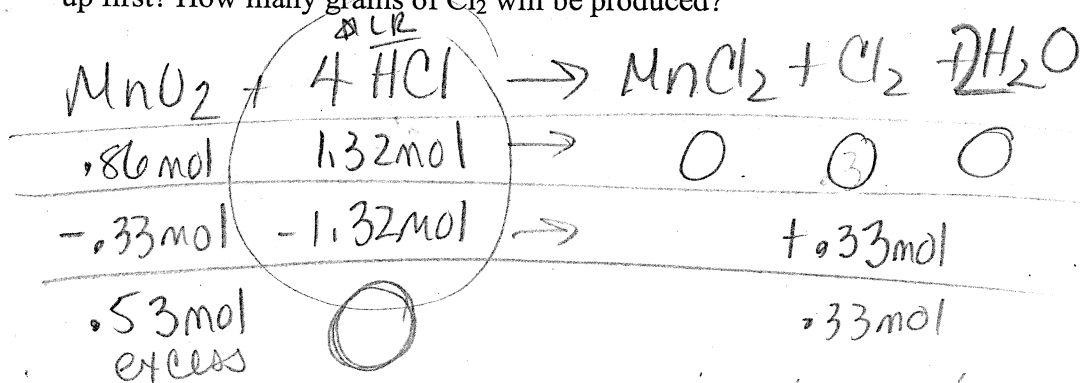
- Which compound will be the limiting reagent?
- How many grams of NO<sub>2</sub> will be produced?
- Calculate the number of moles of the excess reagent remaining at the end of the reaction.



3. Consider the reaction

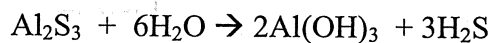


If 0.86 mol of  $\text{MnO}_2$  and 48.2 g of  $\text{HCl}$  react, which reagent will be used up first? How many grams of  $\text{Cl}_2$  will be produced?



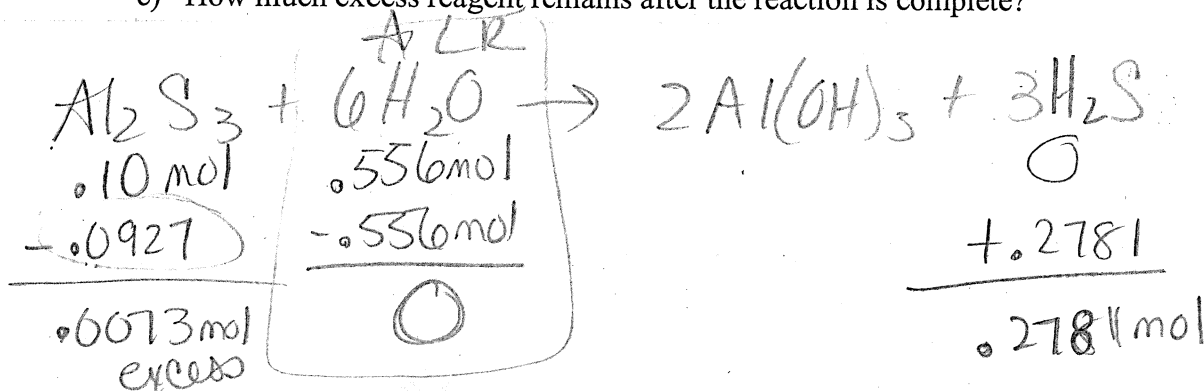
$$.33 \text{ mol} \times 71 \text{ g/mol} = 23.4 \text{ g Cl}_2$$

4. 15.00 g of aluminum sulfide and 10.00 g of water react until the limiting reagent is used up:



$$\frac{15}{150} = .10 \text{ mol}$$

- a) Which is the limiting reagent?  
b) What is the maximum mass of hydrogen sulfide that can form?  
c) How much excess reagent remains after the reaction is complete?



$$.2781 \text{ mol} \times \frac{34 \text{ g}}{\text{mol}} = 9.455 \text{ g H}_2\text{S}$$