

Limiting & Excess Reactant Practice #3

Name: _____

1. Given the following reaction: $\text{___ C}_3\text{H}_8 + \text{___ O}_2 \text{ -----> ___ CO}_2 + \text{___ H}_2\text{O}$

- If you start with 14.8 g of C_3H_8 and 3.44 g of O_2 , determine the limiting reactant
- Determine the number of moles of carbon dioxide produced
- Determine the number of grams of H_2O produced
- Determine the number of grams of excess reactant left

2. Given the following equation: $\text{___ Al}_2(\text{SO}_3)_3 + \text{___ NaOH} \text{ -----> ___ Na}_2\text{SO}_3 + \text{___ Al(OH)}_3$

- If 10.0 g of $\text{Al}_2(\text{SO}_3)_3$ is reacted with 10.0 g of NaOH , determine the limiting reactant
- Determine the number of moles of Al(OH)_3 produced
- Determine the number of grams of Na_2SO_3 produced
- Determine the number of grams of excess reactant left over in the reaction

3. Given the following equation: $\text{___ Al}_2\text{O}_3 + \text{___ Fe} \text{ -----> ___ Fe}_3\text{O}_4 + \text{___ Al}$

- If 25.4 g of Al_2O_3 is reacted with 10.2 g of Fe , determine the limiting reactant
- Determine the number of moles of Al produced
- Determine the number of grams of Fe_3O_4 produced
- Determine the number of grams of excess reactant left over in the reaction

4. Consider the reaction: $\text{___ I}_2\text{O}_5(\text{g}) + \text{___ CO}(\text{g}) \text{ -----> ___ CO}_2(\text{g}) + \text{___ I}_2(\text{g})$

- 80.0 grams of diiodine pentoxide, I_2O_5 , reacts with 28.0 grams of carbon monoxide, CO . Determine the mass of iodine, I_2 , which could be produced?
- If, in the above situation, only 0.160 moles of iodine was produced, what mass of iodine was produced?

5. Consider the reaction: $\text{___ Zn} + \text{___ S} \rightarrow \text{___ ZnS}$

If 25.0 g of zinc and 30.0 g of sulfur are mixed:

- Which chemical is the limiting reactant?
- How many grams of ZnS will be formed?
- How many grams of the excess reactant will remain after the reaction is over?

6. a) Which element is in excess when 3.00 grams of Mg is ignited in 2.20 grams of pure oxygen?

b) What mass is in excess?

c) What mass of MgO is formed?

7. Silver nitrate, AgNO_3 , reacts with iron (III) chloride, FeCl_3 , to give silver chloride, AgCl , and iron (III) nitrate, $\text{Fe}(\text{NO}_3)_3$. In a particular experiment, it was planned to mix a solution containing 25.0 g of AgNO_3 with another solution containing 45.0 grams of FeCl_3 .

a) Write the chemical equation for the reaction.

b) Which reactant is the limiting reactant?

c) What is the maximum number of moles of AgCl that could be obtained from this mixture?

d) What is the maximum number of grams of AgCl that could be obtained?

e) How many grams of the reactant in excess will remain after the reaction is over?

8. Calcium carbonate and sulfur dioxide will synthesize: $\text{___ CaCO}_3 + \text{___ SO}_2 + \text{---} \rightarrow \text{___ CaSO}_3$

In a particular experiment, 255 g of CaCO_3 was exposed to 135 g of SO_2 in the presence of an excess amount of the other chemicals required for the reaction.

a) What is the theoretical yield of CaSO_3 ?

b) If only 198 g of CaSO_3 was isolated from the products, what was the percentage yield of CaSO_3 in this experiment?