Chemistry Unit 8 Review

## Chemical Reaction Model (Quantitative)

## Describe the quantitative characteristics of all chemical reactions. Explain how we can use these features to make quantitative predications for a specific reaction.

**Reaction Terminology**

Theoretical yield is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Actual yield is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Percent yield = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ / \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Limiting reactant is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Excess reactant is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Applying the Model**

1. Tin (II) chloride, SnCl2, reacts with oxygen gas to produce tin (II) oxide and chlorine dioxide.

If 0.750 moles of O2 were consumed using this chemical reaction, what massof   
tin (II) oxide would be produced?

2. Magnesium sulfate, MgSO4, decomposes when heated to produce magnesium sulfide and oxygen gas.

If 6.32 grams of MgSO4 were heated in a test tube, what mass of oxygen gas should be released?

3. What mass of CO was used up in the reaction with an excess of oxygen gas if 24.7 g of carbon dioxide is formed? How many liters of carbon dioxide are formed if the reaction occurs at STP? 2 CO + O2 🡪 2 CO2

4. The reaction between 32.0 g of CH4 and excess oxygen gas produces 75.9 g of CO2 gas and some water. Determine the percent yield.

5. If 6.51 g of copper is reacted with 28.4 g of silver nitrate, the products will be copper (II) nitrate and silver metal. What is the theoretical mass of silver that will be produced?

If the actual yield of silver was 14.3 g, what is the percent yield of the reaction?

6. Oxygen gas reacts with silver to produce silver oxide.

Chemical reaction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
  
Sketch 4 atoms of silver and 10 molecules of oxygen gas in the container on the left. In the right container, sketch the contents *after* the reaction is complete.  
  
  
 What is the limiting reactant?  
  
 How many atoms or molecules of the excess reactant remain?