Limiting Reactants Practice

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. A sample of a solution containing 100 grams of copper (II) chloride is reacted with a solution containing 40 grams of sodium hydroxide.
   1. Write the balanced chemical equation for the reaction, using the state symbols.
   2. Determine the mass in grams of each product produced and the amount of the excess reactant that remains.  
        
      Product 1 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ : Amount Produced \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
        
      Product 2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ : Amount Produced \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
        
      Excess Reactant \_\_\_\_\_\_\_\_\_\_\_\_ : Amount Remaining \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. A sample of a solution containing 90 grams of iron (III) nitrate is reacted with a solution containing 20 grams of potassium hydroxide.
   1. Write the balanced chemical equation for the reaction, using the state symbols.
   2. Determine the mass in grams of each product produced and the amount of the excess reactant that remains.  
        
      Product 1 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ : Amount Produced \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
        
      Product 2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ : Amount Produced \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
        
      Excess Reactant \_\_\_\_\_\_\_\_\_\_\_\_ : Amount Remaining \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Forty grams of magnesium is reacted with an excess of oxygen. How much oxygen is used in the reaction?
4. In a container, 100 grams of iron is combined with 100 grams of oxygen to form iron (II) oxide.
   1. How much iron (II) oxide is produced?
   2. Which element is the limiting reactant? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. How much of the excess reactant does not react?
5. Seventy grams of silver are allowed to react with 50 grams of bromine to form silver bromide, a compound found in eyeglass lenses.
   1. How much silver bromide is produced?
   2. Which element is the limiting reactant? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. How much of the excess reactant does not react?
6. In a container, 30 grams of potassium is combined with 25 grams of nitrogen and potassium nitride is formed.
   1. How much potassium nitride is formed?
   2. What is the limiting reactant? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. How much of the excess reactant remains?
7. And experiment combiners 1000 grams of sodium chloride is with 2000 grams of barium phosphate.
   1. Write a balanced equation for the reaction.
   2. What is the limiting reactant? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. How much of the excess reactant remains?

1. **BONUS**! A chemist burns 160.0 g of Al in excess O2 from the air over a Bunsen burner to produce aluminum oxide, Al2O3.
   1. Use the balanced equation to solve for how much aluminum oxide she could *theoretically* produce, given that the limiting reactant is Al.
   2. She produces 260.0 g of solid aluminum oxide in the crucible. What is the percent yield of this experiment? (Just try it!!!!! Think about what a percent is…)