Limiting Reagent Worksheet #2 Name: _____

1. Consider the reaction

$I_2O_5(g) + 5\ CO(g) \text{ -------> } 5\ CO_2(g) + I_2(g)$

a) 80.0 grams of iodine(V) oxide, I_2O_5, reacts with 28.0 grams of carbon monoxide, CO. Determine the mass of iodine I_2, which could be produced?

b) If, in the above situation, only 0.160 moles, of iodine, I_2 was produced.
   i) what mass of iodine was produced?
   ii) what percentage yield of iodine was produced?

2. Zinc and sulphur react to form zinc sulphide according to the equation.

Zn + S ---------> ZnS

If 25.0 g of zinc and 30.0 g of sulphur are mixed,
a) Which chemical is the limiting reactant?
b) How many grams of ZnS will be formed?
c) How many grams of the excess reactant will remain after the reaction is over?
d) If the yield of the reaction was 87%, what was the actual yield?

3. Silver nitrate, $AgNO_3$, reacts with ferric chloride, $FeCl_3$, to give silver chloride, AgCl, and ferric nitrate, $Fe(NO_3)_3$. 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?

1. a. 50.7g I_2
   b. i. 40.6
      ii. 80.1%

2. b. 37.1g
   c. 17.7g
   d. 32.3 g

3. c. 0.147 mole
   d. 21.1 g
   e. 37.1 g