Limiting Reactant Practice

For questions 1-5 use the following reaction: When copper (II) chloride reacts with sodium nitrate, copper (II) nitrate and sodium chloride are formed.

1)   Write the balanced equation for the reaction given above:

2)   If 15 grams of copper (II) chloride react with 20 grams of sodium nitrate, how much sodium chloride can be formed?

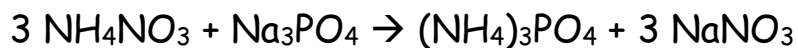3)   What is the limiting reagent for the reaction in #2? _____

4)   What is the excess reactant in this reaction and how many grams are unused?

5)   If 11.3 grams of sodium chloride are formed in the reaction described in problem #2, what is the percent yield of this reaction?

For the following reaction, find the following:

a)   Which of the reactant is the limiting reagent?

b)   What is the maximum amount of each product that can be formed?

c)   How much of the other reactant is left over after the reaction is complete?

6)   Consider the following reaction:

$$3\ NH_4NO_3 + Na_3PO_4 \rightarrow (NH_4)_3PO_4 + 3\ NaNO_3$$

Answer the questions above, assuming we started with 30 grams of ammonium nitrate and 50 grams of sodium phosphate.

For the following reaction, find the following:

a)   Which of the reactant is the limiting reagent?
b)   What is the maximum amount of each product that can be formed?
c)   How much of the other reactant is left over after the reaction is complete?

7)   Consider the following reaction:

$$3\ CaCO_3 + 2\ FePO_4 \rightarrow Ca_3(PO_4)_2 + Fe_2(CO_3)_3$$
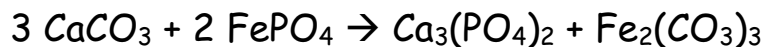
Answer the questions at the top of this sheet, assuming we start with 100 grams of calcium carbonate and 45 grams of iron (III) phosphate.