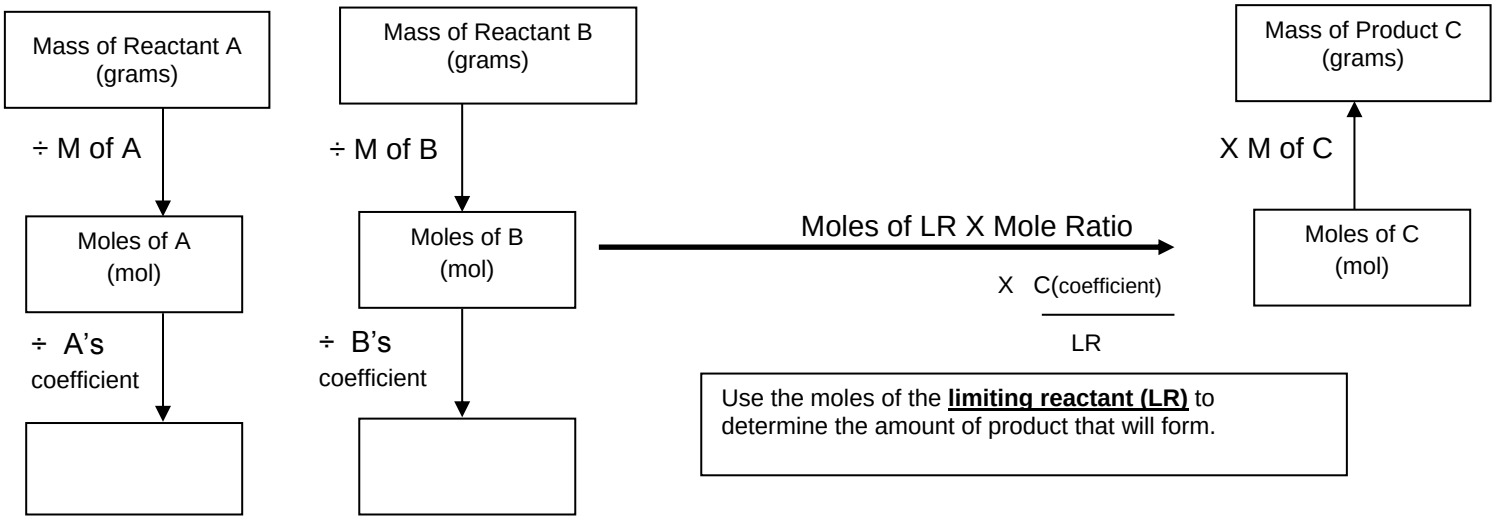
WODSS SCIENCE
SCH 3UI

Name: _____
Date: _____

The Limiting Reactant

Steps to Solving Limiting Reactant Problems (when given mass of reactants)



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Limiting Reactant Problem Set

Complete the following questions from the textbook page 321: Q# 2,4,5,7,10

1. The following balanced chemical equation shows the reaction of aluminum with copper(II) chloride. If 0.25 g of aluminum reacts with 0.51 g of copper(II) chloride, determine the limiting reactant.
   $2Al(s) + 3CuCl_2(aq) \rightarrow 3Cu(s) + 2AlCl_3(aq)$

2. Hydrogen fluoride is a highly toxic gas. It is produced by the double displacement reaction of calcium fluoride with concentrated sulfuric acid.
   $CaF_2(s) + H_2SO_4(l) \rightarrow 2HF(g) + CaSO_4(s)$
   Determine the limiting reactant when 10.0 g of CaF_2 reacts with 15.5 g of H_2SO_4.

3. Use the following equations to answer the questions below:
   $6ClO_2(g) + 3H_2O(l) \rightarrow 5HClO_3(aq) + HCl(aq)$
   a) If 71.00 g of ClO_2 is mixed with 19.00 g of water, what is the limiting reactant?
   b) What mass of $HClO_3$ is expected in part a)?

4. A student performs the following reaction with 61.8 g of MnI_2 and 41.8 g of F_2.
   $2MnI_2(s) + 13F_2(g) \rightarrow 2MnF_3(s) + 4IF_5(l)$
   a) What is the limiting reactant?
   b) What mass of MnF_3 is expected?
   c) How many formula units of MnF_3 will be produced?

5. A student mixes 5.3 g of barium chloride and 6.9 g of sodium sulfate. What mass of barium sulfate is expected?

ANSWERS: 1. $CuCl_2$ 2. CaF_2 3. a) ClO_2 b) 74.08g 4. a) F_2 b) 18.9 g c) 1.02×10^{23} formula units 5. 5.9g