The answers to these problems should be written in to your Interactive Notebook on page 8. If you run out of space, you can continue working on the practice space at the back of your Interactive Notebook.

Example Question and Solution :

1) $N_2 + 3 H_2 ---> 2 NH_3$

Write the molar ratios for N_2 to H_2 and H_2 to NH_3.

1 mole N_2	or	3 moles H_2	3 moles H_2	or	2 moles NH_3
3 moles H_2		1 mole N_2	2 moles NH_3		3 moles H_2

A. How many moles of NH_3 will be produced from 6.0 moles of Hydrogen gas)?

$$6.0 \text{ moles } H_2 \left(\frac{2 \text{ moles } NH_3}{3 \text{ moles } H_2} \right) = 4 \text{ moles } NH_3$$

Now you try it out!

2) $2 SO_2 + O_2 ---> 2 SO_3$

   A.) Write the molar ratios for O_2 to SO_3 and O_2 to SO_2.

   B.) How many moles of Oxygen gas are needed to produce 10 moles of SO_3 gas?

   C.) How many moles of SO_3 will be produced form 2.5 moles of SO_2 in part B?

   D.) How many moles of oxygen gas are needed to exactly use up 2.5 moles of SO_2?

3) $PCl_3 + Cl_2 ---> PCl_5$

   (A) Write the molar ratios for PCl_3 to Cl_2 and PCl_3 to PCl_5.

   (B) How many moles of PCl_5 will be produced from 2.0 moles of PCl_3?

   (C) How many moles of PCl_5 can be produced from 10.0 moles of Cl_2.

4) $4 NH_3 + 3 O_2 ---> 2 N_2 + 6 H_2O$
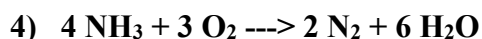
   (A) Write the molar ratios for NH_3 to N_2 and H_2O to N_2.

   (B) How many moles of ammonia gas are needed (with excess O_2 gas) to make 0.5 moles of Nitrogen gas?

   (C) If 24 moles of the product water are used, how much nitrogen gas will also be produced?

5) $Fe_2O_3 + 3 CO ---> 2 Fe + 3 CO_2$
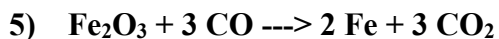
   (A) Write the molar ratios for CO to CO_2 and Fe to CO.

   (B) How many moles of carbon monoxide gas are needed with excess Fe_2O_3 gas to make 50 moles of Fe?

   (C) If exactly 15 moles of Fe metal are produced during the reaction, and all of the reactants were used up by the end of the reaction, how many moles of CO were present when before the reaction started.