Stoichiometry: Mole-Mole Problems
1. $N_2 + H_2 \rightarrow NH_3$
   How many moles of hydrogen are needed to completely react with two moles of nitrogen?
2. $KClO_3 \rightarrow KCl + O_2$
   How many moles of oxygen are produced by the decomposition of six moles of potassium chlorate?
3. $Zn + HCl \rightarrow ZnCl_2 + H_2$
   How many moles of hydrogen are produced from the reaction of three moles of zinc with an excess of hydrochloric acid?
4. $C_3H_8 + O_2 \rightarrow CO_2 + H_2O$
   How many moles of oxygen are necessary to react completely with four moles of propane (C_3H_8)?
5. $K_3PO_4 + Al(NO_3)_3 \rightarrow KNO_3 + AlPO_4$
   How many moles of potassium nitrate are produced when two moles of potassium phosphate react with two moles of aluminum nitrate?

Stoichiometry: Mass-Mass Problems
1. $KClO_3 \rightarrow KCl + O_2$
   How many grams of potassium chloride are produced if 25g of potassium chlorate decompose?
2. $N_2 + H_2 \rightarrow NH_3$
   How many grams of hydrogen are necessary to react completely with 50.0g of nitrogen in the above reaction?
3. How many grams of ammonia are produced in the reaction in problem 2?
4. $AgNO_3 + BaCl_2 \rightarrow AgCl + Ba(NO_3)_3$
   How many grams of silver chloride are produced from 5.0g of silver nitrate reacting with an excess of barium chloride?
5. How much barium chloride is necessary to react with the silver nitrate in problem 4?

Stoichiometry: Volume- Volume Problems
1. $N_2 + H_2 \rightarrow NH_3$
   What volume of hydrogen is necessary to react with five liters of nitrogen to produce ammonia? (STP)
2. What volume of ammonia is produced in the reaction in Problem1?
3. $C_3H_8 + O_2 \rightarrow CO_2 + H_2O$
   If 20 liters of oxygen are consumed in the above reaction, how many liters of carbon dioxide are produced?
4. $H_2O \rightarrow H_2 + O_2$
   If 30mL of hydrogen are produced in the above reaction, how many milliliters of oxygen are produced?
5. $CO + O_2 \rightarrow CO_2$
   How many liters of carbon dioxide are produced if 75 liters of carbon monoxide are burned in oxygen? How many liters of oxygen are necessary?

Stoichiometry: Mixed Problems
1. $N_2 + H_2 \rightarrow NH_3$
   What volume of NH_3 at STP is produced if 25.0g of N_2 is reacted with an excess of H_2?
2. $KClO_3 \rightarrow KCl + O_2$
   If 5.0g of $KClO_3$ is decomposed, what volume of O_2 is produced at STP?
3. How many grams of KCl are produced in Problem 2?
4. $Zn + HCl \rightarrow ZnCl_2 + H_2$
   What volume of hydrogen at STP is produced when 2.5 g of zinc react with an excess of hydrochloric acid?
5. $H_2SO_4 + NaOH \rightarrow H_2O + Na_2SO_4$
   How many molecules of water are produced if 2.0g of sodium sulfate are produced in the above reaction?
6. $AlCl_3 \rightarrow Al + Cl_2$
   If 10.0g of aluminum chloride are decomposed, how many molecules of Cl_2 are produced?