

Problem Set #9

Name:

1.) Given the equation: $_ \text{H}_3\text{PO}_4 + _ \text{Ca}(\text{OH})_2 \rightarrow _ \text{H}_2\text{O} + _ \text{Ca}_3(\text{PO}_4)_2$

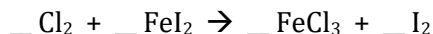
If 1.67 moles of $\text{Ca}(\text{OH})_2$ completely react with excess H_3PO_4

(A) How many moles of H_3PO_4 are needed to react with the $\text{Ca}(\text{OH})_2$?

(B) How many moles of H_2O can be produced?

(C) How many moles of $\text{Ca}_3(\text{PO}_4)_2$ can be produced?

2.) How many moles of chlorine are needed to produce 35.2 grams of FeCl_3 according to this equation?



3.) How many grams of calcium carbide are needed to completely react with 2.942 moles of water?



4.) (A) How many grams of CuI can be produced from the complete reaction of 43.97 grams of KI ?



(Balancing hint: get an even number of I s on the product side first)

(B) If a student produces 22.17 grams of CuI in an experiment, what is the student's percent yield?

5.) Given the equation: $_ (\text{NH}_4)_2\text{Cr}_2\text{O}_7 \rightarrow _ \text{Cr}_2\text{O}_3 + _ \text{H}_2\text{O} + _ \text{N}_2$

Answer these questions using the equation above:

(A) What type of reaction is represented?

(B) How many moles of water are produced by the complete decomposition of 28 grams of $(\text{NH}_4)_2\text{Cr}_2\text{O}_7$?

(C) What is the name of the reactant compound?

6.) How many grams of ammonia (NH_3) are needed to react completely with oxygen to produce 35.4 grams of water?



7.) Consider the reaction: $_ \text{Al} + _ \text{Cl}_2 \rightarrow _ \text{Al}_2\text{Cl}_6$

(A) If 40.5 grams of aluminum are reacted with 213 grams of chlorine, how many grams of Al_2Cl_6 can be produced?

(B) How many grams of excess reactant remain after the reaction is complete?