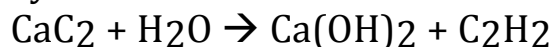


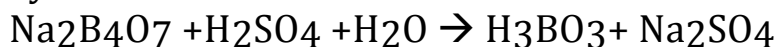
Stoichiometry Test Study Guide

- 1). Thionyl chloride, SOCl_2 , is used as a powerful drying agent. The thionyl chloride reacts with water as shown by the reaction: $\text{SOCl}_2(\text{l}) + \text{H}_2\text{O}(\text{l}) \rightarrow \text{SO}_2(\text{g}) + 2\text{HCl}(\text{g})$
- A) 35.0 grams of thionyl chloride is placed in a glass containing 500.0 grams of water. How many grams of sulfur dioxide will be created?
- B) After the reaction is complete how many grams of the excess reactant will remain unreacted?
- 2). For each of the unbalanced reactions below 5.00 grams of each reactant is mixed together.
- A) Balance the reaction.
- B) Find the mass of the **first** product made by the reaction.
- C) Determine which substance is the limiting reactant.
- D) Determine the mass of the excess substance that remains after the reaction is complete.

System #1



System #2



- 3). Consider the reaction below. The lead (II) iodide is a bright yellow insoluble substance. Prior to the 1960's it was used as a dye in yellow paint. Lead poisoning could result if you eat the paint so different dye is used in today's paint.
- $$\text{NaI} + \text{Pb}(\text{NO}_3)_2 \rightarrow \text{NaNO}_3 + \text{PbI}_2 \text{ (Balance first!!!)}$$
- A) If 10.0 grams of sodium iodide react, how many grams of lead (II) iodide are produced?
- B) When a student completes this reaction, she filters and dries the lead (II) iodide. The mass of the yellow solid is 8.67 grams. What is the actual, theoretical and percent yield?
- 4). Laughing gas, N_2O , can be turned into smog, NO_2 , by heating the laughing gas in the presence of oxygen: $2\text{N}_2\text{O}(\text{g}) + 3\text{O}_2(\text{g}) \rightarrow 4\text{NO}_2(\text{g})$
- A) 9.00 grams of laughing gas react. How many moles of oxygen react?
- B) If 7.50 grams of oxygen react, how many grams of smog are produced?
- C) If 2.5 moles of smog needs to be created, how many moles of laughing gas are required?
- D) If 3.00 moles of oxygen creates 3.75 moles of smog, what is the percent yield?
- 5). Define limiting reactant, excess reactant and percent yield and the law of conservation of mass.