Name: **Honors Chemistry**

Section: Mass-Mass Stoichiometry Problems

A General Process for Problem Solving

1. List what you know.	2. Set up the problem.	3. Estimate and calculate.
• is the equation balanced? • what are you solving for? • possible mole ratios? • gfm?	• keep close eye on units • include "mole-mole" bridge • all factors should cancel out to give units of answer	• is the answer reasonable? • use significant figures

1. When aluminum is heated in oxygen, aluminum oxide is formed. What mass of the oxide can be obtained from 25.0 g of the metal? (47.2 g)

2. When steam (hot water) is passed over iron, hydrogen gas and iron (III) oxide are formed. What mass of steam would be needed to react completely with 100.0 g of iron? (48.20 g)

3. How much ammonium hydroxide is needed to react completely with 75.0 g of copper (II) nitrate in a double displacement reaction? (28.0 g)

4. How much copper metal can be obtained by the single replacement reaction between copper (I) nitrate and 30.0 g of iron metal? $CuNO_3 + Fe \rightarrow Fe(NO_3)_2 + Cu$ (68.3 g Cu)

5. What mass of sulfuric acid (H_2SO_4) will be needed to react completely with 35.5 g of ammonia (NH_3) in the production of ammonium sulfate? (102 g)

6. What mass of chlorine gas will be needed to react completely with 85.8 g of potassium iodide in a single replacement reaction? $Cl_2 + KI \rightarrow I_2 + KCl$ (18.3 g Cl2)

7. How many grams of carbon dioxide can be obtained from the reaction of sulfuric acid, H_2SO_4, with 100.0 g of calcium carbonate? (43.96g CO_2)

8. When ammonia (NH_3) is burned in oxygen, free nitrogen gas and water are produced. What volume of ammonia will react completely with 25.0 L of oxygen? (33.3 L)