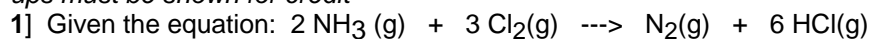# Gas Stoichiometry
CHEMISTRY 110

Name_____

last   first

Problem sets are due within the first 5 minutes of lecture on the due date. Significant figures must be correct. All set-ups must be shown for credit

1] Given the equation: $2 NH_3 (g) + 3 Cl_2(g) \longrightarrow N_2(g) + 6 HCl(g)$

   a. How many milliliters of nitrogen can be made from 13 L of chlorine and 10.0 L of ammonia gas at STP?

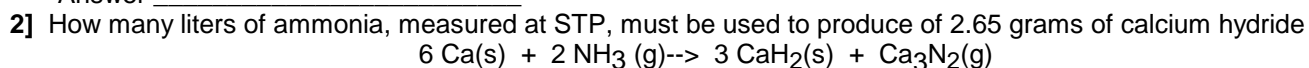   Answer _____

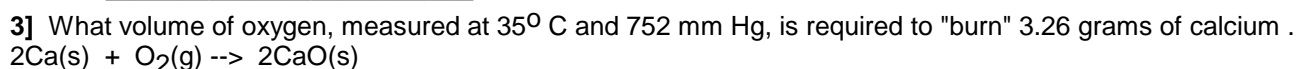   b. How many grams of chlorine must react to produce 16 L of nitrogen gas at 1.2 atm and $23^O C$?

   Answer _____

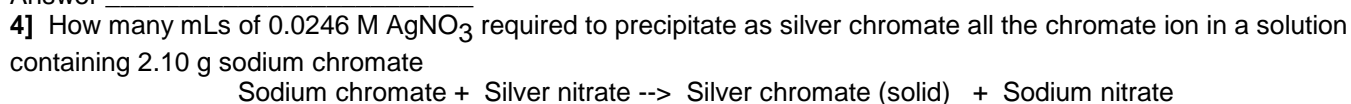   c. How many liters of ammonia gas at 244 torr and $35^O C$ must be used to produce 2.3 kg of HCl gas?
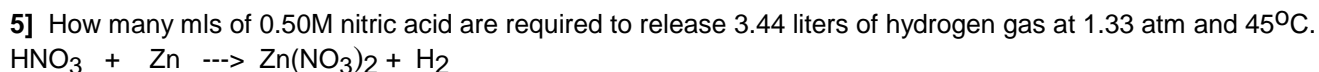
   Answer _____

2] How many liters of ammonia, measured at STP, must be used to produce of 2.65 grams of calcium hydride

$$6 Ca(s) + 2 NH_3 (g) \longrightarrow 3 CaH_2(s) + Ca_3N_2(g)$$

Answer _____

3] What volume of oxygen, measured at 35° C and 752 mm Hg, is required to "burn" 3.26 grams of calcium .
$2Ca(s) + O_2(g) \longrightarrow 2CaO(s)$

Answer _____

4] How many mLs of 0.0246 M $AgNO_3$ required to precipitate as silver chromate all the chromate ion in a solution containing 2.10 g sodium chromate

        Sodium chromate + Silver nitrate --> Silver chromate (solid) + Sodium nitrate

Answer _____

5] How many mls of 0.50M nitric acid are required to release 3.44 liters of hydrogen gas at 1.33 atm and $45^O C$.
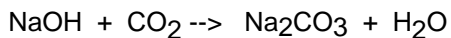$HNO_3 + Zn \longrightarrow Zn(NO_3)_2 + H_2$

Answer _____

6] What is the molarity of a 5.00 L sodium hydroxide solution that would completely react with 2.00 L of carbon dioxide gas measured at STP..

$$NaOH + CO_2 \rightarrow Na_2CO_3 + H_2O$$

Find the **Molarity** of the sodium hydroxide solution

Answer _____

7] How many liters of dry hydrogen gas, measured at 796 torr and 25°C, will be released by the decomposition of 255 milliliters of $H_2O(g)$ at 1.33 atm and 25°C?

Write the balanced equation _____

Answer _____

8] For the following reaction: $2CO(g) + O_2(g) \rightarrow 2CO_2(g)$
1.5 mol of CO and 2.0 mol of oxygen react in a closed 10 L vessel.
a. How many moles of CO, O_2 and CO_2 are present at the end of the reaction

Answer: Moles CO_____Moles O_2_____Moles CO_2_____
b. What will be the total pressure in the flask at 273K?

Answer _____