

test

thursday

Lab

Friday

Purpose: How Do we SOLVE  
GAS STOICHIOMETRY PROBLEMS?

WARMUP, DON'T COPY, JUST  
ANSWER THIS: WRITE  
A BALANCED EQUATION  
FOR THE REACTION OF

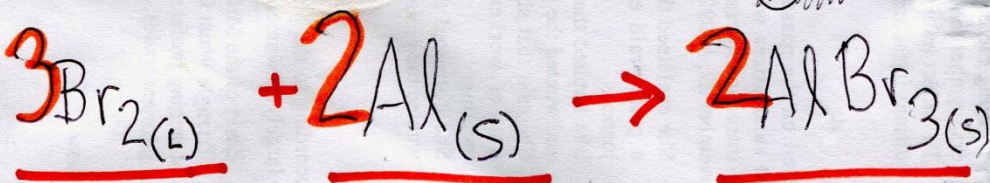
LIQUID  
BROMINE

AND

SOLID  
ALUMINUM

to  
form

SOLID  
ALUMINUM  
BROMIDE



EXAMPLE

If 600. g of bromine react,  
how many moles of  $\text{AlBr}_3$   
form?

SOLUTION

$$600. \text{ g Br}_2 \times \frac{1 \text{ mol Br}_2}{159.8 \text{ g Br}_2} \times \frac{2 \text{ mol AlBr}_3}{3 \text{ mol Br}_2} = \text{moles AlBr}_3 \approx 2.50$$

# ANSWERS TO IN CLASS WORK

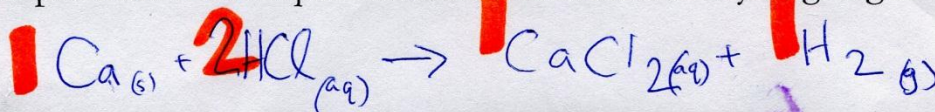
PUT THESE IN NOTES

Name _____	Table calculations done with a partner Save this to help you with tonight's homework	For full credit, work with your partner at _____
Partner's Name _____		Station # _____

**Introduction:** This Friday in lab you will place a strip of metal into acid and produce gas.

The data will be treated similarly to the following calculations:

- a. Write a balanced equation that describes the following reaction:  
 "When solid Calcium is dropped into aqueous hydrogen chloride, two products form: aqueous calcium chloride and hydrogen gas"



- b. You decide that you want to fill a 0.240 L balloon with this gas. Use  $PV = nRT$  to find how many moles of hydrogen this will be. You will first need to fix the units of temperature.

$$PV = nRT \quad \Rightarrow \quad n = \frac{PV}{RT} \quad n = \frac{(1.07 \text{ atm})(0.240 \text{ L})}{(0.0821 \frac{\text{L}\cdot\text{atm}}{\text{mol}\cdot\text{K}})(296.5 \text{ K})}$$

$$n = \cancel{0.0115} \\ n = 0.0105 \text{ moles H}_2$$

- c. Using your balanced equation from (a), do a unit conversion calculation to convert your moles of gas from (b) into grams of calcium needed for the reaction.

$$0.0105 \text{ mol H}_2 \times \left( \frac{1 \text{ moles Ca}}{1 \text{ moles H}_2} \right) \times \left( \frac{40.08 \text{ g Ca}}{1 \text{ moles Ca}} \right) = \text{grams Ca}$$