

## Worksheet 1

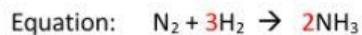
### Stoichiometry

## Mole to Mole Ratio

Name:

Gr/Sec:

### Sample Problem:



Problem: If we have 2.00 mol of  $N_2$  reacting with sufficient  $H_2$ , how many moles of  $NH_3$  will be produced?

### Solving the Problem:

(a) Balance the equation (the equation is already balanced).

(b) The ratio from the problem that you will have to deal with is the ratio of  $N_2$  and  $NH_3$ .

You will be having **1 mol  $N_2$  : 2 mol  $NH_3$**  as observed from the given equation.

(c) What is being asked in the problem is the number of **mol  $NH_3$**  that you will be deriving from the given **2 mol  $N_2$** .

(d) Start the conversion factor.

$$\frac{2 \text{ mol } N_2 \times \frac{2 \text{ mol } NH_3}{1 \text{ mol } N_2}}{1 \text{ mol } N_2} = \underline{\underline{4 \text{ mol } NH_3}}$$

= **4 moles of  $NH_3$  will be produced.**

Try to answer this ff sample problems.

1. Equation:  $\text{C}_3\text{H}_8 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2$

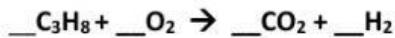
(a) Write the correct balanced equation.

(b) How many moles of  $\text{O}_2$  are required to combust with 3.5 moles of  $\text{C}_3\text{H}_8$ ?

(c) How many moles of  $\text{CO}_2$  are produced if 4.12 moles of  $\text{O}_2$  is reacted with  $\text{C}_3\text{H}_8$ ?

(d) How many moles of  $\text{H}_2$  are produced if 2 moles of  $\text{C}_3\text{H}_8$ ?

Answer to (a) :



Solution/Answer to (b):



Solution/Answer to (c):



Solution/Answer to (d):



2. Carbon disulfide is an important industrial solvent. It is prepared by the reaction of carbon (called coke) with sulfur dioxide:



(a) Balance the equation.

(b) How many moles of carbon are needed to react with 3.01 mol  $\text{SO}_2$ ?

(c) How many moles of carbon monoxide form at the same time that 0.45 mol  $\text{SO}_2$  reacts with C?

(d) How many moles of  $\text{SO}_2$  are required to make 125 mol  $\text{CS}_2$ ?

Answer to (a) :



Solution/Answer to (b):



Solution/Answer to (c):



Solution/Answer to (d):

