

Worksheet 1

Stoichiometry

Mole to Mole Ratio

Name:

Gr/Sec:

Sample Problem:

Equation: $\text{N}_2 + 3\text{H}_2 \rightarrow 2\text{NH}_3$

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.

$$2 \text{ mol } \text{N}_2 \times \frac{2 \text{ mol } \text{NH}_3}{1 \text{ mol } \text{N}_2} = 4 \text{ mol } \text{NH}_3$$

= 4 moles of NH_3 will be produced.

Try to answer this ff sample problems.

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

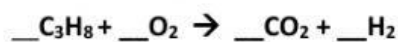
(a) Write the correct balanced equation.

(b) How many moles of O_2 are required to combust with 3.5 moles of C_3H_8 ?

(c) How many moles of CO_2 are produced if 4.12 moles of O_2 is reacted with C_3H_8 ?

(d) How many moles of H_2 are produced if 2 moles of C_3H_8 ?

Answer to **(a)** :



Solution/Answer to **(b)**:

$$\boxed{} \times \frac{\boxed{}}{\boxed{}} = \boxed{}$$

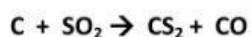
Solution/Answer to **(c)**:

$$\boxed{} \times \frac{\boxed{}}{\boxed{}} = \boxed{}$$

Solution/Answer to **(d)**:

$$\boxed{} \times \frac{\boxed{}}{\boxed{}} = \boxed{}$$

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 SO_2 ?

(c) How many moles of carbon monoxide form at the same time that 0.45 mol SO_2 reacts with C?

(d) How many moles of SO_2 are required to make 125 mol CS_2 ?

Answer to (a) :



Solution/Answer to (b):

$$\boxed{} \times \frac{\boxed{}}{\boxed{}} = \boxed{}$$

Solution/Answer to (c):

$$\boxed{} \times \frac{\boxed{}}{\boxed{}} = \boxed{}$$

Solution/Answer to (d):

$$\boxed{} \times \frac{\boxed{}}{\boxed{}} = \boxed{}$$