

WKS
Mole-Mole Calculations

NAME Answer Key
Period _____ Date _____

Use what you have learned about mole ratios and mole-mole calculations to solve the following problems:

- 1) Given the balanced equation, $6 \text{ AgI} + \text{Fe}_2(\text{CO}_3)_3 \rightarrow 2 \text{ FeI}_3 + 3 \text{ Ag}_2\text{CO}_3$:
- a. How many moles of AgI would be required to form 10. moles of FeI_3 ?

Given: 10 moles FeI_3 ; **Wanted:** ? moles AgI;

$$? \text{ mol Ag I} = 10. \text{ mol FeI}_3 \times \frac{6 \text{ moles AgI}}{2 \text{ moles FeI}_3} = \boxed{30. \text{ mol AgI}}$$

- b. For the same reaction, how many moles of Ag_2CO_3 would be formed from the reaction of 4.0 moles of $\text{Fe}_2(\text{CO}_3)_3$ with enough AgI?

Given: 4 moles $\text{Fe}_2(\text{CO}_3)_3$; **Wanted:** moles Ag_2CO_3

$$? \text{ mol Ag}_2\text{CO}_3 = 4.0 \text{ mol Fe}_2(\text{CO}_3)_3 \times \frac{3 \text{ mol Ag}_2\text{CO}_3}{1 \text{ mol Fe}_2(\text{CO}_3)_3} = \boxed{12 \text{ mol Ag}_2\text{CO}_3}$$

- 2) Given the chemical equation, $\underline{3} \text{ H}_2\text{SO}_4 + \underline{2} \text{ B(OH)}_3 \rightarrow \underline{\quad} \text{ B}_2(\text{SO}_4)_3 + \underline{6} \text{ H}_2\text{O}$

a. Balance the equation

- b. How many moles of B(OH)_3 would be required to completely react with 4.65 moles of H_2SO_4 ?

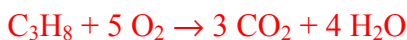
$$? \text{ mol B(OH)}_3 = 4.65 \text{ mol H}_2\text{SO}_4 \times \frac{2 \text{ mol B(OH)}_3}{3 \text{ mol H}_2\text{SO}_4} = \boxed{3.10 \text{ mol B(OH)}_3}$$

- c. For the same reaction, how many moles of H_2SO_4 would be needed, given enough B(OH)_3 , to produce 11.8 moles of $\text{B}_2(\text{SO}_4)_3$?

$$? \text{ mol H}_2\text{SO}_4 = 11.8 \text{ mol B}_2(\text{SO}_4)_3 \times \frac{3 \text{ mol H}_2\text{SO}_4}{1 \text{ mol B}_2(\text{SO}_4)_3} = \boxed{35.4 \text{ mol H}_2\text{SO}_4}$$

- 3) When propane (C_3H_8) gas burns in oxygen gas, it forms carbon dioxide gas and water vapor

a. Write and balance the equation



- b. How many moles of H_2O would be formed in the reaction where 3.19 mol of CO_2 are formed?

$$? \text{ mol H}_2\text{O} = 3.19 \text{ mol CO}_2 \times \frac{4 \text{ mol H}_2\text{O}}{3 \text{ mol CO}_2} = \boxed{4.25 \text{ mol H}_2\text{O}}$$

- c. For the same reaction, how many moles of CO_2 would be produced by the reaction of 23.4 moles of O_2 with sufficient C_3H_8 ?

$$? \text{ mol CO}_2 = 23.4 \text{ mol O}_2 \times \frac{3 \text{ mol CO}_2}{5 \text{ mol O}_2} = \boxed{14.0 \text{ mol CO}_2}$$