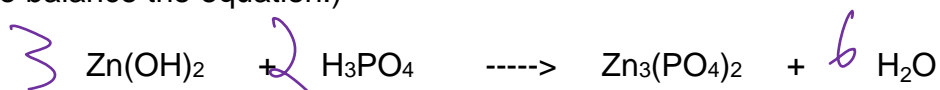


Stoichiometry WorkSheet #1: Worked Solutions

Answer the following questions on your own paper. Show all work. Circle the final answer, giving units and the correct number of significant figures.

1. Based on the following equation, how many moles of each product are produced when 5.9 moles of $\text{Zn}(\text{OH})_2$ are reacted with H_3PO_4 ? (You need to balance the equation.)



5.9 moles $\text{Zn}(\text{OH})_2$	1 mole $\text{Zn}_3(\text{PO}_4)_2$	= 2.0 moles $\text{Zn}_3(\text{PO}_4)_2$
	3 moles $\text{Zn}(\text{OH})_2$	

5.9 moles $\text{Zn}(\text{OH})_2$	6 moles H_2O	= 12 moles H_2O
	3 moles $\text{Zn}(\text{OH})_2$	

2. How many grams of hydrogen are produced when 5.9 moles of aluminum reacts with excess hydrochloric acid? (You need to write out the balanced equation.)



5.9 moles Al	3 mole H ₂	2.02 g H ₂
2 mole Al	1 mole H ₂	

$$= 18 \text{ g H}_2$$

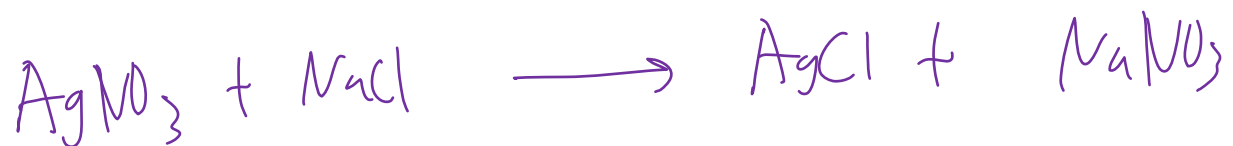
3. How many grams of calcium hydroxide will be needed to completely react with 29.5 g of sodium phosphate?



29.5 g Na_3PO_4	1 mole Na_3PO_4	3 mole Ca(OH)_2	74.1 g Ca(OH)_2
	163.94 g Na_3PO_4	2 mole Na_3PO_4	1 mole Ca(OH)_2

$$= 20.0 \text{ g } \text{Ca(OH)}_2$$

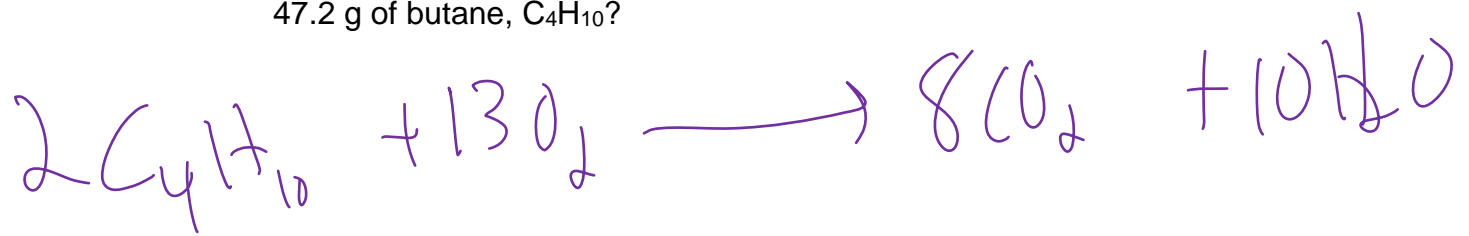
4. How many grams of silver (I) chloride can be produced from the reaction of 59.4 g of silver (I) nitrate with excess sodium chloride?



59.4 g AgNO_3	1 mole AgNO_3	1 mole AgCl	143.32
	169.84 g AgNO_3	1 mole AgNO_3	1 mole AgCl

50.1 g AgCl

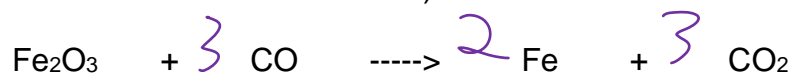
5. How many grams of oxygen are required for the complete combustion of 47.2 g of butane, C_4H_{10} ?



47.2 g C_4H_{10}	1 mole C_4H_{10}	13 mole O_2	32.0 g O_2
	58.14 g C_4H_{10}	2 mole C_4H_{10}	1 mole O_2

$$= \boxed{169 \text{ g } O_2}$$

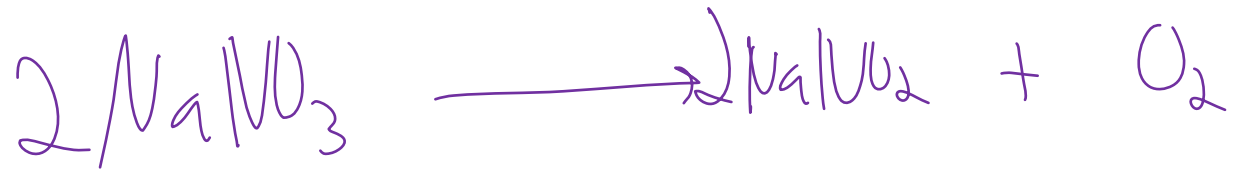
6. Based on the following equation, what would be the minimum amount of carbon monoxide used if you need to produce 18.7 g of Fe? (Note: The equation needs to be balanced first.)



18.7 g Fe	1 mole Fe	3 mole CO	28.01 g CO
	55.85 g Fe	2 mole Fe	1 mole CO

= 14.1 g CO

7. Sodium nitrate decomposes to give sodium nitrite and oxygen. Write the balanced equation.



8. Using the equation from problem 7, if 25.0 g of sodium nitrate decompose, how many grams of each product should be produced?

25.0 g NaNO_3	1 mole NaNO_3	2 mole NaNO_2	69.00 g NaNO_2
	85.00 g NaNO_3	2 mole NaNO_2	1 mole NaNO_2

= 20.3 g
 NaNO_2

25.0 g NaNO_3	1 mole NaNO_3	1 mole O_2	32.0 g O_2
	85.00 g NaNO_3	2 mole NaNO_3	1 mole O_2

= 4.7 g
 O_2