

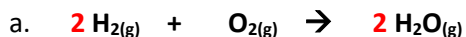
Name: \_\_\_\_\_

**Stoichiometry Practice**  
(to prevent boredom over break)

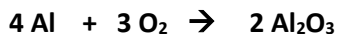
**Directions:**

Complete the following problems - show all work in dimensional analysis to receive credit. Include units and don't forget sig figs. Answers posted on my website.

1. Balance these equations:



2. The formation of aluminum oxide from its constituent elements is represented by this equation:



a. How many moles of aluminum are needed to form 3.7 mol of  $\text{Al}_2\text{O}_3$ ?

6.8 mol Al

b. How many moles of oxygen are required to react completely with 14.8 mol of Al?

11.1 mol  $\text{O}_2$

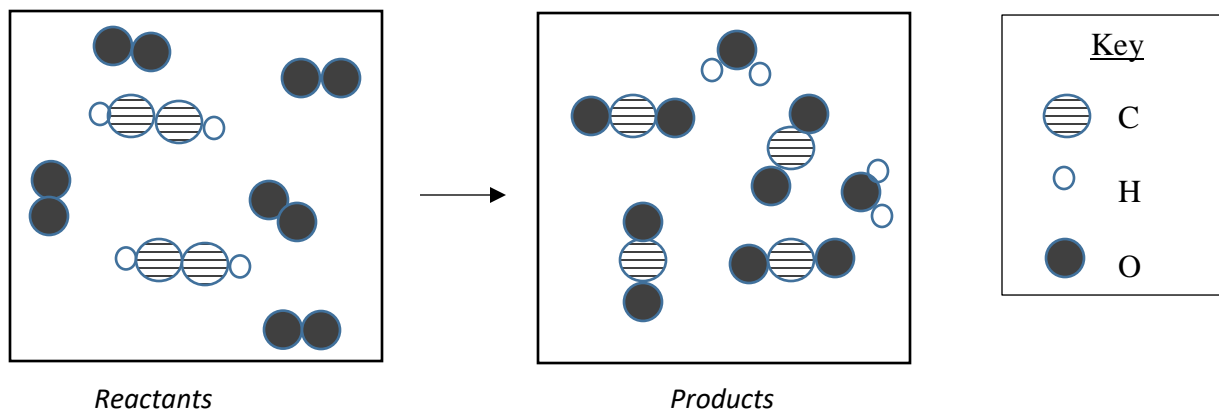
c. Calculate the number of moles of  $\text{Al}_2\text{O}_3$  formed when 0.78 mol of  $\text{O}_2$  reacts with aluminum.

0.52 mol  $\text{Al}_2\text{O}_3$

3. The combustion of acetylene gas is represented by this equation:



a. Draw a particle representation of the reactants and the products.



b. How many grams of  $\text{CO}_2$  and grams of  $\text{H}_2\text{O}$  are produced when 52.0 g of  $\text{C}_2\text{H}_2$  burns?

36.0 g  $\text{H}_2\text{O}$

176 g  $\text{CO}_2$

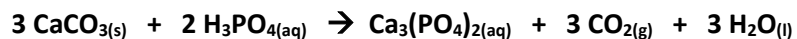
c. How many grams of oxygen are required to “burn” 52.0 g of  $\text{C}_2\text{H}_2$ ?

160. g  $\text{O}_2$

d. Use the answers from (b) and (c) to show that this equation obeys the law of conservation of mass.

212 g reactants = 212 g products

4. Calcium carbonate reacts with phosphoric acid to produce calcium phosphate, carbon dioxide, and water.



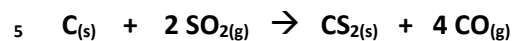
- a. How many grams of calcium chloride will react with 25.0 mL of 1.00 M solution of phosphoric acid ( $\text{H}_3\text{PO}_4$ )?

3.75 g  $\text{CaCO}_3$

- b. Assuming STP conditions, how many liters of carbon dioxide are produced when 5.74 g of  $\text{CaCO}_3$  reacts with  $\text{H}_3\text{PO}_4$ ?

1.28 L  $\text{CO}_2$

5. Carbon disulfide is an important industrial solvent. It is prepared by the reaction of coke with sulfur dioxide.



If 85.0 g of carbon reacts with 67.5 L of sulfur dioxide gas at STP,

- a. What mass of carbon disulfide is produced?

115 g CS<sub>2</sub>

- b. What is the limiting reagent? Excess reagent?

LR = SO<sub>2</sub>; ER = C

- c. How many molecules of excess reagent are left over?

3.35x10<sup>24</sup> atoms C