

## Stoichiometry Worksheet #2

- 1) Given the following equation:  $2 \text{C}_4\text{H}_{10} + 13 \text{O}_2 \rightarrow 8 \text{CO}_2 + 10 \text{H}_2\text{O}$ , show what each of the following molar ratios should be.
- a.  $\text{C}_4\text{H}_{10} / \text{O}_2$       c.  $\text{O}_2 / \text{H}_2\text{O}$       e.  $\text{C}_4\text{H}_{10} / \text{H}_2\text{O}$   
b.  $\text{O}_2 / \text{CO}_2$       d.  $\text{C}_4\text{H}_{10} / \text{CO}_2$
- 2) Given the following equation:  $2 \text{KClO}_3 \rightarrow 2 \text{KCl} + 3 \text{O}_2$   
How many moles of  $\text{O}_2$  can be produced when 12.00 moles of  $\text{KClO}_3$  react?
- 3) Given the following equation:  $2 \text{K} + \text{Cl}_2 \rightarrow 2 \text{KCl}$
- a. How many grams of  $\text{KCl}$  is produced from 2.50 g of  $\text{K}$  and excess  $\text{Cl}_2$  ?  
b. How many grams of  $\text{KCl}$  is produced from 1.00 g of  $\text{Cl}_2$  and excess  $\text{K}$  ?
- 4) Given the following equation:  $\text{Na}_2\text{O} + \text{H}_2\text{O} \rightarrow 2 \text{NaOH}$
- a. How many grams of  $\text{NaOH}$  is produced from  $1.20 \times 10^2$  grams of  $\text{Na}_2\text{O}$ ?  
b. How many grams of  $\text{Na}_2\text{O}$  are needed to produce  $1.60 \times 10^2$  g of  $\text{NaOH}$ ?
- 5) Given the following equation:  $8 \text{Fe} + \text{S}_8 \rightarrow 8 \text{FeS}$
- a. What mass of iron is needed to react with 16.0 grams of sulfur?  
b. How many grams of  $\text{FeS}$  are produced?
- 6) Given the following equation:  $2 \text{NaClO}_3 \rightarrow 2 \text{NaCl} + 3 \text{O}_2$
- a. 12.00 moles of  $\text{NaClO}_3$  will produce how many grams of  $\text{O}_2$ ?  
b. How many grams of  $\text{NaCl}$  are produced when 80g of  $\text{O}_2$  are produced?
- 7) Given the following equation:  $\text{Cu} + 2 \text{AgNO}_3 \rightarrow \text{Cu}(\text{NO}_3)_2 + 2 \text{Ag}$
- a. How many moles of  $\text{Cu}$  are needed to react with 3.50 moles of  $\text{AgNO}_3$ ?  
b. If 89.5 grams of  $\text{Ag}$  were produced, how many grams of  $\text{Cu}$  reacted?
- 8) Molten iron and carbon monoxide are produced in a blast furnace by the reaction of iron(III) oxide and coke (pure carbon). The reaction is:  
 $\text{Fe}_2\text{O}_3 + 3 \text{C} \rightarrow 2 \text{Fe} + 3 \text{CO}$  If 25.0 kilograms of pure  $\text{Fe}_2\text{O}_3$  is used, how many kilograms of iron can be produced?
- 9) The average human requires 120.0 grams of glucose ( $\text{C}_6\text{H}_{12}\text{O}_6$ ) per day. The photosynthetic reaction is:  $6 \text{CO}_2 + 6 \text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6 \text{O}_2$   
How many grams of  $\text{CO}_2$  (in the photosynthesis reaction) are required for this amount of glucose?
- 10) Given the reaction:  $4 \text{NH}_3 (\text{g}) + 5 \text{O}_2 (\text{g}) \rightarrow 4 \text{NO} (\text{g}) + 6 \text{H}_2\text{O} (\text{l})$   
When 1.20 mole of ammonia ( $\text{NH}_3$ ) reacts, the total number of moles of products formed is which answer:
- A) 1.20  
B) 1.50  
C) 1.80  
D) 3.00  
E) 12.0

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