### 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. \( \text{C}_4\text{H}_{10} / \text{O}_2 \)
   b. \( \text{O}_2 / \text{CO}_2 \)
   c. \( \text{O}_2 / \text{H}_2\text{O} \)
   d. \( \text{C}_4\text{H}_{10} / \text{H}_2\text{O} \)

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 80 g of \( \text{O}_2 \) are produced?

7) Given the following equation: \( \text{Cu} + 2 \text{AgNO}_3 \rightarrow \text{Cu(NO}_3)_2 + 2 \text{Ag} 
\)
   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 \( \text{NH}_3 \) (g) + 5 \( \text{O}_2 \) (g) \rightarrow 4 \( \text{NO} \) (g) + 6 \( \text{H}_2\text{O} \) (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