Stoichiometry Worksheet #3

1) Given the following equation: 2 C_4H_{10} + 13 O_2 ---> 8 CO_2 + 10 H_2O,
show what the following molar ratios should be.
a. C_4H_{10} / O_2 b. O_2 / CO_2 c. O_2 / H_2O d. C_4H_{10} / CO_2 e. C_4H_{10} / H_2O

2) Given the following equation: 2 $KClO_3$ ---> 2 KCl + 3 O_2
a. How many moles of O2 can be produced by letting 12.00 moles of $KClO_3$ react?

3) Given the following equation: 2 K + Cl2 ---> 2 KCl
a. How many grams of KCl is produced from 2.50 g of K and excess Cl_2 ?
b. How many grams of KCl is produced from 1.00 g of Cl_2 and excess K ?

4) Given the following equation: Na_2O + H_2O ---> 2 NaOH
a. How many grams of NaOH is produced from 1.20 x 102 grams of Na_2O?
b. How many grams of Na_2O are required to produce 1.60 x 10^2 grams of NaOH?

5) Given the following equation: 8 Fe + S_8 ---> 8 FeS
a. What mass of iron is needed to react with 16.0 grams of sulfur?
b. How many grams of FeS are produced?

6) Given the following equation: 2 $NaClO_3$ ---> 2 NaCl + 3 O_2
a. 12.00 moles of $NaClO_3$ will produce how many grams of O_2?
b. How many grams of NaCl are produced when 80.0 grams of O_2 are produced?

7) Given the following equation: Cu + 2 $AgNO_3$ ---> $Cu(NO_3)_2$ + 2 Ag
a. How many moles of Cu are needed to react with 3.50 moles of $AgNO_3$?
b. If 89.5 grams of Ag were produced, how many grams of 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:
Fe_2O_3 + 3 C ---> 2 Fe + 3 CO
a. If 25.0 kilograms of pure Fe_2O_3 is used, how many kilograms of iron can be produced?

9) The average human requires 120.0 grams of glucose ($C_6H_{12}O_6$) per day.
The photosynthetic reaction is: 6 CO_2 + 6 H_2O ---> $C_6H_{12}O_6$ + 6 O_2
a. How many grams of CO2 (in the photosynthesis reaction) are required for this amount of glucose?

10) Given the reaction: 4 NH_3 (g) + 5 O_2 (g) ---> 4 NO (g) + 6 H_2O (l)
When 1.20 mole of ammonia reacts, the total number of moles of products formed is: a) 1.20 b) 1.50 c) 1.80 d) 3.00 e) 12.0

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