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Stoichiometry Worksheet #1 Answers

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 O_2 can be produced by letting 12.00 moles of $KClO_3$ react?

18.0 mol O_2

3. Given the following equation: 2 K + Cl_2 ---> 2 KCl

a. How many grams of KCl is produced from 2.50 g of K and excess Cl_2 ?

4.77 g KCl

b. How many grams of KCl is produced from 1.00 g of Cl_2 and excess K ?

2.10 g KCl

4. Given the following equation: Na_2O + H_2O ---> 2 NaOH

a. How many grams of NaOH is produced from 1.20 x 10^2 grams of Na_2O?

154.8 g NaOH

b How many grams of Na_2O are required to produce 1.60 x 10^2 grams of NaOH?

124 g Na_2O

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?

27.87 g Fe

b. How many grams of FeS are produced?

43.9 g FeS

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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?

576 g O_2

b. How many grams of NaCl are produced when 80.0 grams of O_2 are produced?

97.4 g NaCl

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 $AgNO_3$?

1.75 mol Cu

b. If 89.5 grams of Ag were produced, how many grams of Cu reacted?

26.4 g Cu

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?

17.49 kg Fe

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 CO_2 (in the photosynthesis reaction) are required for this amount of glucose?

175.8 g CO_2

This problem is slightly different from those above.

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

d. 3.00