

Stoichiometry Practice: SUPER-DUPER Variety Pack!

Learning Target: By the end of the period, students will be able to use a balanced chemical equation to calculate the amount of any units of reactants needed and products made in a chemical reaction that goes to completion.

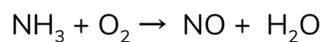
1) When potassium reacts with bromine, potassium bromide forms.

a. Write the balanced equation below:

b. If 4.1 moles of bromine (Br_2) reacts, how many moles of potassium bromide (KBr) are produced?

Answer:

2) The combustion of ammonia in excess oxygen produces nitric oxide (NO) and water.



a. Write the balanced equation below:

b. How many liters of oxygen are needed to react with 1.24×10^{24} molecules of NH_3 ?

Answer:

c. How many liters of nitric oxide are produced from 53.6 g of ammonia?

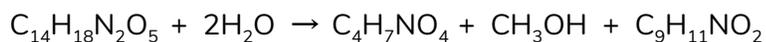
Answer:

- 3) When aluminum reacts with copper(II) sulfate, aluminum sulfate and copper is produced. If 13.6 grams of aluminum metal reacts with excess copper(II) sulfate, how many grams of copper can be collected?

Write and balance the equation below:

Answer:

- 4) Aspartame has been a sweetener in many low-calorie, sugar-free foods and beverages since the 1980's. When aspartame ($C_{14}H_{18}N_2O_5$) reacts with water, aspartic acid ($C_4H_7NO_4$), methanol (CH_3OH), and phenylalanine ($C_9H_{11}NO_2$).



- a. When 10.3 moles of aspartame is consumed in the reaction, how many molecules of methanol are produced?

Answer:

- b. When 97.5 g of aspartame is consumed in the reaction, how many grams of phenylalanine are produced?

Answer:

5) Uranium hexafluoride (UF_6) is a gas used in the production of fuel for nuclear power plants. How many moles of the gas are in 100.0 g of UF_6 ?

Answer:

6) Chlorofluorocarbon (CCl_3CF_3) responsible for the destruction of the ozone layer in Earth's atmosphere. How many molecules are in 82.4 g of CCl_3CF_3 ?

Answer:

7) When nitrogen reacts with fluorine, nitrogen trifluoride is produced.

a. Write the balanced equation below:

b. When 63.6 g of fluorine are reacted, how many moles of NF_3 will be formed?

Answer:

c. How many molecules of N_2 are needed to produce 2.85 g of NF_3 ?

Answer:

d. If 8.31 g of nitrogen reacts with fluorine, how many grams of fluorine are produced?

Answer:

8) Copper(II) chloride reacts with sodium nitrate to produce copper(II) nitrate and sodium chloride.

a. Write the balanced equation below:

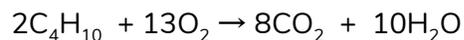
b. If 20.0 g of copper(II) chloride reacts with sodium nitrate, what mass of sodium chloride is formed?

Answer:

c. If 1.37×10^{23} molecules of sodium nitrate is consumed, how many molecules of copper(II) nitrate is produced?

Answer:

9) When butane (C_4H_{10}) burns in excess oxygen, carbon dioxide and water are produced, which is indicative of a combustion reaction.



a. What is the molar mass of butane?

Answer:

b. How many moles of oxygen are in 26.3 grams?

Answer: