

Chemistry Unit 7 Worksheet 4

Samples of Every Kind of Problem

On a separate sheet of paper, write a complete solution to each of the problems below. Follow the procedure outlined in class. Be sure to circle your final answer.

- Calculate the number of moles of potassium chlorate, KClO_3 (s), that must decompose to produce potassium chloride, KCl (s), and 1.8 moles of oxygen gas.
- In a single displacement reaction, magnesium metal reacts with hydrochloric acid to produce magnesium chloride and hydrogen gas. How many moles of hydrochloric acid are needed to completely react with 2.43 g of magnesium?
- Ethane, C_2H_6 reacts with oxygen gas to produce carbon dioxide gas and water vapor. What mass of oxygen gas is required to react with 2.20 moles of ethane?
- Determine the mass of sodium nitrate produced when 0.73 g of nickel (II) nitrate reacts with sodium hydroxide according to the following equation:

$$\text{Ni}(\text{NO}_3)_2 + 2 \text{NaOH} \rightarrow \text{Ni}(\text{OH})_2 + 2 \text{NaNO}_3$$
- In the copper-silver nitrate lab copper metal and silver nitrate solution reacted to produce silver metal and copper(II) nitrate in solution. A student placed a copper wire with a mass of 2.93 g in the reaction test tube. The silver nitrate solution contained 1.41 g of silver nitrate. He obtained 0.87 g of silver metal. Calculate the percent yield of silver.
- When hydrochloric acid (HCl) is added to sodium hydrogen carbonate, the products are water, aqueous sodium chloride and carbon dioxide gas. What is the per cent yield if 4.68 g of CO_2 are collected when 10.0 g of sodium hydrogen carbonate reacts with excess HCl?
- Phosphorus and bromine react vigorously together to form phosphorus tribromide. If 5.0 g of phosphorus and 35 g of bromine react, how many grams of PBr_3 could be produced?
- Zinc sulfide and oxygen gas react to form zinc oxide and sulfur dioxide. Determine the amount of ZnO that should be produced in a reaction between 46.5 g of ZnS and 13.3 g of oxygen. What is the mass of the xs reactant?

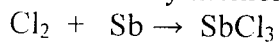
1. 1.2 moles KClO_3 2. 0.200 moles HCl 3. 246 g O_2 4. 0.68 g NaNO_3
 5. 97% 6. 89.3% 7. .39 g PBr_3 8. 22.5 g ZnO , 19.5g ZnS xs

Practice Problems: Stoichiometry (gases)

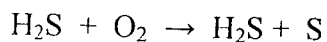
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Assume STP for all problems.

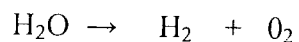
1. What a volume of chlorine gas will react with antimony to produce 58.9 g of antimony trichloride?



2. In the combustion of hydrogen sulfide with oxygen how much oxygen in liters is needed to burn 35.0 g of hydrogen sulfide?



3. What volume of oxygen is produced when 25.0 g of water is decomposed?



4. What volume of carbon dioxide is required to produce 30.0 L of carbon monoxide?

