INTRODUCTION TO STOICHIOMETRY

EVIDENCE NOTEBOOK

CHECKPOINTS PART II

4. $TiO_{2(s)} + C_{(s)} + 2Cl_{2(g)} \rightarrow TiCl_4 + CO_{2(g)}$
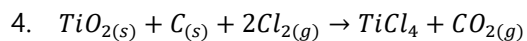
   If you begin with 1.25 mol TiO_2, what mass of Cl_2 is needed?

5. Sodium chloride is decomposed into the elements sodium and chlorine by means of electrical energy. How many grams of chlorine gas can be obtained from 2.50 mol $NaCl$?

6. Use the equation below to answer the following questions:

$$2KMnO_4 + 16HCl \rightarrow 2MnCl_2 + 2KCl + 5Cl_2 + 8H_2O$$

a. How many grams of hydrogen chloride would be needed to react with 16.23 grams of potassium manganate?

b. How many grams of each product would be produced once 16.23 grams of potassium manganate are used up?

7. When ethane (C_2H_6) burns, it reacts with oxygen to produce carbon dioxide and water. If you burn 175 grams of ethane:

    a. How many grams of oxygen will be used in this reaction?

    b. How many grams of carbon dioxide will be produced in this reaction?

    c. How many grams of water will be produced in this reaction?

8. The laboratory instructor wants you to produce 2.50 grams of iron from a single-displacement reaction where sodium metal is added to an iron (III) oxide solution that produces a sodium oxide solution and solid iron.

    a. How many grams of iron (III) oxide do you need for this experiment?

    b. How many grams of sodium metal do you need for this experiment?

    c. How many grams of sodium oxide do you expect to produce in this experiment?

    d. How many grams of sodium oxide do you expect to produce in this experiment?