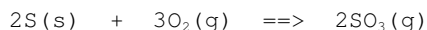


**STOICHIOMETRIC PROBLEMS**

**SHEET #2: MASS ==> AMOUNT ==> AMOUNT ==> MASS**

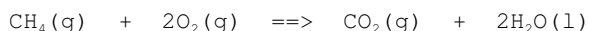
1. How many moles of sulphur will react with 9 mol of oxygen gas for the reaction shown?



2. For the following reaction, what mass of FeS is needed to react with 7.81 g of oxygen? What amount of oxygen is needed to react with 6.79 mol of FeS?

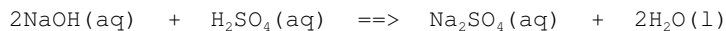


3. What mass of O<sub>2</sub> is needed to react with 6.4 g of methane according to the following equation? What mass of carbon dioxide forms?



4. Sodium carbonate and hydrochloric acid react to give sodium chloride, carbon dioxide and water. How many grams of sodium carbonate and hydrochloric acid would be required to produce 286 g of carbon dioxide.

5. What amount of NaOH is required to produce 8.61 mol of sodium sulphate?



What mass of sulphuric acid is required to produce 4.77 mol of sodium sulphate?

6. If 20.0 g of zinc reacts with excess (more than you need) hydrochloric acid, what mass of zinc chloride and hydrogen gas is produced? What mass of hydrochloric acid is actually required for the reaction?

7. What mass of oxygen is produced in the thermal decomposition of 5.0 g of potassium chlorate?

8. What mass of copper metal is required to replace the silver in 4.0 g of silver nitrate which is dissolved in water. Hint: copper metal has an oxidation state of zero and after reacting with silver nitrate is acquires an oxidation state of 2<sup>+</sup>.

9. Ammonium sulphate reacts with calcium hydroxide to produce calcium sulphate, ammonia gas and water. If 20.0 g of calcium hydroxide is reacted with excess ammonium sulphate, what mass of ammonia gas is produced?

10. Sulphuric acid reacts with sodium chloride to form hydrochloric acid and sodium sulphate. If 30.0 g of sodium chloride is allowed to react with sufficient sulphuric acid, what mass of hydrochloric acid will form?

Answers:

1. 6 mol S	6. 41.7 g ZnCl <sub>2</sub> , 0.618 g H <sub>2</sub> , 22.3 g HCl
2. 12.3 g FeS, 11.9 mol O <sub>2</sub>	7. 1.96 g O <sub>2</sub>
3. 25.5 g O <sub>2</sub> , 17.5 CO <sub>2</sub> g	8. 0.748 g Cu
4. 689 g Na <sub>2</sub> CO <sub>3</sub> , 474 g HCl	9. 9.20 g NH <sub>3</sub>
5. 17.22 mol NaOH, 468 g H <sub>2</sub> SO <sub>4</sub>	10. 18.7 g HCl