**Stoichiometry Review – Note: RTP = Room Temperature and Pressure (24.0 L = 1 mol)**

1. 1.64 g of potassium chlorate was decomposed to potassium chloride and oxygen gas under intense heat. How many grams of each product were formed? Show the “CHECK” of your answer.
2. 6.0 L of ammonia gas reacts with oxygen gas to produce nitrogen dioxide gas and hydrogen gas. How many litres of all gases are present in this reaction? Why is there no such thing as a “Law of Conservation of Volume? If you really wanted to check your answer to this question, what could you do?
3. The combustion of benzene in oxygen produces 20.0 moles of carbon dioxide. How many moles of benzene (C6H6 (g)) are needed?
4. When nitrogen gas combines with hydrogen gas, 5.63 g of ammonia is produced. How many litres of hydrogen gas reacted (at ***RTP***)?
5. Calcium Phosphate reacts with Silicon Dioxide and Carbon (yes, this reaction has 3 reactants!) to form Calcium Orthosilicite (Ca2SiO4), carbon monoxide and 7.2 g of the third product. If product is found to be X4 (where X represents an unknown element) what must be the third product? How many grams of Calcium Phosphate originally reacted?
6. Ammonia and oxygen react to produce water and nitrogen monoxide. What volume of each reactant gas is needed to produce 485 g of water at ***RTP***?
7. 681 L of ethane (C2H6 (g)) burns completely in air at ***STP***. Determine the mass of all participants in this reaction.
8. What masses of zinc and hydrochloric acid must be reacted to generate 156 L of Hydrogen gas at ***RTP***?
9. 314 g of sulphuric acid reacts with 70.5 g of lithium hydroxide
   1. Which reactant is left over after the reaction?
   2. What mass of sulphuric acid was used in the reaction?
   3. What mass of each product is produced?
10. Francium reacts explosively with water to produce Francium Hydroxide and Hydrogen gas. If 325 g of francium react with 84.5 g of water, will both reactants be totally consumed? What mass of products can we expect from the reaction?
11. Nitroglycerin (C3H5N3O9) decomposes explosively to give nitrogen, carbon dioxide, water, and oxygen.
    1. What is the maximum amount of O2 in grams that can be obtained from 2.00 x 102 grams of nitroglycerin?
    2. If the amount of oxygen generated is ONLY 6.55 grams, calculate the efficiency of the reaction.

**ANSWERS**

1. 1.00 g of KCl and 0.643 g of O2
2. 6.0 L of NH3, 6.0 L O2, 6.0 L of NO2 and 9.0 L of H2
3. 3.33 moles of C6H6 (g)
4. 12.2 L
5. The third product was P4. 37 g of Calcium Phosphate originally reacted.
6. 439 L of NH3, and 549 L of O2
7. Qn gives only 3 SF. Therefore:

914 g of C2H6, 3410 g of O2, 2680 g of CO2, 1650 g of H2O (g)

1. 417 g of Zn and 464 g of HCl.
2. a. H2SO4 b. 144 g c. Li2SO4 162g, H2O 53.0g
3. Francium is totally consumed, FrOH 350. g and H2 1.48 g
4. a. 7.05 g O2 b. Efficency: 92.9%