## CHEMISTRY 30S WORKSHEETS UNIT #3 - STOICHIOMETRY

## MOLE- MOLE RELATIONSHIPS

- 1) Hydrogen sulfide + oxygen produces water + sulfur dioxide. How many moles of hydrogen sulfide can be burned by 0.75 mol of oxygen?
- 2) Potassium chlorate decomposes to produce potassium chloride + oxygen. How many moles of oxygen can be produced from 1.8 mol of potassium chlorate?
- 3) Octane,  $C_{\rm g}H_{\rm 1g}$ , burns to produce carbon dioxide + water vapor. How many moles of oxygen are needed to burn 0.40 mol of octane?
- 4) Iron burns to produce iron (III) oxide. How many moles of oxygen are needed to form 120 mol of iron (III) oxide?
- 5) How many moles of carbon dioxide are formed when 0.25 mol of methane burns?
- 6) Copper (II) oxide + ammonia produces water + nitrogen + copper.
- a) How many moles of water are formed from 0.90 mol of copper (II) oxide?
- b) How many moles of nitrogen are formed from 0.90 mol of copper (II) oxide?
- 7) Calcium hydroxide + hydrogen phosphate produces calcium phosphate + water. How many moles of calcium hydroxide are needed to react with 0.10 mol of hydrogen phosphate?

## MOLE- GRAM RELATIONSHIPS

- 1) How many moles of sulfur dioxide form as 128 g of S burns according to the equation:  $\rm S_g + O_2 \to SO_2$
- 2) How many moles of ammonia can be produced from 10.0 g of hydrogen according to the equation:  $N_2+H_2\to NH_3$
- 3) How many moles of hydrogen chloride are required to form 14.2 g of chlorine gas according to the equation:  $HCl + O_2 \rightarrow H_2O + Cl_2$
- 4) How many moles of carbon dioxide are formed when 64 g of methane burns according to the equation:  $CH_4 + O_2 \rightarrow CO_2 + H_2O$
- 5) How many moles of NO form as 189 g HNO $_3$  react? 3Cu + 8HNO $_3 \rightarrow$  3Cu(NO $_3$ ) $_2$  + 4H $_2$ O + 2NO
- 6) How many moles of H<sub>3</sub>PO<sub>4</sub> will react with 60.0 g of sodium hydroxide? H<sub>3</sub>PO<sub>4</sub> + NaOH  $\rightarrow$  Na<sub>3</sub>PO<sub>4</sub> + H<sub>2</sub>O
- 7) How many moles of hydrogen molecules are formed from 18.25 g of hydrogen chloride? Zn + HCl  $\rightarrow$  ZnCl  $_2$  + H $_2$
- 8) How many moles of potassium permanganate are needed to produce 35.5 g of chlorine gas? 2KMnO<sub>4</sub> + 16HCl  $\rightarrow$  2KCl + 2MnCl<sub>2</sub> + 8H<sub>2</sub>O + 5Cl<sub>2</sub>