Name _____    Date _____    Period _____

## Stoichiometry Ws # 4: Limiting Reagents

**Show all work and the balanced equations for each problem.   Circle your final answer with correct units and label.**

1.  Using the reaction, $4Al + 3O_2 \rightarrow 2Al_2O_3$, identify the limiting reactant in each of the following
    a)  0.25mol Al and .40mol $O_2$                     c)  58.5g Al and 98.0g $O_2$

    b)  78.2g Al and 113.1g $O_2$                       d) 78.2g $O_2$ and 113.1g Al

2.  Hexane ($C_6H_{14}$) burns in oxygen to produce carbon dioxide and water. How many moles of oxygen are needed for the complete combustion of $9.88 \times 10^{21}$ molecules of hexane?

3.  Identify the limiting reactant when 10.0g $H_2O$ reacts with 4.5g Na to produce NaOH and $H_2$.

4.  Identify the limiting reactant when 12.5L of $H_2S$ at STP is bubbled through a solution containing 24.0g KOH to form $K_2S$ and $H_2O$.

5.  If 3.5g Zn and 3.5g S are mixed together and heated, what mass of ZnS will be produced?

6.  What mass of barium nitride ($Ba_3N_2$) is produced from the combination reaction between 22.6g solid barium and 4.2g nitrogen gas?

7.  If a 200.0.g sample of Al is reacted with 175.0L of $O_2$ at STP, what is the limiting reagent? The equation for the reaction is  $4Al(s) + 3O_2(g) \rightarrow 2Al_2O_3(s)$.