

Name: _____
Period: _____ Date: _____

Limiting Reactant WS_K & L

1. Sulfuric acid reacts with aluminum hydroxide to produce water and aluminum sulfate. If 30.0 g of sulfuric acid reacts with 25.0 g of aluminum hydroxide, identify the limiting reactant by determining how much water is produced.
- $$3\text{H}_2\text{SO}_4 + 2\text{Al}(\text{OH})_3 \rightarrow 6\text{H}_2\text{O} + \text{Al}_2(\text{SO}_4)_3$$

$$\frac{X \text{ g H}_2\text{O}}{30 \text{ g H}_2\text{SO}_4} = \frac{108.09 \text{ g H}_2\text{O}}{98.078 \text{ g H}_2\text{SO}_4}$$
$$X = 11.02 \text{ g H}_2\text{O}$$

LR: ~~Al(OH)3~~
H2SO4

$$\frac{X \text{ g H}_2\text{O}}{25 \text{ g Al}(\text{OH})_3} = \frac{108.09 \text{ g H}_2\text{O}}{156.006 \text{ g}}$$
$$X = 17.32 \text{ g H}_2\text{O}$$

2. Photosynthesis reactions occur in green plants to make chemical energy by the following equation: $6\text{CO}_2 + 6\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$. If a plant has 88.0 g of carbon dioxide and 64.0 g of water available, determine the limiting reactant.

$$\frac{X \text{ g CO}_2}{64 \text{ g H}_2\text{O}} = \frac{264.054 \text{ g CO}_2}{108.09 \text{ g H}_2\text{O}}$$

$$X \text{ g} = 159.40 \text{ g CO}_2$$

LR: CO2

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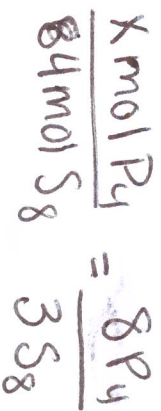
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LR: CO2

3. Using the following equation, $8P_4 + 3S_8 \rightarrow 8P_4S_3$, determine the limiting reactant when 4 mol of P_4 reacts with 4 mol of S_8 .

LR: $8P_4$



10.6 mol P_4

3. Using the following equation, $8P_4 + 3S_8 \rightarrow 8P_4S_3$, determine the limiting reactant when 4 mol of P_4 reacts with 4 mol of S_8 .

4. Balance the equation, $\underline{3}H_2 + \underline{\quad}N_2 \rightarrow \underline{2}NH_3$.

If you have 1.61 moles of H_2 and 2.83 moles of N_2 , what is the limiting reactant?



$$X = 8.49 \text{ g moles } H_2$$

LR: H_2

4. Balance the equation, $\underline{\quad}H_2 + \underline{\quad}N_2 \rightarrow \underline{\quad}NH_3$.

If you have 1.61 moles of H_2 and 2.83 moles of N_2 , what is the limiting reactant?