

# Stoichiometry HW #2

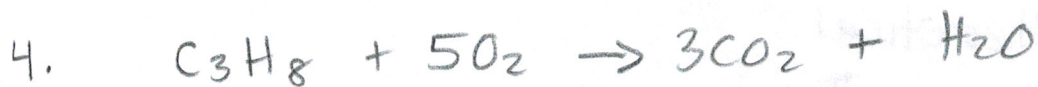


$$1. \quad \frac{12 \text{ g NF}_3 \mid 1 \text{ mol NF}_3 \mid 3 \text{ mol F}_2}{71.01 \text{ g NF}_3 \mid 2 \text{ mol NF}_3} = \boxed{0.25 \text{ mol F}_2}$$

$$2. \quad \frac{10.0 \text{ g N}_2 \mid 1 \text{ mol N}_2 \mid 2 \text{ mol NF}_3 \mid 71.01 \text{ g NF}_3}{28.02 \text{ g N}_2 \mid 1 \text{ mol N}_2 \mid 1 \text{ mol NF}_3} = \boxed{50.7 \text{ g NF}_3}$$



$$\frac{4.75 \times 10^{23} \text{ molec CO}_2 \mid 1 \text{ mol CO}_2 \mid 1 \text{ mol O}_2 \mid 22.4 \text{ L O}_2}{6.02 \times 10^{23} \text{ molec CO}_2 \mid 2 \text{ mol CO}_2 \mid 1 \text{ mol O}_2} = \boxed{8.84 \text{ L O}_2}$$



$$\frac{2.5 \text{ L C}_3\text{H}_8 \mid 1 \text{ mol C}_3\text{H}_8 \mid 3 \text{ mol CO}_2 \mid 44.01 \text{ g CO}_2}{22.4 \text{ L C}_3\text{H}_8 \mid 1 \text{ mol C}_3\text{H}_8 \mid 1 \text{ mol CO}_2} = \boxed{15 \text{ g CO}_2}$$



a)

$2.00 \text{ mol Zn}$	$ $	$8 \text{ mol ZnS}$	$=$	$2.00 \text{ mol ZnS}$
		$8 \text{ mol Zn}$		

$1.00 \text{ mol S}_8$	$ $	$8 \text{ mol ZnS}$	$=$	$8.00 \text{ mol ZnS}$
		$1 \text{ mol S}_8$		

↑ compare & pick the smallest value  
↓

∴ 2.00 mol ZnS produced

b) Zn is the limiting reactant b/c Zn can produce the least amount of product

c) % yield =  $\frac{\text{actual} \leftarrow \text{Lab (experimental)}}{\text{theoretical} \leftarrow \text{"grid" (theoretical, how much should be made)}} \times 100$

$$\% \text{ yield} = \frac{1.00 \text{ mol}}{2.00 \text{ mol}} \times 100 = \boxed{50.0\% \text{ yield}}$$