

* Did not use sig figs *
 * DON'T FORGET TO BALANCE!!! *



a)
$$\frac{8 \text{ g Zn} \mid 1 \text{ mol Zn} \mid 8 \text{ mol ZnS} \mid 97.5 \text{ g}}{65.4 \text{ g} \mid 8 \text{ mol Zn} \mid 1 \text{ mol ZnS}} = 11.9 \text{ g ZnS}$$

$$\frac{6 \text{ g S}_8 \mid 1 \text{ mol S}_8 \mid 8 \text{ mol ZnS} \mid 97.5 \text{ g ZnS}}{256.0 \text{ g S}_8 \mid 1 \text{ mol S}_8 \mid 1 \text{ mol ZnS}} = 18.22 \text{ g ZnS} \leftarrow \text{Not possible}$$

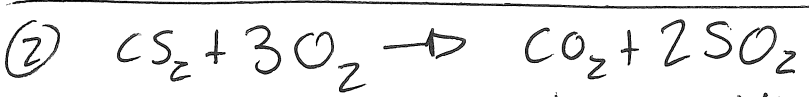
Limiting reactant is Zn

b) Excess = 2.07 g S₈

$$\frac{8 \text{ g Zn} \mid 1 \text{ mol Zn} \mid 1 \text{ mol S}_8 \mid 256.0 \text{ g S}_8}{65.4 \text{ g Zn} \mid 8 \text{ mol Zn} \mid 1 \text{ mol S}_8} = 3.93 \text{ g S}_8 \leftarrow \text{used!}$$

$$6.00 \text{ g S}_8 - 3.93 \text{ g S}_8 = 2.07 \text{ g S}_8$$

c) 11.9 g ZnS (see part a)



* I chose to solve for CO₂; SO₂ would work too! *

a)
$$\frac{15 \text{ g CS}_2 \mid 1 \text{ mol CS}_2 \mid 1 \text{ mol CO}_2 \mid 44 \text{ g CO}_2}{76.2 \text{ g CS}_2 \mid 1 \text{ mol CS}_2 \mid 1 \text{ mol CO}_2} = 0.66 \text{ g CO}_2 \leftarrow \text{NOT possible}$$

$$\frac{15 \text{ g O}_2 \mid 1 \text{ mol O}_2 \mid 1 \text{ mol CO}_2 \mid 44 \text{ g CO}_2}{32 \text{ g O}_2 \mid 3 \text{ mol O}_2 \mid 1 \text{ mol CO}_2} = 6.88 \text{ g CO}_2$$

LR = O₂

b) Excess = 3.1 g CS₂

$$\frac{15 \text{ g O}_2 \mid 1 \text{ mol O}_2 \mid 1 \text{ mol CS}_2 \mid 76.2 \text{ g CS}_2}{32 \text{ g O}_2 \mid 3 \text{ mol O}_2 \mid 1 \text{ mol CS}_2} = 11.9 \text{ g CS}_2$$

$$15 \text{ g CS}_2 - 11.9 \text{ g CS}_2 = 3.1 \text{ g CS}_2$$

c) 6.88 g CO₂ (see part a) & 20.0 g SO₂

$$\frac{15 \text{ g O}_2 \mid 1 \text{ mol O}_2 \mid 2 \text{ mol SO}_2 \mid 64.1 \text{ g SO}_2}{32 \text{ g O}_2 \mid 3 \text{ mol O}_2 \mid 1 \text{ mol SO}_2} = 20.0 \text{ g}$$

3) a) Fe = Limiting R

b) excess = 3.84g of H_2O leftover

c) .24g H_2 & 6.9g Fe_3O_4

4) a) LR is Fe

b) excess = 7.70g of O_2 leftover

c) 14.3g Fe_2O_3

5) a) LR is $CaSi_2$

b) excess = 2.02g $SbCl_3$

c) 4.64g Sb

3.21g Si

6.35g $CaCl_2$

6) a) LR = Mg

b) excess = 5.4g O_2 left

c) 16.6g MgO

~~7~~ 7) a) LR = H_2O

b) excess = 2.43g Li

c) .372g H_2

8.89g $LiOH$

8) a) LR = O_2

b) excess = 5.00g CH_4 leftover

c) 2.25g H_2O

2.75g CO_2