

# 11-3 Practice Problems

1. Identify the limiting reactant when 1.22 g of O<sub>2</sub> reacts with 1.05 g of H<sub>2</sub> to produce water.  
 $2H_2 + O_2 \rightarrow 2H_2O$

O<sub>2</sub>

2. Identify the limiting reactant when 4.68 g of Fe reacts with 2.88 g of S to produce FeS.

Fe

3. Identify the limiting reactant when 5.87 g of Mg(OH)<sub>2</sub> reacts with 12.84 g of HCl to form MgCl<sub>2</sub> and water.

Mg(OH)<sub>2</sub>

4. Identify the limiting reactant when 6.25 g of AgNO<sub>3</sub> reacts with 4.12 g of NaCl to form NaNO<sub>3</sub> and AgCl.



$AgNO_3 \frac{6.25}{169.9} = 0.0368$        $NaCl \frac{4.12}{58.5} = 0.0704$

5. Identify the limiting reactant when 7.81 g of HCl reacts with 5.24 g of NaOH to produce NaCl and H<sub>2</sub>O.



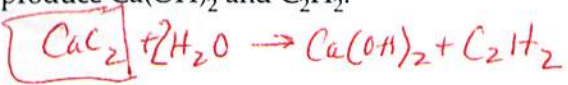
$HCl \frac{7.81}{36.5} = .132$        $NaOH \frac{5.24}{40} = .13$

6. Identify the limiting reactant when 6.33 g of H<sub>2</sub>SO<sub>4</sub> reacts with 5.92 g of NaOH to produce Na<sub>2</sub>SO<sub>4</sub> and water.



$NaOH \frac{5.92}{40} = .148$        $H_2SO_4 \frac{6.33}{98.1} = 0.0645$

7. Identify the limiting reactant when 43.25 g of CaC<sub>2</sub> reacts with 33.71 g of water to produce Ca(OH)<sub>2</sub> and C<sub>2</sub>H<sub>2</sub>.

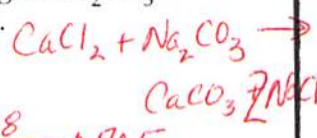


$CaC_2 \frac{43.25}{64.1} = 0.675$        $\frac{33.71}{18} = 1.87$

8. Identify the limiting reactant when 65.14 g of CaCl<sub>2</sub> reacts with 74.68 g of Na<sub>2</sub>CO<sub>3</sub> to produce CaCO<sub>3</sub> and NaCl.

$CaCl_2 \frac{65.14}{111.1} = 0.586$

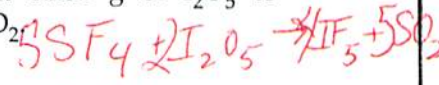
$Na_2CO_3 \frac{74.68}{106} = 0.705$



9. Identify the limiting reactant when 4.687 g of SF<sub>4</sub> reacts with 6.281 g of I<sub>2</sub>O<sub>5</sub> to produce IF<sub>5</sub> and SO<sub>2</sub>.

$SF_4 \frac{4.687}{108.1} = 0.0434$

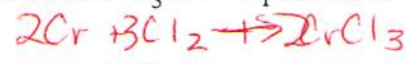
$I_2O_5 \frac{6.281}{337.8} = 0.0188$



10. If 4.1 g of Cr is heated with 9.3 g of Cl<sub>2</sub>, what mass CrCl<sub>3</sub> will be produced?

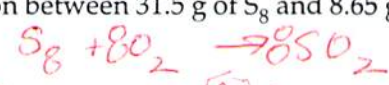
$Cr \frac{4.1}{52.0} = 0.0788$

$Cl_2 \frac{9.3}{71} = .132$



$0.0788 \times 158.5 = 12.5g$

11. What mass of SO<sub>2</sub> is produced from the reaction between 31.5 g of S<sub>8</sub> and 8.65 g of O<sub>2</sub>?



$S_8 \frac{31.5}{256.8} = 0.123$

$O_2 \frac{8.65}{32} = 0.270$

$0.123 \times 270 \times 64 = 17.3g$

12. What mass of SO<sub>3</sub> is produced from the reaction of 12.4 g of SO<sub>2</sub> and 3.45 g of O<sub>2</sub>?

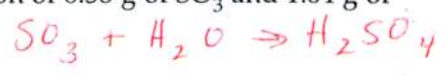


$SO_2 \frac{12.4}{96.1} = 0.129$

$O_2 \frac{3.45}{32} = 0.108$

$0.129 \times 80 = 10.3g$

13. What mass of H<sub>2</sub>SO<sub>4</sub> is produced from the reaction of 6.58 g of SO<sub>3</sub> and 1.64 g of H<sub>2</sub>O?

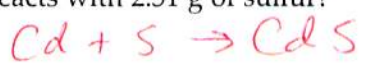


$SO_3 \frac{6.58}{80.1} = 0.0821$

$H_2O \frac{1.64}{18} = 0.0911$

$0.0821 \times 98.1 = 8.05g$

14. What mass of CdS is produced if 8.47 g of cadmium reacts with 2.51 g of sulfur?



$Cd \frac{8.47}{112.4} = .0754$

$S \frac{2.51}{32.1} = .0782$

$0.0754 \times 144.5 = 10.9g$