1.7.6.2: Practice Stoichiometry part 2

Exercise 1.7.6.2.1

$2\ Mg_{(s)} + O_{2\ (g)} \rightarrow 2\ MgO_{(s)}$

In the reaction above, how many grams of MgO would be produced from 6.87 g of Mg and 5.22 g O_2?

Answer

11.4 g MgO (Mg is limiting)

Exercise 1.7.6.2.1

$2\ NH_{3\ (g)} + 3\ O_{2\ (g)} \rightarrow 3\ H_2O_{(g)} + N_2O_{3\ (g)}$

In the reaction above, how many grams of N_2O_3 would be produced from 12.76 g of NH_3 and 17.44 g O_2?

Answer

13.81 g N_2O_3 (O_2 is limiting)

In the reaction above, how many grams of N_2O_3 would be produced from 0.765 moles NH_3 and 1.206 moles O_2?

Answer

29.1 g (NH_3 is limiting)

Exercise 1.7.6.2.1

$2\ HgO_{(s)} \rightarrow 2\ Hg_{(l)} + O_{2\ (g)}$

If you heat 375.0 grams of HgO and obtain 248.4 g Hg, what is your percent yield?

Answer

71.52 % (expect 347.3 g Hg product)

Exercise 1.7.6.2.1

$6\ Li_{(s)} + N_{2\ (g)} \rightarrow 2\ Li_3N_{(s)}$

If you heat 38.44 grams of Li (with plenty of nitrogen) and obtain 44.74 g Li_3N, what is your percent yield?

Answer

69.57 % (expect 64.31 g Li_3N product)

Exercise 1.7.6.2.1

$Fe_2S_{3\ (s)} + 6\ HCl_{(g)} \rightarrow\ 2\ FeCl_{3\ (s)} + 3\ H_2S_{(g)}$

If you treat 17.82 grams of Fe_2S_3 (with plenty of HCl) and obtain 21.36 g $FeCl_3$, what is your percent yield?

Answer

76.83 % (expect 27.80 g $FeCl_3$ product)