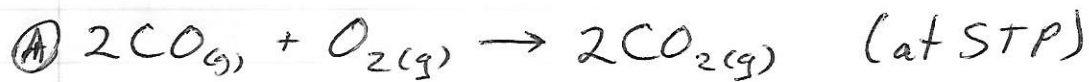


Three step conversions

Sample Problems



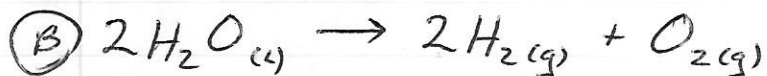
How many litres of O_2 are required to react with 3.86 L of $\text{CO}_{(g)}$?



① $3.86 \text{ L CO}_{(g)} \times \frac{1 \text{ mol}}{22.4 \text{ L}} = 0.172 \text{ mol CO}_{(g)}$

② $0.172 \text{ mol CO}_{(g)} \times \frac{1 \text{ mol O}_{2(g)}}{2 \text{ mol CO}_{(g)}} = 0.086 \text{ mol O}_{2(g)}$

③ $0.086 \text{ mol O}_{2(g)} \times \frac{22.4 \text{ L}}{1 \text{ mol}} = 1.93 \text{ L O}_{2(g)}$



How many molecules of $\text{O}_{2(g)}$ are produced when 29.2 g of $\text{H}_2\text{O}_{(l)}$ reacts?



① $29.2 \text{ g H}_2\text{O}_{(l)} \times \frac{1 \text{ mol H}_2\text{O}}{18.02 \text{ g H}_2\text{O}} = 1.62 \text{ mol H}_2\text{O}_{(l)}$

② $1.62 \text{ mol H}_2\text{O}_{(l)} \times \frac{1 \text{ mol O}_{2(g)}}{2 \text{ mol H}_2\text{O}_{(l)}} = 0.81 \text{ mol O}_{2(g)}$

③ $0.81 \text{ mol O}_{2(g)} \times \frac{6.02 \times 10^{23} \text{ molecules}}{1 \text{ mol}} = 4.88 \times 10^{23} \text{ molecules O}_{2(g)}$

H_2O

$2 \times \text{H} = 2 \times 1.01 \text{ g/mol} = 2.02 \text{ g/mol}$

$1 \times \text{O} = 1 \times 16.00 \text{ g/mol} = 16.00 \text{ g/mol}$

18.02 g/mol