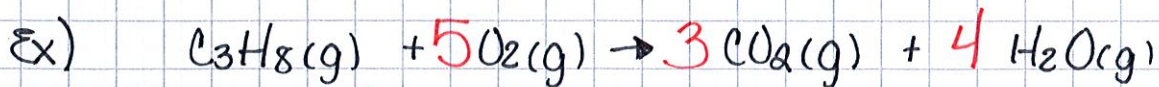


Stoichiometry

mole ratio →

$\frac{\text{moles unknown}}{\text{moles given}}$

← comes from the balanced equation

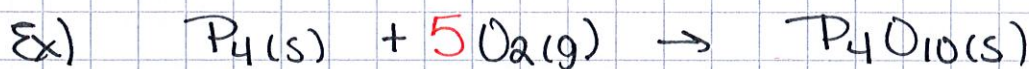


How many moles of water are produced from the reaction of 9.99 moles of oxygen with excess propane (C_3H_8)? GIVEN

$$\frac{9.99 \text{ mol O}_2}{5 \text{ mol O}_2} \left| \frac{4 \text{ mol H}_2\text{O}}{5 \text{ mol O}_2} \right. = 7.99 \text{ mol H}_2\text{O}$$

How many moles of CO_2 are produced along with 7.99 moles of H_2O ? GIVEN

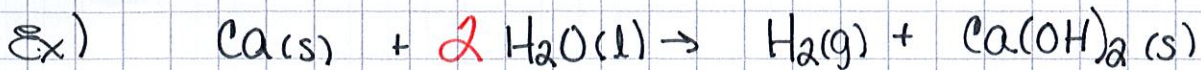
$$\frac{7.99 \text{ mol H}_2\text{O}}{4 \text{ mol H}_2\text{O}} \left| \frac{3 \text{ mol CO}_2}{4 \text{ mol H}_2\text{O}} \right. = 5.99 \text{ mol CO}_2$$



How many moles of P_4O_{10} are produced from reacting 100. g of oxygen with excess phosphorous? GIVEN

$$\frac{100. \text{ g O}_2}{32.00 \text{ g O}_2} \left| \frac{1 \text{ mol P}_4\text{O}_{10}}{5 \text{ mol O}_2} \right. = 0.625 \text{ mol P}_4\text{O}_{10}$$

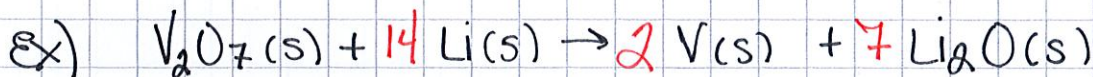
Q₂ $2 \times 16.00 \text{ g} = 32.00 \text{ g}$



How many grams of $\text{Ca}(\text{OH})_2$ are produced from reacting 2.50 mol of H_2O with excess Ca ?
GIVEN

$$\frac{2.50 \text{ mol H}_2\text{O}}{2 \text{ mol H}_2\text{O}} \times \frac{1 \text{ mol Ca}(\text{OH})_2}{1 \text{ mol Ca}(\text{OH})_2} \times \frac{74.10 \text{ g Ca}(\text{OH})_2}{1 \text{ mol Ca}(\text{OH})_2} = 92.4 \text{ g Ca}(\text{OH})_2$$

$$\begin{array}{r} \text{Ca } 1 \times 40.08 \text{ g} = 40.08 \text{ g} \\ \text{O } 2 \times 16.00 \text{ g} = 32.00 \text{ g} \\ \text{H } 2 \times 1.01 \text{ g} = 2.02 \text{ g} \\ \hline 74.10 \text{ g} \end{array}$$



What mass of vanadium is produced when 15.0 g of lithium reacts with excess vanadium (VII) oxide?
GIVEN

$$\frac{15.0 \text{ g Li}}{6.94 \text{ g Li}} \times \frac{1 \text{ mol Li}}{14 \text{ mol Li}} \times \frac{2 \text{ mol V}}{1 \text{ mol V}} \times \frac{50.94 \text{ g V}}{1 \text{ mol V}} = 15.7 \text{ g V}$$



What mass, in grams, of oxygen gas is produced along with 18.0 g of water when hydrogen peroxide decomposes?
GIVEN

$$\frac{18.0 \text{ g H}_2\text{O}}{18.02 \text{ g H}_2\text{O}} \times \frac{1 \text{ mol H}_2\text{O}}{2 \text{ mol H}_2\text{O}} \times \frac{1 \text{ mol O}_2}{1 \text{ mol O}_2} \times \frac{32.00 \text{ g O}_2}{1 \text{ mol O}_2} = 16.0 \text{ g O}_2$$

$$\begin{array}{r} \text{H } 2 \times 1.01 \text{ g} = 2.02 \text{ g} \\ \text{O } 1 \times 16.00 \text{ g} = 16.00 \text{ g} \\ \hline 18.02 \text{ g} \end{array}$$

$$\begin{array}{r} \text{O } 2 \times 16.00 \text{ g} \\ = 32.00 \text{ g} \end{array}$$

Stoichiometry Guide

(A)

(B)

(C)

1 mol given
molar mass
given

moles unknown
moles given

molar mass unknown
1 mol unknown

(from balanced
equation)

If your...

give is in: \approx unknown is in: then complete steps:

moles

moles

(B)

grams

moles

(A) + (B)

moles

grams

(B) + (C)

grams

grams

(A) + (B) + (C)

FIVE STAR.
★★★★★

FIVE STAR.
★★★★★

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★★★★★

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★★★★★