Mole Ratio

Video Workbook with Dr. B

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We get the *mole ratio* from balanced chemical equations. That is a big reason we balance equations!

The coefficients represent the ratios of substances. We often think of the coefficients as *moles*.

The mole ratio is the only time we use the coefficients from a balanced equation in stoichiometry.

Watch this video for all you need to learn how to use the mole ratio!

[Understanding and Using the Mole Ratio]

The mole ratio is needed for reaction stoichiometry problems.

We can write the mole ratios several ways.

For example, for the balanced equation:

$S_8 + 16O_2 \rightarrow 8SO_2$

the mole ratio for S_8 to SO_2 can be written:

$1:8$ or $\frac{1\text{ mol } S_8}{8\text{ mol } SO_2}$ or $\frac{8\text{ mol } SO_2}{1\text{ mol } S_8}$

You could also say that for every one mol of S_8 that reacts there will be 8 mol of SO_2 produced.

Practice with Video Explanations

Mole Ratio O_2 to H_2O
$H_2 + O_2 \rightarrow H_2O$
https://youtu.be/pABeHtosDNs

Mole Ratio for O_2 to CO_2
$CH_4 + O_2 \rightarrow CO_2 + H_2O$
https://youtu.be/4f20OXjnx-c

Mole Ratio for Al_2O_3 to Al
$Al + O_2 \rightarrow Al_2O_3$
https://youtu.be/aGbTh7ivlYM

Mole Ratio for Na to Cl_2
$Na + Cl_2 \rightarrow NaCl$
https://youtu.be/-sGoQMo0ers

Mole Ratio for NH_3 to H_2
$N_2 + H_2 \rightarrow NH_3$
https://youtu.be/fn0Lnj2vuvA

Mole Ratio for H_2 to HCl
$H_2 + Cl_2 \rightarrow HCl$
https://youtu.be/n7Z3hZuKKhQ

Answers

1 mol O_2 : 2 mol H_2O or
1 mol O_2/2 mol H_2O or
2 mol H_2O/1 mol O_2

2 mol Na : 1 mol Cl_2 or
2 mol Na/1mol Cl_2 or
1 mol Cl_2/2 mol Na

2 mol O_2 : 1 mol CO_2 or
2 mol O_2/1mol CO_2 or
1 mol CO_2/2 mol O_2

2 mol NH_3 : 3 mol H_2 or
2 mol NH_3/3 mol H_2 or
3 mol H_2/2 mol NH_3

2 mol Al_2O_3 : 4 mol Al or
2 mol Al_2O_3/4 mol Al or
4 mol Al/2 mol Al_2O_3

1 mol H_2 : 2 mol HCl or
1 mol H_2/2 mol HCl or
2 mol HCl/1 mol H_2