



Reaction Stoichiometry

Video Workbook with Dr. B

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Reaction Stoichiometry problems follow the same general steps:

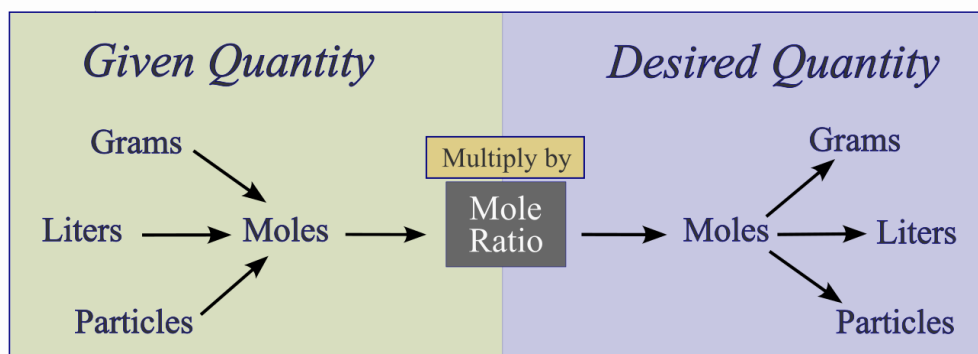
Step 1: Balance the equation and label the *given* and *desired* quantities.

Step 2: Plan your strategy.

- Convert *given* quantity to moles.
- Use the mole ratio to convert moles of *given* to moles of *desired*.
- Convert moles of *desired* to the units you need to end up with.

Step 3: Do the math!

Example: In the equation: $\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}$, how many grams of H_2O will be formed if you start with 3.2 g of O_2 ?



Balance the equation. Convert 3.2g of O_2 to moles of O_2 . Use the mole ratio to find moles of H_2O . Convert moles H_2O to grams.

Watch this video for a full explanation: https://youtu.be/l9_rM-rARSQ

Teachers use different formats to solve these problems. But the process, and end result, are the same.

You must be able to quickly:

- Find the Molar Mass.
- Convert between moles and grams.
- Use the mole ratio.

Remember, the mole ratio comes from the coefficients in the balanced equation.

Often the term “in excess” will be used in problems. It just means you don’t need to worry about the amount of that substance being limiting.

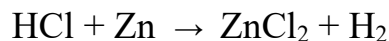
Watch this video on how to solve stoichiometry problems!

[How to Solve Reaction Stoichiometry Problems](#)



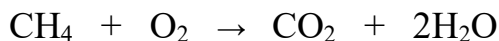
Practice with Video Explanations

Problem 1: Calculate the moles HCl needed to react completely with 8.25 moles of zinc.



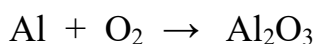
<https://youtu.be/Z5Nw9Hzjq7E>

Problem 2: How many molecules of CO₂ will be produced if 4.2g of CH₄ reacts completely. Assume excess O₂.



<https://youtu.be/8NaGKJVd5eQ>

Problem 3: How many moles of O₂ will react with Al to form 2.4 moles of Al₂O₃?



<https://youtu.be/LRATL-nmuYo>

Problem 4: How many liters of CO₂ are produced if 4.7 grams of Glucose (C₆H₁₂O₆) reacts completely?



<https://youtu.be/KssKjqFL6Ds>

Answers (Note, depending how you round you may get a slightly different answer.)

<https://youtu.be/Z5Nw9Hzjq7E>
Problem 1: 16.5 mol HCl

<https://youtu.be/8NaGKJVd5eQ>
Problem 2: 1.6×10^{23} molecules CO₂

<https://youtu.be/LRATL-nmuYo>
Problem 3: 3.6 moles O₂

<https://youtu.be/KssKjqFL6Ds>
Problem 4: 1.16 L CO₂ gas

Report errors and suggestions to DrB@breslyn.org



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