

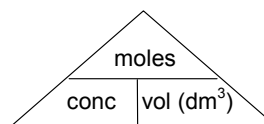


TITRATION CALCULATIONS 1

- Use the volume and concentration of one reactant to calculate the moles.
- Use the chemical equation to find the moles of the other reactant.
- Calculate the volume or concentration as required of that reactant.

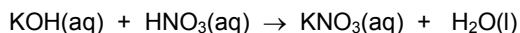
$$\text{concentration (mol/dm}^3\text{)} = \frac{\text{moles}}{\text{volume (dm}^3\text{)}}$$

You could still use the ✓ and ? that you used for reacting mass calculations in C2.



- What volume of 0.100 mol/dm³ sulphuric acid reacts with 30 cm³ of 0.150 mol/dm³ sodium hydroxide?
 $2 \text{NaOH(aq)} + \text{H}_2\text{SO}_4\text{(aq)} \rightarrow \text{Na}_2\text{SO}_4\text{(aq)} + 2 \text{H}_2\text{O(l)}$
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- 25.0 cm³ of 0.200 mol/dm³ sodium hydroxide solution reacted with 28.7 cm³ sulphuric acid. Calculate the concentration of the sulphuric acid in mol/dm³.
 $2 \text{NaOH(aq)} + \text{H}_2\text{SO}_4\text{(aq)} \rightarrow \text{Na}_2\text{SO}_4\text{(aq)} + 2 \text{H}_2\text{O(l)}$
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- 22.5 cm³ of sodium hydroxide solution reacted with 25.0 cm³ of 0.100 mol/dm³ hydrochloric acid.
 $\text{NaOH(aq)} + \text{HCl(aq)} \rightarrow \text{NaCl(aq)} + \text{H}_2\text{O(l)}$
 - Calculate the concentration of the sodium hydroxide solution in mol/dm³.
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 - Calculate the concentration of the sodium hydroxide solution in g/dm³.
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- What volume of 0.150 mol/dm³ rubidium hydroxide reacts with 25.0 cm³ of 0.240 mol/dm³ nitric acid?
 $\text{RbOH(aq)} + \text{HNO}_3\text{(aq)} \rightarrow \text{RbNO}_3\text{(aq)} + \text{H}_2\text{O(l)}$
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- 5) What volume of 1.50 mol/dm³ potassium hydroxide reacts with 25.0 cm³ of 1.10 mol/dm³ nitric acid?

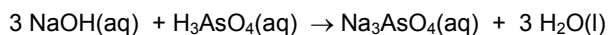


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- 6) 25.0 cm³ of arsenic acid, H₃AsO₄, required 37.5 cm³ of 0.100 M sodium hydroxide for neutralisation. Calculate the concentration of the acid in mol/dm³.

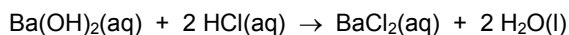


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- 7) 50.0 cm³ of 0.250 mol/dm³ barium hydroxide solution reacted with 24.3 cm³ of hydrochloric acid. Calculate the concentration of the hydrochloric acid in mol/dm³.

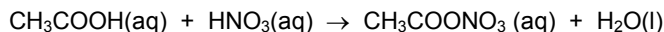


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- 8) 25.0 cm³ of 0.150 mol/dm³ nitric acid reacted with 30.3 cm³ of a solution of ethanoic acid.



- a) Calculate the concentration of the ethanoic acid in mol/dm³.

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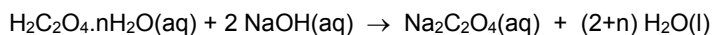
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- b) Calculate the concentration of the ethanoic acid in g/dm³.

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- 9) A 0.1575 g sample of ethanedioic acid crystals, H₂C₂O₄.nH₂O was dissolved in water. In a titration, 25.0 cm³ of this solution of acid reacted with exactly 15.6 cm³ of 0.16 mol/dm³ NaOH. Calculate the value of M_r of the acid and n.



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