Acid/Base Reactions

CH12-13

3 inquiry questions · 20 dot points

1 What is an acid and what is a base?

- investigate the correct IUPAC nomenclature and properties of common inorganic acids and bases
- conduct an investigation to demonstrate the preparation and use of indicators as illustrators of the characteristics and properties of acids and bases and their reversible reactions
- predict the products of acid reactions and write balanced equations to represent:...
- investigate applications of neutralisation reactions in everyday life and industrial processes
- conduct a practical investigation to measure the enthalpy of neutralisation
- explore the changes in definitions and models of an acid and a base over time to explain the limitations of each model, including but not limited to:...

2 What is the role of water in solutions of acids and bases?

- conduct a practical investigation to measure the pH of a range of acids and bases
- calculate pH, pOH, hydrogen ion concentration ([H+]) and hydroxide ion concentration ([OH−]) for a range of solutions
- conduct an investigation to demonstrate the use of pH to indicate the differences between the strength of acids and bases
- write ionic equations to represent the dissociation of acids and bases in water, conjugate acid/base pairs in solution and amphiprotic nature of some salts, for example:...
- construct models and/or animations to communicate the differences between strong, weak, concentrated and dilute acids and bases
- calculate the pH of the resultant solution when solutions of acids and/or bases are diluted or mixed

3 How are solutions of acids and bases analysed?

- conduct practical investigations to analyse the concentration of an unknown acid or base by titration
- investigate titration curves and conductivity graphs to analyse data to indicate characteristic reaction profiles, for example:...
- model neutralisation of strong and weak acids and bases using a variety of media
- calculate and apply the dissociation constant (Ka) and pKa (pKa = -log10 (Ka)) to determine the difference between strong and weak acids
- explore acid/base analysis techniques that are applied:...
- conduct a chemical analysis of a common household substance for its acidity or basicity , for example:...
- conduct a practical investigation to prepare a buffer and demonstrate its properties
- describe the importance of buffers in natural systems