Chemistry Scheme of Learning

<u>Year 9 – Term 4/Unit 4</u>

<u>Intent – Rationale</u>

Pupils build on their knowledge of acid base reactions covered in term 3 and focus on neutralisation, as well as the concept of strong and weak acids. They deepen their understanding concept of concentration of hydrogen ions using a logarithmic scale. Pupils continue to develop their practical skills and carry out titrations in which they plot a pH curve in order to ide base reaction, as well as preparing a soluble salt using an acid-base reaction (required practical 1)

Sequencing – what prior learning does this topic build upon?	Sequencing – what subsequent learning d
 Year 7 Chemistry Topic 3 Acids and Alkalis. Pupils learn about the pH scale and the difference between acids and alkalis, as well as dilute and concentrated acids. Pupils observe a demo titration Year 8 Topic 9 Reactions of Acids. Pupils learn how to prepare a soluble salt from an insoluble substance and they prepare a sample of copper sulphate. They are also introduced to the neutralisation ionic equation and have to know what ions are produced by acids and alkalis 	 Topic 7 Organic Chemistry in term 1 in Year 11 GCSE Chemwhich are weak acids Topic 3 Quantitative Chemistry in term 2 and 3 of Year 10. techniques in the context of chemical calculations. For solvexplain which reagent is the limiting reagent, and for titratic concentrations using this technique Topic 10 Using Resources in term 4 and 5 of Year 11. Pupil method to exactly neutralise ammonia solution to make a Topic 3.1.2 in Term 1 Year 12 A level Chemistry for the Am calculating concentrations and titrations are one of the recendorsement. Topic 3.1.12 in Term 3 Year 13 A level Chemistry for the Am be able to calculate the pH of strong and weak acids and s
What are the links with other subjects in the curriculum?	What are the links to SMSC, British V
Base the content here on what you already know but there will be time in future to liaise further as part of our collaborative work	 Uses acids and bases in everyday life Use of titrations in different careers Manufacture of soluble salts in industry
What are the opportunities for developing literacy skills and developing learner confidence and enjoyment in reading?	What are the opportunities for developin
FROM THE LIBRARY Chemicals in Action: Acids and Bases; Chris Oxlade-546.24 Chemicals in Action; Ann Fullick-540 Elephants on Acid and Other Bizarre Experiments; Alex Boese-500	 Calculating concentrations Logarithms Standard form Graph plotting



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Biology Scheme of Learning

<u>Year 9 – Term 4</u>

Intent – Concepts

What knowledge will students gain and what skills will they develop as a consequence of this topic?

Know

- Know that soluble salts can be made from acids by reacting them with solid insoluble substances, such as metals, metal oxides, hydroxides or carbonates.
- Know that acids produce hydrogen ions (H+) in aqueous solutions
- Describe the use of universal indicator or a wide range indicator to measure the approximate pH of a solution
- Describe how to carry out titrations using strong acids and strong alkalis only (sulfuric, hydrochloric and nitric acids only) to find the reacting volumes accurately.

<u>Apply</u>

- Describe how to make pure, dry samples of named soluble salts from information provided.
- Use the pH scale to identify acidic or alkaline solutions
- Explain that a strong acid is completely ionised in aqueous solution and I can give examples of strong acids (hydrochloric, nitric and sulfuric acids). Explain that a weak acid is only partially ionised in aqueous solution and I can give examples of weak acids (ethanoic, citric and carbonic acids).
- Know for a given concentration of aqueous solutions, the stronger an acid, the lower the pH.

Extend

- I know that the solid is added to the acid until no more reacts and the excess solid is filtered off to produce a solution of the salt
- Use and explain the terms dilute and concentrated (in terms of amount of substance), and weak and strong (in terms of the degree of ionisation) in relation to acids
- Describe neutrality and relative acidity in terms of the effect on hydrogen ion concentration and the numerical value of pH (whole numbers only). Write ionic equations to represent neutralisation reactions
- Know that as the pH decreases by one unit, the hydrogen ion concentration of the solution increases by a factor of 10 and use this information to calculate pH values or hydrogen ion concentration

What	subject specific language will be used and developed in this topic?	What opportunities are available for assessing
Word	Definition	 Long answer question assessed homework for preparing a
Salt	A compound formed when the hydrogen in an acid is replaced by a metal	 Summative Topic 4 test after strong and weak acids
Neutralisation	The chemical reaction of an acid with a base in which salt and water are formed. If the base is a carbonate CO_2 is also produced	
Soluble	Can dissolve	
Filtration	A method of separating mixtures which separates solids from liquids/solutions	
Filtrate	The liquid/solution collected after removing the solid	
Crystallisation	Forming solid crystals from a salt solution.	
Acids	When dissolved in water the solution has a pH below 7. They are	
	H ⁺ donors	
Alkalis	A solution that has a pH above 7	



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рН	A number that tells you how acidic or alkaline a solution is. It tells you the concentration of H^+ in a solution
Titration	A method for measuring the volumes of two solutions reacting together
Ionised	When an ionic compound separates into separate ions in solution
Strong Acid	An acid which fully ionises in a solution, producing many H ⁺
Weak Acid	An acid which partially ionises in a solution, not producing many H ⁺
Concentration	The amount of particles in a solution compared to the volume of
•	water



Intent – Concepts

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