Subject	Year 10 Core Knowledge – Autumn/Spring/Summer term	How to support students' learning
Science – Chemistry	**Autumn Term** **Chemical changes –** 1. Describe reactions of metal oxides. 2. Chemical changes - Describe reactions of acids with metals. 3. Recall the pH scale and understand the link to hydrogen ion concentration in solution. 4. Describe neutralisation of acids and salt production. 5. Recall and apply the reactivity series. 6. Describe extraction of metals and reduction. 7. Understand soluble salts. 8. Describe the process of electrolysis. 9. Describe electrolysis of molten ionic compounds. 10. Describe electrolysis of aqueous solutions. 11. Describe the use of electrolysis to extract metals. 12. Represent chemical reactions as word and balanced symbol equations. 13. Understand oxidation and reduction in terms of electrons, ionic equations, and half equations (HT only). 14. Compare strong and weak acids and calculate changes in hydrogen ion concentration related to changes in pH (HT only). 15. Represent reactions at electrodes as half equations (HT only). 16. Undertake titrations and record results appropriately (Triple only). **Spring Term** **Quantitative chemistry –** 17. Describe the term 'conservation of mass'. 18. Balance chemical equations requiring more than one substance to have a number in front of it.	Students can revise on the following websites: • Educake: www.educake.co.uk • Oak academy lessons: https://continuityoak.org.uk/lessons • Free science lessons: https://www.youtube.com/c/freesciencelessons • BBC bitesize- select Chemistry (Single science) and then AQA if studying for Triple Science or Combined and then select AQA Trilogy if studying Combined Science and then select the relevant topics – https://www.bbc.co.uk/bitesize/levels/z98jmp3 • Save my exams - https://www.savemyexams.com/gcse/ • Primrose Kitten - https://www.primrosekitten.com/collections/gcse • Past paper questions can be found on the Physics and Maths Tutor website for all three science subjects - https://www.physicsandmathstutor.com/

	19. Determine relative formula mass (Mr) for formula with and without brackets. 20. Describe and explain why reactions, where a reactant or product is a gas, appear not to follow the law of conservation of mass. 21. Describe chemical measurements. 22. Quantitative chemistry - Understand and define the term 'mole' (HT only). 23. Identify amounts of substances in equations using mass and moles (HT only). 24. Describe limiting reactants and calculate which reactant is limiting for a given reaction (HT only). 25. Calculate concentrations of solutions in g/dm3. 26. Calculate percentage yield (Triple only) 27. Calculate atom economy. (Triple only). 28. Calculate concentrations of solutions in mol/dm3 (Triple only). 29. Understand and calculate amount of substance in relation to volumes of gases (Triple only). 30. Describe and justify the method used for titration of a strong acid and a strong base (Triple only). 31. Undertake calculations to determine concentration of an unknown solution from titration data (Triple only). **Summer Term** **Energy changes –** 32. Describe exothermic and endothermic reactions. 33. Recall some examples of exothermic and endothermic reactions. 34. Draw the reaction profile for an exothermic and endothermic reaction and label overall energy change, activation energy. 35. Recall and evaluate an experimental method to energy changes during neutralisation.	

	36. Draw a temperature v's time graph for neutralisation and identify the point at which neutralisation occurs. 37. Use bond energies in order to calculate energy changes in chemical reactions (HT only). 38. Describe and explain chemical cells and batteries (Triple only). 39. Describe and explain the use of hydrogen in fuel cells (Triple only). 40. Calculate the rates of reactions using lines of tangent. 41. Describe factors which affect the rate of chemical reactions. 42. Describe collision theory and activation energy. 43. Describe and explain the effect of catalysts. 44. Describe reversible reactions. 45. Describe energy changes in reversible reactions. 46. Describe what equilibrium is. 47. Recognise a reversible reaction. (HT only). 48. Explain the effect of changing conditions on dynamic equilibrium to include Le- Chatelier's principle (HT only). 49. Describe the effect of changing concentration on a system in dynamic equilibrium (HT only). 50. Describe the effect of temperature on a system in dynamic equilibrium (HT only). 51. Describe the effect of pressure changes on a system in dynamic equilibrium (HT only).	