Caroline Chisholm School
Ambition Confidence Success
Everyone Every Lesson Every Opportunity

Year 10 Chemistry Curriculum

Unit	Core knowledge/skill development	Sequence	Assessment	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development	Home learning and enrichment
The Periodic Table	Describe how Mendeleev arranged the elements, known at that time, in a periodic table by using properties of these elements and their compounds. Describe how Mendeleev used his table to predict the existence and properties of some elements not then discovered. Recall the formulae of elements, simple compounds and ions. Explain that Mendeleev thought he had arranged elements in order of increasing relative atomic mass but this was not always true because of the relative abundance of	SC4a Elements and the Periodic Table SC4b Atomic number and mass number SC4c Isotopes	Starter questions Exam-type questions Hinge questions Use of web-based applications to assess knowledge in lesson (e.g. Isaac Physics, Educake, Active Learn etc.) End-of-topic tests. End of year exam (PPE). Mathematical skills will be assessed through examinations. The minimum level of mathematics in	Literacy: key words, definitions, summary notes. Numeracy: summary notes, equation practice, General maths skills (e.g. rearranging equations, graph plotting, standards form , SI prefixes) Equations students are required to recall and apply (list a) and which	**Connection finding (linking)** to use connections from past experiences (KS3) to seek generalisations in the topic **VAAs** **Hard Working: Practice** – Self-regulate and revise practice schedules in line with improvements. Set own goals and monitor progress towards them. Actively seek ways to improve. **Agile - Enquiring** Independently identify questions and problems, justify their interest in them, and critically consider whether they	**Homework**: retrieval quizzing which will assess both current learning and learning from previous years. Homework will be set on Educake, Century Tech, Isaac Physics or Seneca Premium. Exam questions may also be set as homework. There will be revision homework before each Census Assessment and Topic Test.

Unit	Core knowledge/skill development	Sequence	Assessment	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development	Home learning and enrichment
	isotopes of some pairs of elements in the periodic table. Explain the meaning of atomic number of an element in terms of position in the periodic table and number of protons in the nucleus. Describe that in the periodic table: a) elements are arranged in order of increasing atomic number, in rows called periods b) elements with similar properties are placed in the same vertical columns called groups. Identify elements as metals or non-metals according to their position in the periodic table. Predict the electronic configurations of the first 20 elements in		the foundation tier examination papers will be equivalent to Key Stage 3 mathematics. The minimum level of mathematics in the higher tier examination papers will be equivalent to foundation tier GCSE in Mathematics.	they are required to select from a list and apply (list b).	are worth asking and solving. Use connections from across the curriculum to develop their enquiry, answering questions that are of real value to society both in and outside. ACP Analysing: Precision – Select appropriate skills and conventions and use effectively to reach strong outcomes. Realising: Automaticity – Effortlessly use key facts, concepts and ideas relevant to the stage of learning. Draw upon a range of skills without the need to think or process	

Unit:	Core knowledge/skill development:	Sequence:	Assessment:	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development:	Home learning and enrichment
	the periodic table as diagrams and in the form, for example, Explain how the electronic configuration of an element is related to its position in the periodic table					**Homework**: retrieval quizzing which will assess both current learning and learning from previous years. Homework will be set on Educake, Century Tech, Isaac Physics or Seneca Premium. Exam questions may also be set as homework. There will be revision homework before each Census Assessment and Topic Test.
Ionic Bonding	Explain how ionic bonds are formed by the transfer of electrons between atoms to produce cations and anions, including the use of dot and cross diagrams. Recall that an ion is an atom or group of atoms with a positive or negative charge. Calculate the numbers of protons, neutrons and electrons in simple ions given the atomic number and mass number. Explain the formation of ions in ionic compounds	SC5a Ionic Bonds SC5b Ionic Lattices SC5c Properties of ionic compounds			**Connection finding (linking)** to use connections from past experiences (KS3) Atoms into molecules into compounds and mixtures **Self-regulation** to monitor, evaluate and self-correct as this topic	

Unit:	Core knowledge/skill development:	Sequence:	Assessment:	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development:	Home learning and enrichment
	from their atoms, limited to compounds of elements in groups 1, 2, 6 and 7. Recall the formulae of elements, simple compounds and ions. Explain the use of the endings –ide and –ate in the names of compounds. Recall the formulae of elements, simple compounds and ions. Deduce the formulae of ionic compounds (including oxides, hydroxides, halides, nitrates, carbonates and sulfates) given the formulae of the constituent ions. Explain the structure of an ionic compound as a lattice structure: a)consisting of a regular arrangement of ions					

Unit:	Core knowledge/skill development:	Sequence:	Assessment:	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development:	Home learning and enrichment
	b)held together by strong electrostatic forces (ionic bonds) between oppositely-charged ions. Explain the properties of ionic compounds limited to: a) high melting points and boiling points, in terms of forces between ions b) whether or not they conduct electricity as solids, when molten and in aqueous solution					**Homework**: retrieval quizzing which will assess both current learning and learning from previous years. Homework will be set on Educake, Century Tech, Isaac Physics or Seneca Premium. Exam questions may also be set as homework. There will be revision homework before each Census Assessment and Topic Test.
Covalent Bonding	Explain how a covalent bond is formed when a pair of electrons is shared between two atoms. Recall that covalent bonding results in the formation of molecules. Explain the formation of simple molecular, covalent substances,	SC6a Covalent bonds			**Complex and multi-step problem solving** to break down a task (e.g., equations), decide on a suitable approach, and then act. Start with a compound and break it down into its atoms. **Risk-taking**	

Unit:	Core knowledge/skill development:	Sequence:	Assessment:	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development:	Home learning and enrichment
	using dot and cross diagrams, including a hydrogen b hydrogen chloride c water d methane e oxygen f carbon dioxide				Being brave enough to work in unfamiliar contexts.	
Types of Substance	Explain the properties of typical covalent, simple molecular compounds limited to a)low melting points and boiling points, in terms of forces between molecules (intermolecular forces) b)poor conduction of electricity. Describe, using poly(ethene) as the example, that simple polymers consist of large molecules containing chains of carbon atoms. Recall that	SC7a Molecular compounds SC7b Allotropes of carbon SC7c Properties of metals SC7d Bonding models	Starter questions Exam-type questions Hinge questions Use of web-based applications to assess knowledge in lesson (e.g. Isaac Physics, Educake, Active Learn etc.) End-of-topic tests. End of year exam (PPE).		VAAs Hard Working: Practice – Self-regulate and revise practice schedules in line with improvements. Set own goals and monitor progress towards them. Actively seek ways to improve. Agile - Enquiring Independently identify questions and problems, justify their interest in them, and critically	Homework: retrieval quizzing which will assess both current learning and learning from previous years. Homework will be set on Educake, Century Tech, Isaac Physics or Seneca Premium. Exam questions may also be set as homework. There will be revision homework before each Census Assessment and Topic Test.

Unit	Core knowledge/skill development	Sequence	Assessment	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development	Home learning and enrichment
	graphite and diamond are different forms of carbon and that they are examples of covalent giant molecular substances. Describe the structures of graphite and diamond. Explain, in terms of structure and bonding, why graphite is used to make electrodes and as a lubricant, whereas diamond is used in cutting tools. Explain the properties of fullerenes including C60 and graphene in terms of their structures and bonding. Explain the properties of metals, including malleability and the ability to conduct electricity. Describe most metals as shiny solids which have		Mathematical skills will be assessed through examinations. The minimum level of mathematics in the foundation tier examination papers will be equivalent to Key Stage 3 mathematics. The minimum level of mathematics in the higher tier examination papers will be equivalent to foundation tier GCSE in Mathematics.		consider whether they are worth asking and solving. Use connections from across the curriculum to develop their enquiry, answering questions that are of real value to society both in and outside. ACP Analysing: Precision – Select appropriate skills and conventions and use effectively to reach strong outcomes. Realising: Automaticity – Effortlessly use key facts, concepts and ideas relevant to the stage of learning. Draw upon a range of skills without the need to think or process	

Unit	Core knowledge/skill development	Sequence	Assessment	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development	Home learning and enrichment
	high melting points, high density and are good conductors of electricity whereas most non-metals have low boiling points and are poor conductors. Describe the limitations of particular representations and models to include dot and cross, ball and stick models and two- and three-dimensional representations. Explain why elements and compounds can be classified as a)ionic b)covalent, simple molecular c)covalent, giant molecular d)metallic and how the structure and bonding of these types of substances					

Unit:	Core knowledge/skill development:	Sequence:	Assessment:	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development:	Home learning and enrichment
	results in different physical properties, including relative melting point and boiling point, relative solubility in water and ability to conduct electricity (as solids and in solution)					
Acids and Alkalis	Recall that acids in solution are sources of hydrogen ions and alkalis in solution are sources of hydroxide ions Recall that a neutral solution has a pH of 7 and that acidic solutions have lower pH values and alkaline solutions higher pH values Recall the effect of acids and alkalis on indicators, including litmus, methyl orange and phenolphthalein	SC8a Acids, alkalis and indicators SC8b Looking at acids SC8c Bases and Salts SC8c Core Practical – Preparing copper sulfate SC8d Alkalis and balancing equations SC8d Core practical- Investigating neutralisation SC8e Alkalis and neutralisation SC8f Reactions of acids with metals and carbonates	Starter questions Exam-type questions Hinge questions Use of web-based applications to assess knowledge in lesson (e.g. Isaac Physics, Educake, Active Learn etc.) End-of-topic tests. End of year exam (PPE).		VAAs Hard Working: Practice – Self-regulate and revise practice schedules in line with improvements. Set own goals and monitor progress towards them. Actively seek ways to improve. Agile - Enquiring Independently identify questions and problems, justify their interest in them, and critically	Homework: retrieval quizzing which will assess both current learning and learning from previous years. Homework will be set on Educake, Century Tech, Isaac Physics or Seneca Premium. Exam questions may also be set as homework. There will be revision homework before each Census Assessment and Topic Test.

Unit:	Core knowledge/skill development:	Sequence:	Assessment:	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development:	Home learning and enrichment
	Recall that the higher the concentration of hydrogen ions in an acidic solution, the lower the pH; and the higher the concentration of hydroxide ions in an alkaline solution, the higher the pH. Recall that as hydrogen ion concentration in a solution increases by a factor of 10, the pH of the solution decreases by 1 Explain the terms dilute and concentrated, with respect to amount of substances in solution Explain the terms weak and strong acids, with respect to the degree of dissociation into ions Recall that a base is any substance that reacts with an acid to	SC8g Solubility	Mathematical skills will be assessed through examinations. The minimum level of mathematics in the foundation tier examination papers will be equivalent to Key Stage 3 mathematics. The minimum level of mathematics in the higher tier examination papers will be equivalent to foundation tier GCSE in Mathematics.		consider whether they are worth asking and solving. Use connections from across the curriculum to develop their enquiry, answering questions that are of real value to society both in and outside. ACP Analysing: Precision – Select appropriate skills and conventions and use effectively to reach strong outcomes. Realising: Automaticity – Effortlessly use key facts, concepts and ideas relevant to the stage of learning. Draw upon a range of skills without the need to think or process	

Unit:	Core knowledge/skill development:	Sequence:	Assessment:	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development:	Home learning and enrichment
	form salt and water only Explain the general reactions of aqueous solutions of acids with: a metals b metal oxides c metal hydroxides d metal carbonates to produce salts Describe a neutralisation reaction as a reaction between an acid and a base Explain why, if soluble salts are prepared from an acid and an insoluble reactant: a excess of the reactant is added b the excess reactant is removed c the solution remaining is only salt and water *Investigate the preparation of pure, dry, hydrated copper*					

Unit:	Core knowledge/skill development:	Sequence:	Assessment:	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development:	Home learning and enrichment
	sulfate crystals starting from copper oxide Recall that alkalis are soluble bases. Explain the general reactions of aqueous solutions of acids with metal hydroxides to produce salts. *Investigate the change in pH on adding powdered calcium hydroxide or calcium oxide to a fixed volume of dilute hydrochloric acid* Explain an acid-alkali neutralisation as a reaction in which hydrogen ions (H+) from the acid react with hydroxide ions (OH–) from the alkali. Explain why, if soluble salts are prepared from an acid and a soluble reactant: a titration must be used					

Unit:	Core knowledge/skill development:	Sequence:	Assessment:	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development:	Home learning and enrichment
	b the acid and the soluble reactant are then mixed in the correct proportions c the solution remaining, after reaction, is only salt and water. Describe how to carry out an acid-alkali titration, using burette, pipette and a suitable indicator, to prepare a pure, dry salt. Explain the general reactions of aqueous solutions of acids with (a) metals and (d) metal carbonates to produce salts. Describe the chemical test for (a) hydrogen; (b) carbon dioxide (using limewater). Recall the general rules which describe the solubility of common types of substances in water:					

Unit:	Core knowledge/skill development:	Sequence:	Assessment:	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development:	Home learning and enrichment
	a all common sodium, potassium and ammonium salts are soluble b all nitrates are soluble c common chloride are soluble except for those of silver and lead d common sulfates are soluble except those of lead, barium and calcium e common hydroxides and carbonates are insoluble except those of sodium, potassium and ammonium Predict, using solubility rules, whether or not a precipitate will be formed when named solutions are mixed together, naming the precipitate, if any					

Unit:	Core knowledge/skill development:	Sequence:	Assessment:	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development:	Home learning and enrichment
	Describe the method used to prepare a pure, dry sample of an insoluble salt					
Calculations involving Masses	Calculate relative formula mass given relative atomic masses Calculate the formulae of simple compounds from reacting masses and understand that these are empirical formulae Deduce: a the empirical formula of a compound from the formula of its molecule b the molecular formula of a compound from its empirical formula and its relative molecular mass	SC9a Masses and empirical formula SC9bConservation of mass SC9c Moles	Starter questions Exam-type questions Hinge questions Use of web-based applications to assess knowledge in lesson (e.g. Isaac Physics, Educake, Active Learn etc.) End-of-topic tests. End of year exam (PPE). Mathematical skills will be assessed through	● Arithmetic computation when calculating yields and atom economy ● Arithmetic computation, ratio, percentage and multistep calculations permeates quantitative chemistry ● Change the subject of a mathematical equation ● Provide answers to an appropriate number of significant figures ● Convert units	VAAs Hard Working: Practice – Self-regulate and revise practice schedules in line with improvements. Set own goals and monitor progress towards them. Actively seek ways to improve. Agile - Enquiring Independently identify questions and problems, justify their interest in them, and critically consider whether they are worth asking and solving.	Homework: retrieval quizzing which will assess both current learning and learning from previous years. Homework will be set on Educake, Century Tech, Isaac Physics or Seneca Premium. Exam questions may also be set as homework. There will be revision homework before each Census Assessment and Topic Test.

Unit	Core knowledge/skill development	Sequence	Assessment	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development	Home learning and enrichment
	Describe an experiment to determine the empirical formula of a simple compound such as magnesium oxide. Explain the law of conservation of mass applied to: a a closed system including a precipitation in a closed flask b a non-enclosed system including a reaction in an open flask that takes in or gives out a gas Calculate masses of reactants and products from balanced equations, given the mass of one substance Calculate the concentration of solutions in g dm^{-3}		examinations. The minimum level of mathematics in the foundation tier examination papers will be equivalent to Key Stage 3 mathematics. The minimum level of mathematics in the higher tier examination papers will be equivalent to foundation tier GCSE in Mathematics.	where appropriate particularly from mass to moles	Use connections from across the curriculum to develop their enquiry, answering questions that are of real value to society both in and outside. ACP Analysing: Precision – Select appropriate skills and conventions and use effectively to reach strong outcomes. Realising: Automaticity – Effortlessly use key facts, concepts and ideas relevant to the stage of learning. Draw upon a range of skills without the need to think or process	

Unit:	Core knowledge/skill development:	Sequence:	Assessment:	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development:	Home learning and enrichment
	Explain why, in a reaction, the mass of product formed is controlled by the mass of the reactant which is not in excess Deduce the stoichiometry of a reaction from the masses of the reactants and products Recall that one mole of particles of a substance is defined as: a the Avogadro constant number of particles (6.02 x 1023 atoms, molecules, formulae or ions) of that substance b substance mass of 'relative particle mass' g Calculate the number of: a moles of particles of a substance in a given mass of that					

Unit:	Core knowledge/skill development:	Sequence:	Assessment:	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development:	Home learning and enrichment
	substance and vice versa b particles of a substance in a given number of moles of that substance and vice versa c particles of a substance in a given mass of that substance and vice versa					
Electrolytic Processes	Recall that electrolytes are ionic compounds in the molten state or dissolved in water Describe electrolysis as a process in which electrical energy, from a direct current supply, decomposes electrolytes Explain the movement of ions	SC10a Electrolysis SC10a Core Practical-Electrolysis of copper sulfate solution SC10b Products from electrolysis	Starter questions Exam-type questions Hinge questions Use of web-based applications to assess knowledge in lesson (e.g. Isaac Physics, Educake,		VAAs Hard Working: Practice – Self-regulate and revise practice schedules in line with improvements. Set own goals and monitor progress towards them. Actively seek ways to improve.	Homework: retrieval quizzing which will assess both current learning and learning from previous years. Homework will be set on Educake, Century Tech, Isaac Physics or Seneca Premium. Exam questions may also be set as homework.

Unit	Core knowledge/skill development	Sequence	Assessment	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development	Home learning and enrichment
	during electrolysis, in which: a positively charged cations migrate to the negatively charged cathode b negatively charged anions migrate to the positively charged anode Explain the formation of the products in the electrolysis, using inert electrodes, of some electrolytes, including: a copper chloride solution b sodium chloride solution c sodium sulfate solution d water acidified with sulfuric acid e molten lead bromide (demonstration) Predict the products of electrolysis of other binary, ionic compounds in the		Active Learn etc.) End-of-topic tests. End of year exam (PPE). Mathematical skills will be assessed through examinations. The minimum level of mathematics in the foundation tier examination papers will be equivalent to Key Stage 3 mathematics. The minimum level of mathematics in the higher tier examination papers will be equivalent to foundation tier GCSE in Mathematics.		Agile - Enquiring Independently identify questions and problems, justify their interest in them, and critically consider whether they are worth asking and solving. Use connections from across the curriculum to develop their enquiry, answering questions that are of real value to society both in and outside. ACP Analysing: Precision – Select appropriate skills and conventions and use effectively to reach strong outcomes. Realising: Automaticity – Effortlessly use key facts, concepts and ideas	There will be revision homework before each Census Assessment and Topic Test.

Unit:	Core knowledge/skill development:	Sequence:	Assessment:	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development:	Home learning and enrichment
	molten state Write half equations for reactions occurring at the anode and cathode in electrolysis Explain oxidation and reduction in terms of loss or gain of electrons Recall that reduction occurs at the cathode and that oxidation occurs at the anode in electrolysis reactions Explain the formation of the products in the electrolysis of copper sulfate solution, using copper electrodes, and how this electrolysis can be used to purify copper Core Practical: Investigate the electrolysis of copper sulfate solution with inert electrodes and copper electrodes				relevant to the stage of learning. Draw upon a range of skills without the need to think or process	

Unit:	Core knowledge/skill development:	Sequence:	Assessment:	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development:	Home learning and enrichment
Obtaining and Using Metals	Deduce the relative reactivity of some metals, by their reactions with water, acids and salt solutions Explain displacement reactions as redox reactions, in terms of gain or loss of electrons Explain the reactivity series of metals (potassium, sodium, calcium, magnesium, aluminium, (carbon), zinc, iron, (hydrogen), copper, silver, gold) in terms of the reactivity of the metals with water and dilute acids and that these reactions show the relative tendency of metal atoms to form cations Recall that: a most metals are extracted from ores found in the Earth's	SC11a Reactivity SC11b Ores SC11c Oxidation and reduction SC11d Life cycle assessment and recycling	Starter questions Exam-type questions Hinge questions Use of web-based applications to assess knowledge in lesson (e.g. Isaac Physics, Educake, Active Learn etc.) End-of-topic tests. End of year exam (PPE). Mathematical skills will be assessed through examinations. The minimum level of mathematics in the foundation tier examination papers will be equivalent to		VAAs Hard Working: Practice – Self-regulate and revise practice schedules in line with improvements. Set own goals and monitor progress towards them. Actively seek ways to improve. Agile - Enquiring Independently identify questions and problems, justify their interest in them, and critically consider whether they are worth asking and solving. Use connections from across the curriculum to develop their enquiry, answering questions that are of real value to society both in and outside.	Homework: retrieval quizzing which will assess both current learning and learning from previous years. Homework will be set on Educake, Century Tech, Isaac Physics or Seneca Premium. Exam questions may also be set as homework. There will be revision homework before each Census Assessment and Topic Test.

Unit:	Core knowledge/skill development:	Sequence:	Assessment:	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development:	Home learning and enrichment
	crust b unreactive metals are found in the Earth's crust as the uncombined elements Explain oxidation as the gain of oxygen and reduction as the loss of oxygen Recall that the extraction of metals involves reduction of ores Explain why the method used to extract a metal from its ore is related to its position in the reactivity series and the cost of the extraction process, illustrated by a heating with carbon (including iron) b electrolysis (including aluminium) (knowledge of the blast furnace is not		Key Stage 3 mathematics. The minimum level of mathematics in the higher tier examination papers will be equivalent to foundation tier GCSE in Mathematics.		ACP Analysing: Precision – Select appropriate skills and conventions and use effectively to reach strong outcomes. Realising: Automaticity – Effortlessly use key facts, concepts and ideas relevant to the stage of learning. Draw upon a range of skills without the need to think or process	

Unit:	Core knowledge/skill development:	Sequence:	Assessment:	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development:	Home learning and enrichment
	required) Evaluate alternative biological methods of metal extraction (bacterial and phytoextraction) Explain how a metal's relative resistance to oxidation is related to its position in the reactivity series Evaluate the advantages of recycling metals, including economic implications and how recycling can preserve both the environment and the supply of valuable raw materials Describe that a life-cycle assessment for a product involves consideration of the effect on the environment of obtaining the raw materials, manufacturing the					

Unit:	Core knowledge/skill development:	Sequence:	Assessment:	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development:	Home learning and enrichment
	product, using the product and disposing of the product when it is no longer useful Evaluate data from a life cycle assessment of a product					
Reversible reactions and equilibria	Recall that chemical reactions are reversible, the use of the symbol ⇌ in equations and that the direction of some reversible reactions can be altered by changing the reaction conditions Explain what is meant by dynamic equilibrium Describe the formation of ammonia as a reversible reaction between nitrogen (extracted from the air) and hydrogen (obtained from natural gas) and that it can reach a	SC12a dynamic equilibrium	Starter questions Exam-type questions Hinge questions Use of web-based applications to assess knowledge in lesson (e.g. Isaac Physics, Educake, Active Learn etc.) End-of-topic tests. End of year exam (PPE).		**VAAs** **Hard Working: Practice** – Self-regulate and revise practice schedules in line with improvements. Set own goals and monitor progress towards them. Actively seek ways to improve. **Agile - Enquiring** Independently identify questions and problems, justify their interest in them, and critically consider whether they are worth asking and solving.	**Homework**: retrieval quizzing which will assess both current learning and learning from previous years. Homework will be set on Educake, Century Tech, Isaac Physics or Seneca Premium. Exam questions may also be set as homework. There will be revision homework before each Census Assessment and Topic Test.

Unit:	Core knowledge/skill development:	Sequence:	Assessment:	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development:	Home learning and enrichment
	dynamic equilibrium Recall the conditions for the Haber process as: a temperature 450 °C b pressure 200 atmospheres c iron catalyst Predict how the position of a dynamic equilibrium is affected by changes in: a temperature b pressure c concentration		Mathematical skills will be assessed through examinations. The minimum level of mathematics in the foundation tier examination papers will be equivalent to Key Stage 3 mathematics. The minimum level of mathematics in the higher tier examination papers will be equivalent to foundation tier GCSE in Mathematics.		Use connections from across the curriculum to develop their enquiry, answering questions that are of real value to society both in and outside. ACP Analysing: Precision – Select appropriate skills and conventions and use effectively to reach strong outcomes. Realising: Automaticity – Effortlessly use key facts, concepts and ideas relevant to the stage of learning. Draw upon a range of skills without the need to think or process	
Transition Metals and Alloys and Corrosion	Recall that most metals are transition metals and that their	SC13a Transition metals SC13b Corrosion	Starter questions		VAAs	Homework: retrieval quizzing which will assess both current learning

Unit:	Core knowledge/skill development:	Sequence:	Assessment:	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development:	Home learning and enrichment
	typical properties include: a high melting point b high density c the formation of coloured compounds d catalytic activity of the metals and their compounds as exemplified by iron Recall that the oxidation of metals results in corrosion Explain how rusting of iron can be prevented by: a exclusion of oxygen b exclusion of water c sacrificial protection Explain how electroplating can be used to improve the appearance and/or the resistance to corrosion of metal objects Explain, using models, why converting pure metals into alloys often increases the	SC13c Electroplating SC13d Alloying SC13e Uses of metals and their alloys	Exam-type questions Hinge questions Use of web-based applications to assess knowledge in lesson (e.g. Isaac Physics, Educake, Active Learn etc.) End-of-topic tests. End of year exam (PPE). Mathematical skills will be assessed through examinations. The minimum level of mathematics in the foundation tier examination papers will be equivalent to Key Stage 3 mathematics. The		Hard Working: Practice – Self-regulate and revise practice schedules in line with improvements. Set own goals and monitor progress towards them. Actively seek ways to improve. Agile - Enquiring Independently identify questions and problems, justify their interest in them, and critically consider whether they are worth asking and solving. Use connections from across the curriculum to develop their enquiry, answering questions that are of real value to society both in and outside. ACP	and learning from previous years. Homework will be set on Educake, Century Tech, Isaac Physics or Seneca Premium. Exam questions may also be set as homework. There will be revision homework before each Census Assessment and Topic Test.

Unit	Core knowledge/skill development	Sequence	Assessment	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development	Home learning and enrichment
	strength of the product Explain why iron is alloyed with other metals to produce alloy steels Explain how the uses of metals are related to their properties (and vice versa), including aluminium, copper and gold and their alloys including magnalium and brass		minimum level of mathematics in the higher tier examination papers will be equivalent to foundation tier GCSE in Mathematics.		**Analysing: Precision** – Select appropriate skills and conventions and use effectively to reach strong outcomes. Realising: Automaticity – Effortlessly use key facts, concepts and ideas relevant to the stage of learning. Draw upon a range of skills without the need to think or process	
Quantitative Analysis	Calculate the concentration of solutions in mol dm–3 and convert concentration in g dm–3 into mol dm–3 and vice versa Core Practical: Carry out an accurate acid-alkali titration, using burette, pipette and a suitable indicator Carry out simple	SC14a Yields SC14b Atom Economy SC14c Concentrations SC14d Titrations and calculations SC14d Core practical Acid-Alkali titrations SC14e Molar volume of gases	Starter questions Exam-type questions Hinge questions Use of web-based applications to assess knowledge in lesson (e.g. Isaac Physics, Educake,	● Arithmetic computation when calculating yields and atom economy ● Arithmetic computation, ratio, percentage and multistep calculations permeates quantitative chemistry	**VAAs** **Hard Working: Practice** – Self-regulate and revise practice schedules in line with improvements. Set own goals and monitor progress towards them. Actively seek ways to improve.	**Homework**: retrieval quizzing which will assess both current learning and learning from previous years. Homework will be set on Educake, Century Tech, Isaac Physics or Seneca Premium. Exam questions may also be set as homework.

Unit	Core knowledge/skill development	Sequence	Assessment	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development	Home learning and enrichment
	calculations using the results of titrations to calculate an unknown concentration of a solution or an unknown volume of solution required Calculate the percentage yield of a reaction from the actual yield and the theoretical yield Describe that the actual yield of a reaction is usually less than the theoretical yield and that the causes of this include: a incomplete reactions b practical losses during the experiment c competing, unwanted reactions (side reactions) Recall the atom economy of a reaction forming a desired product Calculate the atom		Active Learn etc.) End-of-topic tests. End of year exam (PPE). Mathematical skills will be assessed through examinations. The minimum level of mathematics in the foundation tier examination papers will be equivalent to Key Stage 3 mathematics. The minimum level of mathematics in the higher tier examination papers will be equivalent to foundation tier GCSE in Mathematics.	● Change the subject of a mathematical equation ● Provide answers to an appropriate number of significant figures ● Convert units where appropriate particularly from mass to moles	Agile - Enquiring Independently identify questions and problems, justify their interest in them, and critically consider whether they are worth asking and solving. Use connections from across the curriculum to develop their enquiry, answering questions that are of real value to society both in and outside. ACP Analysing: Precision – Select appropriate skills and conventions and use effectively to reach strong outcomes. Realising: Automaticity – Effortlessly use key facts, concepts and ideas	There will be revision homework before each Census Assessment and Topic Test.

Unit:	Core knowledge/skill development:	Sequence:	Assessment:	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development:	Home learning and enrichment
	economy of a reaction forming a desired product Explain why a particular reaction pathway is chosen to produce a specified product, given appropriate data such as atom economy, yield, rate, equilibrium position and usefulness of by-products Describe the molar volume, of any gas at room temperature and pressure, as the volume occupied by one mole of molecules of any gas at room temperature and pressure (The molar volume will be provided as 24 dm3 or 24000 cm3 in calculations where it is required) Use the molar volume and balanced				relevant to the stage of learning. Draw upon a range of skills without the need to think or process	

Unit:	Core knowledge/skill development:	Sequence:	Assessment:	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development:	Home learning and enrichment
	equations in calculations involving the masses of solids and volumes of gases Use Avogadro's law to calculate volumes of gases involved in a gaseous reaction, given the relevant equation					
Dynamic equilivbria, Calculations Involving Volumes of Gases	Describe the Haber process as a reversible reaction between nitrogen and hydrogen to form ammonia Predict how the rate of attainment of equilibrium is affected by: a changes in temperature b changes in pressure c changes in concentration d use of a catalyst Explain how, in industrial reactions, including the Haber process, conditions	SC15a Fertilisers and the Haber Process SC15b Factors affecting equilibrium	Starter questions Exam-type questions Hinge questions Use of web-based applications to assess knowledge in lesson (e.g. Isaac Physics, Educake, Active Learn etc.) End-of-topic tests. End of year exam (PPE).		**VAAs** **Hard Working: Practice** – Self-regulate and revise practice schedules in line with improvements. Set own goals and monitor progress towards them. Actively seek ways to improve. **Agile - Enquiring** Independently identify questions and problems, justify their interest in them, and critically consider whether they	**Homework**: retrieval quizzing which will assess both current learning and learning from previous years. Homework will be set on Educake, Century Tech, Isaac Physics or Seneca Premium. Exam questions may also be set as homework. There will be revision homework before each Census Assessment and Topic Test.

Unit:	Core knowledge/skill development:	Sequence:	Assessment:	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development:	Home learning and enrichment
	used are related to: a the availability and cost of raw materials and energy supplies b the control of temperature, pressure and catalyst used produce an acceptable yield in an acceptable time Recall that fertilisers may contain nitrogen, phosphorus and potassium compounds to promote plant growth Describe how ammonia reacts with nitric acid to produce a salt that is used as a fertiliser Describe and compare: a the laboratory preparation of ammonium sulfate from ammonia solution and dilute sulfuric acid on a small scale b the		Mathematical skills will be assessed through examinations. The minimum level of mathematics in the foundation tier examination papers will be equivalent to Key Stage 3 mathematics. The minimum level of mathematics in the higher tier examination papers will be equivalent to foundation tier GCSE in Mathematics.		are worth asking and solving. Use connections from across the curriculum to develop their enquiry, answering questions that are of real value to society both in and outside. ACP Analysing: Precision – Select appropriate skills and conventions and use effectively to reach strong outcomes. Realising: Automaticity – Effortlessly use key facts, concepts and ideas relevant to the stage of learning. Draw upon a range of skills without the need to think or process	

Unit	Core knowledge/skill development	Sequence	Assessment	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development	Home learning and enrichment
	industrial production of ammonium sulfate, used as a fertiliser, in which several stages are required to produce ammonia and sulfuric acid from their raw materials and the production is carried out on a much larger scale (details of the industrial production of sulfuric acid are not required)					
Chemical Cells and Fuel Cells	Recall that a chemical cell produces a voltage until one of the reactants is used up Recall that in a hydrogen–oxygen fuel cell hydrogen and oxygen are used to produce a voltage and water is the only product Evaluate the strengths and weaknesses of fuel cells for given uses	SC16a Chemical cells and fuel cells	Starter questions Exam-type questions Hinge questions Use of web-based applications to assess knowledge in lesson (e.g. Isaac Physics, Educake, Active Learn etc.) End-of-topic tests.		VAAs Hard Working: Practice – Self-regulate and revise practice schedules in line with improvements. Set own goals and monitor progress towards them. Actively seek ways to improve.	Homework: retrieval quizzing which will assess both current learning and learning from previous years. Homework will be set on Educake, Century Tech, Isaac Physics or Seneca Premium. Exam questions may also be set as homework. There will be revision homework before each

Unit	Core knowledge/skill development	Sequence	Assessment	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development	Home learning and enrichment
			End of year exam (PPE). Mathematical skills will be assessed through examinations. The minimum level of mathematics in the foundation tier examination papers will be equivalent to Key Stage 3 mathematics. The minimum level of mathematics in the higher tier examination papers will be equivalent to foundation tier GCSE in Mathematics.		Agile - Enquiring Independently identify questions and problems, justify their interest in them, and critically consider whether they are worth asking and solving. Use connections from across the curriculum to develop their enquiry, answering questions that are of real value to society both in and outside. ACP Analysing: Precision – Select appropriate skills and conventions and use effectively to reach strong outcomes. Realising: Automaticity – Effortlessly use key facts, concepts and ideas relevant to the stage of learning.	Census Assessment and Topic Test.

Year 10 Chemistry Curriculum

Unit:	Core knowledge/skill development:	Sequence:	Assessment:	Literacy, numeracy, PSHE, FBV, other links	Key areas of ACP and VAA development:	Home learning and enrichment
					Draw upon a range of skills without the need to think or process	