Curriculum Content Map Subject: Year 10 Combined Chemistry

Curriculum C	ontent M	ар					Subject: Year 10 Combined Chemistry						
Mon	ith	1	Sentember	Term 1	November	December	January	Ter February	rm 2 March	April	May	Term 3	luly
1110.1	논		C1 Atomic Structure	C3 Structure and Bonding	C3 Structure and Bonding	C2 The Periodic Table	C2 The periodic table (cont.)	C5 Chemical Changes	C6 Electrolysis	C7 Energy changes	C7 Energy changes (cont.)	C8 Rates and equilibrium	C8 Rates and equilibrium
	f Wo						C4 Chemical calculations C5 chemical changes	C6 Electrolysis	C7 Energy changes		C8 Rates and equilibrium		C9 Crude oil and fuels
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			Atomic structure and the Periodic Table  • a simple model of the atom consisting of the	Structure, bonding and the properties of matter	Structure, bonding and the properties of matter	Atomic structure and the Periodic Table  • a simple model of the atom consisting of the	Chemical changes  • determination of empirical formulae from	Chemical changes     determination of empirical formulae from	Energy changes in chemistry  • Measurement of energy changes in chemica	Energy changes in chemistry  • Measurement of energy changes in chemical	Rate and extent of chemical change  • factors that influence the rate of reaction:	Rate and extent of chemical change • factors that influence the rate of reaction:	Chemical and allied industries  carbon compounds, both as fuels and
			nucleus and electrons, relative	<ul> <li>changes of state of matter in terms of</li> </ul>	changes of state of matter in terms of	nucleus and electrons, relative	the ratio of atoms of different kinds	the ratio of atoms of different kinds	reactions (qualitative)	reactions (qualitative)	varying temperature or concentration,	varying temperature or concentration,	feedstock, and the competing demands
			atomic mass, electronic charge and isotopes  • the number of particles in a given mass of a	particle kinetics, energy transfers and the relative strength of chemical bonds and	particle kinetics, energy transfers and the relative strength of chemical bonds and	atomic mass, electronic charge and isotopes • the number of particles in a given mass of a	balanced chemical equations, ionic     accustions and state symbols	balanced chemical equations, ionic equations and state symbols	Bond breaking, bond making, activation energy and reaction profiles	Bond breaking, bond making, activation energy and reaction profiles	changing the surface area of a solid reactant or by adding a catalyst	changing the surface area of a solid reactant or by adding a catalyst	for limited resources  • fractional distillation of crude oil and
	KS4		substance	intermolecular forces	intermolecular forces	substance	identification of common gases	identification of common gases	(qualitative).	(qualitative).	factors affecting reversible reactions.	factors affecting reversible reactions.	cracking to make more useful materials
	ı G		the modern Periodic Table, showing elements arranged in order of atomic	types of chemical bonding: ionic, covalent, and metallic	types of chemical bonding: ionic, covalent, and metallic	the modern Periodic Table, showing elements arranged in order of atomic	the chemistry of acids; reactions with some metals and carbonates	the chemistry of acids; reactions with some metals and carbonates	Rate and extent of chemical change • factors that influence the rate of reaction:	Rate and extent of chemical change • factors that influence the rate of reaction:			<ul> <li>extraction and purification of metals related to the position of carbon in a</li> </ul>
	are		number	bulk properties of materials related to	bulk properties of materials related to	number	pH as a measure of hydrogen ion	pH as a measure of hydrogen ion	varying temperature or concentration,	varying temperature or concentration,			reactivity series.
	i i		position of elements in the Periodic Table in relation to their atomic structure	bonding and intermolecular forces	bonding and intermolecular forces  • bonding of carbon leading to the vast array	position of elements in the Periodic Table in relation to their atomic structure	concentration and its numerical scale  • electrolysis of molten ionic liquids and	concentration and its numerical scale  • electrolysis of molten ionic liquids and	changing the surface area of a solid reactant or by adding a catalyst	changing the surface area of a solid reactant or by adding a catalyst	1		
	rri		and arrangement of outer electrons	of natural and synthetic organic	of natural and synthetic organic	and arrangement of outer electrons	aqueous ionic solutions	aqueous ionic solutions	factors affecting reversible reactions	factors affecting reversible reactions.	1		
	a C		<ul> <li>properties and trends in properties of elements in the same group</li> </ul>	compounds that occur due to the ability of carbon to form families of similar	compounds that occur due to the ability of carbon to form families of similar	<ul> <li>properties and trends in properties of elements in the same group</li> </ul>	<ul> <li>reduction and oxidation in terms of loss or gain of oxygen</li> </ul>	<ul> <li>reduction and oxidation in terms of loss or gain of oxygen</li> </ul>			1		
	atio		characteristic properties of metals and non-	compounds, chains and rings	compounds, chains and rings	characteristic properties of metals and non-	8	5			1		
	z		metals • chemical reactivity of elements in relation to	structures, bonding and properties of diamond, araphite, fullerenes and	<ul> <li>structures, bonding and properties of diamond, graphite, fullerenes and</li> </ul>	metals • chemical reactivity of elements in relation to					1		
			their position in the Periodic Table.	graphene.	graphene.	their position in the Periodic Table.					1		
											1		
			Define the word element.	Identify the three states of matter and their	Identify the three states of matter and their	List the significant models for ordering the	Use the periodic table to identify the	List the order of common metals in the	Define electrolysis.	Define exothermic and endothermic	Recall a definition for rate of reaction.	Recall a definition for rate of reaction.	Describe the composition of crude oil.
			Classify familiar substances as elements or	state symbols.	state symbols.	elements.	relative atomic mass for the first 20 elements.	reactivity series.	Write a word equation to describe the	reactions.	Safely describe and follow a method to	Safely describe and follow a method to	State a definition of a hydrocarbon.
			compounds.  • Use the Periodic Table to find the symbols	<ul> <li>Describe the process of melting, freezing, boiling, and condensing.</li> </ul>	<ul> <li>Describe the process of melting, freezing, boiling, and condensing.</li> </ul>	<ul> <li>State how the elements are ordered in the periodic table.</li> </ul>	Calculate the relative formula mass for familiar compounds when the formula is	<ul> <li>Use general equations to write specific word equations for metals listed in the reactivity</li> </ul>	State that oxygen can be produced at the	<ul> <li>State that energy is conserved in a chemical reaction.</li> </ul>	monitor rate of reaction.  • State the units for rate of reaction	monitor rate of reaction.  • State the units for rate of reaction	<ul> <li>State a definition of an alkane.</li> <li>Name the different fractions from crude oil.</li> </ul>
=			or names of given elements.	Use the particle model to draw a	Use the particle model to draw a	Define a group and period in the periodic	supplied and is without brackets.		anode when some solutions are electrolysed.	Safely complete a calorimetry experiment	Describe how surface area of a solid can be	Describe how surface area of a solid can be	
.0			<ul> <li>Describe familiar chemical reactions in word equations.</li> </ul>	representation of how particles are arranged in the three states of matter.	representation of how particles are arranged in the three states of matter.	Describe how electronic structure is linked	<ul> <li>State the definition of theoretical yield, actual yield, and percentage yield.</li> </ul>	Safely make and record observations.     Recall a definition of a displacement	<ul> <li>State that hydrogen can be produced at the cathode when some solutions are</li> </ul>		increased.  • State that chemical reactions can only occur	increased.  • State that chemical reactions can only occur	<ul> <li>Define complete and incomplete combustion.</li> </ul>
Si			State that mass is conserved in a chemical reaction.	State the particles involved in ionic and covalent bonding.	<ul> <li>State the particles involved in ionic and covalent bonding.</li> </ul>	to the periodic table.  • State that noble gases are unreactive.	Calculate percentage yield when actual yield		electrolysed.  • Write a word equation to describe	endothermic reaction.  • Write word equations for familiar reactions.	when a collision occurs with enough energy.	when a collision occurs with enough energy.  • List the factors that can affect the rate of a	Write a word equation to describe the
<u>.</u>			Define the word mixture.	Describe, with an example, how a Group 1	Describe, with an example, how a Group 1	Name the first three elements in Group 1.	and theoretical yield are given.  • Calculate the formula mass of substances	Use the reactivity series to determine whether a reaction between a metal and a	electrolysis of a solution.	Define activation energy.	chemical reaction.	chemical reaction.	Write a word equation to describe the
<u>ا</u> ٤	ė.		Identify a mixture and a compound.     List different separation techniques.	metal atom becomes a positive ion.  • Describe, with an example, how a Group 7	metal atom becomes a positive ion.  • Describe, with an example, how a Group 7	Describe the Group 1 metals as having low densities.	when the formula is given.  Balance simple equations	different metal salt will occur.  • Safely make and record observations.	<ul> <li>State that aluminium can be extracted from aluminium oxide using electrolysis.</li> </ul>	<ul> <li>Sketch a generic reaction profile diagram for an exothermic or endothermic reaction.</li> </ul>	Describe how temperature affects the rate of reaction.	Describe how temperature affects the rate of reaction.	incomplete combustion of a hydrocarbon.  • Define the process of cracking.
S	ledg		State when fractional distillation would be	non-metal atom becomes a negative ion.	non-metal atom becomes a negative ion.	Write word equations from descriptions of	State a definition of atom economy	Safety make and record observations.     Define oxidation and reduction in terms of	Write a word equation to describe the	State when fractional distillation would be	Safely complete an experiment on how	Safely complete an experiment on how	Generate a word equation to describe
Iltural Trans	Substantive Knowl		used.  • Safely make a paper chromatogram	State that opposite charges attract.     Write the charges of ions of Group 1. Group	State that opposite charges attract.     Write the charges of ions of Group 1, Group	how Group 1 metals react with water.  • Name the first four elements in Group 7.	Describe what the concentration of a solution is.	oxygen.  • Describe how metals can be extracted.	electrolysis of aluminium oxide.  • State the products of the electrolysis of	used.  • Safely make a paper chromatogram.	temperature affects the rate of a reaction.	temperature affects the rate of a reaction.	cracking.
		The What!	List the significant models proposed for	Write the charges of ions of Group 1, Group 2, Group 6, and Group 7 elements.	2, Group 6, and Group 7 elements.	Recognise a halogen displacement reaction.	Calculate the concentration of a solution in	Recall a definition of a salt.	brine and a use for each.	asiery make a paper circulatogram.	Describe how changing concentration affects the rate of reaction.	Describe how changing concentration affects the rate of reaction.	Recognise and give examples of alkenes.
			atoms.  • Identify the key parts of the plum-pudding	Describe an ionic lattice.     State that ionic compounds have high	Describe an ionic lattice.     State that ionic compounds have high	Describe the main properties of halogens.     State the trend in reactivity in Group 1.	g/dm3 when given the mass of solute in g and volume of solution in dm3.	Name a salt formed between a metal and sulfuric acid or hydrochloric acid.	<ul> <li>Safely electrolyse a solution, with guidance provided.</li> </ul>		<ul> <li>Describe how changing pressure affects the rate of gas phase reactions.</li> </ul>	<ul> <li>Describe how changing pressure affects the rate of gas phase reactions.</li> </ul>	
			model and the nuclear model of the atom.	melting points and can dissolve in water.	melting points and can dissolve in water.	State the trend in reactivity in Group 7.	List the order of common metals in the	Recall a general equation for a metal			Define a catalyst	Define a catalyst	
			<ul> <li>State the relative charges and masses of sub- atomic particles.</li> </ul>	<ul> <li>State that ionic compounds can conduct electricity when molten or dissolved in water.</li> </ul>	<ul> <li>State that ionic compounds can conduct electricity when molten or dissolved in water.</li> </ul>		reactivity series.  • Use general equations to write specific word	reacting with an acid and use it to write specific word equations.			<ul> <li>Describe how adding a catalyst affects the rate of reaction.</li> </ul>	<ul> <li>Describe how adding a catalyst affects the rate of reaction.</li> </ul>	
			State that atoms have no overall charge (are		Describe an ionic lattice		equations for metals listed in the reactivity	Safely prepare a pure, dry sample of a			Describe and carry out a method to safely	Describe and carry out a method to safely	
1 3			neutral).  • Label the sub-atomic particles on a diagram	Describe a covalent bond     Recognise a covalent compound from its	Describe a covalent bond     Recognise a covalent compound from its		series reacting with oxygen, water, and acid.  • Safely make and record observations.	soluble salt from an insoluble base and a dilute acid.			investigate which catalyst is best for a reaction.	investigate which catalyst is best for a reaction.	
			of a helium atom.	formula, name, or diagram showing bonds.	formula, name, or diagram showing bonds.		Recall a definition of a displacement	Name a salt formed between a metal			Define a reversible reaction.	Define a reversible reaction.	
			State what an ion is.     Define an isotope.	<ul> <li>Name familiar examples of small molecules which contain covalent bonds.</li> </ul>	<ul> <li>Name familiar examples of small molecules which contain covalent bonds.</li> </ul>		reaction.  • Use the reactivity series to determine	hydroxide or metal oxide and sulfuric acid or hydrochloric acid.			<ul> <li>Write a word equation for a familiar reversible reaction.</li> </ul>	<ul> <li>Write a word equation for a familiar reversible reaction.</li> </ul>	
			State the relative sizes of an atom and its nucleus.	State that small molecules have low melting     death a line and the line and	<ul> <li>State that small molecules have low melting and boiling points.</li> </ul>		whether a reaction between a metal and a different metal salt will occur.	Recall a general equation for a base reacting with an acid and use it to write specific word			State an example of a reversible reaction.     State whether a reversible reaction is	State an example of a reversible reaction.     State whether a reversible reaction is	
			State that electrons are found in energy	and boiling points.  • State that small molecules do not conduct	State that small molecules do not conduct		Safely make and record observations.	equations.			exothermic or endothermic in the reverse	exothermic or endothermic in the reverse	
	- n		Students will learn how to interpret the	Students will use periodi tables and interpret	Students will use periodi tables and interpret				students will look at the process of electrolysis		students will see experiments to determine		Students will use diagrams and also models in
	inan		information in the periodic table. Students will carryout practicals to support	them Practical demonstrations for example the	them Practical demonstrations for example the	interpreting chemical equations.  They will also look at practical demonstrations	the periodic table. They will carry out practicals linked to chemical changes and also	as theory. This will inculde electrolysis practical and also the making of simple cells	and will carry out practicals including a demonstration of a cell	during reactions to determine the type of energy change. Students will also construct	the rate of reaction. They might use mass and also gas collection. They will construct graphs	investigate factors that affect rates of reaction. This will include surgace area and	order to understand crude oil. There is also the opportunity to carry out research on this
	scipl	The How!	the theory.	group 1 metals in water	group 1 metals in water	and carry out practicals	the behaviour of elemenets within specific	,		energy level diagrams	to show rates.	also temperature. Students will plot and	topic.
	호호		Students will draw and label diagrams of key appraratus and practical set ups	Use of diagrams to represent structures and bonding	Use of diagrams to represent structures and bonding		grouops 1 and 7				1	interpret graphs	
			This topic builds on concepts from the key stage 3 curriculum	ncepts from the key This topic builds on concepts from the key stage 3 curriculum	This topic builds on concepts from the key stage 3 curriculum	This topic builds on concepts from the key stage 3 curriculum	This topic builds on concepts from the key stage 3 curriculum	This topic builds on concepts from the key stage 3 curriculum	This topic builds on concepts from the key stage 3 curriculum	This topic builds on concepts from the key stage 3 curriculum	This topic builds on concepts from the key stage 3 curriculum	This topic builds on concepts from the key stage 3 curriculum	This topic builds on concepts from the key stage 3 curriculum
	low)	oisus	The particulate nature of matter	The particulate nature of matter	The particulate nature of matter	The particulate nature of matter	The particulate nature of matter	The particulate nature of matter	The particulate nature of matter	Chemical Reactions	The particulate nature of matter	The particulate nature of matter	The particulate nature of matter
	ng (F	Exte	Atoms, elements and compounds     The Periodic Table	Atoms, elements and compounds     Chemical Reactions	Atoms, elements and compounds     Chemical Reactions	Atoms, elements and compounds     Pure and impure substances	Atoms, elements and compounds     Pure and impure substances	Atoms, elements and compounds     Pure and impure substances	Atoms, elements and compounds     Pure and impure substances	Energetics	Atoms, elements and compounds     Pure and impure substances	Atoms, elements and compounds     Pure and impure substances	Atoms, elements and compounds     Pure and impure substances
	enci	8 10		The Periodic Table	The Periodic Table	The Periodic Table	Chemical Reactions	Chemical Reactions	Chemical Reactions		Chemical Reactions	Chemical Reactions	Chemical Reactions
	Sequ	trie		Materials	Materials		The Periodic Table     Materials		Energetics     The Periodic Table		Energetics		Materials     Earth and atmosphere
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	ıt e					Evamination quartiens homework	1	· '	Complete and the control			,	Examination questions homework AP3 full examination question paper - range of
	nativ		Examination questions homework	Examination questions homework	Examination questions homework	Examination questions homework AP1 full examination question paper - range of	Examination questions homework	Examination questions homework	Examination questions homework AP2 full examination question paper - range of	Examination questions homework	Examination questions homework	Examination questions homework	multiple choice, recall and longer answer
	Sumr					multiple choice, recall and longer answer questions.	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		multiple choice, recall and longer answer questions.		,		questions.
int	rtue												
ersonal Empowerment			Friendliness & Civility	Justice & Truthfulness	Courage	Generosity	Gratitude	Good Speech	Good Temper & Humour	Self-Mastery	Self-Mastery	Compassion	Good Sense
	į												
	•	The opportunity to reflect, think											
		deeply and critically about an	It is at this time of year that students and staff will be building and strengthening a working	Students will seek scientific truth in diagrams and equations in order to deepen		Students will be encouraged to be generous with their time and support for each other as	Students will demonstrate gratitude for the work carried out by early mathematicians on	Students should be encouraged to discuss the work using key temrs linked to the topic of	Students will need to demonstrate good temper during this month when tackling AP2	Students will need to develop the skill of self mastery as they spend time reviewing the AP2	Students will need to focus on the skill of self mastery as they build on the AP3 amd focus	Students will need to demonstrate compassion towards others in the group as	Students should demonstrate good sense when approaching AP2. They should also
1 #	irtue	issue.	relationship within Chemistry. Students will	understanding	bonding and structure as this is a potentially		this topic - paving the way for their learning of			assessment and acting on advice to improve on theres topics		they may need more or less preparation time for the AP3 exams	have the goof sense to listen to revision
ä	5		need to remember the virtues of friendliness and civility and the importance of these in		tricky topic	information stored in the periodic table	chemical changes and calculations	ior research and presentation in this topic		on theres topics	1	TO THE AT S EXAMS	advice and act on this
ers(	Ě		building and sustaining relationships for learning										
Work													
Ĭ	Skill		Listening	Leadership	Problem-Solving	Creativity	Staving Bositive	Speaking	Staving Booking	Aiming High	Aiming High	Speaking	Teamwork
for	- S	kills	Listening	Leaversiiip	1 TODICHIT-SOLVING	Cleativity	Staying Positive	эреакііів	Staying Positive	Anning right	Annung rugn	эреакнік	i calliwork
Preparation fo		ile st			1	1			 				!
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		Trans	Students will need to <u>listen</u> to each other and be able to explain another students' opinion.	Students will <u>lead</u> their learning to ensure they are secure in building on previous	Students will need to use their <u>problem-</u> solving skills to be able to draw conclusions	Students will be creating questions based on the concepts within the topic. They	Students will understand the problems	Students will have opportunity to discuss	Students will meed to remain positvie when tackling new concepts and	Students will need to aim high as the end of year and final assessments are coming	Stidents will need to aim high as they work towards the end of the year and try	Students will be able to discuss the work that they are carrying out on rates and	Students will be encouraged to complete
pa	Skil		Students will also need to be <u>listen</u> to the	knowledge.	from data.	could be challenge by use of mark	faced by early scientists in understanding	the concepts of electrolysis and changes	calculations, This could include enthalpy	to a conclusion,	to secure knowledge ahead of GCSE next		work in small groups that will facilitate
<u>i</u>	Link to		teacher to pull out consistent/Students will lead their learning to ensure they are secure			schemes as the basis of questions	the periodic table and recognise their resilience and the way in which they	in chemical reactions, They can be encouraged to link discussions back to	based calculations		year		team work - this could include presentation work based on crude oil and
ھَ	5		in building on previous knowledge.y				stayed positive	work on extraction of metal					fractional distillation
reparation r Citizenship	& F 8	uo:	underlying themes or use of previous skills.  Social	Social	Social	Social		Social	Social	Social	Social	Social	Social
	SMSC a British Values	sinions	Mutual Respect	Rule of Law	Tolerance	Individual Liberty	Social Individual Liberty	Individual Liberty	Tolerance	Individual Libery	Individual Libery	Mutual Respect	Tolerance
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