Weston Favell Academy

Key: *Bold writing shows development or progression from previous year. *Underline shows cross-over of key concepts with other end-points

Faculty:Science Subject: Triple Chemistry						
End points	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
The	Compare and group	3.5.1 Explain the properties	3.5.4 The symbols of	Define the word element,	Describe how melting point and	
understanding	together everyday	of solids, liquids and gases	hydrogen, oxygen, nitrogen,	Classify familiar substances as	boiling point data can be used	
thar matter is	materials on the basis	based on the arrangement	carbon, iron, zinc, copper,	elements or compounds.	to identify pure substances.	
organised into	of their properties,	and movement of their	sulfur, aluminium, iodine,			
different	including their	particles.	bromine, chlorine, sodium,	Use the Periodic Table to find	State what a formulation I and	
categories based	hardness, solubility,		potassium, and magnesium.	the symbols or names of given	<u>their uses.</u>	
upon structure,	transparency,	3.5.1 Relate the features of		elements.		
how the different	conductivity (electrical	the particle model to the	3.5.4 Most substances are		Describe the difference	
elements are	and thermal), and	properties of materials in	not pure elements, but	Describe the basic structure of	between pure substances,	
arranged and that	response to magnets	different states.	compounds or mixtures	an atom.	impure substances, and	
and these give			containing atoms of different		formulations, with definitions.	
rise to distinctive	Know that some	3.5.1 Argue for how to	elements. They have	Explain, including diagrams, the		
properties.	materials will dissolve	classify substances which	different properties to the	difference between a pure	Explain how melting point and	
	in liquid to form a	behave unusually as solids,	elements they contain.	element, a mixture, and a	boiling point data can be used	
	solution, and describe	liquids or gases.		compound.	to determine the purity of a	
	how to recover a		3.5.4 Compare and contrast		substance.	
	substance from a	3.5.1 A substance is a solid	the properties of elements	Name and give the chemical		
	solution	below its melting point, a	and compounds and give a	symbol of the first 20 elements	Justify the classification of	
		liquid between its melting	reason for their differences.	in the Periodic Table.	pure substances, impure	
	Use knowledge of	and boiling points, and a gas			substances, and formulations	
	solids, liquids and	above its boiling point.	3.5.4 Compare the	Use chemical symbols of atoms	when data is supplied.	
	gases to decide how		properties of elements with	to produce the chemical		
	mixtures might be	3.5.2 Liquids have different	the properties of a	formulae of a range of	Explain in detail the use of	
	separated, including	boiling points.	compound formed from	elements and compounds.	formulations.	
	through filtering,		them.			
	sieving and	3.5.1 Explain changes in		Explain the significance of	Calculate percentage	
	evaporating	states in terms of changes to	3.5.4 Use particle diagrams to	chemical symbols used in	composition of components in	
		the energy of particles.	classify a substance as an	formulae and equations	a range of formulations.	
	Give reasons, based on		element, mixture, or	(including balanced).		
	evidence from	3.5.1 Draw before and after	compound and as molecules		Explain how chromatography	
	comparative and fair	diagrams of particles to	or atoms.	Describe familiar chemical	separates solutes.	
	tests, for the particular	explain observations about		reactions in word equations.		
	uses of everyday	changes of state, gas	3.5.4 Name simple		Calculate Rf values from given	
	materials, including	pressure, and diffusion.	compounds using these rules:	State that mass is conserved in	<u>data.</u>	
	metals, wood and		<u>change non-metal to –ide;</u>	a chemical reaction.		
	plastic	3.5.1 Explain unfamiliar	mono, di, tri prefixes; and		Use a chromatogram to	
		observations about gas	symbols of hydroxide, nitrate,	Explain why mass is conserved	determine if a sample is pure or	
	Demonstrate that	pressure in terms of particles.	sulfate, and carbonate.	in a chemical reaction.	<u>impure.</u>	
	dissolving, mixing and					

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changes of state are	3.5.1 Make predictions about	3.5.4 Name compounds using	Describe familiar chemical	Explain why different	
reversible changes	what will happen during	their chemical formulae.	reactions	substances and different	
C C	unfamiliar physical processes,			conditions will have different	
Explain that some	in terms of particles and their	3.5.4 Given chemical	Justify in detail how mass may	Rf values.	
changes result in the	energy.	formulae, name the elements	appear to change in a chemical		
formation of new	0	present and their relative	reaction.	Calculate Rf values from a	
materials, and that this	3.5.2 Choose the most	proportions.		chromatogram, using an	
kind of change is not	suitable technique to	proportions.	Describe unfamiliar chemical	appropriate number of	
usually reversible,	separate out a mixture of	3.5.4 Represent atoms,	reactions with more complex	significant figures.	
including changes	substances.	molecules elements,	balanced symbol equations,	Interpret a chromatogram to	
associated with	Substances.	compounds, and mixtures	including state symbols.	identify unknown substances.	
burning and the action	3.5.2 Devise ways to separate	using particle diagrams.	including state symbols.	identity diknown substances.	
of acid on bicarbonate	mixtures, based on their	using particle diagrams.	Define mixture.	Describe how to safely carry	
	· ·		Denne mixture.		
of soda.	properties.	3.5.4 Deduce a pattern in the		out the laboratory test for	
		formula of similar	Identify a mixture and a	chlorine gas.	
	3.5.2 Air, fruit juice, sea	compounds and use it to	compound.		
	water and milk are mixtures.	suggest formulae for		Identify hydrogen, carbon	
		unfamiliar ones.	List, describe and explain	dioxide, and oxygen from a	
	3.5.2 Explain how substances		different separation	laboratory test.	
	dissolve using the particle	3.5.4 Use particle diagrams to	techniques.		
	model.	predict physical properties of		Explain why limewater turns	
		elements and compounds.	Explain the difference between	milky when it reacts with	
			a compound and a mixture.	carbon dioxide.	
			Explain how the chemical	Interpret results to identify a	
			properties of a mixture relate	gas that is present.	
			to the chemical it is made from.		
				Explain why hydrogen 'pops'	
			Use experimental data to	near a naked flame.	
			explain the classification of a		
			substance as a compound or	Write balanced symbol	
			<u>mixture.</u>	equations, including state	
				symbols, for the reactions of	
			Suggest an appropriate	limewater with carbon dioxide	
			separation or purification	and hydrogen with oxygen.	
			technique for an unfamiliar		
			mixture.	Explain why a glowing splint re-	
				ignites in oxygen.	
			State when fractional		
			distillation would be used.	Explain why chlorine gas turns	
			Safely make a paper	damp indicator paper	
			chromatogram.	colourless.	
			Describe the process of	Write a word equation for the	
			fractional distillation.	reaction between sodium	
				hydroxide and a specified metal	
				salt solution.	
				sait sulution.	

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		Explain the main processes		
		occurring in paper	Identify a metal ion from the	
		chromatography.	colour of a flame or the colour	
		0 1 7	of the hydroxide precipitate.	
		Explain in detail how fractional	or the hydroxide precipitate.	
		distillation can separate	Write balanced symbol	
			Write balanced symbol	
		miscible liquids with similar	equations, including state	
		boiling points.	symbols, for the production of	
			an insoluble metal hydroxide.	
		Evaluate separation or		
		purification techniques for a	Explain why a flame test cannot	
		given mixture.	be used to identify a mixture of	
		-	metal solutions.	
		List the significant models		
		proposed for atoms.	Evaluate flame tests as a	
		proposed for atoms.	method for identifying of	
		Identify the key parts of the	positive metal ions.	
		plum-pudding model and the		
		nuclear model of the atom.	Write balanced ionic	
			equations, including state	
		Describe the differences	symbols for the production of	
		between the plum-pudding	an insoluble metal hydroxide.	
		model and the nuclear model		
		of the atom.	Explain why iron(II) hydroxide	
			solution often changes colour	
		Explain how evidence from	when it stands in air.	
		scattering experiments	when it stands in an.	
			Muite e would envetion for the	
		changed the model of the	Write a word equation for the	
		atom.	reaction when a specific	
			carbonate, halide, or sulfate is	
		Justify why the model of the	being tested with support.	
		atom has changed over time.		
			Identify the presence of	
		Evaluate the current model of	carbonate, a specific halide, or	
		an atom and label one	sulfate ions from simple	
			laboratory tests.	
		State the relative charges and		
		masses of sub-atomic particles.	Write balanced symbol	
			equations, including state	
		State that stoms have as		
		State that atoms have no	symbols for the reactions in the	
		overall charge (are neutral).	simple laboratory tests for	
			carbonate, halide, or sulfate	
		Label the sub-atomic particles	ions.	
		on a diagram of a helium		
		atom	Explain why it can be difficult to	
			identify halides	
			, ,	

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		Explain why atoms have no	Evaluate the halide ion test.	
		overall charge.		
		over an enarge.	Write balanced ionic equations,	
		Use atomic number and mass	including state symbols, for	
		numbers of familiar atoms to	simple laboratory tests for	
		determine the number of each	carbonate, halide, or sulfate	
		sub-atomic particle.	ions.	
		the she Devis distable to find	Fundation in place the survey interesting	
		Use the Periodic table to find	Explain in detail how to identify	
		atomic number and mass	a compound from the results of	
		number data and use it to	simple laboratory tests.	
		determine the number of each		
		sub-atomic particle in any given	List some of the advantages	
			_	
		form.	and disadvantages of	
			instrumental techniques.	
		Recognise and describe		
		patterns in sub-atomic	State an example of an	
		particles of elements listed in	instrumental technique.	
		the Periodic Table.		
		the Feriodic Table.	Chata a second familia a second a familia a	
			State a use for flame emission	
		Explain why we can be	spectroscopy.	
		confident that there are no		
		missing elements in the first 10	Compare and contrast	
		elements of the Periodic Table.	instrumental techniques with	
			simple laboratory tests.	
		State what an ion is.	simple laboratory tests.	
		State what all for is.		
			Describe the main processes of	
		Define an isotope.	flame emission spectroscopy.	
		State the relative sizes of an	Explain how flame emission	
		atom and its nucleus.	spectroscopy is an	
			improvement on flame tests.	
		Describe isotopes using the	improvement on name tests.	
		Describe isotopes using the	Fuchasta the use of	
		atomic model.	Evaluate the use of	
			instrumental techniques.	
		Explain why ions have a charge.		
			Explain how metal ions emit	
		Use atomic number and mass	light when in a flame.	
		numbers of familiar ions to		
			Interpret regults from flows	
		determine the number of each	Interpret results from flame	
		sub-atomic particle.	emission spectroscopy when	
			data is given.	
		Use the Periodic table to find		
		atomic number and use it to		
		determine the number of each		
		sub-atomic particle in an ion.		
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Use SI units and prefixes to	
describe the size of an atom and its nucleus in standard	
form.	
State that electrons are found	
in energy levels of an atom.	
State the maximum number of	
electrons in the first three	
energy levels.	
Write the standard electronic	
configuration notation from a	
diagram for the first 20 elements.	
elements.	
Explain why elements in the	
same group react in a similar	
way.	
Use the Periodic Table to find	
atomic number and determine	
the electronic structure for the	
first 20 elements.	
Make predictions for how an	
element will react when given information on another	
element in the same group.	
List the significant models for	
ordering the elements.	
State how the elements are	
ordered in the periodic table.	
Describe how the elements are	
arranged in groups and periods	
in the periodic table.	
Explain why the periodic table	
was a breakthrough in how to	
order elements.	

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	Explain how and why the ordering of the elements has changed over time.	
	changed over time. Define a group and period in	
	the periodic table.	
	Describe how electronic structure is linked to the periodic table.	
	State that noble gases are unreactive.	
	Describe how the electronic structure of metals and non- metals are different.	
	Explain in terms of electronic structure how the elements are arranged in the periodic table.	
	Explain why the noble gases are unreactive and the trend in their boiling points.	
	Explain how the electronic structure of metals and non- metals affects their reactivity.	
	Use the periodic table to make predictions about the electronic structure and reactions of elements.	
	Predict the electronic structure of stable ions for the first 20 elements.	
	Name the first three elements in Group 1.	
	Describe the Group 1 metals as having low densities.	

Write word equations from descriptions of how Group 1 metals react with water. Recognise trends in supplied data. Explain why the elements in Group 1 react similarly and why the first three elements float on water. Explain why the first three elements float on water. Describe how you can show that hydrogen and metal hydroxides are made when Group 1 metals react with water. Illustrate the reactions of uith and the second of	
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hydroxides are made when Group 1 metals react with water. Illustrate the reactions of	
Group 1 metals react with water. Illustrate the reactions of	
water. Illustrate the reactions of	
Illustrate the reactions of	
Group 1 metals with balanced	
symbol equations.	
Explain how Group 1 metals	
form ions with a +1 charge	
when they react with non-	
metals.	
Justify how Group 1 metals are	
stored and the safety	
precautions used when dealing	
with them.	
Name the first four elements in	
Group 7.	
Recognise a halogen	
displacement reaction.	
Describe the main properties of	
halogens.	
Recognise trends in supplied	
data.	
Explain why the elements in	
Group 7 react similarly.	

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	Explain how to complete a halogen displacement reaction and explain what happens in the reaction.	
	Illustrate the reactions of Group 7 metals with balanced symbol equations.	
	Explain how Group 7 non- metals form ions with a -1 charge when they react with metals.	
	Explain in detail how to compare the reactivity of the Group 7 elements.	
	State the trend in reactivity in Group 1 and Group 7.	
	Explain how electronic structure affects the trend in reactivity of Group 1 and Group 7 elements.	
	Use the nuclear model to explain how the outer electrons experience different levels of attraction to the nucleus.	
	Use electronic structure to explain the trends in physical and chemical properties of Group 1 and Group 7 elements.	
	Apply knowledge of reactivity of Groups 1 and 7 to suggest and explain the trend in reactivity of Groups 2 and 6.	
	List the typical properties of transition metals and their compounds.	

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	Describe how the properties of Group 1 metals compare with transition metals.	
	Interpret the formula and names of familiar transition metal compounds.	
	Justify the use of a transition metal or its compound in terms of its chemical properties.	
	Suggest why Group 1 metals have different properties compared to transition metals.	
	Identify the three states of matter and their state symbols.	
	Describe the process of melting, freezing, boiling, and condensing.	
	Use the particle model to draw a representation of how particles are arranged in the three states of matter.	
	Use data to determine the state of a substance at a given temperature (inks to Physics).	
	Explain, in terms of particles, the energy and temperature of a substance when it is at the melting point or boiling point. (Links to Physics)	
	Describe the factors that affect rate of evaporation.	
	Use the particle model to describe how energy, movement, and attraction between particles change as a	
	substance is heated or cooled. (Links to Physics)	

		Suggest why substances have	
		different melting and boiling	
		points from each other.	
		State the particles involved in	
		ionic and covalent bonding.	
		Describe, with an example, how	
		a Group 1 metal atom becomes	
		a positive ion.	
		Describe, with an example, how	
		a Group 7 non-metal atom	
		becomes a negative ion.	
		Draw dot and cross diagrams of	
		compounds formed between	
		Group 1 and Group 7 elements.	
		Group I and Group 7 elements.	
		Explain how electron transfer	
		allows ionic bonding to occur	
		in the compound formed when	
		a Group 1 metal reacts with a	
		Group 7 non-metal.	
		Draw dot and cross diagrams	
		of unfamiliar ionic compounds.	
		Suggest and explain the charge	
		of a monatomic ion based on	
		its position in the periodic	
		table.	
		State that opposite charges	
		attract.	
		Write the charges of ions of	
		Group 1, Group 2, Group 6, and	
		Group 7 elements.	
		Describe a giant ionic lattice.	
		Explain how the position of an	
		element in the periodic table	
		relates to the charge on its	
		most stable monatomic ion.	
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Explain, in terms of electronic structure, how unfamiliar elements become ions. Interpret the formulae of familiar ionic compounds to determine the number and type of each ion present. Suggest the charge on unfamiliar ions using the position of the element in the periodic table. Explain the ratio of metal and non-metal ions in compounds. Generate the formulae of a wide range of incompounds when the charge of the ions are given. State that ionic compounds
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when the charges of the ions are given. State that ionic compounds
are given. State that ionic compounds
State that ionic compounds
have high melting points and
can dissolve in water.
State that ionic compounds can
conduct electricity when
molten or dissolved in water.
Explain why ionic compounds
have a high melting point.
have a high meiting point.
Describes he because of here is a second s
Describe, in terms of ions, how
an ionic compound can conduct
electricity.
Explain the movement of ions
in solution or when molten.
Explain in detail why ionic
compounds cannot conduct
electricity when they are solid
but can when molten or in
solution.

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		Justify in terms of properties	
		that a compound has ionic	
		bonding.	
		Soliding.	
		Apply the ionic model to make	
		predictions of the physical	
		properties of ionic compounds.	
		Describe a covalent bond	
		Recognise a covalent	
		compound from its formula,	
		name, or diagram showing	
		bonds.	
		Name familiar examples of	
		small molecules which contain	
		covalent bonds.	
		Explain how a covalent bond	
		forms in terms of electronic	
		structure.	
		Draw dot and cross diagrams	
		and ball and stick diagrams for	
		H2, Cl2, O2, N2, HCl, H2O, NH3,	
		and CH4.	
		Describes a devible based in a	
		Describe a double bond in a	
		diatomic molecule.	
		Draw dot and cross diagrams	
		and ball and stick diagrams for	
		unfamiliar small molecules.	
		Suggest how double and triple	
		covalent bonds can be formed.	
		Suggest how the properties of a	
		double covalent bond could be	
		different to the properties of a	
		single covalent bond.	
		<u>.</u>	
		State that small molecules have	
		low melting and boiling points.	

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			State that small molecules do	
			not conduct electricity.	
			,	
			Describe an intermolecular	
			force.	
			Explain how the size of	
			molecules affects melting and	
			boiling points.	
			Explain why small molecules	
			and polymers do not conduct	
			electricity.	
			Identify substances that would	
			have weak intermolecular	
			forces.	
			Predict the physical properties	
			of unfamiliar covalently bonded	
			substances.	
			Compare and contrast the	
			properties of substances with	
			different bonding.	
			Justify the use of a model to	
			explain the physical properties	
			of a small molecule and discuss	
			the limitations of various	
			molecular models.	
			List the main physical	
			properties of diamond and	
			graphite.	
			graphic.	
			State that giant covalent	
			State that giant covalent	
			structures have high melting	
			points.	
			Describe the structure of	
			graphite in terms of layers of	
			carbon atoms.	
			Recognise the structure of	
			diamond and graphite from	
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	formation provided in written r diagrammatic form.	
Ext	xplain the properties of	
	iamond in terms of its	
50	onding.	
Ext	xplain the properties of	
gra	raphite in terms of its	
bo	onding.	
	ise a molecular model of an	
	nfamiliar giant covalent	
	tructure to predict and explain	
	s physical properties.	
	ustify in detail a use for	
	raphite and diamond based	
	n their properties.	
De	escribe the relationship	
	etween graphite and	
	raphene.	
	ist the main physical roperties of fullerenes.	
	tate the molecular formula of	
bu	uckminsterfullerene.	
Be	ecognise the structure of a	
	ullerene or nanotube in	
	iagrams and prose.	
Ev.	xplain the structure of	
	ullerenes.	
List	ist the properties and	
	onsequent uses of fullerenes nd carbon nanotubes.	
	escribe and explain the	
	pplications of fullerenes.	
	se molecular models of	
	raphene, nanotubes, and	
	ullerenes to explain their	
	roperties.	



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	Justify in detail a use for graphene, nanotubes, and fullerenes, based on their properties.	
	State that metals form a giant structure.	
	Recognise metallic bonding in diagrams.	
	Describe metallic bonding.	
	Recognise and represent metallic bonding diagrammatically.	
	Explain how metal atoms form giant structures.	
	Evaluate different models of metallic bonding.	
	List the physical properties of metals.	
	Describe the structure of a pure metal.	
	Explain key physical properties of metals using the model of metallic bonding.	
	Describe why metals are alloyed.	
	Explain in detail, including labelled diagrams, how alloying affects the structure and bonding in metals and its effect on properties.	
	Justify in detail why alloys are more often used than pure metals.	

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		State a definition of		
		nanoscience.		
		Describe how surface area to		
		volume ratio increases as		
		particle size decreases.		
		Descention that the manufacture		
		Recognise that the negative		
		indices in standard form used		
		in nanoscience represent very		
		small numbers.		
		Describe the size of		
		nanoparticles.		
		Explain why surface area to		
		volume ratio increases as		
		particle size decreases.		
		Convert lengths into standard		
		form.		
		Classify a particle as coarse,		
		fine, or nanoparticle based on		
		its size.		
		Quantitatively explain the		
		relationship between surface		
		area to volume ratio and		
		particle size and its effect on		
		properties.		
		Convert standard form into a		
		variety of length units.		
		State and evaluate the use of		
		nanoparticles in sun cream and		
		their other uses.		
		List the advantages and		
		disadvantages of using		
		nanoparticles.		
		Explain why nanoparticles can		
		have new applications.		
-		•	•	



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				Decide and justify in detail why nanotechnology research should continue.		
	NC/Spec coverage See above	NC/Spec coverage The particle model Separating mixtures	NC/Spec coverage Elements Periodic table	NC/Spec coverage Atomic structure Bonding	NC/Spec coverage Chemical analysis Links to Quantitative chemistry and Rates of reaction	NC/Spec coverage
The understanding that different	Know that some materials will dissolve in liquid to form a	3.6.2 Acids and alkalis can be corrosive or irritant and require safe handling.	3.6.4 Chemical reactions can be described by a model in which atoms and molecules	Define exothermic and endothermic reactions.	Use the periodic table to identify the relative atomic mass for the first 20 elements.	State the purpose of the Haber process.
elements interact in predictable ways to form	solution, and describe how to recover a substance from a	2.13 Identify risks, hazards and identify control	in reactants rearrange to make the products and the total number of atoms is	State that energy is conserved in a chemical reaction.	Calculate the relative formula mass for familiar and unfamiliar	State the conditions for the Haber process.
compounds. Appreciating that they do this in	solution Give reasons, based on	3.6.2 Acids have a pH below	conserved. 3.6.4 Write word equations	Safely complete a calorimetry experiment for a reaction that takes place in solution.	<u>compounds when the formula</u> <u>is supplied and is without</u> brackets or a formula.	Write a word equation to describe the Haber process.
predictable ways, with predictable energy,	evidence from comparative and fair tests, for the particular	7, neutral solutions have a pH below 7, neutral solutions have a pH of 7, alkalis have a pH above 7.	from information about chemical reactions.	State a use of an exothermic reaction and an endothermic	Use the periodic table to find the relative atomic mass of all	Describe how the raw materials are turned into the reactants for the Haber
"amounts" and rates of reaction.	uses of everyday materials, including metals, wood and plastic	3.6.2 Identify the best indicator to distinguish between solutions of	3.6.4 Use particle diagrams to show what happens in a reaction.	reaction. Write word equations for familiar reactions.	elements. State the units for the "amount" of substance.	process. Describe how the Haber process is a reversible
	Demonstrate that dissolving, mixing and	different pH, using data provided.	2.13 Identify control measures.	Explain how an energy change from a chemical reaction can	Explain why relative atomic masses may not be a whole	reaction. Describe the Haber process
	changes of state are reversible changes	3.6.2 Use data and observations to determine the pH of a solution and	3.6.4 Combustion is a reaction with oxygen in which energy is transferred to the	be used. Write balanced symbol	<u>number.</u> Explain why some elements	with the help of a balanced symbol equation including state symbols.
	Explain that some changes result in the formation of new	explain what this shows. 3.6.2 Hydrochloric, sulfuric	surroundings as heat and light.	<u>equations for familiar</u> <u>reactions.</u>	have the same relative atomic mass as each other.	Evaluate the Haber process using atom economy and
	materials, and that this kind of change is not usually reversible,	and nitric acid are strong acids.	3.6.4 Chemical changes can be described by a model in which atoms and molecules	Suggest a chemical reaction for a specific purpose based on the energy change for the reaction.	Use balanced symbol equations to calculate reacting masses.	LCA to determine its environmental impact.
	including changes associated with burning and the action	3.6.2 Ethanoic (acetic) and citric acid are weak acids.	in reactants rearrange to make the products and the total number of atoms is	Evaluate in detail the uses of exothermic and endothermic	Explain why chemical equations must be balanced.	Explain how costs are kept to a minimum in the Haber process
	of acid on bicarbonate of soda.	3.6.2 Deduce the hazards of different alkalis and acids using data about their	conserved. 3.6.4 Write word equations	reactions. Define activation energy.	Identify the limiting reactant in a chemical reaction.	• Explain, with the use of balanced symbol equations,
		concentration and pH. 3.6.2 Explain how	from information about chemical reactions.	Sketch a generic reaction profile diagram for an	Explain the effect of a limiting reactant on the amount of product made.	where the reactants come from for the Haber process.
		neutralisation reactions are used in a range of situations.	3.6.4 Predict the products of the combustion or thermal	exothermic or endothermic reaction.		Explain the effect of changing temperature on

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		decomposition of a given		Explain the effect of a limiting	the yield of the Haber
	3.6.2 Describe a method for	reactant and show the	Label activation energy on a	reactant on the amount of	process.
	how to make a neutral	reaction as a word equation.	reaction profile diagram.	product made.	-
	solution from an acid and			State the definition of	Explain the effect of
	alkali.	3.6.4 Compare the pros and	Generate a specific reaction	theoretical yield, actual yield,	changing pressure on the
		cons of fuels in terms of their	profile diagram for a given	and percentage yield.	yield of the Haber process.
	3.6.2 Devise an enquiry to	products of combustion.	chemical reaction when its		
	compare how well		energy change is also supplied.	Calculate percentage yield	Explain why the conditions
	indigestion remedies work.	3.6.4 Devise a general rule for		when actual yield and	used in the Haber process
		how a set of compounds	Identify bonds broken in	theoretical yield are given.	are a compromise.
	3.6.2 Estimate the pH of an	reacts with oxygen or	reactants and new bonds made		
	acid based on information	thermally decomposes.	in products of a reaction.	Calculate percentage yield	Justify why the conditions
	from reactions.			when the actual yield is given	used in the Haber process
		3.6.4 Thermal decomposition	Explain why chemical reactions	and the mass of the limiting	are a compromise.
	3.6.2 Given the names of an	is a reaction in which a single	need activation energy to start	<u>reactant is given.</u>	
	acid and an alkali, work out	reactant is broken down into	them.		Explain the effect of an iron
	the name of the salt	simpler products by heating.		List reasons why actual yield is	<u>catalyst on the rate and</u>
	produced when they react.		Use the particle model to	often lower than theoretical	position of equilibrium in
		3.6.4 Chemical changes can	explain how a chemical	<u>yield.</u>	the Haber process.
	Know that neutralisation	be described by a model in	reaction occurs.		
	reactions produce a salt and	which atoms and molecules		Calculate the percentage yield	Use data to predict and
	water.	in reactants rearrange to	Explain energy change in terms	using a variety of units and	explain the effect on the
		make the products and the	of the balance between bond	conversions.	equilibrium and rate of
	3.6.1 Iron, nickel and cobalt	total number of atoms is	making and bond breaking		reaction of changing
	are magnetic elements.	conserved.		Justify why percentage yield	conditions in the Haber
			State when fractional	<u>can never be above 100%.</u>	process.
	3.6.1 Mercury is a metal that	3.6.4 Explain why a reaction	distillation would be used.		
	is liquid at room	is an example of combustion		Calculate the formula mass of	
	temperature.	or thermal decomposition.	Safely make a paper	substances when the formula	
			chromatogram.	<u>is given.</u>	
	3.6.1 Bromine is a non-metal	3.6.4 Use particle diagrams to	Fundate sectors the second data	Palance during a most and	
	that is liquid at room	show what happens in a	Explain, using the particle	Balance simple equations	
	temperature.	reaction.	model, how reactants become	State a definition of store	
		2.C. 4. Due diet the gue due to of	products in a chemical reaction.	State a definition of atom	
	3.6.1 Identify an unknown element from its physical and	3.6.4 Predict the products of the combustion or thermal	Explain why bond breaking is	economy	
	chemical properties.	decomposition of a given	endothermic and bond making	Calculate the atom economy	
	chemical properties.	reactant and show the	is exothermic.	for a given chemical reaction.	
	3.6.1 Justify the use of	reaction as a word equation.	is exothermic.	tor a given chemical reaction.	
	specific metals and non-		Define bond energy and	Explain why using reactions	
	metals for different	3.6.4 Devise a general rule for	identify all the bonds that	with high atom economy is	
	applications, using data	how a set of compounds	break and are made in a	important.	
	provided.	reacts with oxygen or	chemical reaction.		
	p. criaca.	thermally decomposes.		Evaluate different reactions to	
	3.6.1 Describe an oxidation,		Calculate the energy needed to	decide the best production	
	displacement, or metal–acid		break the reactant bonds and	method of a chemical.	
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	reaction with a word	3.6.4 Explain observations	the energy released when the	Explain why the sum of the	
	equation.	about mass in a chemical or	product bonds are made.	formula masses of the	
		physical change.		reactants is the same as the	
	3.6.1 Use particle diagrams to		Calculate the energy change for	sum of the formula masses of	
	represent oxidation,	3.6.4 Use known masses of	a reaction, including the correct	the products.	
	displacement and metal-acid	reactants or products to	unit.		
	reactions.	calculate unknown masses of		Describe what the	
	3.6.1 Identify an unknown	the remaining reactant or	Explain in terms of bond	concentration of a solution is.	
	element from its physical and	product.	energies how a reaction is		
	chemical properties.		either exothermic or	Calculate the concentration of	
		3.6.4 Use the mass of	endothermic.	a solution in g/dm3 when	
	3.6.1 Deduce the physical or	reactant in an equation to		given the mass of solute in g	
	chemical changes a metal has	determine the mass of	Describe a simple cell.	and volume of solution in dm3.	
	undergone from its	product, for example,	Describe a battery		
	appearance.	magnesium and oxygen.	,	Explain how concentration of a	
			Give an example of a non-	solution can be changed.	
	3.6.1 Describe an oxidation,	3.6.4 Balance a symbol	rechargeable battery		
	displacement, or metal-acid	equation.	, , , , , , , , , , , , , , , , , , ,	Calculate the mass of solute (in	
	reaction with a word		Explain how potential	g) in a solution when given the	
	equation.	6.3.3 State that during a	difference can be changed in a	concentration in g/dm3 and	
		chemical reaction bonds are	cell.	volume in dm3 or cm3.	
	3.6.1 Use particle diagrams to	broken (requiring energy) and			
	represent oxidation,	new bonds formed (releasing	Interpret data from an	Calculate the mass of a	
	displacement and metal-acid	energy). If the energy	electrochemical cell to	chemical when any volume	
	reactions.	released is greater than the	determine the reactivity of the	and concentration is given.	
		energy required, the reaction	metals involved.	<u> </u>	
	3.6.1 Deduce the physical or	is exothermic. If the reverse,		Explain the concentration of a	
	chemical changes a metal has	it is endothermic.	Explain why non-rechargeable	solution in terms of particles.	
	undergone from its		batteries stop working.		
	appearance.	6.3.3 Use experimental		Accurately read the volume on	
		observations to distinguish	Describe an electrochemical	a burette to 1 decimal place.	
	3.6.1 Justify the use of	exothermic and endothermic	cell with half equations and	<u></u>	
	specific metals and non-	reactions.	ionic equations.	Identify concordant results	
	metals for different				
	applications, using data	6.3.3 Use energy data to	Explain why the reactions in an	Calculate a titre.	
	provided.	select a reaction for a	electrochemical cell are redox		
	provided	chemical hand warmer or	reactions and determine which	Describe how an indicator can	
	3.6.1 Place an unfamiliar	cool pack.	species is oxidised or reduced	be used to determine the end	
	metal into the reactivity		in an electrochemical cell.	point.	
	series based on information	3.6.3 Investigate a	<u> un ciccu cenemicar ceni</u>		
	about its reactions.	phenomenon that relies on	Evaluate the use of non-	Explain how accuracy can be	
		an exothermic reaction.	rechargeable cells.	improved in a titration.	
	3.6.1 Deduce a rule from data				
	about which reactions will	6.3.3 State that during a	Describe a hydrogen fuel cell.	Justify the use of a pipette and	
	occur or not, based on the	chemical reaction bonds are		burette for a titration,	
	reactivity series.	broken (requiring energy) and	State some uses for hydrogen	evaluating the errors involved	
	reactivity series.	new bonds formed (releasing	fuel cells.	in reading these instruments.	
		new bonds for med (releasing	ועבו נכווא.	in reading these list unlents.	

	3.6.1 Use experimental	energy). If the energy			
	results to suggest an order of	released is greater than the	State that hydrogen fuel cells	Explain how precise results are	
	reactivity of various metals.	energy required, the reaction	could be an alternative to	obtained in a titration.	
		is exothermic. If the reverse,	rechargeable cells and	Justify the use of an indicator in	
	2.6.1 Describe an avidation		•	-	
	3.6.1 Describe an oxidation,	it is endothermic.	batteries.	an acid-base titration.	
	displacement, or metal-acid				
	reaction with a word	6.3.3 Use a diagram of	Explain how a hydrogen fuel	Calculate the concentration of	
	equation.	relative energy levels of	cell produces electricity.	a solution in mol/dm3 when	
	-	particles to explain energy		given the volume/mass of	
	3.6.1 Use particle diagrams to	changes observed during a	List the advantages and	solute in moles and volume of	
	represent oxidation,	change of state.	disadvantages of hydrogen fuel	solution in dm3.	
	•	change of state.		solution in ans:	
	displacement and metal-acid		cells.		
	reactions.	6.3.3 State that during a		Calculate the amount of acid	
		chemical reaction bonds are	Explain why hydrogen fuel cells	<u>or alkali needed in a</u>	
		broken (requiring energy) and	are an alternative to	neutralisation reaction.	
		new bonds formed (releasing	rechargeable cells and		
		energy). If the energy	batteries.	Calculate the unknown	
		released is greater than the		concentration of a reactant in	
			Describe the reactions in first		
		energy required, the reaction	Describe the reactions in fuel	a neutralisation reaction when	
		is exothermic. If the reverse,	cells using balanced symbol and	the volumes are known and	
		the reaction is endothermic.	half equations.	the concentration of one	
				reactant is also known.	
		6.3.3 Use a diagram of	Evaluate the use of hydrogen		
		relative energy levels of	fuel cells instead of	Extract data from given	
		particles to explain energy	rechargeable cells and	information to perform multi-	
			batteries.	step calculations	
		changes.	batteries.		
		6.3.3 Predict whether a		independently.	
		chemical reaction will be	Determine and explain which		
		exothermic or endothermic	species is oxidised and which is	Calculate the amount in moles	
		given data on bond strengths.	reduced in a hydrogen fuel	of gas in a given volume at	
		-	cell.	room temperature and	
				pressure.	
				Convort units	
				<u>Convert units</u>	
				Suggest how the volume of gas	
				would change when	
				temperature or pressure was	
				changed.	
				Calculate the moles or volume	
				of a gaseous substance	
				involved in a chemical	
				reaction.	
				Recall a definition for rate of	
				reaction.	
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Image: series of a chemical reaction. Describe how changing the surface area changes the rate of reaction. Image: series of reaction. Describe what the activation				
Image: series of a chemical reaction. Describe how changing the surface area changes the rate of reaction. Image: series of reaction. Describe what the activation			can only occur when a collision	
Image: Section of the section of th				
Image: series of a chemical reaction. Describe how changing the surface area changes the rate of reaction. Image: series of reaction. Describe what the activation			occurs with enough energy.	
Image: series of a chemical reaction. Describe how changing the surface area changes the rate of reaction. Image: series of reaction. Describe what the activation				
Image: series of a chemical reaction. Describe how changing the surface area changes the rate of reaction. Image: series of reaction. Describe what the activation			List the factors that can affect	
Describe how changing the surface area changes the rate of reaction. Describe what the activation				
Surface area changes the rate of reaction. Describe what the activation			the rate of a chemical reaction.	
Surface area changes the rate of reaction. Describe what the activation				
Surface area changes the rate of reaction. Describe what the activation			Departies have all to the	
Surface area changes the rate of reaction. Describe what the activation			Describe now changing the	
of reaction. Describe what the activation			surface area changes the rate	
Describe what the activation				
			or reaction.	
			Describe what the estimation	
energy of a reaction is.				
			energy of a reaction is.	

			Calculate the surface area to	
			<u>volume ratio.</u>	
			Use collision theory to explain	
			in detail how increasing surface	
			area increases the rate of	
			reaction.	
			Use a graph to calculate the	
			rate of reaction at specific	
			times in a chemical reaction.	
			times in a chemical reaction.	
			Evolain why many collisions do	
			Explain why many collisions do	
			not lead to a chemical reaction.	
			Describe how temperature	
			affects the rate of reaction.	
			Safely complete an experiment	
			on how temperature affects	
			the rate of a reaction.	
			Use collision theory to explain	
			how changing temperature	
			alters the rate of reaction.	
			Calculate mean rates of	
			reaction.	
			<u>Use a graph to calculate the</u>	
			rate of reaction at specific	
			times in a chemical reaction.	
			times in a chemical reaction.	
			Calculate 1 / t and plot a graph	
			with a more meaningful line of	
			<u>best fit.</u>	
			Describe how changing	
			concentration affects the rate	
			of reaction.	
			Describe how changing	
			pressure affects the rate of gas	
			phase reactions.	
			Use collision theory to explain	
			how changing concentration or	
	1	1		

	pressure alters the rate of reaction.	
	Explain how to change gas pressure.	
	Interpret a rate of reaction graph, including calculating the rate of reaction at specific times in a chemical reaction.	
	Explain why changing pressure has no effect on the rate of reaction for some reactions.	
	Justify quantitative predictions and evaluate in detail their investigation into the effect of concentration on rate of reaction.	
	Define a catalyst	
	Describe how adding a catalyst affects the rate of reaction.	
	Describe and carry out a method to safely investigate which catalyst is best for a reaction.	
	Use collision theory to explain how adding a catalyst alters the rate of reaction.	
	Explain, with an example, the industrial use of a catalyst.	
	Calculate the mean rate of reaction.	
	Use a reaction profile diagram to explain in detail the effect of adding a catalyst.	



		Justify the use of catalysts in	
		industry and in household	
		products.	
		Explain what an enzyme is and	
		how it works.	
		now it works:	
		Define a reversible reaction.	
		Write a word equation for a	
		familiar reversible reaction.	
		State an example of a	
		reversible reaction.	
		reversible reaction.	
		Explain, using a familiar	
		example, how a reaction can be	
		reversible.	
		reversible.	
		Describe a familiar reversible	
		reaction using a balanced	
		symbol equation.	
		Predict the observations of a	
		familiar reversible reaction	
		when the conditions are	
		changed.	
		Describe an unfamiliar	
		reversible reaction, using a	
		balanced symbol equation with	
		state symbols.	
		,	
		lustify the use of reversible	
		Justify the use of reversible	
		reactions in the lab and items	
		available in the home.	
		Justify the classification of a	
		reaction as reversible.	
		State whether a reversible	
		reaction is exothermic or	
		endothermic in the reverse	
		direction if the forward	
		direction is stated.	

			Write a word equation for the	
			reversible reaction of	
			dehydration/hydration of	
			<u>copper sulfate.</u>	
			Explain why the energy change	
			in a reversible reaction is	
			exothermic in one direction	
			and endothermic in the	
			reverse direction.	
			Generate balanced symbol	
			equations for reversible	
			reactions from information	
			provided.	
			Make predictive observations	
			of familiar reversible reactions	
			when information is supplied.	
			Explain in detail the energy	
			changes in an equilibrium	
			system.	
			Suggest and explain a simple	
			laboratory test which could be	
			completed using a reversible	
			reaction.	
			Make predictive observations	
			of unfamiliar reversible	
			reactions when information is	
			supplied.	
			Define a dynamic equilibrium	
			and describe how to reach it	
			Describe a closed system	
			,,,	
			Describe how rate of the	
			Describe how rate of the	
			forward reaction compares to	
			rate of the backward reaction	
			in a dynamic equilibrium.	
			Describe Le Chatelier's	
			Principle.	
	1	1	l	1

					Explain dynamic equilibrium.	
					Explain why the concentration	
					of chemicals in a dynamic	
					equilibrium remains constant.	
					Predict the effect on the rate	
					of forward and reverse	
					reactions by applying the Le	
					Chatelier's Principle when the	
					conditions of a dynamic	
					equilibrium are changed.	
					Explain how changing	
					conditions for a system at	
					dynamic equilibrium affects the	
					rate of the forward and reverse	
					reactions.	
					Predict the effect on yield of	
					changing temperature,	
					concentration, or pressure I a	
					given equilibrium system.	
					8	
					Explain why changing pressure	
					has no effect on some systems.	
					Justify, in detail, the	
					compromise conditions chosen	
					in given industrial processes.	
	NC/Spec coverage	NC/Spec coverage	NC/Spec coverage	NC/Spec coverage	NC/Spec coverage	NC/Spec coverage
		Metals and non-metals	Types of reaction	Bonding	Rates of reaction	Earth's resources
		Acids and alkalis	Chemical energy	Chemical changes	Links to quantitative	
				Energy changes		
Understand that				Describe examples of	State a definition of an alkene.	Define a monomer and a
Carbon				exothermic and endothermic	Name the first form all some	polymer.
compounds give				reactions.	Name the first four alkenes.	State como usos of
rise to				Evolution using observations	State the product of a	State some uses of
homologous series which have				Explain, using observations from calorimetry, how to	State the product of a combustion and an addition	poly(ethene) and
specific properties				classify a reaction as	reaction of an alkene.	poly(propene).
and structures				exothermic or endothermic.		Write a word equation for
				Explain in detail how to carry	Draw the displayed structural	the formation of
				out a calorimetry experiment.	formulae for the first four	poly(ethene) and
					alkenes.	poly(propene).
				Describe the composition of		
				crude oil.		
				1		

		1	1		WESTON FAVELL ACADEMY
				Draw the displayed structural	Describe how monomers
			State a definition of a	formulae for the products of	become polymers.
			hydrocarbon.	the addition reactions between	
			,	alkenes and hydrogen, water	Draw the monomer for an
			State a definition of an alkane.	(steam), or a halogen.	addition polymer when the
			state a definition of an alkane.	(stearing, or a halogen.	structure of the polymer is
			Describe houses concrete and	Duedlet the survey and helewood	
			Describe how to separate crude	Predict the word and balanced	given.
			oil into fractions in a school	symbol equations for the	
			laboratory.	complete combustion of an	Draw an addition polymer
				alkene when the number of	structure when the structure
			Classify a hydrocarbon as an	carbon atoms is given.	of the monomer is given.
			alkane.		
				Predict the word and balanced	Explain why monomers for
			State the names and describe	symbol equations to describe	addition polymers must be
			the first four alkanes.	reactions between alkenes and	unsaturated.
				hydrogen, water (steam), or a	
			Explain why fractional		Explain the preserve of
			Explain why fractional	<u>halogen.</u>	Explain the process of
			distillation is used to separate		addition polymerisation in
			crude oil into fractions.	Compare and contrast the	detail, including using
				reactivity of alkanes and	balanced symbol equations
			Apply a general formula to	alkenes.	and the concept of atom
			generate a molecular formula		economy.
			and a displayed formula for a	Predict the general formula of	-
			straight-chain alkane.	an alkene.	Explain how the repeating
					unit of a polymer relates to
			Classify and justify the	Recognise the functional group	the monomer.
			classification of a chemical as	in an alcohol and a carboxylic	the monomen.
			an alkane.		Describe condensation
				acid.	
			Name the different fractions	Name for the first four primary	polymerisation.
			from crude oil.	alcohols and the first four	
				carboxylic acids.	Draw a simplified structure
			State a use for each fraction		of the monomers for a
			from crude oil.	Name ethyl ethanoate from its	condensation polymer when
				formula.	the structure of the polymer
			Describe how the trend in		is given.
			colour, viscosity, flammability,	Classify an organic compound	-
			and boiling point changes as	as an alcohol, a carboxylic acid,	Draw a simplified structure
			the length of the hydrocarbon	or an ester.	of a condensation polymer
				or an ester.	when the structure of the
			chain changes.	Draw the structure land	
				Draw the structural and	monomers are given.
			Describe how the properties of	displayed formulae for the first	
			a fraction of crude oil make it	four primary	Predict the products of
			appropriate for its use.	alcohols and the first four	condensation
				carboxylic acids.	polymerisation.
			Explain in detail how fractional		
			distillation is used to separate		Explain the process of
			crude oil into fractions.		condensation
L					conactigation

				WESTON TAVELL ACADEMI
			Draw the structural and	polymerisation in detail,
		Explain how chain length	displayed formulae for ethyl	including using equations.
		affects the properties of crude	ethanoate.	
		oil fractions.		Compare and contrast in
			Predict the structure for	detail, giving appropriate
		Make predictions about the	primary alcohols or carboxylic	examples, the two methods
		properties of crude oil fractions	acids when the number of	of polymerisation.
		from the fraction's	carbon atoms is given.	
		hydrocarbon chain length.		State an example of a natural
		nyu ocu bon chun length.	Suggest a general formula for a	polymer.
		Define complete and	homologous series.	polymer.
		•	noniologous series.	Describe the relationship
		incomplete combustion.	Constant of the second se	Describe the relationship
			Suggest why an organic acid is	between sugar as a
		Write a word equation to	not an alcohol even though it	monomer and starch or
		describe the complete	contains an –OH functional	cellulose as a polymer.
		combustion of a hydrocarbon.	group.	
				Describe the relationship
		Write a word equation to	State that fermentation can be	between amino acids as a
		describe the incomplete	used to make ethanol.	monomer and protein as a
		combustion of a hydrocarbon.		polymer.
			List some chemical properties	
		Explain the differences	of the first four alcohols.	Identify the monomer from
		between complete and		, the structural formula of a
		incomplete combustion.	Recognise the formula and	polymer.
		·····	structure of ethanol and state	P = · J · · · e · ·
		Write balanced symbol	some of its uses.	Describe the structure of an
		equations for the complete and	some of its uses.	amino acid.
		incomplete combustion of	Describe fermentation to	
		hydrocarbons.	make aqueous solutions of	Predict the products of
		nyul ocal bolls.		-
			ethanol, including a word	condensation
		Explain how to test for the	equation.	polymerisation.
		products of complete		
		combustion.	Describe the reactions of	Explain in detail the process
			alcohols, including using word	of condensation
		Justify the use of a given fuel	equations.	polymerisation with natural
		over another.		monomers, including using
			Explain the relationship	equations.
		Explain in detail how the	between ethanol and ethanoic	
		production of carbon monoxide	acid.	Explain how amino acids
		in incomplete combustion can		react together in an acid–
		be lethal.	Explain why solutions of	
			ethanol have a pH of 7.	State that DNA is an example
		Use balanced symbol equations		of a natural polymer.
		to calculate amounts of	Describe complete combustion	or a natural polymer.
				State what DNA stands for
		reactants or products in a	reactions of a range of alcohols	State what DNA stands for.
		combustion reaction.	using balanced symbol	
		Define the process of cracking.	equations.	

						WESTON FAVELL ACADEM
						Name the type of monomers
				Generate a word equation to	Plan an investigation to	used to make DNA.
				describe cracking.	determine the relative energy	
					transferred to the surroundings	Describe the main structure
				Recognise and give examples of	by the combustion of different	of DNA.
				alkenes.	alcohols.	
						Describe the importance of
				Describe the process of	Recognise a carboxylic acid	DNA for living systems.
				cracking, including conditions.	from its name or formula.	
						Sketch the shape of a DNA
				Generate a balanced symbol	List some chemical properties	strand.
				equation to describe cracking.	of carboxylic acids.	
				equation to describe cracking.	or carboxyne actus.	Explain the shape of the DNA
				Describe a chemical test to	Describe an ester and state	polymer.
				show an alkene is present.	some uses of this class of	polymer.
				show all alkelle is present.		Explain how nucleatides
					compounds.	Explain how nucleotides
				Use examples to explain the	Describe a describe de la construction	form DNA.
				process of cracking and why it	Describe why carboxylic acids	
				is so important to the	are acidic.	Explain the purpose of DNA.
				petrochemical industry.		
					Use word equations to	
				Explain the similarities and	describe the reactions of	
				differences between alkanes	carboxylic acids with metal	
				and alkenes.	carbonates and with alcohols.	
				Explain, using balanced symbol	Describe how to make an ester.	
				equations, the reaction		
				between bromine water and an	Explain, using ionic equations,	
				alkene.	why carboxylic acids are weak	
				alkene.		
					acids.	
					Predict the products of the	
					reactions of a range of	
					carboxylic acids with metal	
					carbonates and with alcohols.	
					כמי שטוומנכי מווע שונוו מונטווטוט.	
					Explain the term volatile in	
					terms of molecular forces.	
	NC/Spec coverage	NC/Spec coverage	NC/Spec coverage	NC/Spec coverage	NC/Spec coverage	NC/Spec coverage
	NC/Spec coverage	NC/Spec coverage	NC/Spec coverage	Energy changes	Organic chemistry	Earth's resources
					Organic chemistry	
				Crude oil & fuels		Polymers
Appreciate that		3.7.1 The three rock layers	3.7.3 Greenhouse gases	Describe the Earth's early	Define electrolysis.	List some human uses of the
the evolution of		inside Earth are the crust, the	reduce the amount of energy	atmosphere.		Earth's resources.
the Earth's		mantle and the core.	lost from the Earth through		Write a word equation to	
atmosphere has			radiation and therefore the		describe the electrolysis of a	Give examples of a finite and
			temperature has been rising		-	
been and remains			temperature has been rising		molten ionic compound.	a renewable resource.

a number of processes which provide resources we use todayparticular property based on how it was formed.gases has risen.formed in the development of the atmosphere.of movement of ions.product th supplement equation including state products.3.7.1 Identify the causes of weathering and erosion and describe how they occur.3.7.3 Scientists have evidence that global warming caused by human activity is causing changes in climate.State the composition, including formulae, of the Earth's early atmosphere.Write a balanced symbol equation including state products.3.7.1 Predict planetary conditions from descriptions of rocks on other planets.3.7.3 Methane and carbon dioxide are greenhouse gases.Describe a theory for the development of the Earth's atmosphere.Predict the products at each electrolysis of a molten ionic compound.Explain the sustainable3.7.1 Identify circumstances that indicate fast processes.Earth's atmosphere contains around 78% nitrogen, 21% oxigen, Explain, using word equation, atmosphere and how oceans were formed.Explain in detail how the atmosphereExplain why electrolysis can only occur when an ionic compound is molten or in aqueous solution.Interpret i graphs, ch prose.	ented or replaced by ral or synthetic and classify a as finite or e when information he use of natural, ile, and finite
processes which provide resources we use todayhow it was formed.3.7.3 Scientists have evidence that global warming caused by human activity is causing changes in climate.the atmosphere.Write a balanced symbol equation including state symbols for the overall electrolysis of a molten ionic compound.supplement agricultur.3.7.1 Identify the causes of weathering and erosion and describe how they occur.3.7.3 Scientists have evidence that global warming caused by human activity is causing changes in climate.State the composition, including formulae, of the Earth's early atmosphere.Write a balanced symbol equation including state 	ented or replaced by ral or synthetic and classify a as finite or e when information he use of natural, le, and finite s. information from formats including
provide resources we use todayS.7.1 Identify the causes of weathering and erosion and conditions from descriptions of rocks on other planets.3.7.3 Scientists have evidence that global warming caused by human activity is causing changes in climate.Write a balanced symbol equation including state symbols for the overall electrolysis of a molten ionic compound.agriculture products.3.7.1 Predict planetary conditions from descriptions of rocks on other planets.3.7.3 Methane and carbon dioxide are greenhouse gases.Describe a theory for the development of the Earth's atmosphere.Predict the products at each electrolysis of of a molten ionic compound.is given. resource a that indicate fast processes of change on Earth and those that indicate slower processes.Earth's atmosphere contains around 78% nitrogen, 21% oxygen,Explain, using word equations, 	ral or synthetic and classify a as finite or e when information he use of natural, le, and finite s. information from formats including
we use today3.7.1 Identify the causes of weathering and erosion and describe how they occur.that global warming caused by human activity is causing changes in climate.State the composition, including formulae, of the Earth's early atmosphere.equation including state symbols for the overall electrolysis of a molten ionic compound.products.3.7.1 Predict planetary conditions from descriptions of rocks on other planets.3.7.3 Methane and carbon dioxide are greenhouse gases.Describe a theory for the development of the Earth's atmosphere.Predict the products at each electrode for the electrolysis of a molten ionic compound.Describe a the subscriptions of a molten ionic compound.Describe a the subscriptions of a molten ionic compound.Explain the sustainable resource a transmither3.7.1 Identify circumstances 	and classify a as finite or e when information he use of natural, le, and finite s. information from formats including
weathering and erosion and describe how they occur.by human activity is causing charges in climate.including formulae, of the Earth's early atmosphere.symbols for the overall electrolysis of a molten ionic compound.Describe a resource a renewable3.7.1 Predict planetary conditions from descriptions of rocks on other planets.3.7.3 Methane and carbon dioxide are greenhouse gases.Describe a theory for the development of the Earth's atmosphere.Predict the products at each electrole for the electrolysis of a molten ionic compound.Describe a renewable electrode for the electrolysis of a molten ionic compound.Describe a renewable electrole for the electrolysis of a molten ionic compound.Describe a 	and classify a as finite or e when information he use of natural, le, and finite S. information from formats including
weathering and erosion and describe how they occur.by human activity is causing charges in climate.including formulae, of the Earth's early atmosphere.symbols for the overall electrolysis of a molten ionic compound.Describe a resource a renewable3.7.1 Predict planetary conditions from descriptions of rocks on other planets.3.7.3 Methane and carbon dixide are greenhouse gases.Describe a theory for the development of the Earth's atmosphere.Predict the products at each electrode for the electrolysisDescribe a renewable of a molten ionic compound.3.7.1 Identify circumstances that indicate fast processes of change on Earth and those that indicate slower that indicate slower that indicate slower 	as finite or e when information he use of natural, ile, and finite s. information from formats including
describe how they occur.changes in climate.Earth's early atmosphere.electrolysis of a molten ionic compound.Describe a resource a renewable3.7.1 Predict planetary conditions from descriptions of rocks on other planets.3.7.3 Methane and carbon dioxide are greenhouse gases.Describe a theory for the development of the Earth's atmosphere.Predict the products at each electrode for the electrolysis of a molten ionic compound.Is given.3.7.1 Identify circumstances that indicate fast processes of that indicate slower processes.Earth's atmosphere contains around 78% nitrogen, 21% oxygen,Explain, using word equations, how gases were formed in the atmosphere and how oceans 	as finite or e when information he use of natural, ile, and finite s. information from formats including
S.7.1 Predict planetary conditions from descriptions of rocks on other planets.3.7.3 Methane and carbon dioxide are greenhouse gases.Describe a theory for the development of the Earth's atmosphere.Predict the products at each electrode for the electrolysis of a molten ionic compound.resource at renewable is given.3.7.1 Identify circumstances that indicate fast processes of change on Earth and those that indicate slower processes.Earth's atmosphere contains around 78% nitrogen, 21% oxygen,Explain, using word equations, now gases were formed in the atmosphere and how oceans 	as finite or e when information he use of natural, ile, and finite s. information from formats including
3.7.1 Predict planetary conditions from descriptions of rocks on other planets.3.7.3 Methane and carbon dioxide are greenhouse gases.Describe a theory for the development of the Earth's atmosphere.Predict the products at each electrode for the electrolysis of a molten ionic compound.renewable is given.3.7.1 Identify circumstances that indicate fast processes of change on Earth and those that indicate slower processes.Earth's atmosphere contains around 78% nitrogen, 21% oxygen,Explain, using word equations, how gases were formed in the atmosphere and how oceans were formed.Explain why electrolysis can 	e when information he use of natural, ile, and finite 5. information from formats including
conditions from descriptions of rocks on other planets.dioxide are greenhouse gases.development of the Earth's atmosphere.Predict the products at each electrode for the electrolysis of a molten ionic compound.is given.3.7.1 Identify circumstances that indicate fast processes of change on Earth and those that indicate slower processes.Earth's atmosphere contains around 78% nitrogen, 21% oxygen,Explain, using word equations, how gases were formed in the atmosphere and how oceans were formed.Explain why electrolysis can only occur when an ionic 	ne use of natural, ile, and finite 5. information from formats including
of rocks on other planets.gases.atmosphere.electrode for the electrolysis of a molten ionic compound.Explain the sustainable3.7.1 Identify circumstances that indicate fast processes of change on Earth and those that indicate slower processes.Earth's atmosphere contains around 78% nitrogen, 21% oxygen,Explain, using word equations, how gases were formed in the atmosphere and how oceans were formed.Explain why electrolysis can only occur when an ionic 	le, and finite 5. information from formats including
3.7.1 Identify circumstances Earth's atmosphere contains Explain, using word equations, of a molten ionic compound. Explain the sustainable 1 Mathematicate S.7.1 Identify circumstances Earth's atmosphere contains Explain, using word equations, how gases were formed in the Explain why electrolysis can resources. 1 Mathematicate Sorgen, Sorgen, Sorgen, were formed. Explain in detail Interpret in aqueous solution. Interpret in aqueous solution.	le, and finite 5. information from formats including
3.7.1 Identify circumstances that indicate fast processes of change on Earth and those that indicate slower processes.Earth's atmosphere contains around 78% nitrogen, 21% oxygen,Explain, using word equations, how gases were formed in the atmosphere and how oceans were formed.Explain why electrolysis can only occur when an ionic compound is molten or in aqueous solution.sustainable resources.3.7.1 Construct a labelled diagram to identify the3.7.3 Describe how human activities affect the carbonhow the atmosphere developed.Describe electrolysis with half equations at the electrodes.proces.	le, and finite 5. information from formats including
that indicate fast processes of change on Earth and those that indicate slower processes. around 78% nitrogen, 21% oxygen, how gases were formed in the atmosphere and how oceans were formed. Explain why electrolysis can only occur when an ionic compound is molten or in aqueous solution. resources. 3.7.1 Construct a labelled diagram to identify the 3.7.3 Describe how human activities affect the carbon how gases were formed in the atmosphere and how oceans were formed. Explain why electrolysis can only occur when an ionic compound is molten or in aqueous solution. Interpret in different for graphs, ch	s. information from formats including
change on Earth and those that indicate slower processes. oxygen, <1% carbon dioxide, plus small amounts of other gases. atmosphere and how oceans were formed. only occur when an ionic compound is molten or in aqueous solution. Interpret in different for graphs, ch proces. 3.7.1 Construct a labelled diagram to identify the 3.7.3 Describe how human activities affect the carbon how the atmosphere developed. Describe electrolysis with half equations at the electrodes.	information from formats including
that indicate slower processes. <1% carbon dioxide, plus small amounts of other gases. were formed. compound is molten or in aqueous solution. Interpret in different for graphs, che diagram to identify the 3.7.1 Construct a labelled diagram to identify the 3.7.3 Describe how human activities affect the carbon how the atmosphere developed. Describe electrolysis with half equations at the electrodes. prose.	formats including
processes. small amounts of other gases. use a theory to explain in detail aqueous solution. different for graphs, change 3.7.1 Construct a labelled 3.7.3 Describe how human how the atmosphere Describe electrolysis with half prose. diagram to identify the activities affect the carbon developed. equations at the electrodes. equations at the electrodes.	formats including
SectorSectorUse a theory to explain in detailgraphs, ch3.7.1 Construct a labelled diagram to identify the3.7.3 Describe how human activities affect the carbonhow the atmosphere developed.Describe electrolysis with half equations at the electrodes.prose.	-
3.7.1 Construct a labelled diagram to identify the3.7.3 Describe how human activities affect the carbonhow the atmosphere developed.Describe electrolysis with half equations at the electrodes.prose.	iai (s, tables, allu
diagram to identify the activities affect the carbon developed. equations at the electrodes.	
processes of the rock cycle. cycle. Understan	nd data and
	information using
	magnitude to
differences between the rock human activity is causing Earth's atmosphere and why it oxidation or reduction. compare.	
cycle and everyday physical global warming or climate has changed.	a set a characteria
	ne role of chemistry
	ing agricultural and
	processes.
that are responsible for rock through natural processes in formed in the atmosphere and electrolysed.	
	clusions consistent
	rmation provided
	ohs, charts, tables,
	e and evaluate the
might be similar to some activities (burning fuels). dioxide have decreased in the electrolysed. validity of	the data.
types of rock. atmosphere.	
	why potable water
3.7.2 Describe how space explain how carbon is List the names and symbols of describe electrolysis of a is important	ant.
exploration and observations recycled in the environment the gases in dry air. solution.	
	ey processes to
scale of the universe. State where methane and Describe electrolysis of make drink	nking water.
3.7.3 Scientists have evidence ammonia in the atmosphere solutions in terms of movement	
	til salty water
particular units for measuring by human activity is causing	
distance. changes in climate. Describe how the proportion <u>Write a balanced symbol</u> Explain wh	hy the method of
of carbon dioxide in the early equation including state obtaining	potable water
3.7.2 Describe the atmosphere was reduced. symbols for the overall depends of	on the local
appearance of planets or <u>electrolysis of a solution</u> . conditions	

					WESTON FAVELL ACADEMY
	moons from diagrams	3.7.3 Describe how human	State the composition of dry		
	showing their position in	activities affect the carbon	air.	Predict the products at each	Explain reasons for filtration
	relation to the Earth and Sun.	cycle.		electrode for the electrolysis of	and sterilisation in water
			Use word equations to show	a molten ionic compound or its	treatment.
	3.7.2 Describe how space	3.7.3 Describe how global	how carbon dioxide can form	solution.	
	exploration and observations	warming can impact on	sedimentary rocks.	Explain how hydrogen ions and	Describe and explain in detail
	of stars are affected by the	climate and local weather		hydroxide ions can be present	how to safely distil salty
	scale of the universe.	patterns.	Use a theory to explain in detail	in solutions, including a	water.
			how the early atmosphere	balanced symbol equation with	
	3.7.2 Make deductions from	3.7.3 Compare the relative	developed to form the	state symbols, for the	Explain the difference
	observation data of planets,	effects of human-produced	atmosphere today.	reversible reaction in which	between pure water and
	stars and galaxies.	and natural global warming.		water ionises.	potable water.
	-		Explain why the composition of		
	3.7.2 Explain why places on	3.7.3 Evaluate the	the Earth's atmosphere has not	Describe electrolysis with half	Justify the choice of potable
	the Earth experience	implications of a proposal to	changed much for 200 million	equations at the electrodes.	water supply in a given
	different daylight hours and	reduce carbon emissions.	years.		scenario.
	amounts of sunlight during			Explain the classification of	
	the year.	3.7.3 Investigate the	Use balanced symbol equations	reactions at the electrodes as	Explain in detail why
		contribution that natural and	to explain how carbon dioxide	oxidation or reduction.	desalination is not often
	3.7.1 Predict patterns in day	human chemical processes	forms sedimentary rock and		used to generate safe clean
	length, the Sun's intensity or	make to our carbon dioxide	how methane and ammonia	State that aluminium can be	drinking water and justify
	an object's shadow at	emissions.	were removed from the	extracted from aluminium	when it is used.
	different latitudes.		atmosphere.	oxide using electrolysis.	
		3.7.4 Most metals are found		,	List what is removed from
	3.7.2 Relate observations of	combined with other	Describe the greenhouse	Write a word equation to	waste water before it can be
	changing day length to an	elements, as a compound, in	effect.	describe the electrolysis of	released.
	appropriate model of the	ores. The more reactive a		, aluminium oxide.	
	solar system.	metal, the more difficult it is	Name three greenhouse gases		State the main processes in
	,	to separate it from its	5 5	Describe the electrolysis of	sewage treatment.
	3.7.2 Describe the	compound. Carbon displaces	State some human activities	aluminium oxide.	5
	appearance of moons from	less reactive metals, while	that affect the proportion of		State uses of sewage slurry.
	diagrams showing their	electrolysis is needed for	greenhouse gases in the	Explain why electrolysis is an	с ,
	position in relation to the	more reactive metals.	atmosphere.	expensive metal extraction	Explain why waste water
	Earth and Sun.		'	method and illustrate this with	should be treated before it is
		3.7.4 Describe how Earth's	Explain the greenhouse effect	the extraction of aluminium.	released into the
	3.7.2 Compare explanations	resources are turned into			environment.
	from different periods in	useful materials or recycled.	Explain how greenhouse gases	Explain why cryolite is added	
	history about the motion of	,	increase the temperature of	to aluminium oxide in the	Describe the main processes
	objects and structure of the	3.7.4 Justify the choice of	the atmosphere.	industrial extraction of	in sewage treatment.
	Universe.	extraction method for a		aluminium.	5
		metal, given data about	Explain how human activity can		Explain uses of sewage
		reactivity.	change the proportion of	Explain why electrolysis is used	slurry.
			greenhouse gases in the	to extract aluminium from	
		3.7.4 Suggest factors to take	atmosphere.	compounds.	Evaluate the ease of
		into account when deciding		•	obtaining potable water
		whether extraction of a metal		Describe electrolysis with half	from waste, ground, or salt
		is possible.		equations at the electrodes.	water.
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			WESTON FAVELL ACADEM
 3.7.4 Suggest ways in which waste products from industrial processes could be reduced. 3.7.4 Predict the method used for extracting metal based on its position in the reactivity series. 3.7.4 There is only a certain quantity of any resource on Earth, so the faster it is extracted, the sooner it will run out. Recycling reduces the need to extract resources. 3.7.4 Explain why recycling of some materials is particularly important. 3.7.4 Describe how Earth's resources are turned into useful materials or recycled. 3.7.4 Suggest ways in which changes in behaviour and the use of alternative materials may limit the consumption of natural resources. 3.7.4 Use data to evaluate proposals for recycling materials. 	Justify why scientists, as well as the public, disagree about the cause of climate change.Explain the difference between global warming and the greenhouse effect.Evaluate evidence to suggest if global warming is man-made or natural.List some of the possible outcomes of climate change.State a definition for carbon footprint.List some ways to reduce a carbon footprint.Explain the possible effects of global climate change and why they are difficult to predict.Explain possible methods to reduce greenhouse gas emissions.Explain some of the problems in trying to reduce greenhouse gas emissions.Evaluate the scale, risk, and environmental impact of global climate change.Justify why reducing greenhouse gas emissions can be difficult to achieve.Evaluate the use of products, services, or events in terms of their carbon footprint.	Explain the classification of the reactions at each electrode as oxidation or reduction. State the products of the electrolysis of brine and a use for each. Safely electrolyse a solution, with guidance provided. Describe how to electrolyse brine in terms of ions moving Predict the products of electrolysis of a solution. Plan and carry out an electrolysis investigation. Explain the electrolysis of brine using half equations, classifying reactions at the electrode as oxidation or reduction. Evaluate in detail an investigation they have planned and carried out, commenting on their methodology and quality of the data collected. Compare and contrast the electrolysis as a molten compound.	Explain in detail how and why waste water is processed before it is released into the environment. Evaluate the uses of sewage slurry. Describe the processes of phytomining and bioleaching. Write balanced symbol equations to explain metal extraction techniques. Explain the need for new ways of extracting metals (in particular copper). Explain in detail how phytomining and bioleaching extract metals. Write ionic equations to explain metal extraction techniques and identify the species being oxidised or reduced. Evaluate biological methods of metal extraction. State the different stages of an LCA in the correct order. Carry out an LCA for shopping bags made from plastic or paper with support. Explain the importance of
	services, or events in terms of their carbon footprint.		Explain the importance of LCA and how it can be misused.

			State what is required for iron to rust.
			Define the term corrosion.
			Suggest ways of minimising the environmental impact of exploiting raw materials.
			Evaluate ways of reducing the use of limited resources.
			products.
			Evaluate the environmental, economic, and social impacts of reusing and recycling
			Evaluate ways of reducing the use of limited resources when information is given.
			Explain why some recycling can be difficult.
			Explain the importance of reusing and recycling products.
			Describe how glass can be reused and recycled.
			Describe how metal can be reused and recycled.
			List some products that can be reused or recycled.
			Evaluate products in detail using LCAs.
			Explain the limits of LCAs.
			Carry out LCAs for different products when data is supplied.

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			List some ways to prevent rusting.
			Describe an experiment to investigate the conditions
			<u>required for rusting to</u> <u>occur.</u>
			With the help of equations, describe the process of
			rusting.
			Explain how different
			<u>corrosion prevention</u> techniques work.
			Explain in detail why
			<u>corrosion is a problem.</u>
			Write balanced equations to
			describe rusting and identify species that are oxidised
			and reduced.
			Evaluate rust prevention
			techniques and suggest which is best for a specific
			purpose.
			State the difference
			<u>between a metal before and</u> after being alloyed.
			State the elements in steel
			and bronze.
			List some common examples
			of alloys and their uses.
			Explain in detail why pure metals are often alloyed
			before they are used.
			Describe how different
			amounts of carbon affect the properties of iron.

			Identify an appropriate
			purpose for an alloy when
			given data on its properties.
			Explain the term carat.
			Use data on the properties of
			unfamiliar alloys to explain a
			suitable alloy for a given
			purpose.
			Evaluate an alloy in terms of
			its properties and uses.
			Describe the properties of a
			thermosetting and
			thermosetting plastics.
			Describe the difference
			Describe the difference between LD and HD
			poly(ethene).
			poly(ethene).
			Explain how thermosetting
			plastics and thermosetting
			plastics are different in terms
			of structure and bonding.
			ç
			Describe the different
			conditions used to make
			poly(ethene).
			Explain how the structure of
			poly(ethene) affects its
			properties and therefore its
			uses.
			Explain in detail, giving
			examples, how the
			properties of plastics can be
			changed.
			When data about the
			properties of plastics is
			given, suggest a suitable
			plastic for a given purpose.

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			Describe how the raw materials are turned into the reactants for the Haber process.
			Describe how the Haber process is a reversible reaction.
			Describe the Haber process with the help of a balanced symbol equation including state symbols.
			Evaluate the Haber process using atom economy and LCA to determine its environmental impact.
			Explain how costs are kept to a minimum in the Haber process.
			Explain, with the use of balanced symbol equations, where the reactants come from for the Haber process.
			Explain the effect of changing temperature on the yield of the Haber process.
			Explain the effect of changing pressure on the yield of the Haber process.
			Explain why the conditions used in the Haber process are a compromise.
			Justify why the conditions used in the Haber process are a compromise.

Explain the effect of an iron catalyst on the rate and position in the Haber process. Use data to predict and explain the effect of the equilibrium and rate of reaction of changing conditions in the Haber process. State what a fertiliser is. Identify the fertiliser procestion.
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State what a fertiliser is. Identify the fertiliser
Identify the fertiliser
Write a word equation for
the formation of the
chemicals in NPK fertilisers.
Explain the importance of fertilisers for agriculture.
Describe in detail how
fertilisers are produced in
the laboratory.
Write balanced symbol equations for the reactions
to make components of NPK
fertilisers.
Evaluate different processes
to make NPK fertilisers.
Write ionic equations for
reactions to make fertilisers.
Calculate the concentration
of an ammonia solution from
the results of a titration.
Name the elements in NPK
fertilisers.

						Describe where the raw materials for NPK fertilisers come from.
						Name and give the formulae of the chemicals in NPK fertilisers.
						Describe production of fertilisers in industry.
						Compare and contrast the industrial and laboratory production of fertilisers.
						Write balanced symbol equations for the reactions to make components of NPK fertilisers.
						Evaluate the composition of fertilisers.
						Evaluate different processes to make NPK fertilisers.
						Write ionic equations to illustrate the reactions to make NPK fertilisers.
	NC/Spec coverage	NC/Spec coverage Earths structure Universe	NC/Spec coverage Climate Earth resources Enquiry processes	NC/Spec coverage Earth's early atmosphere Crude oil and fuels	NC/Spec coverage Organic Chemical amalysis	NC/Spec coverage Earth's resources
Have an appreciation of the importance of	Know that some materials will dissolve in liquid to form a	2.3 Judge whether the conclusion is supported by the data.	2.3 Make a conclusion and explain it	Explain in detail how multi-step separation techniques work.	Describe how to calculate Rf values.	Describe and safely carry out a method to make a paper chromatogram.
practical	solution, and describe		2.1 Identify patterns in data.	Every required practical	Describe a use of	Francisco da constitución
chemistry and have the skills to	how to recover a substance from a	3.5.2 Use the solubility curve of a solute to explain	2.5 Use scientific vocabulary		chromatography.	Every required practical
investigate	solution	observations about solutions.	accurately, showing that you		Safely carry out testing for	
hypotheses			know its meaning, and use		carbonates, halides, and sulfate	
	Use knowledge of	3.5.2 Analyse and interpret	appropriate units and correct		ions.	
	solids, liquids and	solubility curves.	chemical nomenclature.			
	gases to decide how	3.5.2 Use techniques to			Safely carry out the laboratory	
	mixtures might be separated, including	separate mixtures.			test for hydrogen, oxygen, carbon dioxide, and chlorine.	
	separateu, including	separate mixtures.				1



 				WESTON FAVELL ACADEMY
through filtering,		3.5.4 Investigate changes in		
sieving and	3.5.2 Suggest a combination	mass for chemical and	Calculate Rf values from a	
evaporating	of methods to separate a	physical processes.	chromatogram, using an	
	complex mixture and justify		appropriate number of	
Give reasons, based on	the choices.	6.3.3 Use energy data to	significant figures.	
evidence from		select a reaction for a	Interpret a chromatogram to	
comparative and fair	2.9 Carry out the method	chemical hand warmer or	identify unknown substances.	
tests, for the particular	carefully and consistently	cool pack.		
uses of everyday			Safely carry out a flame test.	
materials, including	3.5.2 Choose the most			
metals, wood and	suitable technique to		Safely carry out testing for	
plastic	separate out a mixture of		metal ions using sodium	
	substances.		hydroxide.	
Demonstrate that				
dissolving, mixing and	3.5.2 Suggest a combination		Every required practical	
changes of state are	of methods to separate a			
reversible changes	complex mixture and justify			
	the choices.			
Explain that some				
changes result in the	2.9 Carry out the method			
formation of new	carefully and consistently.			
materials, and that this				
kind of change is not	3.5.2 Use evidence from			
usually reversible,	chromatography to identify			
including changes	unknown substances in			
associated with	mixtures.			
burning and the action				
of acid on bicarbonate	2.9 Gather data, minimising			
of soda.	errors.			
	2.9 Decide whether the			
	conclusion of the experiment			
	agrees with your prediction.			
	2.6 Describe the evidence for			
	an idea.			
	2.6 Explain why evidence			
	supports an idea.			
	2.13 Identify risks and			
	hazards.			
	2.13 Identify control			
	measures.			



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		2.12 Make an experimental prediction.				
		2.9 Gather data, minimising errors.				
		2.12 Decide whether the				
		conclusion of the experiment				
		agrees with your prediction.				
		2.4 Select a good way to				
		display data.				
	NC/Spec coverage	NC/Spec coverage Every unit	NC/Spec coverage Every unit	NC/Spec coverage Every unit	NC/Spec coverage Every unit	NC/Spec coverage Every unit
		Enquiry processes	Enquiry processes			Lvery unit
Use calculations		2.4 Select a good way to	3.6.4 Balance a symbol		Calculate the concentration of	Calculate the number of
and data analysis		display data.	equation.		a solution in mol/dm3 when given the volume/mass of	moles or mass of a substance from data supplied.
		2.4 Draw line graphs to	6.3.3 State that during a		solute in moles and volume of	nom data supplied.
		display relationships.	chemical reaction bonds are		solution in dm3.	Explain why chemical
		relationships.	broken (requiring energy) and new bonds formed (releasing		Calculate the amount of acid or	equations must be balanced
		2.6 Suggest a scientific idea	energy). If the energy		alkali needed in a neutralisation	Calculate the relative
		that might explain the	released is greater than the		reaction.	formula mass for one
		observation.	energy required, the reaction			substance when the relative
		2.9 Identify the independent	is exothermic. If the reverse, it is endothermic.		Calculate the unknown concentration of a reactant in a	formula masses are given for all the other substances
		variable.			neutralisation reaction when	in a balanced symbol
					the volumes are known and the	equation.
		2.9 Decide how to measure the dependent variable.			concentration of one reactant is also known.	Interpret balanced symbol
						equations in terms of mole
		2.9 Identify control variables.			Extract data from given	ratios.
		2.9 Control the variables.			information to perform multi- step calculations	
		2.9 Control the variables.			independently.	
		2.9 Describe how controlling				
		variables is important in			Calculate the amount in moles	
		providing evidence for a conclusion.			of gas in a given volume at room temperature and	
		2.10 Write a fair test enquiry			pressure.	
		question.				
		2.10 Make a conclusion and			Convert units	
		explain it.				

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			Calculate the moles or volume	
	2.9 Prepare a table with		of a gaseous substance	
	space to record all		involved in a chemical reaction.	
	neasurements.			
			State the units for the	
	2.9 Prepare a table with		"amount" of substance.	
	space to record all		anount of substance.	
	-			
	measurements.		Use balanced symbol equations	
			to calculate reacting masses.	
	2.10 Write a fair test enquiry			
	question.		Explain the effect of a limiting	
			reactant on the amount of	
	2.11 Decide how to vary the		product made.	
	independent variable			
	between planned values.		State the definition of	
			theoretical yield, actual yield,	
	2.11 Decide how to measure		and percentage yield.	
			and percentage yield.	
	the dependent variable.			
			Calculate percentage yield	
	2.11 Identify control		when actual yield and	
	variables.		theoretical yield are given.	
	2.11 Control the variables.		Calculate percentage yield	
			when the actual yield is given	
	2.11 Describe how controlling		and the mass of the limiting	
	variables is important in		reactant is given.	
	providing evidence for a			
	conclusion.		Calculate the percentage yield	
	conclusion.			
			using a variety of units and	
			conversions.	
			Justify percentage yield	
			Calculate the formula mass of	
			substances when the formula is	
			given.	
			0 -	
			Balance simple equations	
			balance simple equations	
			State a definition of stars	
			State a definition of atom	
			economy	
			Calculate the atom economy	
			for a given chemical reaction.	
			Describe what the	
			concentration of a solution is.	
			concentration of a solution 15.	

NC/Spec coverage	NC/Spec coverage Is incorporated throughout. Enquiry Processes.	NC/Spec coverage Is incorporated throughout. Enquiry Processes.	NC/Spec coverage	Calculate the concentration of a solution in g/dm3 when given the mass of solute in g and volume of solution in dm3.Calculate the mass of solute (in g) in a solution when given the concentration in g/dm3 and volume in dm3 or cm3.Calculate the mass of a chemical when any volume and concentration is given.Accurately read the volume on a burette to 1 decimal place.Identify concordant results.Calculate a titre.NC/Spec coverage Quantitative chemistry Links to Chemical analysis and energy changes	NC/Spec coverage Links with quantitative chemistry
NC/Spec coverage	NC/Spec coverage	NC/Spec coverage	NC/Spec coverage	NC/Spec coverage	NC/Spec coverage
NC/Spec coverage	NC/Spec coverage	NC/Spec coverage	NC/Spec coverage	NC/Spec coverage	NC/Spec coverage