	Content	Links to prior learning	Skills and Assessment	Expected Learning Outcomes
	(Intent)		(Implementation)	(Impact)
Term 1 – Physical chemistry	Amount of substance • Relative atomic mass (Ar) relative isotopic mass (RIM) • The mole and Avogadro's number • Concentration • The ideal gas equation	Y10 atomic structure and calculations	Skills: Maths skills – calculating Ar, rearranging equations Practical skills RP1 – making a standard solution and titration Literacy Assessment: End of topic test covering content from this topic and previous topics. Test includes multiple choice, structured, closed short answer, and open response questions	 define and calculate relative atomic mass (Ar)and relative molecular mass (Mr). Carry out calculations: using the Avogadro constant using mass of substance, Mr , and amount in moles using concentration, volume and amount of substance in a solution Using the ideal gas equation Using the ideal gas equations to relate the amount of reactants and products for a given reaction To determine atom economy and % yield To determine the empirical or molecular formula of a compound

	Content	Links to prior learning	Skills and Assessment	Expected Learning Outcomes
	(Intent)		(Implementation)	(Impact)
Ţ	Energetics	Y10 energy topic	Skills:	• define mean bond enthalpy,
ern	 Enthalpy changes 		Maths skills – calculating Ar,	standard enthalpy of
1	 Bond enthalpies 		rearranging equations	combustion (ΔHc^{Θ}) and
P	• Hess' Law		Practical skills RP1 – making a	standard enthalpy of
hys			standard solution and titration	formation (ΔHf ^Θ)
ica			RP2 measurement of an enthalpy	• Carry out calculations using
l ct			change	the equation $q = mc\Delta T$
len			Literacy	• use Hess's law to perform
nist				calculations, including
Ň			Assessment:	calculation of enthalpy
			End of topic test covering content	changes for reactions from
			from this topic and previous	enthalpies of combustion or
			topics. Test includes multiple	from enthalpies of
			choice, structured, closed short	formation
			answer, and open response	• use mean bond enthalpies to
			questions	calculate an approximate
				value of ΔH for reactions in the
				gaseous phase
				 explain why values from
				mean bond enthalpy
				calculations differ from those
				determined using Hess's law

Term 2 - Inorganic chemistry	•	Periodicity Oxidation numbers Half equations REDOX reactions Group 2 Group 7	Y12 amount of substance topic Y10 periodic table, chemical reactions and electrolysis topics	Skills: Maths skills – simple calculations using positive and negative numbers, balancing equations Practical skills RP4 – carry out simple test tube reactions to identify ions Literacy Assessment: End of topic test covering content from this topic and previous topics. Test includes multiple choice, structured, closed short answer, and open response questions	 explain the trends in atomic radius and first ionisation energy for the elements in period 3, group 2 and group 7 explain the melting point of the elements in terms of their structure and bonding elements in period 3, group 2 and group 7 describe and explain the properties, reactions and uses of the group 2 and 7 elements explain the trend in electronegativity and oxidising ability for the group 7 elements explain the trend in reducing ability for the halide ions describe and explain the trend in reducing ability for the halide ions work out the oxidation state of an element in a compound or ion from the
					 describe and explain the test for halide ions work out the oxidation state of an element in a compound or ion from the formula write half-equations identifying the oxidation and reduction processes in redox reactions

Content	Links to prior learning	Skills and Assessment	Expected Learning Outcomes
(Intent)		(Implementation)	(Impact)
			 combine half-equations to give an overall redox equation

	Content	Links to prior learning	Skills and Assessment	Expected Learning Outcomes
	(Intent)		(Implementation)	(Impact)
Term 3 - Physical chemistry	 Equilibrium Le Chatelier's principle and the effect of changing concentration, pressure and temperature on equilibria Kc 	Y11 Reversible reactions and dynamic equlibrium	Skills: Practical Skills Maths skills – writing expression for Kc, determining units of Kc, rearranging and evaluating Kc Literacy Assessment: End of topic test covering content from this topic and previous topics. Test includes multiple choice, structured, closed short answer, and open response questions Paper 1 mock	 Describe and explain the nature of dynamic equilibirum use Le Chatelier's principle to predict qualitatively the effect of changes in temperature, pressure and concentration on the position of equilibrium explain why, for a reversible reaction used in an industrial process, a compromise temperature and pressure may be used construct an expression for Kc for a homogeneous system in equilibrium calculate a value for Kc from the equilibrium concentrations for a homogeneous system at constant temperature perform calculations involving Kc predict the qualitative effects of changes of temperature on the value of K

ч	Kinetics	Y11 rate of reaction	Skills:	• Describe and explain the
ern	Collision theory	topic	Practical Skills – RP3 –	effect of concentration.
n 4 - Physical chemistry	 Maxwell-Boltzman distribution Catalysts 		Investigation of how the rate of a reaction changes with temperature Maths skills – calculating rate, plotting, sketching and interpreting graphs Literacy Assessment: End of topic test covering content from this topic and previous topics. Test includes multiple choice, structured, closed short answer, and open response questions Paper 2 mock	 pressure, temperature, surface area and catalysts on the rate of a reaction, using the collision theory define the term activation energy explain why most collisions do not lead to a reaction. Describe and explain the chemical tests used to identify unknown ionic compounds Evaluate the advantages and disadvantages of instrumental analysis draw and interpret distribution curves for different temperatures use the Maxwell– Boltzmann distribution to explain why a small temperature increase can lead to a large increase in rate use a Maxwell–Boltzmann distribution to help explain how a catalyst increases the rate of a reaction involving a gas

	Content	Links to prior learning	Skills and Assessment	Expected Learning Outcomes
	(Intent)		(Implementation)	(Impact)
Term 5 - Physical Chemistry	Thermodynamics • enthalpy changes • Born Haber cycles • Enthalpy changes of solution • Factors affecting lattice enthalpy • Entropy • Gibbs free energy	Y12 energetics Y12 Bonding	Skills: Practical Skills – recap RP2 enthalpy change of solution practical Maths skills - calculations using positive and negative numbers, balancing equations, rearranging equations, unit conversions Literacy Assessment: Paper 2 mock - 1hour 45 C7-15	 define enthalpy of formation, ionisation energy, enthalpy of atomisation, bond enthalpy, electron affinity, enthalpy of hydration, enthalpy of solution and lattice enthalpy construct Born–Haber cycles to calculate one of the enthalpy changes compare lattice enthalpies from Born–Haber cycles with those from calculations based on a perfect ionic model to provide evidence for covalent character in ionic compounds calculate entropy changes from absolute entropy values use the relationship ΔG = ΔH – TΔS to determine how ΔG varies with temperature use the relationship ΔG = ΔH – TΔS to determine the temperature at which a reaction becomes feasible.

	Content	Links to prior learning	Skills and Assessment	Expected Learning Outcomes
	(Intent)		(Implementation)	(Impact)
Ţ	Equilibrium constant Kp for homogeneous systems	Y12 Equlibria topic	Skills:	 derive partial pressure from
ern	Partial pressure	Y11 reversible	Practical Skills	mole fraction and total
16	Mole fraction	reactions topics	Maths skills – calculating mole	pressure
P	Kp calculations		fractions and partial pressure,	 construct an expression for
syr			writing expression for Kp,	K p for a homogeneous
ica			determining units of Kp,	system in equilibrium
5			rearranging and evaluating Kp	 perform calculations
lem			Literacy	involving K p • predict the
nist				qualitative effects of changes
7			Assessment:	in temperature and pressure
			End of topic test covering content	on the position of equilibrium
			from this topic and previous	 predict the qualitative
			topics. Test includes multiple	effects of changes in
			choice, structured, closed short	temperature on the value of K
			answer, and open response	р
			questions	• understand that, whilst a
				catalyst can affect the rate of
				attainment of an equilibrium,
				it does not affect the value of
				the equilibrium constant

Resources and/or activities to support learning

Resource	Where to find it	Why?
Textbook	Kerboodle: <u>www.kerboodle.com</u>	Use for research, to consolidate class work, complete summary questions
CGP student books	CGP A level chemistry Student book – available to order through the school at the start of each academic year	Use for research, to consolidate class work, complete summary questions

Chemistry hand book	You should have a copy of this – ask your teacher if you don't	Useful course information, study tips, revision tips, opportunities to reflect on your progress
Practical guide	You should have a copy of this in your practical folder – ask your teacher if you don't	Use to prepare for and review methods for required practicals which will be assessed in end of topic assessments and papers
Teacher		
powerpoints,		
worksheets and	Teams	Use to consolidate class work, complete homework tasks and questions
exam question		
packs		
AQA website	http://www.aqa.org.uk/subjects/science/as-and-a-level/chemistry- 7404-7405	specification, past papers and mark schemes
Physics and Maths tutor	AQA A-level Chemistry Revision - PMT (physicsandmathstutor.com)	It saves you time making your own revision notes. Answering questions allows you to apply what you have learned and identify gaps in your knowledge. Also has notes, flash cards, questions and videos for the required practicals
Chem guide	www.chemguide.co.uk	very detailed explanation of all parts of the course with some excellent summary questions and answers. This is not specific to AQA so it contains some things you don't need to know, but it's a really good place to start if you are looking for good explanations of the content
Chem revise	www.chemrevise.org	Online revision guides for all chapters
A level chemistry.co.uk	www.alevelchemistry.co.uk	Notes, exercises, tests and "exam papers"