

Department: Science Subject: Chemistry

Program of Study: Key stage 3 to Key stage 5

Key Concepts

Atomic	Bonding,	Quantitative	Chemical	Energy	The rate and	Organic	Chemical	Chemistry of	Using
structure and	structure, and	chemistry	changes	changes	extent of	chemistry	analysis	the	resources
the periodic	the properties				chemical			atmosphere	
table	of matter				change				
The periodic	Chemists use	Chemists use	Understanding	Energy	Chemical	The main	Analysts	The Earth's	Industries use
table	theories of	quantitative	of chemical	changes are an	reactions can	sources of	have	atmosphere	the Earth's
provides a	structure and	analysis to	changes meant	important part	occur at vastly	organic	developed	is dynamic	natural
structured	bonding to	determine the	that scientists	of chemical	different rates.	compounds	qualitative	and forever	resources to
organisation	explain the	formulae of	could begin to	reactions. The	There are many	are living, or	tests to	changing.	manufacture
of the known	physical and	compounds	predict exactly	interaction of	variables that	once-living	detect	The causes of	useful
chemical	chemical	and the	what new	particles often	can be	materials	specific	these	products. In
elements.	properties of	equations for	substances	involves	manipulated in	from plants	chemicals.	changes are	order to
The	materials.	reactions.	would be	transfers of	order to speed	and animals.	The tests	sometimes	operate
arrangement	Scientists use	Analysts can	formed and use	energy due to	them up or slow	These sources	are based	man-made	sustainably,
can be	this knowledge	then use	this knowledge	the breaking	them down.	include fossil	on reactions	and	chemists seek
explained in	of structure	quantitative	to develop a	and formation	Understanding	fuels which	that	sometimes	to minimise
terms of	and bonding to	methods to	wide range of	of bonds.	energy changes	are used in	produce a	part of many	the use of
atomic	engineer new	determine the	different		that accompany	the	gas with	natural	limited
structure	materials with	purity of	materials and		chemical	petrochemical	distinctive	cycles.	resources, use
which	desirable	chemical	processes. It		reactions is	industry.	properties,	Scientists use	of energy,
provides	properties.	samples and	also helped		important in	Chemists take	or a colour	very complex	waste and
evidence for		to monitor the	biochemists to		industry to	organic	change or	software to	environmental
the model of		yield from	understand the		determine the	molecules and	an insoluble	predict	impact in the
a nuclear		chemical	complex		effect of	modify them	solid that	weather and	manufacture
atom with		reactions.	reactions that		different	in many ways	appears as a	climate	of these
electrons in			take place in		variables on	to make new	precipitate.	change.	products.
energy levels.			living		reaction rate	and useful			
			organisms.		and yield.	materials.			

Key Themes

Atoms	Elements	Periodic table	Bonding	Structure	Rates of Reaction	Energy changes
Matter is composed of tiny particles called atoms and there are about 100 different naturally occurring types of atoms called elements	Elements show periodic relationships in their chemical and physical properties	Periodic properties can be explained in terms of the atomic structure of the elements	Atoms bond by either transferring electrons from one atom to another or by sharing electrons	The shapes of molecules (groups of atoms bonded together) and the way giant structures are arranged is of great importance in terms of the way they behave	There are barriers to reaction so reactions occur at different rates	Energy is conserved in chemical reactions so can therefore be neither created or destroyed.

<u>Key Stage 3</u>

<u>YEAR: 7</u>

1234567Big Question:What are we made of?(Chemistry + Biology)	Big Question:Big Question:What are we made of?What makes things move ?(Chemistry + Biology)(Physics)How do organisms manage to live and survive together? (Biology)		Where o our hom What is	Big Question: Where does the electricity in our homes come from? What is it? (Physics)		from? (Biology)			28 29 30 31 32 Big Question: How do we fit into our Universe? (Physics)			33343536373839Big Question:Is the phrase "you are what youeat" really true? (Biology)How do rocks form and change?(Chemistry)					
Key Concepts	/ Concepts Key Concepts Key Concepts			Key Concepts		Key Concepts		Key Concepts									
Key Themes	Key Themes	Key Themes		Key Themes		Key Themes		Key Themes		Key Themes							
Assessment Method:	Assessment	Method:		Assessr	nent Met	hod:	Assess	nent Meth	od:	Asse	ssmer	nt Metho	od:	Assessment Method:			
GL Initial assessment Educake + ERA/Prac + End of topic test	Educake + ERA/Prac + End of topic test		Educake + ERA/Prac + End of topic test		Educake + ERA/Prac + End of topic test		Educake + ERA/Prac + End of topic test GL assessment (tbc)										

<u>YEAR: 8</u>

1234567Big Question:What makes me, me?Where did we all comefrom? (Biology)How do we see?(Physics)	8 9 10 11 12 13 14 15 Big Question: What is the Periodic Table? (Chemistry) Do we really live on a ball of rock? (Chemistry)	161718192021Big Question: Can space travel help me lose weight? (Physics) Why do magnets 'stick'? (Physics)	22 23 24 25 26 27 Big Question: Are all acids dangerous? What is a chemical reaction? (Chemistry)	2829303132Big Question:Why don't all my houselights go out when abulb blows?What is 'greenenergy'? (Physics)	33343536373839Big Question: Do plants eat sunshine?Where do we get our energy from? (Biology)If a tree falls in the woods but no one sees, does it still make a sound? (Physics)	
Key Concepts	ey Concepts Key Concepts		Key Concepts	Key Concepts	Key Concepts	
Key Themes	Key Themes	Key Themes	Key Themes	Key Themes	Key Themes	
Assessment Method: GL Initial assessment Educake + ERA/Prac + End of topic test	Assessment Method: Educake + ERA/Prac + End of topic test	Assessment Method: Educake + ERA/Prac + End of topic test	Assessment Method: Educake + ERA/Prac + End of topic test	Assessment Method: Educake + ERA/Prac + End of topic test GL assessment (tbc)	Assessment Method: Educake + ERA/Prac + End of topic test	

<u>Key Stage 4</u>

<u>YEAR: 9</u>

1 2 3 4 5 6 7	8 9 10 11	12 13 14 1	5 16 1	7 18 19	20 21	22 23	24 25	26 27	28 2	29 30	31 32	33 34	35	36 37	38 39
Fundamental atomic structure Introduction to the Periodic Table	Chemical changes acid reactions	s – reactivity and	Chemi	cal bonding		Rates of and collis theory		in mass		-	changes	Chemist	ry of the	e Atmosp	here
Key Concepts	Key Concepts		Key Co	oncepts		Key Cond	cepts	Key Co	ncepts			Key Cor	icepts		
Key Themes	Key Themes		Key Th	nemes		Key Then	nes	Key The	emes			Key The	mes		
Assessment Method: Educake + ERA/Prac + End of topic test	Assessment Meth Educake + ERA/F test			sment Metho ke + ERA/Pr c test		Assessm Method: Educake ERA/Prac of topic te	+ c + End	Educak topic tes	ment Met e + ERA/ st essment	Prac + E	End of	Assessn Educake topic tes	+ ERA	thod: /Prac + E	End of

<u>YEAR: 10</u>

1 2 3 4 5 6 7	8 9 10 11 12 13 14 15	16 17 18 19 20 21	22 23 24 25	26 27 28 29 30 31 32	33 34 35 36 37 38 39	
Recap bonding	Purity, formulations and	Reactions of metals	Rates of reaction	Quantitative chemistry – mass	Alkanes and alkenes, crude oil.	
Chemical changes -	chromatography	Endothermic and	and equilibrium	changes, mole calculations and		
Electrolysis	Properties of matter	exothermic reactions		yield		
Key Concepts	Key Concepts	Key Concepts	Key Concepts	Key Concepts	Key Concepts	
Key Themes	Key Themes	Key Themes	Key Themes	Key Themes	Key Themes	
Assessment Method:	Assessment Method:	Assessment Method:	Assessment	Assessment Method:	Assessment Method:	
Educake + ERA/Prac +	Educake + ERA/Prac + End of topic	Educake + ERA/Prac + End	Method:	Educake + ERA/Prac + End of	Educake + ERA/Prac + End of	
End of topic test			Educake +	topic test	topic test	
			ERA/Prac + End	PPE (paper 1)		
			of topic test			

<u>YEAR: 11</u>

1 2 3 4 5 6 7	8 9 10 11 12 13 14 15	16 17 18 19 20 21	22 23 24 25	26 27 28 29 30 31 32	33 34 35 36 37 38 39
Using resources – water treatment, metal alloys and Haber	Organic chemistry and nano- science	Chemical analysis – identification of ions	REVISION	EXAMS	
Key Concepts	Key Concepts	Key Concepts	Key Concepts	Key Concepts	
Key Themes	Kay Thomas	Key Themes	Kay Thomas	Kay Thomas	
Key memes	Key Themes	Key memes	Key Themes	Key Themes	
Assessment Method: Educake + ERA/Prac PPE 1 (paper 1)	Assessment Method: Educake + ERA/Prac + End of topic test	Assessment Method: PPE 2 (full set) Educake + ERA/Prac+Exam	Assessment Method:	Assessment Method:	

<u>Key Stage 5</u>

<u>YEAR: 12</u>

1234567Bonding, AtomicStructure and Amount ofSubstance	8 9 10 11 12 13 14 15 Amount of substance , Kinetics and Organic Chemistry (Alkanes)	161718192021Chemical Equilibria and Organic Chemistry (Halogenoalkanes)	22232425Energetics andOrganicOrganicChemistry(Alcohols)	26272829303132Periodicity and Organic Analysis	33343536373839Oxidation, reduction (redox)equations and Organic Chemistry(carboxylic acids and derivatives)
Key Concepts	Key Concepts	Key Concepts	Key Concepts	Key Concepts	Key Concepts
Key Themes	Key Themes	Key Themes	Key Themes	Key Themes	Key Themes
Assessment Method: Exam End of topic Test+ Exam Questions (Exampro) + Prac+ Exam	Assessment Method: End of topic Test+ Exam Questions (Exampro) + RP1 +RP3	Assessment Method: End of topic Test+ Exam Questions (Exampro) +Prac	Assessment Method: End of topic Test+ Exam Questions (Exampro) + RP2+RP5	Assessment Method: End of topic Test+ Exam Questions (Exampro) + RP4+RP6+ Exam	Assessment Method: End of topic Test+ Exam Questions (Exampro) + RP8

<u>YEAR: 13</u>

1234567Rate Equation and Optical Isomerism and Organic Chemistry (Aldehydes and Ketones; Carboxylic acids and derivatives)	8 9 10 11 12 13 14 15 Thermodynamics and Organic Chemistry (Amines and Polymers) and Aromatic Chemistry	16 17 18 19 20 21 Transition Metals and Amino Acids, Proteins and DNA	22232425Acids and Basesand OrganicSynthesis(Chromatography)and NMRSpectroscopy	26 27 28 29 30 31 32 Revision	33 34 35 36 37 38 39
Key Concepts	Key Concepts	Key Concepts	Key Concepts	Key Concepts	
Key Themes	Key Themes	Key Themes	Key Themes	Key Themes	
Assessment Method: End of topic Test+ Exam Questions (Exampro) + RP7+RP10	Assessment Method: End of topic Test+ Exam Questions (Exampro) Prac (making nylon)	Assessment Method: End of topic Test+ Exam Questions (Exampro) + RP11+ Mock Exam	Assessment Method: End of topic Test+ Exam Questions (Exampro) + RP9 +RP12	Assessment Method:	