Curriculum Map: Year 9 Subject Chemistry 21/22

Topic	Key Knowledge *What will all students KNOW by the end of the topic?*	Key Skills *What key skills will be learnt/developed by the end of the topic? What will all students be able to DO by the end of the topic?*	Assessment Opportunities *What are the key pieces of assessment? How will students be assessed?*

Atomic structure and the Periodic Table	• A simple model of the atom
	• The development of the model of the atom including:
	  ○ The Dalton Model
	  ○ The plum pudding model
	  ○ The nuclear model and
	  ○ The Bohr model including associated evidence
	• The difference between atoms, elements and compounds
	• Sizes, locations, masses and charges of sub-atomic particles including relative atomic mass in elements, ions and isotopes
	• The electronic structure(s) of elements and ions up to and including calcium
	• How chemical reactions are represented using word and symbol equations
	• The development of the periodic table
	• The structure of the modern periodic table
	The chemistry of the elements of:
	  ○ Group 1
	  ○ Group 7
	  ○ Group 0
	• Properties of some of the transition metals
		• Fluency in the use of IUPAC nomenclature regarding element symbols, atomic numbers and mass numbers and electronic structures.
		• Construction and use of word and symbol equations.
		• Explaining how new evidence can lead to changes in accepted models.
		• Application of key mathematical skills: calculating numbers of subatomic particles, the relative size of atoms, using extremely small and large numbers and the associated use of standard form, SI units and standard prefixes
		• Fluency in the use of IUPAC nomenclature regarding element symbols and electronic structures.
		• Construction and use of word and symbol equations.
		• Explaining how new evidence can lead to changes in accepted models.
			• History of the atom Exam Questions
			• Knowledge organiser test L5
			• Group 0
			• Transition metals HW

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Chemical Analysis	• Physical separation processes including:
	  ○ Filtration, crystallisation, simple and fractional distillation and chromatography
	• The difference between pure substances and mixtures and formulations
	• The gases:
	  ○ Hydrogen
	  ○ Oxygen
	  ○ Carbon dioxide and
	  ○ Chlorine
	  ▪ can be identified by simple laboratory tests and the positive test results for these gases
		• Be able to explain how chromatography separates mixtures.
		• Interpretation of chromatograms Describing how to carry out tests for gases
		• Application of key mathematical skills:
		• Calculating Rf values or distances moved by a solvent or a substance during chromatography.
		• Practical skills and development and apparatus use: Setting up running paper chromatography
			• Distillation extended writing
			• Knowledge organiser Test L15

Bonding	• The difference between atoms and ions • How ionic compounds form • Properties of ionic compounds • How covalent compounds form • Properties of covalent compounds • Properties of metals and alloys and metallic bonding • Types of giant covalent structure • Properties of giant covalent compounds	• Determining numbers of sub-atomic particles Drawing dot-cross diagrams • Calculating charges on ions • Determining formulae of ionic compounds • Identifying the state of a range of substances at different temperatures • Describing limitations of the ionic model • Describing limitations of a range of covalent models • Drawing and interpreting dot-cross diagrams for covalent compounds • Explaining how different substances conduct electricity • Explaining the properties of alloys • Researching a range of allotropes of carbon • Explaining the properties of giant covalent compounds	• Ionic Bonding Exam Questions • Covalent bonding dot and cross diagram homework • Knowledge organiser test

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