THE ABBEY SCHOOL
A BUSINESS & ENTERPRISE ACADEMY

Subject: Chemistry

Year 9
Scheme of Learning 2025-2026

Subject leader: Mr S Brock

Topics by term	Topic overview for Year 9					
	Term 1	**Term 2**	**Term 3**	**Term 4**	**Term 5**	**Term 6**
Topics taught	**Chemistry** – C1a; atomic structure	**Chemistry** – C1a; atomic structure	**Chemistry** – C1b; The periodic table	**Chemistry** – C2a; Bonding & structure	**Chemistry** – C2a; Bonding and structure	**Chemistry** – C2b; States of matter Revision for end of year assessment
Prerequisites	**Vital Prerequisites:** Knowing differences between atoms, elements, compounds and knowing chemical	**Vital Prerequisites:** A basic knowledge of the history of the development of the atom structure. From	**Vital Prerequisites:** A basic understanding of the periodic table, knowing why elements are placed	**Vital Prerequisites:** A basic understanding of elements, mixtures and compounds.	**Vital Prerequisites:** A basic understanding of elements, mixtures and compounds. Knowing the different	**Vital Prerequisites:** A basic understanding and knowledge of the different states of

	symbols and formulae for key elements and compounds learnt in KS3. Basic understanding what a mixture is and how to separate mixtures of different substances using a variety of techniques such as; filtration, evaporation, distillation and chromatography. Learnt and practically done in KS3.	Dalton's sphere model, to Thomson's plum pudding model to the nuclear model. Covered in KS3. Basic understanding of atom structure and the electronic structure of an atom from KS3.	into groups and periods, metals and non-metals. Knowing the principles that underpin the periodic table and the varying physical and chemical properties of different elements, learnt in KS3. Basic knowledge of the properties of metals and non-metals, leading to the understanding of chemical properties of metal and non-metal oxides with regards to acidity.	Knowing the different types of compounds between; metals, metals and non-metal, and non-metals. Covered in KS3 A basic understanding and knowledge of the periodic table, why elements are in groups and separated by metals and non-metals. Covered in KS3.	types of compounds between; metals, metals and non-metal, and non-metals. Covered in KS3 A basic understanding and knowledge of the periodic table, why elements are in groups and separated by metals and non-metals. Covered in KS3.	matter and their properties. Learnt in KS3. A basic understanding and knowledge of the changes of state in terms of the particle model. Knowledge of the key words for changes of state such as; melting, evaporating, condensing and freezing. Learnt in KS3.
	Why are we teaching this now?	**Why are we teaching this now?**	**Why are we teaching this now?**	**Why are we teaching this now?**	**Why are we teaching this now?**	**Why are we teaching this now?**
	It is important for students to have a good understanding of a simple model of the atom. They need to know that atoms consist of sub-atomic particles; protons,	Students will need to know in what order the atom structure developed and what sub-atomic particles were discovered in order. They will need to know the scientist	Students will need to understand the modern periodic table, showing elements in order of their atomic number (proton number) and how their positioned in the	Students will need to have a good understanding of the three types of chemical bonding; ionic, covalent and metallic.	Students will need to have a good understanding of the three types of chemical bonding; ionic, covalent and metallic.	Students will need to know the changes in the states of matter in terms of particles kinetics and energy transfers. They will need to know the strength of the

	neutrons and electrons. Students also need to know the electronic charge carried by the sub-atomic particles and their mass. Students will need to have a good understanding of chemical analysis, be able to distinguish between a pure and impure substance. They will also need to be able to practically set up and separate mixtures using different techniques and have a good understanding of fractional distillation.	who discovered each sub-atomic particle and the scientists who developed the structure of the atom. As well as the key experiments that led to the development such as, JJ Thomson alpha particle scattering experiment. Student will understand how chemical reactions can take place is 3 different ways; proton transfer, electron transfer and electron sharing.	periodic table in relation to their atomic structure and out electron shells. Students will need to know the different properties and trends of elements in the same group and their reactivity in relation to their position on the periodic table.	Students will need to have an understanding of the structures, bonding and properties of diamond, graphite, fullerenes and graphene. Students will need to understand the bonding of Carbon and how it leads to the many different natural and synthetic organic compounds and chains.	Students will need to have an understanding of the structures, bonding and properties of diamond, graphite, fullerenes and graphene. Students will need to understand the bonding of Carbon and how it leads to the many different natural and synthetic organic compounds and chains.	intermolecular forces and chemical bonds. Students will need to know what the process of each change of state is and how it is achieved. They will also need to have knowledge on the process of skipping a change in state (for example; from solid to gas or gas to solid).

Exam Board AQA							
Topic Big question	**Lesson questions**	**Lesson objective**	**Outcomes**	**Key Terms** **Literacy** **Numeracy** **Practical activities**	**Assessment and homework tasks**	**Resources**	**Personal Development curriculum links (SMSC, British Values, PSHE)**
Term 1							
C1a – atoms, elements, compounds and mixtures							
What makes matter?	What makes up an atom?	To be able to describe and explain the structure of an atom.	- To be able to use a periodic table to find the number of protons or electrons in an atom. - To explain why atoms are neutral. - To recall the relative masses and charges of protons, neutrons and electrons.	Electron Electron Shell Negative Nucleus Positive Atomic Number Neutral Neutron Proton	Homework tasks linked to the lesson question. Plenary questions at the end of every lesson.	Knowledge organiser CGP textbook Lesson PowerPoint presentations	British values – respect through silence is a key aspect of the Abbey science lessons. – Students are expected to listen to, and respect others' opinions.
	What are the simplest chemical substances in the world?	To be able to explain that an element consists of the same type of atoms.	- To recognise elements and compounds of the first 20 elements from their formulae. - To describe how atoms of different elements differ. - To distinguish between atoms using their nuclear symbols.	Compound Element Atomic number Mass number Calculating the number of protons, neutrons and electrons in an atom.			
	Why are there different types of atoms for some elements?	To be able to define what an isotope is, and calculate the relative mass of an element using	- To use atomic numbers and mass numbers to find the number of sub-atomic particles in an atom.	Atomic Mass Isotope Neutrons Protons Relative atomic mass			

		percentage abundances.	- To explain what isotopes are and how they differ. - To calculate relative mass of an element using percentage abundance of isotopes.	Calculating the relative atomic mass of an isotope.			
	What happens when several elements join together?	To be able to define what a compound is and identify different elements in a compound.	- To recognise that the periodic table contains elements which can react to form compounds. - To be able to identify the individual elements in a compound. - To explain that the properties of the compound are different to the individual elements.	Compound Formula Properties			
	What is the difference between a mixture and a compound?	To be able to explain the difference between a mixture and a compound.	- To distinguish between formulae for elements and compounds and name the elements in a compound. - To know that mixtures consist of two or more elements or compounds not combined chemically.	Compound Element Ions Molecules Chemical bonds Formula Molecule			
	How can we separate different dyes in an ink?	To be able to explain how paper chromatography can be used to separate dyes in an ink, and carry it out practically.	- To know that mixtures can be separated using chromatography. - To separate a mixture of inks using chromatography. - To explain how chromatography can be used to separate mixtures. -	Chromatogram Insoluble Soluble Solvent front Completing paper chromatography of a mixture of inks.			

	What steps are involved in filtration and crystallisation?	To be able to select suitable separation techniques for different mixtures	- To separate a mixture of copper and sodium chloride. - To explain how filtration, crystallisation, simple distillation, fractional distillation and chromatography are used to separate mixtures and select suitable methods.	Chromatography Filtration Mixture Separation Practical activity to separate a mixture of sand, salt and water.			
Term 2							
C1a – atoms, elements, compounds and mixtures							
What makes matter?	How can we use simple distillation to get water from sea water?	To be able to describe how simple distillation and fractional distillation work.	- To be able to describe the processes of simple distillation and fractional distillation. - To be able to determine what type of mixture can be separated with both techniques.	Distillation Fractional distillation	Termly assessment focused on atoms, elements and compounds. Homework tasks linked to the lesson question. Plenary questions at the end of every lesson.	Knowledge organiser CGP textbook Lesson PowerPoint presentations	British values – respect through silence is a key aspect of the Abbey science lessons. – Students are expected to listen to, and respect others' opinions.
	How can we use simple distillation to get water from sea water? **REQUIRED PRACTICAL**	To be able to describe how simple distillation can be used to separate water from salt water.	- To observe a demonstration of simple distillation. - To be able to draw valid conclusions, and evaluate the method used.	Distillation Fractional distillation Simple distillation to separate water from ink, **practical activity**			

	What are the historical models of an atom?	To be able to describe and explain how the atomic model has evolved over time.	- To describe how and why the atomic model has changed over time. - To describe the difference between the plum-pudding model of the atom and the nuclear model of the atom. - To describe why the new evidence from the scattering experiment led to a change in the atomic model.	Alpha particle scattering experiment Electron Shell Ernest Rutherford Geiger and Marsden J. J. Thompson James Chadwick John Dalton Neils Bohr Plum pudding model			
	How are electrons arranged in an atom?	To be able to explain how electrons fill up in the shells of an atom.	- To know that electrons are arranged in shells or energy levels around the nucleus in an atom. - To be able to draw electronic structures for the first 20 elements. - To be able to write electronic configurations for the first 20 elements.	Electronic Structure Electron Shells Energy Levels			
Term 3							
C1b – The periodic table							
Why is the periodic table useful?	How was the modern periodic table developed?	To be able to explain the main steps, and important scientists involved in the development of the modern periodic table.	- To describe the main steps in the development of the periodic table. - To explain why the periodic table has changed throughout the years. - To know how the elements were arranged in previous versions.	Periodic Predictions Properties Patterns	End of topic assessment focused on the periodic table. Homework tasks linked to the lesson question.	Knowledge organiser CGP textbook Lesson PowerPoint presentations	British values – respect through silence is a key aspect of the Abbey science lessons. – Students are expected to

					Plenary questions at the end of every lesson.		listen to, and respect others' opinions.
	What information does the periodic table tell us?	To be able to draw the electronic structure of elements based on their position in the periodic table and describe the difference between metals and non-metals.	- To relate the number of electrons and energy levels to an element's position in the periodic table. - To define the terms group and period. - To explain that since chemical reactions involve rearranging the outer electrons, elements in the same group can be expected to have similar chemical reactions. - To be able to identify properties of metals and non-metals	Electron Shells Energy Levels Group Period			
	What are the alkali metals?	To be able to locate the alkali metals on the periodic table and describe the trend in their reactivity.	- To explain why Group 1 metals are known as alkali metals. - To use the trends down the group to make predictions. - To relate the properties of the alkali metals to their electron configurations. - To explain why the alkali metals get more reactive as you go down the group.	Alkali Density Ion Reactivity **Demonstration** of lithium, sodium and potassium and their reactions with oxygen and water.			
	What are the halogens?	To be able to locate the halogens on the periodic table and describe the trend in their reactivity.	- To recall that group 7 are non-metals called halogens.	Bromine Chlorine Displacement Halogen			

			- To use the trends down the group to make predictions. - To explain how displacement reactions can be used to determine the order of reactivity of these elements.	Iodine Metals Reactivity Displacement reaction between halogens and halide ions **practical activity.**			
	What are the noble gases?	To be able to locate the noble gases on the periodic table and explain why they are inert.	- To describe the properties of noble gases. - To predict and explain the trends of the boiling points of the noble gases (going down the group). - To explain how properties of the elements in Group 0 depend on their electron configurations.	Argon Elements Helium Inert Neon Unreactive			
Term 4							
C2a – Bonding and structure							
How does the structure of a compound affect its properties?	How is an ion different to an atom?	To be able to explain how an ion is formed by the gain or loss of electrons, and work out the charge on any atom based on its group number.	- To know that metal atoms become positive ions and non-metals become negative ions. - To understand that the electronic structure of ions formed by group 1, 2,6 and 7 elements are the same as group 0 - To be able to work out the charge on the ions of metals and non-metals.	Atom Ion Anion Cation	Homework tasks linked to the lesson question. Plenary questions at the end of every lesson.	Knowledge organiser CGP textbook Lesson PowerPoint presentations	British values – respect through silence is a key aspect of the Abbey science lessons. – Students are expected to listen to, and respect others' opinions.
	What is an ionic bond?	To be able to represent an ionic bond using a dot and cross diagram.	- To draw diagrams of electronic structures and use them to show how ionic bonds form. - To draw dot and cross diagrams for ionic compounds formed from	Dot and cross Electron transfer Electrostatic attraction Ionic			

			groups 1 and 2 metals and groups 6 and 7 non-metals. - To describe how electrons are transferred in ionic bonds.				
	What properties do ionic compounds have in common?	To be able to describe the properties of giant ionic structures, and explain how they are linked to their structure.	- To recognise ball and stick diagrams, close-packed diagrams and two-dimensional (2D) and 3D representations showing giant structures having ionic bonding. - To explain that ionic compounds have high melting points because large amounts of energy are needed to overcome the strong electrostatic forces between the oppositely charged ions. - To explain that ionic compounds conduct electricity. -	Electrostatic attraction Ions free to move High melting point. Ionic compounds investigation to see in what state of matter they conduct electricity, **practical activity.**			
	How are covalent bonds formed?	To be able to represent a covalent bond using a dot and cross diagram.	- To identify single lines in diagrams of small molecules, repeating units of polymers and giant covalent structures as representing single covalent bonds. - To draw dot and cross diagrams for the molecules H_2, Cl_2, O_2, N_2, HCl, H_2O, NH_3 and CH_4. - To deduce the molecular formula of a substance from a given model showing the atoms and bonds in a molecule.	Covalent Giant covalent structure Single bond			
	Why are some covalent compounds known as	To identify small molecules from formulae and to understand the	- To recognise that formulae of small molecules have no charge and contain two or more atoms. They	Covalent bond Free electrons			

	simple molecules?	difference between a covalent bond and an intermolecular force.	are usually gases or liquids at room temperature, have relatively low melting points and boiling points and do not conduct electricity. - To explain that covalent bonds are strong bonds and are not broken when a covalent substance melts or boils. - To explain how intermolecular forces increase with the size of the molecules, and larger molecules have higher melting points and boiling points because more energy is needed to overcome the intermolecular forces.	Intermolecular force Molecule			
Term 5							
C2a – Bonding and structure							
How does the structure of a compound affect its properties?	Why are some covalent compounds known as giant covalent structures?	To be able to recognise giant covalent structures and polymers and explain their properties.	- To know that polymers are very large molecules and recognise them from diagrams. - To explain that the intermolecular forces between some polymer chains can be overcome by applying a force and the polymer can stretch. - To be able to draw the repeating unit given the displayed formula of the monomer and the structure of a length of the polymer chain.	Intermolecular force Monomer Polymer Repeating unit	Termly assessment focused on atoms, elements and compounds. Homework tasks linked to the lesson question. Plenary questions at the end of every lesson.	Knowledge organiser CGP textbook Lesson PowerPoint presentations	Why are polymers (plastics) an issue in the modern world?
	What are different allotropes of carbon?	To be able to recognise different allotropes of carbon and explain how their	- To know that each carbon atom in diamond forms four covalent bonds with other carbon atoms in a giant	Cylindrical Diamond Directional bonds Electrical non-conductor			British values – respect through silence is a key

		properties are linked to their structure.	covalent structure, and this makes diamond very hard. - To explain that diamond and graphite have a very high melting point because of their structure and bonding. - To explain that diamond, unlike graphite, does not have free electrons to conduct electricity. - To know that graphene is made of hexagonal rings of carbon atoms bonded by strong covalent bonds and is one layer thick. - To explain that fullerenes are molecules of carbon atoms with hollow shapes such as C_{60}. - To explain that nanotubes are fullerenes with cylindrical shapes.	Fullerene Graphene Nanotube Tetrahedral bonding			aspect of the Abbey science lessons. – Students are expected to listen to, and respect others' opinions.
	What is the bonding in metals?	To be able to describe the bonding in metals and explain how the properties of a metal are linked to its structure.	- To describe that metals consist of giant structures of atoms arranged in a regular pattern. - To explain that the metal ions are held together by the strong electrostatic forces between the positive metal ions and the negative sea of delocalised electrons. - To explain that electrons are delocalised when they leave the outer shell of metal atoms and move throughout the metal structure.	Alloy Delocalised electrons Distort Ductile Malleable Metal ions Metallic bonding 'Sea' of delocalised electrons Making metal crystals **practical activity**.			

			- To identify metals as having giant structures of atoms with strong metallic bonding. - To know that pure metals such as gold, copper, iron and aluminium, do not always have the properties required for everyday use, so are mixed with other metals to make alloys with the desired properties. - To explain that different sized atoms in alloys distort the layers of metal atoms, making it more difficult for the layers to slide over each other and changing the properties of the pure metal.				
Term 6							
C2b – States of matter							
What happens when a substance changes state?	What are the properties of the different states of matter?	To be able to describe the arrangement of particles in a solid, liquid and gas.	- To know that there are 3 states of matter . - To describe each state of matter by arranging particles in a limited space. - To explain the limitations of the particle theory model	Gas Liquid Solid	End of year assessment focused on all topics covered throughout the year. Homework tasks linked to the lesson question. Plenary questions at the end of every lesson.	Knowledge organiser CGP textbook Lesson PowerPoint presentations	British values – respect through silence is a key aspect of the Abbey science lessons. – Students are expected to listen to, and respect others' opinions.
	How to substances change state of matter?	To be able to explain the changes of state and predict what state of matter a substance is at room temperature. Theory lesson	- To use the terms 'melting', 'freezing', 'boiling', 'condensing', 'evaporating' and 'sublimating' correctly. - To use ideas about the particle theory of matter to explain melting,	Changes of state Condense Evaporate Freeze Melt Sublimate			

			freezing, boiling, condensing and evaporation.				
	How to substances change state of matter?	To be able to practically observe a substance cooling down and record relevant data.	- To be able to collect relevant data from an experiment to cool down a substance. - To be able to draw a graph of results and make relevant conclusions.	Drawing graph of results. Cooling curve **practical activity**.			