

Calendar	Topic	Assessment	Sequencing and Coherence <i>concepts - themes - skills</i>	Literacy
Autumn Term – HT1 and HT2	C1 Atomic Structure: Atoms, Chemical equations, Structure of the atom, Ions and isotopes, electronic structure, History of the atom and Separation techniques	C1: Educake online quiz – The quizzes are instantly marked and feedback is provided for students. C1 End of Topic Test with GCSE exam style questions for both higher and foundation papers. End of topic tests are marked by the teacher and feedback is provided with modelled answers for all questions and personalised follow up exam questions focusing on areas of weakness.	Atomic Structure and the Periodic Table <u>Substantive knowledge headlines:</u> <ul style="list-style-type: none"> • a simple model of the atom consisting of the nucleus and electrons, relative atomic mass, electronic charge, and isotopes • the number of particles in a given mass of a substance • the modern Periodic Table, showing elements arranged in order of atomic number • position of elements in the Periodic Table in relation to their atomic structure and arrangement of outer electrons • properties and trends in properties of elements in the same group • characteristic properties of metals and non-metals • chemical reactivity of elements in relation to their position in the Periodic Table <u>Disciplinary knowledge headlines:</u> <ul style="list-style-type: none"> • safe use of a range of equipment to separate chemical mixtures • why and how scientific methods and theories develop over time 	Glossaries are provided for each topic. Regular opportunities to read as a class are provided. Strategies such as choral reading and teacher modelling of difficult to pronounce words are used. Etymology of keywords are explored to make links between other words pupils are familiar with. The Frayer model is used to look at keywords such as element and compound. Construction of a timeline for the history of Atomic Structure. Writing model answers for 6 mark questions on separation technique methods.

Spring Term – HT 3 and HT 4	C2 The Periodic Table: Development of the periodic table, Group 1 alkali metals and trends, Group 7 halogens and trends, The Noble Gases.	C2: Educake online quiz – The quizzes are instantly marked and feedback is provided for students. C2 End of Topic Test with GCSE exam style questions for both higher and foundation papers. End of topic tests are marked by the teacher and feedback is provided with modelled answers for all questions and personalised follow up exam questions focusing on areas of weakness.	<ul style="list-style-type: none"> use SI units and the prefix nano explain how testing a prediction can support or refute a new scientific idea. <p><u>Link to knowledge from previous units:</u></p> <ul style="list-style-type: none"> KS3 Elements and compounds; Particle model of matter. <p><u>Link to knowledge in future units:</u></p> <ul style="list-style-type: none"> GCSE Chemistry – constant references to these fundamental ideas in Bonding/structure model. <p><u>Math skills:</u></p> <ul style="list-style-type: none"> recognise expressions in standard form visualise and represent 2D and 3D forms including two-dimensional representations of 3D objects 	Construction of a timeline for the history of the Periodic Table. Writing model answers for longer style questions on trends in the Periodic Table.
Summer Term – HT 5 and HT 6	C3: Structure and Bonding States of matter, Atoms into ions, Ionic bonding, Covalent bonding, Simple molecules, Giant covalent structures, Fullerenes and graphene, Bonding in metals.	C3: Educake online quiz – The quizzes are instantly marked and feedback is provided for students. C3 End of Topic Test with GCSE exam style questions for both higher and foundation papers. End of topic tests are marked by the teacher and feedback is provided with modelled answers for all questions and personalised follow up exam questions focusing on areas of weakness.	<p>Bonding, structure, and properties of matter</p> <p><u>Substantive knowledge headlines:</u></p> <ul style="list-style-type: none"> changes of state of matter in terms of particle kinetics, energy transfers and the relative strength of chemical bonds and intermolecular forces types of chemical bonding: ionic, covalent, and metallic bulk properties of materials related to bonding and intermolecular forces bonding of carbon leading to the vast array of natural and synthetic organic compounds that occur due to the ability of carbon to form families of similar compounds, chains, and rings structures, bonding and properties of diamond, graphite, fullerenes, and graphene. <p><u>Disciplinary knowledge headlines:</u></p>	Student talk tactics used to compare the structures of different substances.

- recognise substances as small molecules, polymers or giant structures from diagrams showing their bonding
- recognise substances as metallic giant structures from diagrams showing their bonding

[Link to knowledge from previous units:](#)

- KS3 Particle model of matter

[Link to knowledge in future units:](#)

- GCSE Chemistry – running theme fundamental

Math skills:

- visualise and represent 2D and 3D forms including two-dimensional representations of 3D objects
- work out the empirical formula of an ionic compound from a given model or diagram that shows the ions in the structure
- make order of magnitude calculations (Triple Science only)
- calculate areas of triangles and rectangles, surface areas and volumes of cubes (Triple Science only).
- recognise and use expressions in standard form
- use ratios, fractions, and percentages
- make estimates of the results of simple calculations