Curriculum Summary Document

Year 10 - Maths

Module/Unit of Learning	Taught During	What will students learn?	How are students challenged to become experts?	Links to other Subjects
Pythagoras	**Autumn Term 1**	In this module, students will revisit and consolidate their knowledge of squares, cubes, and roots, using both numerical and pictorial approaches to strengthen conceptual understanding. They will apply this knowledge to uncover and solve hidden Pythagoras questions, before engaging in a mixed practice session that interleaves these skills with wider mathematical concepts.	Students are challenged to become experts by moving beyond rote recall into strategic problem-solving, where they must identify when squares, cubes, and roots are relevant in unfamiliar contexts. The inclusion of hidden Pythagoras problems demands strong pattern recognition, while mixed practice develops adaptability, precision, and the ability to apply concepts fluidly across varied question types.	
Trigonometry (6+/7+/8+)	**Autumn Term 1**	In this module, students will be introduced to the sine, cosine, and tangent ratios for solving problems in right-angled triangles. They will begin by learning each ratio individually, before combining them in mixed problems to select the most appropriate method. The topic will progress to applying trigonometry in a variety of contexts, culminating in mixed practice that integrates reasoning and interpretation.	Students are challenged to become experts by moving from straightforward ratio calculations to strategically selecting and combining sine, cosine, and tangent in complex, multi-step problems. Mixed practice tasks require them to interpret contexts, decide on the correct approach, and justify their choices, ensuring they can confidently apply trigonometry beyond routine question formats.	

Angles (4+/5+/X)	**Autumn Term 1**	In this module, students will revise angle properties in triangles, quadrilaterals, and specifically parallelograms, reinforcing their understanding of geometric relationships. They will solve a range of problems involving angles inside quadrilaterals, then revisit angle facts with parallel lines. The topic concludes with mixed practice that integrates reasoning and interpretation skills.	Students are challenged to become experts by applying their angle knowledge in multi-step reasoning problems, often requiring the combination of different geometric rules. The focus on parallelogram properties, parallel lines, and integrated problem-solving tasks pushes them to make strategic decisions, justify their reasoning, and adapt methods to complex, unfamiliar situations.	
Equations Linear and Quadratics	**Autumn Term 1**	In this module, students will strengthen their equation-solving skills by revisiting linear equations through interleaved practice. They will recap drawing quadratic graphs using both calculator and non-calculator methods, identifying key points such as roots and turning points. Building on this, students will review how to factorise quadratics and then apply this method to solve them, making explicit links between factorised forms, graphs, and the interpretation of roots.	Students are challenged to become experts by connecting algebraic and graphical representations of quadratics, moving seamlessly between equations and their visual forms. The interleaving of linear equations with quadratic skills develops adaptability, while the explicit linking of factorisation to graph roots ensures deep conceptual understanding, enabling students to interpret and solve problems from multiple perspectives.	
Percentages	**Autumn Term 2**	In this module, students will build their percentage skills, starting with finding a percentage of an amount and applying increases and decreases. They will then extend their understanding to reverse percentages and percentage change, before progressing to the distinction between simple and compound interest. The topic concludes with repeated percentage change, exploring contexts of growth and decay.	Students are challenged to become experts by tackling problems that require them to move flexibly between percentage methods, including reversing processes and applying compound change. Growth and decay problems demand multi-step reasoning and the ability to interpret contexts, ensuring students can apply percentage skills to complex mathematical and real-life financial scenarios with confidence.	

Inequalities	**Autumn Term 2**	In this module, students will begin by clarifying key vocabulary, distinguishing between equations, inequalities, and identities. They will solve linear inequalities, including those that require rearranging, and represent solutions on number lines, covering cases with multiple solutions. Alongside this, they will recap rounding skills, work with error intervals, and apply upper and lower bounds in a variety of calculations. The module then progresses to quadratic inequalities, building on prior knowledge of quadratic factorisation, and develops confidence in interpreting and solving these more complex problems.	Students are challenged to become experts by applying inequalities and bounds to unfamiliar and multi-step problems, requiring precision and logical reasoning. Representing solutions graphically and algebraically develops flexibility, while combining bounds with contextual calculations ensures accuracy under pressure. Extending from linear to quadratic inequalities pushes students to generalise patterns, strengthen algebraic fluency, and tackle GCSE-level reasoning with confidence.	
Area, Volume and Similarity	**Autumn Term 2 and Spring Term 1**	In this module, students will recap 2D area and ratio before moving on to 3D shapes, beginning with the volume of cubes and cuboids. They will extend this to finding the volume of prisms and cylinders, including reverse problems where missing dimensions must be calculated. Building on this, students will explore similarity in shapes, starting with length ratios and progressing to area and volume relationships, before applying these concepts to exam-style questions. The module concludes with an introduction to congruency, reinforcing precision in reasoning about shape properties.	Students are challenged to become experts by solving reverse and multi-step problems that demand both conceptual understanding and accurate calculation. Applying similarity to length, area, and volume pushes them to generalise and connect ratio across dimensions, while congruency and exam-style questions develop their ability to reason rigorously and justify conclusions. This ensures fluency not only in carrying out procedures but also in applying geometric principles flexibly to complex, unfamiliar contexts.	

Ratio	**Spring Term 1**	In this module, students will strengthen their understanding of ratios by simplifying, finding equivalents, and expressing ratios in the form 1:n. They will solve problems involving sharing ratios, both when given a total and when given a part, including "more than" contexts. The unit will then extend into direct and inverse proportion, beginning with worded problems before moving into algebraic representations of both types of proportion.	Students are challenged to become experts by moving beyond simple ratio calculations to tackle multi-step worded and algebraic proportion problems. They must select appropriate strategies, justify their methods, and interpret results in context. The progression to algebraic direct and inverse proportion develops generalisation skills and prepares students for higher-level functional problems where proportional reasoning is embedded in complex, unfamiliar scenarios.	
Compound Measures	**Spring Term 1 and 2**	This sequence builds from metric unit conversions, starting with lengths before extending to area and volume, ensuring students understand how scale factors work across dimensions. Conversions are broadened to include liquids and time, reinforcing practical applications. Students then explore density—what it means, how to calculate it, and how it links mass and volume. Building on this, speed is revisited through word problems, recapping Year 9 knowledge, before students move to interpreting and using distance-time-speed (DTS) graphs, culminating in practice with contextual problem-solving.	Students are pushed to mastery by moving beyond procedural conversion into applied, multi-step problem-solving that requires them to connect different measures (e.g., linking volume with density or time with speed). The inclusion of density and speed problems develops their ability to interpret and manipulate compound units. Working with DTS graphs requires both algebraic and graphical reasoning, demanding precision in extracting and applying information. This combination ensures students not only recall facts but can flexibly apply their knowledge to novel and real-world contexts, hallmarks of expert understanding.	

Transformations	**Spring Term 2 and Summer 1**	This unit develops understanding of symmetry and transformations, starting with line and rotational symmetry, enriched through artistic contexts such as Escher's work. Students then move to translations, reflections, and rotations, ensuring they can both perform and describe transformations accurately. Enlargement is introduced through similarity and scale factors before progressing to enlargements with a centre, negative and fractional scale factors, and the concept of invariant points. Alongside, a recap of linear graphs provides algebraic grounding, reinforcing links between geometry and coordinate representations.	Expertise is developed through precision in describing transformations, not just executing them, and by tackling increasingly complex scenarios such as negative and fractional enlargements. Students must reason mathematically about invariant points and combine multiple transformations into single descriptions, moving from procedural fluency to higher-order reasoning. By linking algebraic graphing with geometric transformations, learners strengthen cross-topic connections, preparing them to apply transformational geometry flexibly in unfamiliar contexts, demonstrating both mastery and depth of understanding.	
Probability	**Summer Term 1**	This sequence builds probability from its foundations through single events, progressing to the use of set notation with AND, OR, and NOT, before extending into mutually exclusive events. Students then explore relative frequency and expectation, developing their understanding of probability as both a theoretical and experimental concept. They learn to apply the product rule, list outcomes systematically with sample spaces, and move into structured methods of representation using tree diagrams, both independent and conditional. The journey culminates in applying probability within problem-solving contexts, including algebraic problems, ensuring students can generalise beyond simple cases.	Students are challenged to think beyond procedural calculation by applying probability rules within abstract notation and conditional contexts, where misconceptions are common. The integration of algebraic probability problems requires them to link topics, using manipulation of expressions and equations alongside probability reasoning. Tree diagrams demand careful logical sequencing, while the inclusion of expectation pushes learners to interpret results within real-world contexts. By embedding reasoning and problem-solving at each stage, learners move from handling straightforward probabilities to demonstrating expert fluency in applying probability laws, justifying methods, and evaluating outcomes in complex, multi-step problems.	

Sequences	**Summer Term 2**	This unit begins by revisiting linear sequences, consolidating key vocabulary and recognising special patterns, such as the Fibonacci sequence, with links to algebraic representation. Building on this, students progress to quadratic sequences, learning to identify the second difference and deduce the coefficient of n2n^2n2. Finally, they apply this understanding to construct and interpret the full nth term for quadratic sequences, moving from recognition to generalisation.	Students are challenged to become experts by connecting visual and numerical patterns with algebraic rules, developing fluency in spotting structure rather than relying on rote methods. The step from linear to quadratic sequences requires a deeper conceptual shift, testing their ability to handle abstraction and generalisation. By working with nth term expressions, students must reason mathematically, justify their methods, and apply their results to predict and explain terms far beyond the given data—demonstrating genuine mastery rather than procedural recall.	
Quadratic Sequences (6+/7+/8+)	**Summer Term 2**	This unit focuses on developing confidence with quadratic sequences, specifically deriving and applying the nth term to generate and predict terms in the sequence. Alongside this, students are introduced to the concept of limiting factors, where they explore boundaries or constraints that affect outcomes—likely linked to mathematical modelling or problem contexts.	To become experts, students are expected not only to compute nth terms but also to explain the reasoning behind their methods, linking the second difference to the structure of the quadratic formula. With limiting factors, they are challenged to apply critical thinking, considering real-world constraints or contextual restrictions within problems. This combination encourages precision in algebraic manipulation and deeper reasoning in applying mathematical models to varied contexts.	

Simultaneous Equations	**Summer Term 2**	This sequence builds algebraic fluency through expanding double brackets, starting with positive terms before moving to negatives and mixed signs. It then revisits linear equations to ensure foundational skills are secure, before introducing simultaneous equations in a structured progression: beginning with puzzles where one variable is already aligned, moving to cases where adjustments are required in one equation, and finally tackling scenarios where both equations must be changed.	Students are challenged to become experts by moving beyond procedural substitution and elimination to reasoning flexibly with simultaneous equations. They are expected to recognise patterns, choose efficient methods, and justify their approaches when faced with different structures. The inclusion of puzzles encourages deeper problem-solving and resilience, while the stepwise increase in complexity develops mastery by ensuring they can handle both straightforward and more demanding algebraic contexts with confidence.	