BRANNEL SCHOOL
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Curriculum Summary Document

Year 8 – Maths

Module/Unit of Learning	Taught During	What will students learn?	How does this help to build a broad and strong foundation?	Links to other Subjects
Vectors and Translations	**Autumn Term 1**	In this module, students will learn to represent and manipulate vectors, including addition, subtraction, and finding resultant vectors. They will describe and perform translations on and off coordinate grids, revisiting all four quadrants to translate shapes accurately and build strong spatial reasoning skills.	Understanding vectors and translations strengthens students' ability to connect algebra and geometry, while improving spatial reasoning and precision. These skills are essential for later work in transformations, mechanics, and real-world problem-solving involving direction and movement.	Art
Rotation	**Autumn Term 1**	In this module, students will learn to perform rotations clockwise, anti- clockwise, and through 180 degrees, identifying the centre of rotation and maintaining accuracy in both drawing and description. They will practise describing rotations using precise mathematical language and consolidate their understanding through mixed tasks that combine rotations with translations, strengthening their grasp of transformations.	Mastering rotations builds accuracy, spatial awareness, and the ability to visualise movement, all of which are essential for understanding transformations. It also strengthens connections between geometry and algebra, preparing students for more advanced topics such as symmetry, vectors, and coordinate geometry.	Art
FDP	**Autumn Term 1**	In this module, students will revise short division before learning to convert between fractions, decimals, and percentages without a calculator. They will explore the links between these forms, identify key conversions that can be done efficiently, and practise switching between all three representations. This builds fluency, strengthens number sense, and supports	Fluency in converting between fractions, decimals, and percentages ensures students can choose the most efficient form for any problem. This flexibility underpins success in topics such as ratio, probability, and data handling, and supports confident problem- solving in both	

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		problem-solving across a wide range of mathematical topics.	mathematical and real-life contexts.	
Expressions, Functions and Formulae 2	**Autumn Term 2**	In this module, students will revisit expanding single brackets to consolidate prior learning before progressing to expanding double brackets. They will practise this process with a variety of expressions, building fluency and accuracy in applying the distributive law to more complex algebraic forms.	Proficiency in expanding brackets is a fundamental algebra skill, essential for simplifying expressions, solving equations, and factorising. This knowledge underpins future topics such as quadratics, algebraic fractions, and proof, enabling students to manipulate expressions confidently and accurately.	
Representing Data 1	**Autumn Term 2**	In this module, students will learn to present and interpret data using bar charts, pictograms, vertical line graphs, pie charts, and scatter graphs. They will apply averages, work accurately with angles, use proportion to solve problems, and explore correlation, prediction, and the difference between correlation and causation.	Developing these data handling and geometry skills enables students to interpret and present information accurately, a key skill across maths and other subjects. It also builds their ability to analyse patterns, make predictions, and solve problems, supporting future learning in statistics, probability, and real-world applications.	
Sequences	**Autumn Term 2**	In this module, students will explore a variety of sequences, starting with identifying patterns, predicting the next terms, and finding missing values from different sections of a sequence. They will use substitution to generate terms from a position- to-term rule and investigate special sequences such as Fibonacci, Fibonacci-type, and geometric sequences, with algebraic extensions for challenge. Students will learn to determine the position- to-term rule for arithmetic sequences, correctly	Understanding sequences develops students' pattern recognition, logical reasoning, and algebraic thinking. These skills are crucial for later topics such as linear and quadratic sequences, series, and functions, and also support problem-solving across the curriculum. This foundation prepares students to model real-world situations	

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		using notation and subscripts, and will apply this knowledge to decide whether a number belongs to a sequence and where it appears.	mathematically and to connect number, algebra, and geometry in more complex contexts.	
Algebraic Graphs 1 Linear	**Spring Term 1**	In this module, students will plot coordinates in all four quadrants, solving problems involving shapes and linking to sequences and lines such as $y = x$. They will learn to draw linear graphs both without a calculator, using function machines, and with a calculator, identifying the y-intercept and rearranging equations for extension. Students will calculate gradients between two coordinates using "per one" and ratio methods, working with both positive and negative gradients. They will explore the equation of a straight line in the form $y = mx + c$ and, for higher prior attainment, extend to $y - y_1 = m(x - x_1)$. The unit concludes with mixed practice on drawing and interpreting straight line graphs.	These skills form the core of coordinate geometry, essential for understanding relationships between variables and representing them visually. Mastery of plotting, gradient, and straight-line equations prepares students for advanced algebra, simultaneous equations, transformations, and real-world modelling in subjects such as science, economics, and geography.	
Circles 1	**Spring Term 1**	In this module, students will build their understanding of circles, starting with key vocabulary such as radius, diameter, and circumference, and exploring the origins of Pi. They will use formulas to find the area and circumference of circles, leaving answers in terms of Pi unless otherwise instructed. Students will calculate the area of sectors, lengths of arcs, and perimeters of sectors, including fractional multiples of a circle. Lessons will combine area, circumference, diameters, and radii, leading to mixed practice problems involving all circle parts. The module concludes with finding the areas of shaded regions, drawing on prior	Mastering circle properties and formulas equips students with essential geometry skills for GCSE and beyond. This knowledge supports problem- solving in topics such as trigonometry, surface area, and volume, and encourages precision, logical thinking, and the ability to apply multiple formulas in complex, real-world contexts.	

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		knowledge of 2D shapes.		
Percentages 1	**Spring Term 1**	In this module, students will consolidate and extend their understanding of percentages, beginning with a recap of Year 7 skills. They will find one number as a percentage of another without a calculator to strengthen fraction fluency, calculate percentage change with and without calculators, and use fraction and decimal multipliers to increase or decrease a value. Students will also learn to reverse percentages to find original amounts and will apply all these skills in mixed practice tasks, with particular focus on reverse percentage problems.	Strong percentage skills are essential for success in many areas of mathematics, from ratio and proportion to financial mathematics and data analysis. Mastery of these methods ensures students can work flexibly between fractions, decimals, and percentages, preparing them for problem-solving in real-life contexts such as budgeting, statistics, and compound change.	
Ratio	**Spring Term 2**	In this module, students will develop their understanding of ratios, starting with expressing ratios as fractions and solving sharing problems, including opportunities for Year 7 recap. They will extend this by using ratios to find the midpoint of a line and to split a line in a given ratio. Students will also learn to combine two ratios into a three-part ratio and apply ratio skills to currency conversions. The unit concludes with mixed practice to consolidate all learning.	A solid grasp of ratio is essential for solving proportional problems in mathematics and real life. These skills support future learning in similarity, trigonometry, and scaling, while also building the ability to compare quantities, interpret data, and apply proportional reasoning in financial, scientific, and geometric contexts.	
Compound Measures and Graphs	**Spring Term 2**	In this module, students will work with conversion graphs, learning to read and plot data while interpreting gradients as “per one” values in real-life contexts, such as price per unit. They will practise converting between units of time, using both manual methods and the calculator’s time function. Students will explore speed as a concept, using ratio methods to calculate speed, distance, or time	These skills combine ratio, proportion, and graph interpretation, which are vital for problem-solving across mathematics and science. Understanding how to read gradients and interpret graphs prepares students for advanced work in kinematics, rates of change, and functional mathematics, as well as	

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		without relying on the formula triangle. They will read and interpret distance–time graphs, linking the gradient to speed and reinforcing the "per one" approach for accuracy and understanding.	developing the ability to apply mathematical reasoning in real-world scenarios.	
Expressions, Functions and Formulae 3	**Summer Term 1**	In this module, students will revisit factorising single brackets before progressing to factorising double brackets, working with cases where all terms are positive or all negative, as well as where one bracket contains positive terms and the other negative. They will engage in mixed practice that develops their ability to recognise when factorising is required and apply the correct method accurately.	Factorising is a key algebraic skill that underpins solving equations, simplifying expressions, and working with quadratics. By mastering different factorising scenarios, students build the fluency and flexibility needed for more advanced topics such as algebraic fractions, completing the square, and proof.	
Area and Volume	**Summer Term 1**	In this module, students will begin by finding the area of compound shapes, revisiting Year 7 knowledge of 2D geometry. They will then explore volume, starting with cubes and cuboids before extending to compound shapes. Students will learn what defines a prism and calculate the volume of different prisms, excluding cylinders at first. The topic will progress to retrieving circle knowledge to calculate the volume of cylinders, before applying all skills in mixed practice. Finally, they will solve problems involving finding a missing dimension when given the volume of a prism.	Understanding area and volume equips students with key spatial reasoning skills and the ability to work with 2D and 3D representations. These concepts underpin later work in surface area, density, and problem-solving in real-world contexts such as construction and design, while also reinforcing accuracy, logical reasoning, and the application of multiple steps in calculations.	
Indices. Powers and Roots	**Summer Term 2**	In this module, students will begin by revisiting squares, cubes, powers of 2, and roots. They will then move on to simplifying indices, applying the multiplication, division, zero, and one rules, before exploring the use of brackets and expansion to understand index laws more	A secure understanding of index laws is vital for success in algebra, surds, standard form, and higher-level mathematics. These skills enhance students' ability to work with powers and roots	Science

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		deeply. Students will learn the rule for unit fraction indices and apply pattern tables to find values, then extend this to negative indices where appropriate. The unit concludes with mixed practice, incorporating compound index laws to consolidate all skills.	efficiently, recognise patterns, and apply rules in complex calculations, supporting both problem- solving and progression into advanced topics in mathematics and science.	
Parallel Lines	**Summer Term 2**	In this module, students will be introduced to key angle facts involving parallel lines, beginning with vertically opposite and corresponding angles, followed by alternate and co-interior angles. They will practise applying all four angle facts in combination and use them to set up and solve equations involving unknown angles. The unit ends with mixed practice that includes reasoning questions and opportunities to revisit related Year 7 angle knowledge.	Understanding angle relationships in parallel lines is a cornerstone of geometry, supporting accurate problem-solving and logical reasoning. These skills are essential for progressing to more advanced topics such as polygons, circle theorems, and geometric proofs, and also help students apply algebra in geometric contexts with confidence.	