Mathematics Year 10 Curriculum Overview

What is the Year 10 Mathematics curriculum aiming to achieve?

What do we want our Year 10 Mathematicians to be like?	How are we building on prior learning?	How can parents/carers support their child's learning?
• Have a comprehensive mathematical vocabulary and recall key facts and formulae • Able to confidently recall and apply standard techniques when solving problems • Able to use communicate using correct language, notation, structure and diagrams • Able to explain their reasoning and justify • Adept in using a scientific calculator	• Using lessons and homework to check on retention of prior learning • Checking students are fluent in key skills by using lessons to review and re-inforce where required • Introducing linked concepts that build on prior learning • Helping students master key skills	• Help by testing them on key skills, formulae and vocabulary • Encourage them to complete homework to the best of their ability • Encourage them to revise for tests, making use of online resources • Ensure they are properly equipped, including a scientific calculator

How are we organising the Year 10 Mathematics curriculum?

	Autumn Units	Spring Units	Summer Units
Topics, Skills & Threshold Concepts *(extension only)*	**Angles and Measure**: basic angle rules; angles in parallel lines; angles in polygons; labelling conventions & vocabulary; bearings; map scales; scale factors **Numbers and the Number System**: factors, multiples, primes & prime factors; powers & roots; surds **Manipulating:** simplify; rules of indices; expand & factorise with single brackets; expand two (*or more*) brackets; factorise quadratics; difference of two squares **Calculating and Place Value:** use place value; compare & order; 4 rules with integers & decimals; BIDMAS; financial problems; standard form **Representing and Interpreting:** interpret & construct charts for data; scatter graphs; time series graphs; *histograms* **Rounding and Accuracy:** rounding; estimating; rounding errors; bounds; *calculate with bounds*	**Equations and Formulae**: linear equations; simultaneous equations; substitution; formulae; rearranging formulae **Fractions and Decimals**: understand fractions; equivalence; ordering; convert between fractions and decimals; recurring decimals **Sequences**: using and finding term-to-term rules; arithmetic sequences; nth term; square, cube & triangle numbers; quadratic sequences; Fibonacci & geometric sequences **Fraction Calculations**: fractions of amounts; express one quantity as a fraction of another; add, subtract, multiply and divide with fractions and mixed numbers **Perimeter, Area and Volume**: perimeter of 2D shapes; area of 2D shapes including compound shapes, circles & sectors; volume of 3D shapes; nets; surface area	**Linear Graphs**: coordinates; plot linear functions; read values off graphs; gradient & intercept; y = mx+c; find equations of lines given points and/or gradient **Percentages**: convert percentages to fractions & decimals; calculate percentages; percentage increase/decrease; compound percentage; simple interest; exponential growth/decay; original value problems **Analysing**: averages & range from a list; averages from a table or chart; compare data; *quartiles*; *cumulative frequency & boxplots* **Ratio**: ratio notation; simplify; ratio & fraction; divide in a ratio; find missing values in ratio problems; ratio in real contexts; best-buy problems **Pythagoras and Trigonometry:** Pythagoras' theorem; trigonometric ratios; find missing sides or angles in tight-angled triangles; *Pythagoras & trigonometry in 3D problems* **Transformations and Vectors:** symmetry, rotation. Reflection, translation, enlargement, *invariance*, vector calculation, *vector geometry*
Enrichment within the curriculum	Students will continue to have opportunities to develop and practise problem-solving skills in more complex situations, including unfamiliar contexts. They will develop their mathematical communication skills using structured methods and algebraic techniques. Real-world applications of mathematics will be discussed whenever possible, including links to careers.		
Cross curricular links	• Science: standard form, substitution into and rearranging formulas, unit conversions, scatter graphs, graphs • Geography: graphs, scales, analysing data • Business Studies: compound percentages, interpreting charts		
Extra-curricular opportunities	Every year, groups of students take part in the Intermediate Mathematical Challenge. Students are able to seek help and support from their teachers outside lessons at any time, and homework support is always available. The Maths Department runs a lunchtime drop-in support session and also offers IT access to complete homework.		

What are the intended outcomes of the Year 10 Mathematics curriculum?

	Autumn	Spring	Summer
Opportunities to show progress (Assessments)	**Homework** – weekly online tasks set on Sparx Maths, which follows the curriculum. Tasks are personalised to a student's ability, and Sparx provides targeted practice, consolidation, and booster tasks in addition to compulsory tasks.		
	End of unit quizzes – at the end of every unit, students complete a short quiz in class, which is self-assessed with support from the teacher. Students can identify skills needing further practice before the more formal assessments.		
	Autumn 1 test **Autumn 2 test** Formal, 1 hour tests, covering concepts and skills from specific units. These are marked by the teacher and evaluated by the student in class afterwards.	**Spring 1 test** **Spring 2 test** Formal, 1 hour tests, covering concepts and skills from specific units. These are marked by the teacher and evaluated by the student in class afterwards.	**Summer Paper 1 (non-calculator)** **Summer Paper 2 (calculator)** Formal, 1.5 hour exams, with concepts and skills from all units. These are marked by the teacher and evaluated by the student in class afterwards.
Impact on personal development (SMSC)	Mathematics provides essential skills needed for everyday life. Many jobs require the use of problem-solving skills, and these often involve mathematics as well. Through mathematics, students learn how to analyse, communicate, explain and evaluate. Students will also become better equipped to deal with difficult problems and will develop their independence, perseverance and resilience.		
Preparation for the next stage of education	The concepts and skills taught are part of our spiral curriculum. They are all key features of the GCSE course and developing competence and confidence in these key areas will set students up for success at GCSE level. Regular homework and assessments will also provide students with opportunities to test their understanding and demonstrate their skills.		