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 reinforce 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**: use and find term-to-term rules; arithmetic sequences; nth term; square, cube & triangle numbers; quadratic, 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;* exact values; *sine rule, cosine rule,* area of a triangle **Transformations and Vectors:** symmetry, rotation. Reflection, translation, enlargement, *invariance*, vector calculation, *vector geometry* **Quadratics:** expand two *or more* binomials; factorise quadratic expressions; solve quadratic equations by factorising, *completing the square, quadratic formula;* draw quadratic functions, deduce roots and turning points
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?

Opportunities to show progress (Assessments)	**Homework** – weekly online tasks set on MathsWatch, with tasks set up by their teacher to consolidate learning. Students can also use MathsWatch to undertake independent learning, complete practice questions and revise. Students have access to personalised learning checklists for each unit, and these include references to MathsWatch.
	Learning Checkpoints – at the end of each unit, students complete a Learning Checkpoint in class to test their understanding of the skills from the unit. These will take around 20 minutes to complete. The teacher may take them in and mark, allowing improvement and correction time in a later lesson, or teachers may model the answers in class to support students in self-assessing their work. Results are recorded and students can identify skills needing further practice before the formal summative assessments.
	Summative Assessments – students will complete two larger formal assessments during the year, which will test a wider variety of skills as well as students' recall of prior learning. Both assessments will consist of a non-calculator test and a calculator test, and the tests will either take place during normal lesson time in formal exam conditions, or a formal exam hall. Tests are marked by the teacher, and students will have time to review the tests and make corrections in a later lesson.
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.