Mathematics Year 9 Curriculum Overview

What is the Year 9 Mathematics curriculum aiming to achieve?

What do we want our Year 9 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 & formulae • Able to apply techniques confidently across a range of problems • Able to communicate mathematically using correct notation and structure • Able to explain their reasoning • Confident 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 9 Mathematics curriculum?

	Autumn Units	Spring Units	Summer Units
Topics, Skills & Threshold Concepts *(only covered as extension)*	**Numbers & the number system 3**: Factors, multiples & primes; HCF & LCM; prime factorisation; powers and roots; square & cube numbers; standard form; *surds* **Angles 3**: angles in parallel lines; angles in polygons; circle theorems **Calculating 3**: add, subtract, multiply & divide with integers & decimals in real contexts; financial maths; using a calculator; BIDMAS **Manipulating 3**: simplify; expand; factorise; substitute; write expressions; rearrange; expand two (*or more*) brackets; *factorise quadratics* **Measuring 3**: constructions; congruent triangles; scales; *bearings* **Place Value 3**: ordering; rounding; estimate; bounds **Representing 3**: interpret & construct charts for data; scatter graphs; cumulative frequency curves, *quartiles*	**Fractions 5**: convert fractions & decimals; order; reciprocal; recurring decimals **Equations 3**: solve multi-step equations & inequalities; *simultaneous equations* **Fractions 6**: Add, subtract, multiply & divide with fractions or mixed numbers in context **Probability 3**: probability; sample space; relative frequency; Venn diagrams; *tree diagrams* **Area, perimeter & volume 3**: perimeter & area of plane & composite shapes; circumference & area of circles and part circles; volume & surface area of prisms **Compound Units 1:** compound units speed, density, pressure, population density	**Ratio 3**: solve ratio & direct proportion problems; graphical & algebraic representations **Pythagoras & Trigonometry 1:** Pythagoras' Theorem; trigonometry ratios; sine, cosine and tangent in right-angled triangles **Graphs 2**: Plot linear graphs; estimate values; $y = x^2$ graph; gradient; $y = mx + c$, *quadratic graphs and features* **Symmetry & transformations 3**: reflect, rotate, translate; enlarge; combinations of transformations; *vector arithmetic* **Analysing 3**: averages & range from a list or table; compare data sets; averages from grouped data **2D & 3D shapes 3**: shape properties & vocabulary **Percentages 3**: percentage change; compare; original value problems
Enrichment within the curriculum	During mathematics lessons, 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. Some groups of students take part in the Intermediate Maths Challenge with Year 10 and 11.		
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 • Technology: accurate drawing; scales		
Extra-curricular opportunities	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 9 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 take place during normal lesson time in formal exam conditions. 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 topics taught are part of our spiral curriculum and introduce, or build upon, fundamental skills that underpin the whole mathematics curriculum. These concepts and skills all feature, to varying extents, in the GCSE course. 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.