

Mathematics – KS5

Intent – KS5	Implementation – KS5	Impact – KS5
<p>We intend that every student choosing to study KS5 Maths is successful in thoroughly learning advanced mathematical concepts and is able to demonstrate that understanding in an exam situation.</p> <p>We offer three different courses and qualifications:</p> <ul style="list-style-type: none"> • L3 Mathematical Studies (core maths) • A Level Mathematics • A Level Further Mathematics <p>Given that each course is suited to students who have achieved different levels of success at KS4, we will work with KS4 providers to offer the right places on our courses to students that are capable of thriving in the demanding environment that each course requires.</p> <p>Students embarking on any of the above courses will be supported in developing their independent study skills, with bridging work and GCSE resources being made available for those that need consolidation of prior knowledge. We will work closely with parents and tutors to ensure that progress is made continually throughout the course by students managing their study time effectively and balancing that with their wellbeing.</p> <p>We will inspire students by exposing them to higher education opportunities and apprenticeships, and highlight links between KS5 Maths content and other subjects like Science, Humanities and Business Studies, in order to attach purpose to learning.</p> <p>Students will be encouraged to access a wide range of resources (both printed and electronic) during their personal study and revision time, and along with support opportunities, students will not be disadvantaged due to Covid impact.</p>	<p>We follow an intense two year program of study for each of our courses, and ensure that topics build sequentially on previous knowledge. Multiple teachers are involved in classroom delivery, and for every hour spent in class, students are expected to study at least 1 hour in their personal study time.</p> <p>ILT is set regularly to ensure students don't fall behind with the pace required for success, and students will sit multiple past papers in order to become familiar with the differing types of exam questions, track progress and reveal weak areas that need effort and focus.</p> <p>ICT tools like Google classroom are used to upload slides or worksheets or worked examples after each lesson, providing a digital library, and references are often made to sites like MathsWatch, ExamSolutions.net, drfrostmaths.com and mathway.com.</p> <p>Whilst we offer KS5 teaching at our Sixth Form campus (away from KS3 and KS4 learning), a KS5 Lead Teacher is in place to support KS5 students especially and to maintain an 'open door' approach to ensure support is available, and teachers regularly offer revision workshops to make sure no student is left behind.</p> <p>Student work is stored in personal categorised revision folders, with notes being taken on blank paper. Worksheets, trial papers or revision documents are hole-punched and inserted as appropriate to form comprehensive revision notes.</p> <p>During periods of absence (or during lockdown), students use Google meet to access live teaching to help compensate for reduced teacher contact time.</p>	<p>Learners gain a deep understanding of the many advanced mathematical skills at KS5, and relate their learning to a wide range of careers and higher education prerequisites.</p> <p>Students are taught well and achieve results in keeping with their effort. In doing so, they are able to access a wide range of Higher Education opportunities. Students learn to wrestle with challenging concepts and methods, build up a comprehensive set of study and revision notes over the duration of the course, and feel supported in their studies.</p> <p>Students are aware of the high expectations for personal study time, and increasingly use out-of-the-classroom time effectively to keep up with the demands of these challenging courses. Students become competent in analysing problems and identifying which mathematical approach to apply, and make connections between learned topics. Through familiarity with a wide range of questions, students are able to identify appropriate methods to follow in order to solve problems.</p> <p>Through completion of regular ILTs and multiple trial sets of exams, (at least 4 sets during KS5), students and parents are aware of their progress (against their target) and their trajectory, and interventions are used effectively in order to fill knowledge gaps.</p> <p>Absent students join virtually and regularly to make up any lost time, and all students take responsibility for their own progress and exam results.</p>

		Autumn		Spring		Summer	
		Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 12 A Level	Knowledge	P: Algebraic manipulation, indices and surds M: Introduction to Vectors and Trig recap S: Sampling techniques and coding	P: Quadratics and inequalities, transforming graphs M: Vector arithmetic and proving parallel vectors or collinear points S: Interpreting diagrams	P: Differentiation and Integration M: Speed and velocity, distance and displacement S: Mutually exclusive events	P: Straight line graphs and circles, e^x and logs M: Distance time graphs S: Probability	P: Proof and disproofs M: Motion in a straight line, Newton's laws S: Hypothesis testing	P: Algebraic fractions M: Equilibrium, gravity and kinematics S: Statistical distributions
	Skills	Managing bridging content Folder management	Maximising effectiveness of independent study	Accessing staff support	Accessing online resources	Managing expectations half way through	Revision techniques Exam techniques
	Strategies: <ul style="list-style-type: none"> Start revision folders, categorised content for future revision Insist on personal revision and study outside the classroom Introduce (and signpost regularly to) various web sites for support Continued ILT and use of merits and success cards Regular uploading of slides, worksheets and answers to Google Classroom Expose to university life through visits and trips Continually feed apprenticeship opportunities to inspire 						
Assessment: <ul style="list-style-type: none"> Quality AfL in every lesson – questioning or group presentation Regular (most fortnightly) ILTs, with written feedback (WWW, EBI) at least twice per term and results tracked in shared digital mark book Parents' evening in term 4 AS level trial paper in term 6 							

Sequence of learning – Year 13 A Level

		Autumn		Spring		Summer	
		Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 13 A Level	Knowledge	P: Algebraic manipulation, indices and surds M: Introduction to Vectors and Trig recap S: Sampling techniques and coding	P: Quadratics and inequalities, transforming graphs M: Vector arithmetic and proving parallel vectors or collinear points S: Interpreting diagrams	P: Differentiation and Integration M: Speed and velocity, distance and displacement S: Mutually exclusive events	P: Straight line graphs and circles, e^x and logs M: Distance time graphs S: Probability	P: Proof and disproofs M: Motion in a straight line, Newton's laws S: Hypothesis testing	P: Algebraic fractions M: Equilibrium, gravity and kinematics S: Statistical distributions
	Skills	Managing bridging content Folder management	Maximising effectiveness of independent study	Accessing staff support	Accessing online resources	Managing expectations half way through	Revision techniques Exam techniques
	Strategies: <ul style="list-style-type: none"> Start revision folders, categorised content for future revision Insist on personal revision and study outside the classroom Introduce (and signpost regularly to) various web sites for support Continued ILT and use of merits and success cards Regular uploading of slides, worksheets and answers to Google Classroom Expose to university life through visits and trips Continually feed apprenticeship opportunities to inspire 						
		Assessment: <ul style="list-style-type: none"> Quality AfL in every lesson – questioning or group presentation Regular (most fortnightly) ILTs, with written feedback (WWW, EBI) at least twice per term and results tracked in shared digital mark book Parents' evening in term 4 Multiple trial AS and A level papers throughout the year 					

		Autumn		Spring		Summer	
		Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 10	Knowledge	Numbers and the number system	Solving equations and inequalities	Handling inequalities	Conjecturing	Presenting data	Presenting data
		Non-calc arithmetic	Mathematical movement	Patterns	Algebraic proficiency	Visualising	Measuring data
	Properties of shapes	Proportional reasoning	Analysing statistics	Understanding risk	Analysing statistics		
	Skills	Recall and retrieval	Identify maths methods in GCSE questions	Effective note taking	Identifying gaps in individual learning	Listening to others	Revision techniques
		Folder management		Evaluating progress against WILFs		Buddying with KS3 students	Exam techniques
Strategies: <ul style="list-style-type: none"> • Switch to revision folders, categorised content for future revision • Introduce GCSE teacher (stays the same for next 3 years) • Start strategic awareness of Higher or Foundation paper goals • Continued ILT and use of merits and success cards • Inspire through Science Museum trip • Expose the majority of students to Higher paper content 							
Assessment: <ul style="list-style-type: none"> • Quality AfL in every lesson – mini whiteboards or questioning or group presentation • Topic tests/assessments at least three times in the year, and GCSE trial papers (Higher for most students) at the end of year • Regular (most weekly) ILTs, with written feedback (WWW, EBI) at least twice per term and results tracked in shared digital mark book • Parents’ evening in term 3 • Ongoing assessment in year 9 to ensure students are put in the correct GCSE speed set in year 10 • Evaluate borderline students and select whether Higher or Foundation content is most appropriate • Emphasis on ‘last full year of teaching’ right from the year start 							

Sequence of learning – year 11

		Autumn		Spring		Summer	
		Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 11	Knowledge	Numbers and the number system Non-calc arithmetic Properties of shapes	Solving equations and inequalities Mathematical movement Proportional reasoning	Handling inequalities Patterns Analysing statistics KS5 bridging (high ability students)	Conjecturing Algebraic proficiency Understanding risk KS5 bridging (high ability students)	Presenting data Visualising Analysing statistics	Presenting data Measuring data
	Skills	Recall and retrieval Folder management	Revision techniques Exam techniques	Identifying weak areas and agreeing interventions	Initiative in seeking assistance		Revision techniques Exam techniques
	Strategies: <ul style="list-style-type: none"> • Finish new content by Christmas, focus on interweaving topics, revision and complex problems from Jan - May • Offer intervention groups to fill revealed knowledge gaps • Emphasis on student responsibility for personal revision • Continued ILT and use of merits and success cards • Expose the majority of students to Higher paper content • Continue open and honest relationship with parents • Sixth form open evenings and taster lessons • KS5 bridging work for higher ability classes 						
	Assessment: <ul style="list-style-type: none"> • Quality AfL in every lesson – mini whiteboards or questioning or group presentation • Self-assessment ‘tick’ sheet (adapted according to what has been learned) • Regular (most weekly) ILTs, with written feedback (WWW, EBI) at least twice per term and results tracked in shared digital mark book • Multiple Parents’ evening in terms 1 and 4 • Progress tracking chart used (and shared with parents) for trial exams 						