Mathematics – KS5

Intent – KS5	Implementation – KS5	Impact – KS5
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. We offer three different courses and qualifications: • L3 Mathematical Studies (core maths) • A Level Mathematics • A Level Further Mathematics 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. 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. 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. Students will be encouraged to access a wide range of resources (both printed an electronic) during their personal study and revision time, and along with support opportunities, students will not be disadvantaged due to Covid impact.	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 (although different teachers are kept to a minimum), and for every hour spent in class, students are expected to study at least 1 hour in their personal study time. 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. ICT tools like Google classroom are used to upload slides or worksheets or worked examples after lessons, providing a digital library, and references are often made to sites like MathsWatch, ExamSolutions.net, drfrostmaths.com and mathway.com. 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. Student work is stored in categorised folders (and more recently, books, with an emphasis on quality note taking. Worksheets, trial papers or revision documents are used as appropriate to form comprehensive revision notes.	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. 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. 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. 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.

Sequence of learning – Year 12 A Level

		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: • 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: • 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: • 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: • 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						

Sequence of learning – year 12 Core Maths

		Autumn		Spring		Summer	
Year 10		**Term 1**	**Term 2**	**Term 3**	**Term 4**	**Term 5**	**Term 6**
	Knowledge	• Mode, Mean and Median • IQR • Box plots • Histograms • Cumulative Freq. • Sampling strategies	• Personal Finance • Calculating income tax and N.I • IER and APR • Pay slips • Using Excel	• Volume, capacity and density • Venn Diagrams • Estimations and Fermi • Compound interest & depreciation	• Network activity diagrams • Gantt Charts • Critical Path Analysis	• Probability • Advanced percentages • Advanced tables and graphs	• Arithmetic money questions
	Skills	Recall and retrieval Folder management	Identify GCSE core skills in advanced questions ICT	Effective note taking Evaluating progress against WILFs	Identifying gaps in individual learning	Listening to others Revision techniques	Exam techniques Past papers
	Strategies: • Complete course in 1 year (real exams at end of y12) • Use work & revision folders, categorised content for future revision • Springboard from GCSE content • Continued ILT to monitor progress						
	Assessment: • Quality AfL in every lesson –questioning or group presentation • Increased collaboration/discussion in lesson to develop teamwork and problem solving • 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 • Trial exams during term 6 to reveal gaps/weaknesses • Expose students to the highest level of GCSE stats/probability/percentage/graphs questions						