Curriculum Map - Maths

KS3	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 7	Number skills. Expressions, functions, formulae.	Decimals and Measures.	Analysis and Displaying Data. Fractions.	Probability. Ratio and Proportion.	Lines and Angles. Sequences and Graphs.	Transformations.

KS3	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 8	Number. Expressions and Equations.	Calculating with Fractions. Area and Volume.	Statistics, graphs and charts. Real Life graphs.	Decimals and Ratio. Lines and Angles.	Straight Line Graphs.	Percentages, Decimals and Fractions.

KS3	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 9	Indices and Standard Form. Expressions and Formulae.	Dealing with Data.	Multiplicative Reasoning. Constructions.	Equations, Inequalities and Proportionality.	Circles, Pythagoras & Prisms. Sequences & Graphs.	Probability.

KS4	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 10	Number calculations including fractions and percentages. Algebraic expressions and formulae	Equations, inequalities and sequences. Shapes and Angles.	Statistics and averages. Perimeter, area and volume. Graphs	Transformations. Ratio and Proportion.	Right angles triangles. Multiplicative reasoning.	Probability. Constructions, Loci and Bearings

KS4	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 11	Quadratics Further Trigonometry Similarity and Congruence Circle, cylinders and spheres	Standard form Further algebra Standard Form	Circle Theorems Equations and graphs Vectors	Proportion Targeted Revision	Targeted Revision	Targeted Revision

KS5	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 12	Equations and inequalities. Constant acceleration.	Graphs and circles. Measures and spreads of location	Binomial, trigonometry, correlation and probability	Vectors, differentiation, forces and statistical distributions	Integration and hypothesis testing	Exponentials and logarithms, variable acceleration

KS5	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer	
Year 13	Function and graphs, sequence and series, moments	Binomial expansion, radians, forces and friction, conditional probability	Tri and modelling, parametric equations, normal distribution, projectiles	Numerical methods, integration, application of forces, kinematics	Vectors	

Curriculum Overview - Maths

KS3

The mathematics KS3 curriculum begins by reinforcing concepts from KS2 and secures a strong foundation that fosters a curiosity that develops students into mathematicians who can reason and justify passionately. We strive to progress students to become confident and fluent in the fundamentals of mathematics by applying a mastery approach to learning. All topics indulge students in problem solving experiences and will challenge them to not rely on processes but instead be authentic with their thinking and methods to come to solutions.

Many topics will be taught at KS3 under the umbrella units of number, algebra, geometry and measures, probability, ratio, proportion and rates of change. Many topics require the students to retrieve previous knowledge to be able to build on their skills or apply skills into new concepts. The mathematics curriculum requires skills to be interleaved throughout, students will take small steps to gain a deep understanding and become coherent across all of their mathematics in their learning journey.

KS4

The mathematics KS4 curriculum builds even more on the key skills developed throughout KS3, with the topics covered continuing to be based around number, ratio & proportion, algebra, geometry, and statistics. There is a particular emphasis on developing lifelong skills in numeracy based on real life, the ability to communicate mathematically, and apply problem solving strategies in new contexts. The curriculum guides students to select mathematical techniques and methods to use these to then interpret and reason mathematically, make deductions, inferences and draw conclusions using their knowledge, skills and understanding of all the mathematical methods and concepts taught. All students are taught content to a high level to enable them to access the best of their ability whilst ensuring it is accessible for all.

The final GSCE qualification is 100% examination based with two possible tiers of entry: higher or foundation tier. These consist of three 90-minute examinations papers (one non-calculator and two calculator). In order to ensure students are as prepared as possible for their GCSE exams and beyond, we regularly track and monitor their progress in lessons, via assessments and by utilising mock exam papers. We deliver targeted subject-enhancement sessions to ensure that everyone remains on track and address any gaps in knowledge/ misconceptions.

KS5

Students studying mathematics in SUA6 undertake the Pearson A-Level mathematics course. This course builds upon the GCSE course; it challenges students to extend their range of mathematical skills to enable them to make logical, reasoned decisions when solving problems in a variety of contexts. The curriculum aims to foster confidence and enjoyment of mathematics and provide a strong foundation for progression to higher education or employment.

Students will study Pure 1 and Statistics & Mechanics 1 in Year 12, then Pure 2 and Statistics & Mechanics 2 in Year 13. Topics in Pure include; proof, algebra and functions, coordinate geometry, sequences and series, trigonometry, exponentials and logarithms, differentiation, integrations, numerical methods and vectors. Topics in statistics include; sampling, data presentation and interpretation, probability, statistical distributions and hypothesis. Topics in mechanics include; quantities and units, kinematics, forces and Newton's Laws and moments.

The final A-Level qualification is 100% examination based and consists of three 2-hour examinations papers: two Pure and one Statistics & Mechanics. How to use appropriate A-Level designed calculators effectively is supported throughout the course as they are allowed in both papers in the exam.

Links from KS2

All of the content covered in maths will rely on basic maths knowledge from KS2, such as knowing multiplications. We interconnect mathematical concepts that students can move between with fluency by building upon previously mastered skills. Being able to identify patterns and overlapping concepts in maths topics is key to progression. We expose students to more mathematical reasoning and problem solving that they would have been introduced to at KS2. This is done at a higher, more sophisticated level.

Experiences

A wide-range of activities to develop mathematical thinking and skills are on offer throughout the year, including:
- National competitions
- A variety of maths clubs to suit all ages and interests
- Maths challenges to develop problem solving skills

Links to CHARACTER

- Careers – Linking lessons to the huge number of careers that use mathematical skills, outside of the usual mathematical career options
- Resilience – Developed through challenging lessons with students given regular opportunities to solve problems
- Development of numeracy skills to ensure that students can tackle any mathematical challenge that they are presented with in day-to-day life