

KS4 Curriculum Overview

Mathematics

EXAM BOARD: Edexcel

Curriculum Intent

Our aim is to develop an appreciation for mathematics as a language and a tool to solve problems and analyse the world around us. We hope to inspire creative mathematicians that are able to apply their understanding to other subjects, see the beauty in maths and to always look for the most elegant solution. By the end of year 11, we aim for all students to have a strong sense of number and to be ready to progress on to future learning or career in a mathematical field.

How does the KS4 curriculum build on that from KS3?

Our KS4 curriculum builds on KS3 as students continue to study units across the strands of Number, Algebra, Geometry and Measure, Probability and Statistics and Proportional Reasoning. Students are split in to Higher and Foundation tiers for GCSE, building on different levels of understanding of the content covered throughout KS3. Students will go on to study new topics such as Functions, Advanced trigonometry and Circle theorems at Higher, and Trigonometry at the Foundation tier.

What do students *do* with this knowledge or these skills?

Students will increasingly face more complex problems incorporating several areas of maths. They will need to apply their conditional knowledge to recognise which methods are needed to solve problems. KS4 students will be encouraged to find the most efficient method and present their mathematical arguments logically.

How does the KS4 curriculum align to the National Curriculum?

Our KS4 curriculum matches the National Curriculum. In addition, our most able students are entered for UKMT challenges and the OCR Level 3 Additional Maths qualification.

Term	Year 10	Year 11
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	Higher	Foundation	Higher	Foundation
Autumn	<ul style="list-style-type: none"> Ratio Indices and Standard Form Algebraic Expressions and Proof Parallel lines, Internal and External angles Pythagoras (2d & 3d) Right Angled Trigonometry Surds 	<ul style="list-style-type: none"> Multiplying and Dividing Multiples, Factors & Primes Negative Numbers Algebraic Simplification Direct Proportion Solving Equations Fractions 	<ul style="list-style-type: none"> Cosine and sine rule Trigo graphs Geometric sequences Iteration Functions and graphs Graphical transformations Circle theories and proof 	<ul style="list-style-type: none"> Fractions, decimal, and percentages arithmetic Percentage increase, decrease, change and reverse Compound and simple interest Substitution focusing on negative numbers Solving equations Pythagoras Area and perimeter of compound shapes Rounding and estimation Circles Indices Standard index form Expanding brackets and factorising Drawing graphs
Spring	<ul style="list-style-type: none"> Rearranging formulae Solving linear equations Simultaneous equations Solving Quadratics Venn Diagrams Completing the square Simultaneous equations (quadratic) Area/Perimeter of circles/sectors Volumes of solids & prisms Area/volume scale factors Upper and Lower Bounds 	<ul style="list-style-type: none"> Percentages Venn Diagrams Angles Problems Internal and External Angles of polygons Probability of multiple events Timetables Time Series Standard Form 	<ul style="list-style-type: none"> Vectors Exponential graphs Gradient of a curve Estimating area under a curve Transformations Constructions 	<ul style="list-style-type: none"> Rearranging and solving equations Simultaneous equations Constructions Loci Elevations and plans Angles in parallel lines Bearings Scale Diagrams Congruence and similarity Transformations Vectors Trigonometry

Summer	<ul style="list-style-type: none"> • Probability of multiple events • Averages, Pie Charts, Bar Charts • Linear Graphs • Inequalities • Direct and Inverse Proportion • Histograms • Cumulative Frequency • Ratio 	<ul style="list-style-type: none"> • Linear Graphs • Area (including circles) • Pythagoras • Trigonometry • Charts & Graphs 	Revision and Exams	Revision and Exams
Rationale for this sequencing	<p>The start of the GCSE course includes topics that are essential for future learning. For example, the number and algebra units in the first term of year 10 are needed before students are able to progress on to the later algebra units. Pre-requisites have been taken into consideration when planning the order of units. The sequence has been designed so that students have access to challenging questions, combining different areas of maths that have been covered throughout the course</p>			

Additional support at home

Additional reading for enjoyment, enhancement and extension	<ul style="list-style-type: none"> • Alex's Adventures in Numberland by Alex Bellos • The Language of Mathematics by Keith Devlin
Online resources to practice, consolidate and revise	<ul style="list-style-type: none"> • Corbettmaths • Mathswatch • Maths Genie
Workbooks & revision guides to practice, consolidate and revise	<ul style="list-style-type: none"> • CGP Revision Guide Edexcel Higher • CGP Revision Guide Edexcel Foundation