



KING EDWARD VI ASTON GRAMMAR SCHOOL
MATHEMATICS
Curriculum Intent and Overview (A-level Further Mathematics)

Intent Statement

The Mathematics Department aims to help your child discover the joy and beauty of this fascinating and extremely rewarding subject. Our primary objective is to ensure all students develop a strong foundation in mathematical fluency and language, fostering confidence in problem-solving. Through our creative curriculum, which carefully weaves prior learning throughout the academic journey, we cultivate a love of learning and enhance students' ability to model and solve complex, non-routine problems using their mathematical knowledge.

Our curriculum extends beyond the standard specification, offering enriching experiences and activities accessible to all students, regardless of background. We nurture independence, critical thinking and enthusiasm through engaging lessons and diverse extra-curricular opportunities. These include Mathematics Inspiration lectures, inter-school Mathematics competitions and participation in the prestigious UKMT Mathematics Challenge.

In the Curriculum Overview below, topics are coloured according to the following strands:

- Pure
- Mechanics
- Statistics and Probability
- Core Pure
- Decision
- Further Statistics and Probability

		MICHAELMAS TERM	LENT TERM	SUMMER TERM
KEY STAGE 5	YEAR 12*	- Surds and Indices - Quadratic functions and modelling - 2D Vectors - Statistical sampling - The large data set - Solving equations and inequalities - Inequalities on graphs - Linear graphs - Modelling in Mechanics - Constant acceleration of particles - Measures of location and spread	- Algebraic fractions and partial fractions - Variable acceleration - Correlation and linear regression - Statistical modelling, PMCC and Hypothesis testing - Functions and graphs - Projectiles - Representations of data - Trigonometric functions and their inverses - Trigonometry and Modelling	- Binomial expansion with rational numbers - Binomial hypothesis testing - Numerical methods - Parametric equations - Series - Complex numbers - Matrices - Roots of polynomials - Argand diagrams - Volumes of revolution

Key: * means that the scheme of work has changed for this year group
Subject Lead Name and Email: Mr J Berwick, j.berwick@ast.kevibham.org



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		- Curved graphs and transformations - Circles - Forces and Newton's laws of motion - Probability with Venn diagrams and tree diagrams - Polynomial division and the factor theorem - Binomial expansion with natural numbers - Trigonometric ratios and their graphs - Statistical distributions - Differentiation - Integration - Forces and friction - Exponentials and logarithms - Proof - Moments - Radians - Trigonometric identities and equations - Solving equations with radians - Sequences and series	- 3D Vectors - Further kinematics - Differentiation - Integration - Applications of forces - The normal distribution	- Proof by Induction - Discrete random variables - Poisson distributions - Continuous distributions - Combinations of random variables
	YEAR 13	- Linear transformations - Vectors - Sorting and bin packing algorithms - The Planarity algorithm - Discrete random variables - More complex numbers - Series and Maclaurin expansions - Floyd's algorithm - Route inspection - Poisson distributions - Hypothesis testing with Poisson - Polar coordinates - Hyperbolic functions - Critical path analysis - Geometric and Negative binomial	- Methods in calculus - Linear programming - Chi squared tests - Central limit theorem - Differential equations - Modelling with differential equations - Simplex algorithm - Probability generating functions - Quality of tests	Revision and A-level exams

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		- Hypothesis testing with Geometric - Travelling salesman problem		
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