



KING EDWARD VI ASTON GRAMMAR SCHOOL
MATHEMATICS
Curriculum Intent and Overview (Years 7-11)

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:

- Number
- Algebra
- Geometry and Measure
- Statistics and Probability
- Ratio and Proportion

		MICHAELMAS TERM	LENT TERM	SUMMER TERM
KEY STAGE 3	YEAR 7	- Multiply and divide by 10, 100, 1000. - Mental & written calculations - Fraction and Decimal calculations - Fraction, Decimal and Percentage equivalence - Factors and multiples - Divisibility rules - Using letter symbols - Simplifying terms - Expanding single brackets - Using and forming formulae - Solving equations - Coordinates & straight-line graphs	- Converting metric & imperial measures - Perimeter & area of triangles and quadrilaterals - Surface area & volume of cuboids - Simple angle rules - Angles on parallel lines - Transformations (not enlargement) - Linear sequences - Simplifying & finding values in ratios - Proportions as fractions, decimals or percentages - Percentages of amounts - Percentage increase/decrease - Reverse percentages - Financial Mathematics (VAT, APR and Best buys)	- Averages and range - Drawing frequency tables, bar charts and pie charts - Averages from ungrouped frequency tables - Probability scale and equally likely outcomes - Mutually exclusive events - Experimental probability - Constructing triangles



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	YEAR 8	- Negative Indices and powers of 0. - Index laws with numbers and terms. - Prime factor decomposition of composite numbers. - HCFs and LCMs using prime factors and 3 number problems. - Rounding and estimation. - Working with powers of ten. - Decimal calculations (inc. dividing by a decimal). - Fraction calculations (inc. all operations with mixed numbers). - Percentage change problems. - Expanding Financial Awareness (Insurance and Taxation). - Harder arithmetic with terms. - Expanding single and double brackets. - Factorising into single brackets. - Adding/subtracting simple algebraic fractions. - Rearranging formulae without factorisation. - Linear graphs (introducing gradient more formally). - Curved graphs and real-life graphs.	- Stem and leaf diagrams. - Averages from tables (inc. grouped). - Scatter graphs and correlation. - Two-way tables and frequency trees. - Sample space diagrams. - Product rule for counting. - Tree diagrams with two branches. - Venn diagrams with 2 circles. - Linear & basic geometric sequences. - Recurrence relations. - Equations with fractions. - Draw inequalities on number lines. - Solving linear inequalities. - Converting area and volume units. - Pythagoras' Theorem in 2D.	- Area and perimeter of 2D shapes (including circles) - Surface area & volume of prisms (including cylinders) - Combining ratios. - Subdividing a ratio. - Angles and 2D shapes. - Enlargement with positive scale factors and combining transformations. - Plans and elevations. - Bisectors, RHS triangle constructions and Bearings.
	YEAR 9	- Estimation; upper & lower bounds. - Finding prime factorisations for multiples of prime factorisations. - Finding the number of factors that a number has by using its prime factorisation. - Indices (fractional) & surds (not rationalising). - Working with and calculating in standard form.	- Quadratic sequences. - Parallel & perpendicular lines. - Linear simultaneous equations on graphs. - Combining linear inequalities - Graphing linear inequalities. - Cubic, exponential & reciprocal graphs. - Real life graphs (conversion graphs and rate graphs).	- Review of surface area and volume. - Constructions and loci. - Sampling (including stratified and capture/recapture) - Combined mean problems. - Quartiles and box plots. - Cumulative frequency graphs. - Comparing data (GCSE "compare" questions). - Tree diagrams with 3 branches and algebraic problems with independence.



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		- Fraction and decimal calculation review with FDP and ratio worded problems. - Converting recurring decimals. - Simple Interest and Compound percentage change. - Real-World Financial Decisions (Inflation and Mortgages). - Expanding double brackets (negative between 2 sets). - Expanding triple brackets - Factorising using DOTS. - Factorising monic quadratics. - Rearranging formulae with factorisation. - Linear simultaneous equations.	- Transformations inc enlargement by negative scale factors and invariance. - Compound measures. - Review on angles with tessellation problems with polygons. - Arcs and sectors. - Pythagoras' Theorem in 3D. - 2D Trigonometry (inc. bearings).	- Venn diagrams with 3 circles and conditional probability. - Line segments with ratio. - Relationships between variables. - Direct and Inverse proportion problems with machine days and workers etc. - Congruent triangles. - Similarity with lengths of 2D shapes.
KEY STAGE 4	YEAR 10	- Negative indices - Fractional indices - Changing bases to solve equations - Simplifying surds - Arithmetic with surds - Rationalising the denominator - Solving quadratic equations by factorising, completing the square and the formula - Sketching quadratics with features which include the turning point - Sequences including quadratic, geometric and Fibonacci - Rearranging more complex formulae which includes factorising - Simplifying and arithmetic with algebraic fractions - Cubic, exponential, reciprocal and trigonometric graphs	- Sampling - Averages from tables (including grouped) - Combined mean problems - Quartiles and box plots - Cumulative frequency graphs - Histograms - Mean from a histogram - Interpolation to find the median or other quartiles - Plans and elevations - Congruency and similar shapes including area and volume scale factors - Non-right angled trigonometry - Arc length and area of a sector - Volumes and surface areas of cylinders, pyramids, cones, frustums and spheres	- Direct and indirect proportion with algebra - Accuracy and bounds including estimation - Tree diagrams including algebraic problems



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	YEAR 11	- Circle theorems - Linear graphs revision - Gradient of curves (Rates of change) - Area under graphs using trapezia - Functions - Circles and simultaneous equations - Graphical solutions to simultaneous equations	- Revision of how to sketch a quadratic and then growth and decay - Graphical transformations - Vectors - Iteration - Ratio with algebraic problems - Loci	Revision and GCSE exams
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