Mulberry Academy Woodside

Mathematics

KS4 Curriculum Overview 2025 - 2026

Curriculum intent statement:

Our Maths curriculum is ambitious, inclusive, and knowledge-rich, making Mathematics accessible and engaging for all students. It fosters curiosity, confidence, and problem-solving skills, while providing appropriate challenge to ensure every learner can achieve their potential. Learners are empowered to build fluency, conceptual depth, and an appreciation for the relevance of Maths in everyday life, careers, and its historical and cultural significance across time and societies.

KS4 Edexcel		AUTUMN TERM		SPRING TERM		SUMMER TERM	
		TERM 1A	TERM 1B	TERM 2A	TERM 2B	TERM 3A	TERM 3B
YEAR 10	KNOWLEDGE	**Algebraic Manipulation Equations, Inequalities and Formulae.**	**Quadratic Expressions and Equations. Percentages.**	**Ratio and Scale. Work with Fractions.**	**Non-Calculator Methods. Straight Line Graphs.**	**Probability. Rounding and Estimation. Perimeter, Area and Volume.**	**Interpret and Represent Data. Non-Linear Graphs. Angles.**
	SKILLS	Simplify expressions, expand and factorise linear expressions, solve linear equations and inequalities, apply laws of indices. Manipulate algebraic expressions accurately, solve equations using multiple methods, apply formulae in context. **GCSE AO links** AO1: Recall and apply facts AO2: Reason and communicate mathematically AO3: Solve problems in context.	Simplify quadratic expressions, expand and factorise quadratics, solve quadratic equations, apply laws of indices. Calculate percentage increase/decrease, scale diagrams, convert between fractions, decimals, and percentages. Understand percentage change, calculate percentage profit, use simple and compound interest, calculate using reverse percentages calculate the original price. **GCSE AO links** AO1: Recall and apply facts AO2: Reason and communicate mathematically AO3: Solve problems in context.	Identify equivalent ratios, share quantities in a ratio (given total, one part or difference), link ratios and fractions, combine multiple ratios, share in a ratio algebraically, solve problems involving ratio and algebra, apply ratios and scales in real-life contexts. Understand four operations with fractions, solve problems with fractions, add and subtract algebraic fractions, work with algebraic fractions, multiply and divide more complex algebraic fractions, solve equations with algebraic fractions. **GCSE AO links** AO1: Recall and apply facts AO2: Reason and communicate mathematically AO3: Solve problems in context.	Apply order of operations, perform related calculations, solve multi-step problems, convert recurring decimals to fractions, convert more complex recurring decimals to fractions. Plot straight-line graphs, use y = mx + c, find equations from graphs, represent inequalities on graphs, find midpoints, calculate equations from one point and gradient, calculate equations from two points, work with perpendicular lines, interpret real-life straight-line graphs. **GCSE AO links** AO1: Recall and apply facts AO2: Reason and communicate mathematically AO3: Solve problems in context.	Find probability of a single event, use probabilities sum to 1, list outcomes, calculate relative frequency, use sample spaces, interpret two-way tables and frequency trees, work with independent events, draw tree diagrams, calculate conditional probability. Round to decimal places and significant figures, estimate answers, use a calculator effectively, determine error intervals, calculate upper and lower bounds. Calculate perimeter and area of 2-D shapes, area and circumference of circles, arc length, area of a sector, volume and surface area of prisms and cylinders, interpret nets. **GCSE AO links** AO1: Recall and apply facts AO2: Reason and communicate mathematically AO3: Solve problems in context.	Calculate averages and range, find averages from frequency tables, calculate mean from grouped data, compare distributions, identify data types, apply sampling methods, use capture-recapture, interpret scatter graphs, apply interpolation and extrapolation. Plot quadratic and cubic graphs, identify intercepts and roots, find turning points, approximate solutions, equation of a tangent, estimate area under a curve, work with circle equations, find tangent to a circle. Calculate angles around a point, on a line and vertically opposite, angles in triangles and quadrilaterals, interior and exterior angles of polygons, angles in parallel lines, apply angles in algebraic contexts, prove geometric facts. **GCSE AO links** AO1: Recall and apply facts AO2: Reason and communicate mathematically AO3: Solve problems in context.

YEAR 11	KNOWLEDGE	**Percentage and Interest Probability. Collecting, Representing and Interpreting Data. Non-calculator Methods.**	**Types of Number and Sequences. Roots and Indices. Manipulating Expressions. Gradients and Lines. Non-Linear Graphs.**	**Using Graphs. Expanding and Factorising. Changing the Subject. Functions. Multiplicative Reasoning. Geometric Reasoning.**	**Algebraic Reasoning. Transforming and Constructing. Listing and Describing. Show That…**	**Revision and consolidation**	**Examinations**
	SKILLS	Percentages: calculate, increase/decrease, reverse percentage, simple and compound interest, repeated percentage change. Basic probability, sample spaces, two-way tables, tree diagrams (independent/dependent), Venn diagrams, conditional probability. Apply stratified sampling, draw and interpret pie charts, bar charts, time series, scatter graphs, averages, line of best fit, frequency tables, polygons, stem-and-leaf, histograms, cumulative frequency, box plots, compare distributions, extrapolation. Apply integer and decimal operations, fraction arithmetic, exact answers, rational and irrational numbers, surds and surd calculations, rounding and estimation, limits of accuracy and bounds, number sense, financial maths, multi-step problem solving. **GCSE AO links** AO1: Recall and apply facts AO2: Reason and communicate mathematically AO3: Solve problems in context.	Work with integers, decimals, fractions, factors, multiples, primes. calculate HCF, LCM, surds, rational and irrational numbers, nth term (linear, quadratic), arithmetic and geometric sequences, sequences with surds. Calculate with square and cube numbers, powers and roots, powers of ten, standard form, rules for indices (including zero, negative, fractional). Simplify algebraic expressions, use identities, multiply and divide algebraic fractions, form and solve equations and inequalities, represent numbers algebraically, algebraic proof. Plot straight-line graphs, interpret y = mx + c, find equations of lines, check points on graphs, solve simultaneous equations graphically, explore perpendicular lines. Plot quadratic, cubic and reciprocal graphs, recognise graph shapes, interpret roots and intercepts, understand exponential graphs. **GCSE AO links** AO1: Recall and apply facts AO2: Reason and communicate mathematically	Construct and interpret distance-time, speed-time graphs, interpret direct and inverse proportion graphs, find approximate solutions, equation of a circle (centre 0,0), tangent to a curve, estimate area under a curve. Expand and factorise brackets and binomials, solve quadratic equations, complete the square, use quadratic formula. Change the subject of formulae (including repeated), solve by iteration. Use function machines, substitute into formulae, apply function notation, work with composite and inverse functions. Use scale factors, solve ratio problems, understand and construct direct and inverse proportion equations. Work with angles at a point, in parallel lines and polygons, solve vector problems, apply Pythagoras and trigonometric ratios, prove geometric facts, review circle theorems. **GCSE AO links** AO1: Recall and apply facts AO2: Reason and communicate mathematically AO3: Solve problems in context.	Find nth term (linear, quadratic), solve linear and quadratic simultaneous equations, simplify complex equations, use sequence rules, formal algebraic proof, inequalities with two variables. Perform and describe symmetry, reflection, rotation, enlargements, standard constructions, transformations, loci, negative enlargements, identify invariant points and lines, use trigonometric graphs, sketch translations and reflections of functions. Draw and interpret sample spaces, Venn diagrams, plans and elevations, compare distributions, interpret scatter graphs, organised lists, product rule for counting. Show that with number, algebra, shape, angles, data, congruent triangles, vectors, formal proof. **GCSE AO links** AO1: Recall and apply facts AO2: Reason and communicate mathematically AO3: Solve problems in context.	Consolidate all prior topics, focus on exam-style questions and mixed-topic problem solving. Apply reasoning across topics, tackle multi-step problems, manage time effectively in exams.	

			AO3: Solve problems in context.				