

Overall Intent for KS4 Mathematics curriculum:

The KS4 scheme of learning is designed to follow the AQA examination specification for GCSE and to revisit and expand upon previously taught topics. Challenging GCSE topics which have not been met in KS3 will be introduced. Revisiting previous topics ensures strong understanding, fills gaps in knowledge and helps to embed deeper learning. Throughout each year, all six key maths strands: number, algebra, ratio, proportion and rates of change, geometry and measure, probability, statistics are covered. We use a spiral curriculum model which gives pupils opportunity to develop fluency, reasoning and problem-solving skills and frequently revisit skills to embed them throughout the course. This mirrors the curriculum structure within our collaborative mainstream schools. Content can be interwoven in topic areas, for example, using algebra to problem solve in angles work.

In Year 11 planning allows time for revisiting content, to review the skills and knowledge taught over KS3 and KS4, with AO2 and AO3 questions that draw on various mathematical strands.

YEAR 10 (2024-2025)	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic / Area of study	Number basics Angles, bearings and scale drawings Factors and multiples	Basic algebra Fractions, decimals & percentages	Representing data & averages Sequences. Co-ordinates and linear graphs	Working in 2D Angles and polygons	Linear equations & inequalities Probability	Circles Constructions and loci Measures & Accuracy
Key learning aims – knowledge and skills	Basic number Order positive and negative integers and decimals, apply four operations of number, place value, recognise and use	Basic algebra Use algebraic notation, understand key vocabulary, simplify, and manipulate algebraic expressions.	Representing data & averages Interpret and construct tables, charts, and diagrams, interpret, analyse, and compare data sets. Use	Working in 2D Calculate the perimeter and area of triangles and quadrilaterals. know, and apply formulae for area. Transformations - Rotation,	Linear equations & inequalities Recognise and use function machines with input and output values. Derive and solve linear equations in one variable	Circles Identify and apply circle definitions, know associated formulae, calculate areas, calculate exactly with pi, calculate surface areas.

	relationships between operations, estimate answers, check calculations. Round numbers and measures to an appropriate degree of accuracy, apply and interpret limits of accuracy. Angles, bearings and scale drawings Derive and use angle rules. Use scale factors, scale diagrams and maps, measure and interpret maps and scale drawings, use bearings. Factors and multiples Prime numbers, factors, multiples, product notation, systematic listing.	Fractions, decimals & percentages Order fractions, apply four operations to fractions and mixed numbers, calculate exactly with fractions. Convert and order FDP. Find fractions and percentages of an amount.	statistics to describe a population, population sampling. Sequences Generate terms of a sequence. Recognise different sequences, linear, quadratic, and simple geometric progressions. Deduce expressions for n^{th} term of linear sequences. Co-ordinates and linear graphs Co-ordinates in all four quadrants, plot straight line graphs, identify and interpret gradients.	reflections, translation, and enlargement, describe translations as 2D vectors. Use basic congruence criteria for triangles, apply angle facts, apply, and use the concepts of congruence and similarity Angles & polygons Derive and apply the properties and definitions of special types of triangles and quadrilaterals. Derive and use the sum of angles in a triangle and a quadrilateral. Deduce and use the interior angle sum and exterior angle sum in any polygon and use properties of regular polygons.	including involving brackets and/ or with unknowns on both sides. Derive and solve two linear simultaneous equations in two variables. Solve linear inequalities in one variable and represent the solution on a number line. Probability Record, describe and analyse frequency of outcomes of probability experiments, apply properties of probability laws, construct theoretical possibility spaces, and use them to calculate.	Constructions and loci Ruler and compass constructions, perpendicular distance, construct given figures and solve loci problems. Measures & accuracy Limits of accuracy, standard units of measure and mass, change between units, use compound units.
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YEAR 11 (2024-2025)	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic / Area of study	Probability Volume Algebra – quadratics, rearranging formulae, and identities Scatter graphs	Inequalities Pythagoras' Theorem Simultaneous equations Algebra and graphs (1) Mock exams (1)	Algebra and graphs (2) Sketching graphs Direct and inverse proportion	Trigonometry Solving quadratic equations Quadratic graphs Growth and decay Mock exams (2)	Vectors Personalised revision for Summer exams	GCSE exams
Key learning aims – knowledge and skills	Probability Randomness, fairness, relative expected frequency, biased, Venn diagrams, tree diagrams, independent and dependent combined events.	Inequalities Solve linear inequalities, represent solutions on a number line. Pythagoras' Theorem Know the formula and apply it to triangles in 2D.	Algebra and graphs (2) Continued from Autumn 2 Sketching graphs Recognise, sketch, and interpret graphs of linear, quadratic, and cubic functions.	Trigonometry Know and use trigonometric ratios, know common exact values, make links to trigonometric ratios. Solving quadratic equations	Vectors Addition and subtractions of vectors, multiplication by a scalar and diagrammatic and column representation of vectors.	GCSE exams

	Volume Compare using ratio notation, scale factor, link to similarity, formulae for volume, calculate with pi. Algebra – quadratics, rearranging formulae, and identities Simplify and manipulate algebraic expressions, use, and rearrange formulae, functions with inputs and outputs. Scatter graphs Use and interpret scatter graphs of bivariate data, correlation, lines of best fit, make predictions and interpolate and extrapolate trends.	Simultaneous equations Solve two simultaneous equations, find approximate solutions using graphs, derive two simultaneous equations. Algebra and graphs (1) Solve linear equations, find approximate solutions using graphs, derive equations and algebraic expressions. Mock exams (1)	Direct and inverse proportion Solve problems involving direct and inverse proportion, including using equations, recognise and interpret graphs that illustrate proportion.	Solve equations algebraically and graphically. Quadratic graphs Recognise, sketch, and interpret graphs, identify and interpret roots, deduce roots algebraically. Growth and decay Solve growth and decay problems, including compound interest. Mock exams (2)	<i>Personalised revision to address gaps in learning and misconceptions.</i>	
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Assessment	If pupil's join on placement in Year 11 we will establish what assessments they have completed so far in Year 11 – i.e., mock examinations. All pupil's will be given a baseline assessment if required to determine their current attainment level. Baseline assessments are past GCSE papers. Mock exams are completed twice in Year 11 with time for intervention built in as required to address gaps in learning and common misconceptions. Mock exams will use past GCSE papers, Autumn 2 paper 1 and paper 2, Spring 2 paper 1 and paper 3.					
Assessment	End of half term practice questions from all topics covered – using past exams questions	Mock exams (1)	End of half term practice questions from all topics covered – using past exams questions	Mock exams (2)	GCSE exams	GCSE exams