

Curriculum Map Year 12: A LEVEL MATHEMATICS

Topic Name	Term	Skills developed with link to NC Subject content	Reflection on previous link in the curriculum	Progress to future link in the curriculum
Pure Maths: Algebraic expansion	<i>Autumn HT1</i>	<ul style="list-style-type: none"> • Index laws • Expanding brackets • Factorising • Negative and fractional indices • Surds • Rationalising denominators 	GCSE: Algebra content	<i>Year 12: Quadratics Year 12: Binomial Expansion</i>
Pure Maths: Quadratics	<i>Autumn HT1</i>	<ul style="list-style-type: none"> • Solving quadratic equations • Completing the square • Functions • Quadratic graphs • The discriminant • Modelling with quadratics 	GCSE: Algebra content	<i>Year 12: Equations and inequalities</i>
Pure Maths: Equations and inequalities	<i>Autumn HT1</i>	<ul style="list-style-type: none"> • Linear simultaneous equations • Quadratic simultaneous equations • Simultaneous equations on graphs • Linear inequalities • Quadratic inequalities • Inequalities on graphs • Regions 	GCSE: Algebra content	<i>Year 12: Differentiation</i>
Statistics: Data Collection	<i>Autumn HT1</i>	<ul style="list-style-type: none"> • Populations and samples • Sampling • Non-random sampling • Types of data • The large data set 	<i>GCSE: Sampling</i>	<i>Year 12: Measures of location and spread</i>
Statistics: Measures of location and spread	<i>Autumn HT1</i>	<ul style="list-style-type: none"> • Measures of central tendency • Other measures of location • Measures of spread • Variance and standard deviation • Coding 	<i>GCSE: Averages</i>	<i>Year 12: Representations of data</i>
Statistics: Representations of data	<i>Autumn HT1</i>	<ul style="list-style-type: none"> • Outliers • Box plots • Cumulative Frequency • Histograms • Comparing Data 	<i>GCSE: Statistical diagrams</i>	<i>Year 12: Probability</i>
Pure Maths: Graphs and transformations	<i>Autumn HT2</i>	<ul style="list-style-type: none"> • Cubic graphs • Quartic graphs • Reciprocal graphs • Points of intersection • Translating graphs • Sketching graphs • Transforming functions 	<i>GCSE: Graphs</i>	<i>Year 11: Graphs: Graphs of other functions.</i>
Pure Maths: Straight line graphs	<i>Autumn HT2</i>	<ul style="list-style-type: none"> • $y = mx + c$ • Equations of straight lines • Parallel and perpendicular Lines • Length and area • Modelling with straight lines 	<i>GCSE: Linear Graphs</i>	<i>Coordinate Geometry of Circles</i>

Pure Maths: Coordinate geometry of circles	<i>Autumn HT2</i>	<ul style="list-style-type: none"> • Midpoints and perpendicular bisectors • Equation of a circle • Intersection of straight lines and circles • Use tangent and chord properties • Circles and triangles 	<i>Year 12: Straight Line Graphs GCSE: Circle Theorems</i>	<i>Year 12: Differentiation</i>
Statistics: Correlation	<i>Autumn HT2</i>	<ul style="list-style-type: none"> • Correlation • Linear regression 	<i>GCSE: Scatter Graphs</i>	<i>Year 13: Regression, correlation and hypothesis testing</i>
Statistics: Probability	<i>Autumn HT2</i>	<ul style="list-style-type: none"> • Calculating probabilities • Venn diagrams • Mutually exclusive and independent events • Tree diagrams 	<i>GCSE: Probability</i>	<i>Year 12: Conditional probability</i>
Statistics: Statistical distributions	<i>Autumn HT2</i>	<ul style="list-style-type: none"> • Probability distributions • Binomial distribution • Cumulative probabilities 	<i>Year 12: Probability</i>	<i>Year 13: The normal distribution</i>
Pure Maths: Algebraic methods 1	<i>Spring HT3</i>	<ul style="list-style-type: none"> • Algebraic methods • Dividing polynomials • Factor theorem • Methods of proof 	<i>GCSE: Algebra content</i>	<i>Year 12: Algebraic methods 2</i>
Pure Maths: Binomial expansion 1	<i>Spring HT3</i>	<ul style="list-style-type: none"> • Pascal's triangle • Factorial notation • Binomial expansion • Solving binomial problems • Binomial estimation 	<i>GCSE: Algebra content</i>	<i>Year 13: Binomial expansion</i>
Pure Maths: Trigonometric ratios	<i>Spring HT3</i>	<ul style="list-style-type: none"> • Cosine rule • Sine rule • Area of triangles • Solving triangle problems • Graphs of sine, cosine and tangent • Transforming trigonometric graphs 	<i>GCSE: Trigonometry</i>	<i>Year 12: Trigonometric equations and identities</i>
Statistics: Hypothesis testing	<i>Spring HT3</i>	<ul style="list-style-type: none"> • Hypothesis testing • Finding critical values • One tailed tests • Two tailed tests 	<i>Year 12: Statistical distributions</i>	<i>Year 13: Regression, correlation and hypothesis testing</i>
Mechanics: Modelling in mechanics	<i>Spring HT3</i>	<ul style="list-style-type: none"> • Constructing a model • Modelling assumptions • Quantities and units • Working with vectors 	<i>GCSE: Vectors</i>	<i>Year 13: Further kinematics</i>
Pure Maths: Trigonometric identities and equations	<i>Spring HT4</i>	<ul style="list-style-type: none"> • Angles in all four quadrants • Exact values of trigonometric ratios • Trigonometric identities • Trigonometric equations 	<i>Year 12: Trigonometric ratios</i>	<i>Year 13: Trigonometric Functions</i>
Pure Maths: Vectors 1	<i>Spring HT4</i>	<ul style="list-style-type: none"> • Representing vectors • Magnitude and direction • Position vectors • Solving geometric problems • Modelling with vectors 	<i>GCSE: Vectors</i>	<i>Year 13: Vectors</i>
Pure Maths: Differentiation	<i>Spring HT4</i>	<ul style="list-style-type: none"> • Gradients of curves • Finding the derivative • Differentiating x^n • Differentiating quadratics and functions with two or more terms 	<i>GCSE: Algebra content</i>	<i>Year 13: Differentiation</i>

		<ul style="list-style-type: none"> • Gradients, tangents and normal • Increasing and decreasing functions • Second order derivatives • Stationary points • Sketching gradient functions • Modelling with differentiation 		
Mechanics: Constant acceleration	<i>Spring HT4</i>	<ul style="list-style-type: none"> • Displacement-time graphs • Velocity-time graphs • Constant acceleration formulae • Vertical motion under gravity 	<i>GCSE: Kinematic graphs</i>	<i>Year 13: Further kinematics</i>
Mechanics: Forces in motion	<i>Spring HT4</i>	<ul style="list-style-type: none"> • Force diagrams • Forces as vectors • Forces and acceleration • Motion in two dimensions • Connected particles • Pulleys 	<i>Year 12: Constant acceleration</i>	<i>Year 13: Forces and friction</i>
Pure Maths: Integration	<i>Summer HT5</i>	<ul style="list-style-type: none"> • Integrating x^n • Indefinite integrals • Finding functions • Definite integrals • Area under curves • Area under the x axis • Area between curves and lines 	GCSE: Algebra content	<i>Year 13: Integration</i>
Pure Maths: Exponentials and logarithms	<i>Summer HT5</i>	<ul style="list-style-type: none"> • Exponential functions • $y = e^x$ • Exponential modelling • Logarithms • Laws of logarithms • Solving equations using logarithms • Working with natural logarithms • Logarithms and non-linear data 	GCSE: Algebra content	<i>Year 13: Differentiation</i> <i>Year 13: Integration</i>
Mechanics: Variable acceleration	<i>Summer HT5</i>	<ul style="list-style-type: none"> • Functions of time • Using differentiation • Maxima and minima problems • Using integration • Constant acceleration formulae 	<i>Year 12: Differentiation</i> <i>Year 12: Integration</i>	<i>Year 13: Further kinematics</i>
Pure Maths: Algebraic methods 2	<i>Summer HT6</i>	<ul style="list-style-type: none"> • Proof by contradiction • Algebraic fractions • Partial fractions • Repeated factors • Algebraic division 	<i>Year 12: Algebraic methods 1</i>	<i>Year 13: Integration</i> <i>Year 13: Binomial Expansion 2</i>
Statistics: Conditional probability	<i>Summer HT6</i>	<ul style="list-style-type: none"> • Set notation • Conditional probability • Conditional probabilities in Venn diagrams • Probability formulae • Tree diagrams 	<i>Year 12: Probability</i>	<i>Examination practice</i>