Curriculum Map – Year 11 – Mathematics (2024-25)

Topic name	Term	Skills developed	Prior learning	Next link in curriculum
Gradients and lines	Autumn	• Interpret the gradient of a line as a rate of change • Identify the equation of a line given two points or one point and the gradient • Approximate the solution to two simultaneous equations (one linear and one quadratic) using a graph	● Y10 Autumn Representing solutions of equations ● Y10 Autumn Simultaneous equations ● Y9 Straight Line Graphs	● A Level – developing understanding of straight line graphs and links to exponential functions
Algebraic Reasoning	Autumn	• Begin to use algebra to support and construct proofs • Deduce expressions to calculate the nth term of a linear and quadratic sequence • Find solutions for simultaneous equations (one linear and one quadratic) algebraically • Solve linear and quadratic inequalities	● Y9 Testing conjectures and Deduction ● Y10 representing solutions of equations and inequalities ● Y10 Simultaneous equations	● A Level – Proof and further work on simultaneous equations on context
Vectors	Autumn	● Understand and use vector notation, including column notation, and understand and interpret vectors as displacement in the plane with an associated direction. ● Understand that 2**a** is parallel to **a** and twice its length, and that **a** is parallel to –**a** in the opposite direction. ● Represent vectors, combinations of vectors and scalar multiples in the plane pictorially. ● Calculate the sum of two vectors, the difference of two vectors and a scalar multiple of a vector using column vectors (including algebraic terms). ● Find the length of a vector using Pythagoras' Theorem. ● Calculate the resultant of two vectors.	● Y9 Autumn – Testing Conjectures ● Y9 Spring – Pythagoras' Theorem	● Developing understanding of Vectors at A Level. ● Problem Solving with Vectors at A Level.

		• Solve geometric problems in 2D where vectors are divided in a given ratio. • Produce geometrical proofs to prove points are collinear and vectors/lines are parallel. ○		
Graphs	Autumn	• Recognise, sketch, plot and interpret graphs of linear, quadratic, cubic, reciprocal and exponential functions • Identify and interpret roots of quadratic functions graphically • Recognise and use the equation of a circle with centre at the origin • Calculate the gradients of tangents and chords • Calculate or estimate the gradients and areas under graphs • Interpret results in distance time graphs and velocity time graphs	• Y10 representing solutions of equations and inequalities • Y9 Rates	• A Level – develop understanding of equations of circles, reciprocal and exponential functions
Changing the Subject	Autumn	• Rearrange familiar and unfamiliar formulae • Derive an equation (or simultaneous equations), solve the equation and interpret the solution • Find approximate solutions to equations numerically using iteration	• Y10 and Y11 work on simultaneous equations • Y9 rearranging formulae	• A Level – develop understanding and methods to solve equations using iteration and equations in context

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Multiplicative Reasoning	Spring	• Construct and interpret equations that describe direct and inverse proportion • Work with proportional relations algebraically and graphically	• Y9 Rates • Y10 Congruence and Similarity	• A Level – develop understanding of calculus
Functions		• Interpret expressions as functions and the reverse process as the 'inverse function' • Interpret the succession of two functions as a 'composite function'	• Y10 Trigonometric functions	• A Level – Functions
Geometric Reasoning		• Apply and prove the standard circle theorems concerning angles, radii, tangents and chords, and use them to prove related results • Use vectors to construct geometric arguments and proofs	• Y10 Pythagoras and Trigonometry • Y10 Circle Theorems	• A Level – Proof and Trigonometry
Transforming and Constructing		• Describe combinations of transformations • Recognise and interpret graphs of the trigonometric functions • Sketch reflections and translations of the graph of a given function	• KS3 Transformations • Y10 Trigonometry	• A Level – Trigonometry and functions
Show that…		• Change recurring decimals into their corresponding fractions and vice versa • Use vectors to construct geometric arguments and proofs	• Y10 Vectors • Y11 Algebraic reasoning	• A Level - Vectors

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Key

Number	Geometry	Ratio & proportion	Algebra	Statistics