



Key Stage 5 Mathematics Curriculum Maps

	AUTUMN								SPRING						SUMMER					
	1	2	3	4	5	6	7	8	16	17	18	19	20	21	27	28	29	30	31	32
Year 12 Teacher A	<p style="text-align: center;">Topic – Kinematics</p> <p>S - Understand and use the language of kinematics.</p> <p>P - Understand, use and interpret graphs in kinematics for motion in a straight line</p> <p>P - Understand, use and derive the formulae for constant acceleration for motion in a straight line</p>				<p style="text-align: center;">Topic – Trigonometry</p> <p>P - Understand and use the definitions of sine, cosine, and tangent, the sine and cosine rules, the area of a triangle</p> <p>P - Understand and use their graphs, symmetries, and periodicity</p> <p>P - Solve simple trigonometric equations</p>				<p style="text-align: center;">Topic – Forces</p> <p>SK - Understand and use Newton's third law; including problems involving smooth pulleys and connected particles.</p>			<p style="text-align: center;">Topic – Differentiation</p> <p>P - Understand and use the derivative as the gradient of a curve, interpretation as a rate of change; sketching the gradient function for a given curve; second derivatives; differentiation from first principles for small positive integer powers of x</p>			<p style="text-align: center;">Topic – Variable acceleration</p> <p>P - Use calculus in kinematics for motion in a straight line:</p>		<p style="text-align: center;">Revision and Y12 Exam</p>			
Year 12 Teacher B	<p style="text-align: center;">Topic – Surds and Indices</p> <p>S/P - Understand and use the laws of indices</p> <p>P - Use and manipulate surds, rationalising the denominator</p>		<p style="text-align: center;">Topic – Quadratics</p> <p>P - quadratic functions and their graphs, the discriminant of a quadratic function, including the conditions for real and repeated roots.</p>		<p style="text-align: center;">Topic – Equations and Inequalities</p> <p>P - simultaneous equations</p> <p>Solve linear and quadratic inequalities</p>		<p style="text-align: center;">Topic – Polynomials</p> <p>P - Manipulate polynomials algebraically P- Use of the factor theorem</p>		<p style="text-align: center;">Topic – Probability</p> <p>S- Understand and use mutually exclusive and independent events when calculating probabilities</p> <p>Sk- Link to discrete and continuous distributions</p>			<p style="text-align: center;">Topic – the binomial expansion and distribution</p> <p>P- Understand and use the binomial expansion including associated notation</p> <p>P- Understand and use the binomial distribution, as a model; calculate probabilities using the binomial distribution</p> <p>Sk- Conduct a statistical hypothesis test using the binomial distribution and interpret the results in context</p>		<p style="text-align: center;">Topic – Exponentials and logarithms continued.</p>		<p style="text-align: center;">Revision and Y12 Exam</p>				

	9	10	11	12	13	14	15	22	23	24	25	26	33	34	35	36	37	38	39	
Year 12 Teacher A	Topic – Graphs and Transformations P- Understand and use graphs of functions, sketch curves. Simple transformations on graphs, including sketching graphs:				Topic – Vectors S - Calculate the magnitude and direction of a vector P - Use vectors to solve problems in pure mathematics and in context, including forces		Topic – Forces P - understand and use Newton’s first law P - Understand and use Newton’s second law for motion in a straight line Sk - Understand and use weight and motion in a straight line under gravity			Topic – Differentiation P - Understand and use the second derivative as the rate of change of gradient P - Identify where functions are increasing or decreasing		Topic – Integration S - Know and use the Fundamental Theorem of Calculus S - Integrate functions and related sums, differences, and constant multiples P - Evaluate definite integrals; use a definite integral to find the area under a curve			Topic – Differentiation S- Understand and use the second derivative in connection to convex and concave sections of curves and points of inflection P- Apply differentiation to find points of inflection P- Differentiate using the product rule, the quotient rule and the chain rule, including problems involving connected rates of change and inverse functions					
Year 12 Teacher B	Topic – Coordinate geometry P - Understand and use the equation of a straight line, P - The coordinate geometry of the circle S - the angle in a semicircle is a right angle S - the perpendicular from the centre to a chord bisects the chord S - the radius of a circle at a given point on its circumference is perpendicular to the tangent					Topic – Collecting and interpreting data P- Interpret measures of central tendency and variation, extending to standard deviation P- Be able to calculate standard deviation, SK- Recognise and interpret possible outliers				Topic – Finish binomial distribution	Topic – Exponentials and logarithms P- Understand and use the laws of logarithms Sk – Solve exponential equations P- Use logarithmic graphs to estimate parameters in relationships given data for x and y Sk- Understand and use exponential growth and decay; use in modelling				Topic – Sequences and Series S - Understand and use sigma notation for sums of series S/P - Understand and work with arithmetic sequences and series, including the formulae for nth term and the sum to n terms S/P - Understand and work with geometric sequences and series including the formulae for the nth term and the sum of a finite geometric series; the sum to infinity of a convergent geometric series					
Assessment- Y12 half term tests throughout year																				

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Year 13 Teacher A	<p>Topic – Functions</p> <p>S/P - the modulus function</p> <p>S/P - composite functions; inverse functions and their graphs</p> <p>SK - combinations of transformations</p> <p>Sk - Use of functions in modelling,</p>	<p>Topic – Further differentiation</p> <p>S - the derivative of $\sin x$ and $\cos x$</p> <p>P - the second derivative</p> <p>P</p> <p>- Differentiate exponentials and logarithms and implicitly</p>	<p>Topic – Vectors</p> <p>P - Use vectors in two dimensions and in three dimensions</p>	<p>Topic – Integration</p> <p>Contd.</p>	<p>Topic – Force and motion</p> <p>P - Understand and use Newton's second law for motion in a straight line; extended to situations where forces need to be resolved.</p> <p>P - Understand and use addition of forces; resultant forces; dynamics for motion in a plane.</p>	<p>Topic –Friction</p> <p>S - the model for friction, coefficient of friction</p>	Revision and A-level Exam												
Year 13 Teacher B	<p>Topic – Trigonometry</p> <p>S - Work with radian measure, arc length, area of sector</p> <p>P - Understand and use the standard small angle approximations</p>	<p>Topic – Trigonometric functions and identities</p> <p>S - The definitions of secant, cosecant and cotangent and of arcsin, arccos and arctan</p> <p>P - Understand and use compound and double angle formulae, use expressions in the equivalent forms</p> <p>Sk - Construct proofs involving trigonometric functions and identities</p>					<p>Topic – Probability and distributions</p> <p>(contd.)</p>	<p>Topic – Parametric equations</p> <p>S/P - Parametric equations, conversion between Cartesian and parametric forms</p> <p>Sk - Use parametric equations in modelling</p> <p>P - Differentiate simple functions for first derivative only</p>	<p>Topic – Proof</p> <p>Sk - Proof by contradiction (including proof of the irrationality of $\sqrt{2}$ and the infinity of primes, and application to unfamiliar proofs)</p>	Revision and A-level Exam									
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Year 13 Teacher A	<p>Topic – Kinematics</p> <p>P</p> <p>- Understand, use and derive the formulae for constant acceleration</p> <p>for motion in a straight-line using vectors in 2d</p>	<p>Topic – Projectiles</p> <p>Sk - Model motion under gravity in a vertical plane</p> <p>P - Use trigonometric functions to solve problems in context</p>	<p>Topic – Integration</p> <p>P - Use a definite integral to find the area between two curves</p> <p>P - Integration by substitution P - Integration by parts.</p> <p>SK - Integrate using partial fractions that are linear in the denominator</p>				<p>Topic – Friction (contd.)</p>	<p>Topic – Differential equations</p> <p>P - Evaluate the analytical solution of simple first order differential equations with separable variables, including finding particular solutions</p> <p>Sk - Interpret the solution of a differential equation in context</p>	<p>Topic – Moments</p> <p>S/P - Understand and use Moments in simple static contexts</p>										

Year 13 Teacher B	Topic – Algebra	Topic – Probability and distributions	Topic – Hypothesis testing	Topic – Numerical methods	
	<p>Sk - Simplify rational expressions</p> <p>P - Decompose rational functions into partial fractions</p> <p>S/P - Extend the binomial expansion to any rational n, including its use for approximation</p>	<p>S - Understand and use the conditional probability formula</p> <p>P - Understand and use the Normal distribution to find probabilities</p> <p>Sk - Select an appropriate probability distribution for a context, with appropriate reasoning, including recognising when the binomial or Normal model may not be appropriate</p>	<p>S/P - Extend AS content to correlation coefficients interpret a given correlation coefficient using a given p-value or critical value (calculation of correlation coefficients is excluded)</p> <p>P - Conduct a statistical hypothesis test for the mean of a normal distribution</p>	<p>P - Locate roots by considering changes of sign</p> <p>P - Solve equations approximately using simple iterative methods; be able to draw associated cobweb and staircase diagrams</p> <p>S - Solve equations using the Newton-Raphson method</p> <p>S - Numerical integration of functions: the trapezium rule</p>	
	Assessment- Y13 January Mock exams		Assessment- Y13 March Mock exams		