Curriculum Plans: Year 11 Accelerator

Term	Topic	Knowledge: By the end of the unit students will know:	Skills: What skills will students have developed by the end of this unit?	Key terms: What new key terms and vocabulary will be learnt in this unit?	Summative Assessment: How will pupils be assessed in this unit?
Michaelmas 1	Sequences	How to recognise and use rules for different sequences including triangular, square, cube, Fibonacci-type, arithmetic, quadratic, and geometric sequences, and how to find the nth term for linear and quadratic sequences.	Recognise and use rules for number and pattern sequences, including triangular, square, cube & Fibonacci-type numbers, arithmetic sequences, quadratic sequences and geometric sequences. Finding the nth term for linear and quadratic sequences.	Nth term Arithmetic Sequence Geometric Sequence Quadratic Sequence	Weekly homework set via Sparx Maths which is connected to each scheme of work and creates questions that are a combination of retrieval and current content. Half term test in the final week of the half term to formally assess students in all areas covered.
	Equation of a circle	How to recognise and use the equation of a circle to find its centre and radius, as well as finding equations of tangents to circles.	Recognise and use the equation of a circle to find circle centre and radius, equation of tangent Finding the equation of any circle given centre and radius Find the equation of tangents to a circle with a non-origin centre	Circle centre, radius, diameter, tangent, chord gradient	
	Vectors	How to understand and solve geometric problems using vectors, including the use of coordinates in 3D.	Understand vectors and solving geometric problems using vectors	magnitude direction parallel perpendicular scale factor	
	Trigonometry	How to draw trigonometric graphs for sine, cosine, and tangent functions and use these	Draw trig graphs for sin, cos and graph functions	periodic unit circle degrees	

		graphs to find angles greater than 90 degrees. How to apply the sine and cosine rules to find missing angles and lengths in triangles, and how to use the trigonometric formula to find the area of a triangle.	Use trig graphs to find angles greater than 90 degrees Use sine and cosine rule to find missing angles and lengths of triangles Use trig formula to find area of a triangle	maximum minimum symmetry	
	Functions	How to use function notation, understand inverse and composite functions, and express positions using these notations. How to understand and work with the domain and range of functions, including drawing and interpreting graphs with up to 3 parts to their domain.	Be able to use of f(x), fg(x) and $f^{-1}(x)$ notation Understand 'inverse function' and 'composite function' Understand domain and range of a function Draw and Interpret graphs of functions with up to 3 parts to their domain	Range Domain Compound Inverse	
	Iteration	How to find approximate solutions to equations numerically using iteration techniques.	Find approximate solutions to equations numerically using iteration	Roots	
	Graph Transformations		Sketch graphs of y=af(x), y =f(ax), y=f(x)+a, y=f(x+a) given the graph of y=f(x)	Transformations Reflections Translations Stretch	

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				Scale Factors	
Michaelmas 2	Algebra	Binomial expansion	Expand $(a + b)^n$ for positive integer n	Expansion Co-efficients Pascals triangle	Weekly homework set via Sparx Maths which is connected to each scheme of work and creates questions that are a combination of retrieval and current content. Mock examinations in the final weeks of the half term to formally assess students in all areas covered in the GCSE.
	Number	How to use multiplication in order to count	<u>Example</u> Work out how many 5-digit odd numbers can be formed using the digits 1 3 4 6 8 with no repetition of any digit	Combinations Factorial	
	Algebra	Factorising complex algebra	<u>Example</u> Factorise fully $(2x + 3)^2 – (2x – 5)^2$ Factorise $15x^2– 34xy – 16y^2$ Factorise fully $x^4 – 25x^2$	Factors	
		Rearranging formula	Rearranging formula where the subject appears twice.	Changing the subject Factorise	
		Simplifying algebraic fraction	Simplifying algebraic fractions	Simplify	
		Solving linear equations	Solving linear equations involving fractions	Solve	
		Understanding how, why and when to complete the Square	Solving quadratics by completing the square; Sketching quadratics from the equation in completed square form	Minimum Maximum Co-ordinates Turning point	
			The equation of a straight line		

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		Equation of a line Graphs of exponential functions	$y = mx + c$ and $y - y_1 = m(x - x_1)$ and other forms, Including interpretation of the gradient and y-intercept from the equation Exponential graphs will be of the form $y = ab^x$ and $y = ab^{-x}$, where a and b are rational numbers	Gradient Y intercept Exponential (growth/increase/ decrease)	
Lent	Calculus	The factor theorem Differentiation	Use of the factor theorem for rational values of the variable for polynomials Differentiation of kx^n where n is an integer; Differentiation from first principles; Find the equation of a tangent and normal at any point on a curve; Increasing and decreasing functions; The second derivative; identifying stationary points and their nature	Factors Linear Derivative Gradient function Nature of stationary point	Weekly homework set via Sparx Maths which is connected to each scheme of work and creates questions that are a combination of retrieval and current content. A second round of Mock examinations around Easter, including assessments in the GCSE and Further Maths GCSE
	Algebra	Algebraic Proof	Using algebraic proof to prove a statement is true	Proof	
	Geometry	Matrices	Multiplying Transformations The Identity Matrix Combination Transformations	Identity matrix Transformations	

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			Simultaneous equations in three unknowns	Simultaneous equations	
	Shape	Trigonometry	Solutions of trigonometric equations Trigonometric identities	Sin, cos, tan Identity	
	Geometry	Co-ordinate Geometry	Parallel and Perpendicular Lines The intersection of two lines Dividing a line in a given ratio Pythagoras' theorem in 2D and 3D Angle facts and Circle Theorems Geometric proof	Parallel Perpendicular Intersection Pythagoras Circle theorems Chord Tangent	