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Curriculum Planning Template

Subject: Statistics Year 11 Ability All

Half Term 3 / weeks	**Week 1-3**	**Week 4-6**
Topic	Block 4 – Calculus	Block 5 - Matrices
Topic overview **Pupils will learn…**	The students will be able to differentiate a polynomial and apply the results.	The students will be able to multiply matrices and define transformations using them
Components	• Know that the gradient function dy/dx gives the gradient of the curve • Know that the gradient of a function is the gradient of the tangent at that point • Differentiation of kx^n when n is a positive integer or 0, and the sum of those functions • The equation of a tangent and normal at any point on the curve • Increasing and decreasing functions • Understand and use the notation d^2y/dx^2 • Use of differentiation to find stationary points on a curve: maxima, minima and points of inflection • Using calculus to find maxima and minima in simple problems • Sketch a curve with known stationary points	• Multiplication of matrices • The identity matrix, I • Transformations of the unit square in the x-y plane • Combinations of transformations
What pupils should already know (prior learning components)	Students need to be able to solve equations set to zero. Students need to be able to write the equation of a straight line given a gradient and a point. Students need to be able to find the gradient of a perpendicular line.	Students need to able to multiply a vector. Students need to be able to perform the four transformations on a unit square.
Transferrable knowledge (skills)	Calculus is a mainstay of A Level and this block introduces differentiation for the first time. Students will use this extensively throughout A Level Maths.	Using and manipulating matrices is used at A Level.
Key vocabulary pupil will know and learn	Gradient, gradient function, differential, differentiate, with respect to, stationary point, point of inflection, maximum, minimum	Row, column, matrix, matrices, image, rotation, reflection, enlargement, identity
Assessment activities	Homework: Calculus End of half term test	Homework: Matrices End of half term test
Resources available	Corbettmaths: Further maths – calculus	Corbettmaths: Further maths – matrices

	Hegartymaths: 903-914	Hegartymaths: 928-940
Notes **Why this topic is important…**	The topic starts with differentiation from first principles to show students where the key concept of differentiation comes from before building into differentiating general polynomials. This is then used to find the gradients at points on a curve to allow tangents and normal to be found. Finally stationary points are found and the use of maxima and minima in modelling is introduced. All of this is essential in further maths study,	GCSE Maths deals with vectors and vector manipulation and this topic extends it to matrices. Students are introduced to a matrix as storing information and how to manipulate them. This is then applied to certain reflection, rotation and enlargement transformations by considering the unit square to create matrix. Finally the topic is linked to composite functions by considering combined transformations.