Further Maths Year 10 Curriculum End Points and key vocabulary

	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Unit of Work	Number and Algebra	Algebra 2	Algebra 4	Algebra 4 / Matrices	Matrices	Geometry 1
Ethos Links	STEM - Use of algebra in many different areas of business and applications of equations	STEM - Use of algebra in many different areas of business and applications of equations	STEM - Use of algebra in many different areas of business and applications of equations	STEM - Use of algebra in many different areas of business and applications of equations	STEM – Business applications	STEM - Use of geometry in engineering and other construction areas including architecture
Knowledge	By the end of this unit students will know and understand: Numbers and the number system • How to do complex percentage questions including percentage increases and decreases using multipliers • How to do calculations with	By the end of this unit students will know and understand: Factorising • How to factorise quadratic expressions • How to factorise quadratic expressions with a coefficient of x^2 Rearranging formulae • How to change the subject of simple formulae	By the end of this unit students will know and understand: Quadratic equations • How to factorise a quadratic equation in order to solve it • How to factorise a quadratic equation with a coefficient of x^2 in order to solve it • Understand that you can find the	By the end of this unit students will know and understand: The factor theorem • How to use the factor theorem to find factors of quadratics • How to use the factor theorem to find factors of cubic • How to use polynomial division to divide cubic equations	By the end of this unit students will know and understand: Transformations of matrices • How to transform a point by a given matrix The identity matrix • How write the identity matrix using matrix notation • How to multiply a matrix by the	By the end of this unit students will know and understand: Circle theorems • Know all circle theorem • How to apply knowledge of circle theorems in working out multi step problems Geometric proof • How to prove the circle theorems

	fractions including mixed numbers • Express ratios in their simplest forms • How to calculate with standard form Simplifying expressions • How to factorise complex expressions into single brackets • Collect like terms when terms have indices • Multiply and divide algebraic terms to be able to simplify an expression • How to do calculations with algebraic fractions Solving linear equations • How to solve linear equations involving brackets • How to solve linear equations involving fractions • How to form and solve linear equations. Algebra and number • How to solve problems with algebra and ratio • Write an expression when a term is increased	• How to change the subject of more complex formulae • How to change the subject of formulae with multiple terms of the new subject Simplifying algebraic fractions • How to simplify simple algebraic fractions • How to simplify algebraic fractions that require factorising single brackets • How to simplify algebraic fractions that require factorising into double brackets • How to add and subtract algebraic fractions • How to divide and multiply algebraic fractions • To calculate with algebraic fractions with multiple operations Solving linear equations involving fractions	roots of a quadratic graph by solving a quadratic • How to solve a quadratic equation by completing the square • How to find the turning point of a quadratic graph by completing the square • How to solve a quadratic equation using the quadratic formula • How to rearrange a quadratic equation in order to solve it • How to choose the best method of solving a quadratic equation in order to solve it Simultaneous equations in two unknowns • How to solve simultaneous equation with two unknowns by elimination • How to solve simultaneous equation with two unknowns by elimination	Linear inequalities • How to solve linear inequalities with an unknown on one side • How to solve linear inequalities with an unknown on both sides • How to solve a double inequality • How to determine whether inequalities stand for given values Quadratic inequalities • How to use a sketch of a quadratic to help solve a quadratic inequality • How to apply knowledge of solving quadratic inequalities to problem-solving questions Indices • How to simplify expressions using the laws of indices • How solve more complex equations using indices • How to solve a disguised quadratic equation problem Algebraic proof	identity and know you will get the same as the original matrix • Solve problems using the identity matrix Transformations of the unit square • How to write the unit square in matrix form • How to work out which matrices represent which transformations • How to transform the unit square using matrix multiplication Combining transformations • How to transform a point using multiple transformations How to transform the unit square using multiple transformations	• How to prove geometric problems algebraically The sine and cosine graphs • To understand how to use the unit circle to derive the siine and cosine graphs • To recognise and draw the sine and cosine graphs The tangent graph • To understand that the tangent graph comes from sin/cos • To recognise and draw the tangent graph Solution of trigonometric equations • To use the symmetry of the sine, cosine and tangent graphs to find multiple solutions of trigonometric equations Trigonometric identities • To know the trigonometric identities and understand the derivation.

	or decreased by a percentage Expanding brackets • How to expand double brackets • How to expand triple brackets Binomial expansion • How to draw pascal's triangle • How to use pascal's triangle to find the coefficients of a binomial expansion Manipulating surds • How to simplify surds into the form $a\sqrt{k}$ • How to rationalise denominators in the form $\frac{a}{\sqrt{k}}$ • How to rationalise denominators in the form $\frac{a}{b\sqrt{k}}$ How to use the conjugate to rationalise denominators in the form $\frac{a}{\sqrt{k}+b}$	• How to solve linear equations involving fractions • How to form and solve linear equations involving fractions Completing the square • How to understand notation of different ways quadratic expressions can be written e.g. $ax^2 + bx + c$ $(x \pm a)(x \pm b)$ $a(x \pm p)^2 \pm q$ • How to complete the square of a quadratic expression • How to complete the square of a quadratic expression with a coefficient of x^2	• How to form and solve a simultaneous equation with two unknowns in real life situations • How to solve quadratic simultaneous equations by substitution Simultaneous equations in three unknowns How to solve simultaneous equations with three unknowns	• How to generalise number properties algebraically • How to equate coefficients to solve equations • How to prove given algebraic equations or inequalities • How to form and prove algebraic equations or inequalities Sequences • How to find the nth term of linear sequences • How to find the nth term of quadratic sequences • How to use the nth term of a sequence to calculate values of terms • How to use to nth term of a sequence to solve problems Limiting value of a sequence • How to calculate the limiting value of a sequence Matrices arithmetic • How to read matrix notation • How to multiply a matrix by a scalar		To use the trigonometric identities in solving problems.

				• How to add and subtract matrices • How to multiply together 2 given matrices How to solve problems when multiplying matrices		
Key Vocabulary	*Multipliers* *Conjugate* *Rationalise* *Surd* *Binomial* *Polynomial* *Pascal's triangle*	*Coefficient* *Numerator* *Denominator* *Factorise* *Complete the square* *Quadratic*	*Simultaneous* *Equation* *Unknown* *Variable* *Linear* *Non-linear* *Quadratic* *Quadratic formula* *Factorise* *Solve*	Factor Cubic Binomial Polynomial Linear Quadratic Inequality Indices Proof Consecutive Sum Product Multiple Odd Even Nth Term Limiting Value Matrices Scalar	Transformation Rotation Reflection Translation Enlargement Identity Matrix Matrices	Circle theorems Domain Identities