Timing	Unit Title	Key Question	Knowledge and key skills	Assessing understanding
Year 10 Autumn 1	**Basic number**	**Can you carry out number work fluently?**	• Ratio, proportion and percentages • Fractions, decimals and percentages • Standard form • Calculator methods and accuracy	**How understanding is assessed:** • Mini whiteboards • Homework • Verbal questioning **Skills developed:** • Conceptual understanding and connections between topics • Numerical and algebraic fluency • Problem solving and mathematical reasoning • Interpreting and analysing mathematical information **Assessment points:** • Termly tests
	Simplifying expressions	**Can you write an expression in its most compact form?**	• Collecting and simplifying like terms • Expanding single and double brackets • Factorising linear expressions • Factorising quadratic expressions	
	Linear equations	**Can you solve a linear equation?**	• Solving two-step linear equations • Solving equations involving brackets • Solving equations involving fractions • Forming linear equations • Using inverse operations accurately • Checking solutions by substitution	
	Algebra and number	**Can you apply your basic number skills to algebra?**	• Applying ratio and percentages in algebraic contexts • Solving problems involving fractions algebraically • Interpreting algebraic solutions in context	
	Surds	**Can you apply your understanding of algebra to surds?**	• Simplifying surds by identifying square factors • Expanding brackets involving surds • Collecting and simplifying surd terms • Rationalising denominators • Rationalising complex denominators using conjugates • Simplifying expressions involving surds into standard form	

Curriculum Information - Year 10/11 Further Maths

Department: Mathematics

Timing	Unit Title	Key Question	Knowledge and key skills	Assessing understanding
Year 10 Autumn 1	**Changing the subject**	**Can you rearrange formulae to change the subject?**	• Rearranging formulae involving multiple operations • Rearranging formulae involving powers and roots • Using factorisation to change the subject of a formula • Rearranging formulae involving algebraic fractions	**How understanding is assessed:** • Mini whiteboards • Homework • Verbal questioning **Skills developed:** • Conceptual understanding and connections between topics • Numerical and algebraic fluency • Problem solving and mathematical reasoning • Interpreting and analysing mathematical information **Assessment points:** • Termly tests
Year 10 Autumn 2	**Indices**	**Can you apply the laws of indices to algebraic expressions?**	• Applying the laws of indices • Using zero, negative and fractional indices • Converting between index and root notation • Simplifying expressions involving indices • Solving equations involving indices	
	Binomial theorem	**Can you expand binomial expressions using Pascal's triangle?**	• Expanding binomial expressions • Using Pascal's triangle to determine coefficients • Substituting values into binomial expressions	
	Algebraic fractions	**Can you manipulate and solve algebraic fractions?**	• Simplifying algebraic fractions using factorisation • Applying the difference of two squares to algebraic fractions • Multiplying and dividing algebraic fractions • Adding and subtracting algebraic fractions using common denominators • Solving equations involving algebraic fractions	
	Quadratics	**Can you solve a quadratic equation?**	• Factorising quadratic expressions • Completing the square • Applying the quadratic formula	

Curriculum Information - Year 10/11 Further Maths

Department: Mathematics

Timing	Unit Title	Key Question	Knowledge and key skills	Assessing understanding
Year 10 Autumn 2	**Simultaneous equations**	**Can you solve simultaneous equations using algebraic methods?**	• Solving simultaneous equations by elimination • Solving simultaneous equations by substitution • Solving simultaneous equations with three unknowns	**How understanding is assessed:** • Mini whiteboards • Homework • Verbal questioning **Skills developed:** • Conceptual understanding and connections between topics • Numerical and algebraic fluency • Problem solving and mathematical reasoning • Interpreting and analysing mathematical information **Assessment points:** • Termly tests
Year 10 Spring 1	**Circle theorems**	**Can you apply and prove circle theorems?**	• Applying angle properties in circles • Applying properties of cyclic quadrilaterals • Using tangent properties and the alternate segment theorem • Applying chord and perpendicular bisector properties • Solving multi-step problems involving circle theorems • Constructing geometric proofs using circle theorems	
	Pythagoras and trigonometry	**Can you apply trigonometry and Pythagoras' Theorem to 2D and 3D problems?**	• Applying Pythagoras' Theorem and SOH CAH TOA in 2D and 3D problems • Solving multi step problems involving right-angled triangles • Applying trigonometry in coordinate geometry • Calculating angles and distances in 3D shapes	
	Linear and quadratic inequalities	**Can you solve quadratic equations and inequalities algebraically and graphically?**	• Solve quadratic equations by factorising, the quadratic formula and completing the square • Solve quadratic equations graphically and link the algebraic results to the graphical solutions • Solve quadratic inequalities graphically	
	Algebraic fractions	**Can you simplify and solve algebraic fractions involving quadratics?**	• Simplifying algebraic fractions involving quadratics • Solving equations involving algebraic fractions • Applying factorisation to algebraic fractions	

Curriculum Information - Year 10/11 Further Maths

Department: Mathematics

Timing	Unit Title	Key Question	Knowledge and key skills	Assessing understanding
Year 10 Spring 2	**Non-right angled trigonometry**	**Can you apply the sine rule, cosine rule and area formula to non-right angled triangles?**	• Applying the Sine Rule • Understanding the ambiguous case • Applying the Cosine Rule • Finding the area of a triangle • Solving geometrical problems involving non-right angled triangles	**How understanding is assessed:** • Mini whiteboards • Homework • Verbal questioning **Skills developed:** • Conceptual understanding and connections between topics • Numerical and algebraic fluency • Problem solving and mathematical reasoning • Interpreting and analysing mathematical information **Assessment points:** • Termly tests
	Quadratic identities	**Can you apply quadratic identities to simplify expressions and construct proofs?**	• Using quadratic identities in algebraic proofs • Applying algebraic identities to simplify expressions	
	Quadratic nth term	**Can you find and apply the nth term of a quadratic sequence?**	• Finding quadratic nth term rules using second differences • Generating sequences from quadratic formulae • Determining whether a number is in a quadratic sequence	
Year 10 Summer 1	**Functions**	**Can you work with the domain and range of functions, including composite and inverse functions?**	• Using function notation • Finding the domain and range of functions • Working with composite functions • Finding inverse functions • Understanding piecewise functions • Applying graph transformations to functions	
	Limiting values	**Can you determine the limiting value of a sequence?**	• Using limiting values of sequences • Applying the limiting value of $\frac{1}{n}$ as $n \to \infty$	

Curriculum Information - Year 10/11 Further Maths

Department: Mathematics

Timing	Unit Title	Key Question	Knowledge and key skills	Assessing understanding
Year 10 Summer 1	**Quadratic simultaneous equations and graphs**	**Can you solve simultaneous equations involving quadratic graphs?**	• Solving quadratic simultaneous equations algebraically • Finding points of intersection graphically • Determining the number of solutions graphically • Sketching quadratic graphs • Solving quadratic inequalities graphically	**How understanding is assessed:** • Mini whiteboards • Homework • Verbal questioning **Skills developed:** • Conceptual understanding and connections between topics • Numerical and algebraic fluency • Problem solving and mathematical reasoning • Interpreting and analysing mathematical information **Assessment points:** • Termly tests
	The factor theorem and polynomial division	**Can you apply the factor theorem and polynomial division to factorise polynomials?**	• Performing polynomial division • Applying the factor theorem • Factorising polynomials completely	
Year 10 Summer 2	**Straight line equations**	**Can you determine and apply the equation of a straight line?**	• Finding the gradient of a straight line • Finding the equation of a straight line • Finding parallel and perpendicular lines	
	Algebraic proof	**Can you construct algebraic proofs?**	• Using algebraic proof to show whether statements are true • Using even, odd and consecutive integers in proofs	
Year 11 Autumn 1	**Permutations and combinations**	**Can you determine the number of different outcomes of an event?**	• Applying the product rule for counting • Using permutations where order matters • Using combinations where order does not matter	
	Straight line ratio problems	**Can you use ratio to find coordinates on a straight line?**	• Determine the length of a line connecting two coordinates • Find the midpoint of a line connecting two coordinates • Determine a missing coordinate on a line given two coordinates and the appropriate ratio	

Curriculum Information - Year 10/11 Further Maths

Department: Mathematics

Timing	Unit Title	Key Question	Knowledge and key skills	Assessing understanding
Year 11 Autumn 1	**Calculus**	**Can you use differentiation to analyse polynomial functions and their graphs?**	• Differentiating polynomial functions • Finding gradients of curves at a point • Finding stationary points using first derivatives • Determining the nature of stationary points using second derivatives • Finding equations of tangents and normals • Determining where functions are increasing and decreasing	**How understanding is assessed:** • Mini whiteboards • Homework • Verbal questioning **Skills developed:** • Conceptual understanding and connections between topics • Numerical and algebraic fluency • Problem solving and mathematical reasoning • Interpreting and analysing mathematical information **Assessment points:** • Termly tests
Year 11 Autumn 2	**Circles**	**Can you apply the equation and properties of circles to coordinate geometry problems?**	• Determine information from the equation of a circle • Find the equation of a circle when given its centre and a point on its circumference • Use circle theorems involving tangents and bisectors to solve coordinate geometry problems	
	Matrices	**Can you use matrices to perform transformations and solve geometrical problems?**	• Perform matrix multiplication including matrices with vectors and solve equations involving this matrix multiplication. • Determine the coordinates of a point that has been transformed by a matrix. • Determine the transformation defined by a matrix. • Find the overall matrix defining a combination of transformations.	
	Trigonometric equations and identities	**Can you solve trigonometric equations and apply trigonometric identities?**	• Using graphs of sine, cosine and tangent • Solving trigonometric equations in a given range • Applying the trigonometric identities $\frac{sinx}{cosx} \equiv tanx$ and $sin^2x + cos^2x \equiv 1$ • Constructing proofs using trig identities	

Curriculum Information - Year 10/11 Further Maths

Department: Mathematics

Timing	Unit Title	Key Question	Knowledge and key skills	Assessing understanding
Year 11 Spring	**Revision**		• Functions • Number • Algebra • Ratio • Factor theorem • Circles • Exam practice	