Year 11 – Maths Higher Set 1						
Curriculum intent	We believe that students deserve a creative and ambitious mathematics curriculum, rich in skills and knowledge, which ignites curiosity and prepares them well for everyday life and future employment. Our mathematics curriculum will give students the opportunity to: • become fluent in the fundamentals of mathematics, through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately. • reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language. • can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and preserving in seeking solutions. • can communicate, justify, argue and prove using mathematical vocabulary. • develop their character, including resilience, confidence and independence, so that they contribute positively to the life of the school, their local community and the wider environment.					
Term	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Knowledge	• Recurring Fractions • Fractional/Negative Indices • Product Rule • Upper and Lower Bounds • Surds • Expanding and Factorising • Rearranging Equations • Sequences • Coordinate Geometry • Surface Area • Transformations • Quadratics • Simultaneous Equations • Conditional Probability • Direct and Inverse Proportion	• Graphs of Trig Functions • Further Trig • Sampling • Cumulative Frequency and Boxplots • Histograms • Graphs of Circles • Area under Curves • Circle Geometry • Circle Theorems • Algebraic Fractions • Functions • Algebraic Proof • Congruence and Geometric Proof • Vectors	• Individual personalised revision topics identified by the teacher from a range of sources. • ½ exam papers each week to build confidence and boost exam skills.	• Individual personalised revision topics identified by the teacher from a range of sources. • ½ exam papers each week to build confidence and boost exam skills.	• Exam Preparation	
Skills	• To convert between recurring decimals and fractions.	• To recognise/sketch/interpret the graphs of the trigonometric functions.	• Individual personalised revision topics identified by	• Individual personalised revision topics identified by	• To understand the various command	

	• Use index laws to simplify and calculate the value of numerical expressions involving multiplication and division of integer powers, fractional and negative powers, • Use the product rule for counting • Calculate the upper and lower bounds of an expression involving the four operations to varying degrees of accuracy; • To understand surd notation, simplify and rationalise surds. • To expand and simplify linear and quadratic expressions. • To change the subject of a formula. • To find and use the nth term for both linear and quadratic sequences. • To solve problems involving sequences with real life examples. • To use and interpret coordinates in a variety of mathematical situations including Pythagoras and trigonometry. • To find surface areas/ volumes of different 3D shapes. • To perform and describe single/combinations of transformations. • To solve quadratic equations using the 4 methods.	• To apply transformations to the trigonometric graphs. • To understand how to calculate the area of any triangle. • To use the sine and cosine rules to solve 2D and 3D length/angle problems. • To compare relative frequencies from samples of different sizes. • To draw/interpret box plots/cumulative frequency graphs to find statistical data. • To be able to draw/interpret histograms and calculate estimates. • To be able to draw/interpret graphs of linear/quadratics and those of circles and to use these to solve problems. • To use tangents as estimates for gradients of quadratic curves and interpret these. • To calculate areas under curves and interpret the results. • To construct graphs of circles and use tangents and radii to solve problems. • To understand and use circle theorems in context with other angle facts to solve problems. • To simplify and calculate with algebraic fractions to solve equations.	the teacher from a range of sources.	the teacher from a range of sources.	words for maths questions. • To understand how to pick out the key information from the question. • How to check accuracy of answers. • How to use a calculator effectively. • What to write down for working out.	

	• To use iteration with simple converging sequences. • To set up and solve simultaneous linear/non linear equations. • To use different statistical diagrams to help calculate conditional probability. • To solve problems involving direct and inverse proportionality. • To use the concept of similarity to calculate missing lengths, areas or volumes and to solve similar shape problems.	• To be able to use function notation to solve equations. • To be able to use composite functions to solve problems. • To be able to find inverses of functions. • To solve 'Show that' and proof questions in context including (but not limited to) area, perimeter and volume. • Use formal Geometric proof for the similarity/congruence of two triangles. • To be able to perform vector arithmetic. • To be able to calculate resultant vectors from diagrams. • To be able to use vectors to solve geometric problems involving ratios.				
Assessments	• Baseline • Regular exam practice	• Autumn Assessment (exam paper) • Regular exam practice	• Mock exams • ½ weekly exam papers	• Regular exam practice • ½ weekly exam papers	• Regular exam practice ½ weekly exam papers	
Curiosity	• Try a mini exam paper https://www.onmaths.com/mock_exams/mini-mock-1-higher-calculator/ • Visit the oak national academy website to view lessons and videos of the above topics. Practice your surds skills here: https://www.transum.org/Softwar	• Try a mini exam paper https://www.onmaths.com/mock_exams/mini-mock-2-higher-calculator/ • Visit the oak national academy website to view lessons and videos of the above topics. • Practice your functions skills here https://www.transum.org/	Weekly revision sessions	Weekly revision sessions	Weekly revision sessions	

	e/SW/Starter_of_the_day/Students/Surds.asp?Level=1 • Have a go at this interactive activity around rearranging equations. How many levels can you progress through? https://www.transum.org/software/SW/Starter_of_the_day/Students/Changing_The_Subject.asp?Level=6 • Play around with the fibbonaci sequence and see what yopu can find out https://nrich.maths.org/11164 • How does the recipe change? Here are some online questions to help you - https://www.transum.org/Maths/Exercise/Ratio/Recipe.asp . Alternatively, pick a recipe from a cookbook at home and practice changing the measurements based on how many people you would cook for? Weekly revision sessions •	Maths/Exam/Online_Exercise.asp?NaCu=105 • Practice your further trigonometry skills here: https://www.transum.org/Maths/Exercise/Advanced_Trigonometry/ • Histograms practice https://www.mathsisfun.com/data/histograms.html • Here is a series of videos to watch on algebraic fractions: https://www.interactive-maths.com/simplifying-algebraic-fractions-video.html • https://www.interactive-maths.com/adding-and-subtracting-algebraic-fractions-video.html • https://www.interactive-maths.com/multiplying-and-dividing-algebraic-fractions-video.html • Weekly revision sessions Black history month Maths challenge Date TBC				