Curriculum Content Map — **Subject: Year 11 Maths - Higher**

			Term 1					Term 2				Term 3	
Month			September	October	November	December	January	February	March	April	May	June	July
Cultural Transmission	Units of Work		1) Indices and Surds **ALGEBRA** 2) More Trigonometry **SHAPE**	Similarity and Congruence **SHAPE**	Equations and Graphs **ALGEBRA**	Further Statistics **DATA**	Circle Theorems **SHAPE**	More Algebra **ALGEBRA**	Proportion and Graphs **RATIO** **ALGEBRA**	Vectors and Geometric Proof **SHAPE**	REVISION **ALGEBRA** **DATA** **NUMBER** **RATIO** **SHAPE**		
	National Curriculum area – KS4		1) "Be able to multiply and divide indices, apply indices with brackets, calculate negative and fractional indices as well as simply algebraic expressions involving indices" "Be able to simplify surds, apply the four operations to surds, expand surds with double brackets and rationalise denominators" 2) "apply Pythagoras' Theorem and trigonometric ratios to find angles and lengths in right-angled triangles and, where possible, general triangles in two and three dimensional figures" "know the exact values of sine, cosine and tangent" "know and apply the sine rule, and cosine rule, to find unknown lengths and angles" "know and apply to calculate the area, sides or angles of any triangle"	2) "compare lengths, areas and volumes using ratio notation and/or scale factors; make links to similarity (including trigonometric ratios)" "apply the concepts of congruence and similarity, including the relationships between lengths, (areas and volumes) in similar figures"	"solve quadratic equations including those that require rearrangement algebraically by factorising, by completing the square and by using the quadratic formula; find approximate solutions using a graph" "solve two simultaneous equations in two variables (linear/linear or linear/quadratic) algebraically; find approximate solutions using a graph" "find approximate solutions to equations numerically using iteration" "solve linear inequalities in one or two variables, and quadratic inequalities in one variable; represent the solution set on a number line, using set notation and on a graph"	"infer properties of populations or distributions from a sample, whilst knowing the limitations of sampling" "construct and interpret diagrams for grouped discrete data and continuous data, i.e. histograms with equal and unequal class intervals and cumulative frequency graphs, and know their appropriate use" "interpret, analyse and compare the distributions of data sets from univariate empirical distributions through: - appropriate graphical representation involving discrete, continuous and grouped data, including box plots - appropriate measures of central tendency (including modal class) and spread including quartiles and inter-quartile range"	"identify and apply circle definitions and properties, including: centre, radius, chord, diameter, circumference, tangent, arc, sector and segment" "apply and prove the standard circle theorems concerning angles, radii, tangents and chords, and use them to prove related results"	"know the difference between an equation and an identity; argue mathematically to show algebraic expressions are equivalent, and use algebra to support and construct arguments and proofs" "recognise, sketch and interpret graphs of linear functions, quadratic functions, simple cubic functions, the reciprocal function, the exponential function, and the trigonometric functions (with arguments in degrees), for angles of any size"	"recognise, sketch and interpret graphs of linear functions, quadratic functions, simple cubic functions, the reciprocal function, the exponential function, and the trigonometric functions (with arguments in degrees) for angles of any size" "sketch translations and reflections of the graph of a given function" "plot and interpret graphs (including reciprocal graphs and exponential graphs) and graphs of non-standard functions in real contexts, to find approximate solutions to problems such as simple kinematic problems involving distance, speed and acceleration" "understand that X is inversely proportional to Y is equivalent to X is proportional to 1/Y; construct and interpret equations that describe direct and inverse proportion"	"apply addition and subtraction of vectors, multiplication of vectors by a scalar, and diagrammatic and column representations of vectors; use vectors to construct geometric arguments and proofs."	Consolidation of all KS3 and KS4 skills		
	Substantive Knowledge	***The What!***	1) Surds and Indices 2) Geometric Proof Similarity, including area, volume and 3D shapes	Geometric Proof Similarity, including area, volume and 3D shapes	Solving simultaneous equations graphically Represent inequalities graphically Solving quadratic equations Cubic Equations Iteration	Sampling Cumulative Frequency Box Plots Histograms	Circle Theorems, including proof	Rearranging formulae Algebraic fractions Proof Functions	Direct Proportion Inverse Proportion Exponential Functions Non-Linear Graphs Translating and reflecting graphs of functions	Vectors notation Vector arithmetic Parallel vectors Geometric proof	Consolidation of all KS3 and KS4 skills		
	Disciplinary knowledge	***The How!***	1) Using index laws, algebra and knowledge of rsquare, cube and rooted numbers	Understanding Scale Factors	Drawing and plotting graphs Understanding inequalities Understanding Trial and Error	Drawing and plotting graphs Understanding quartiles Comparing Data	Understanding the Parts of a circle Using Angle rules	Understanding inverse operations Understanding proof	Using formulae Rearranging formulae Using Inverse operations Drawing and plotting graphs	Understanding movement on a graph (linked to translation)	Review of assessments, end of topic tests and retrieval tasks as well as homework.		
	Sequencing (Flow)	***Retrieval & Extension***	1) <u>Builds from Y10:</u> Simple indices Algebraic expressions 2) Builds from Y10: Using and rearranging formulae Pythagoras Trigonometry (right-angled triangle) Quadratic Graphs	<u>Builds from Y10:</u> <u>Congruence</u> <u>Angle Facts / Rules</u>	<u>Builds from Y10:</u> Substitution Solving equations Solving inequalities Expand double brackets Factorise quadratics Drawing and plotting graphs	<u>Builds from Y10:</u> Types of Data Averages, including from a frequency and grouped data table	<u>Builds from Y10:</u> Angle rules, especially triangles and quadrilaterals Pythagoras' Theorem Trigonometry	<u>Builds from Y10:</u> Add and Subtract Fractions Simplify Surds Expand brackets Solve equations Rearrange simple formulae Laws of Indices Factorising	<u>Builds from Y10:</u> Velocity-Time Graphs Sketching graphs Trigonometric graphs	<u>Builds from Y10:</u> Geometrical fluency - identifying 2D shapes and properties of 2D shapes - Pythagoras' Theorem - translation	Consolidation of all KS3 and KS4 skills		
	Summative Assessment		1) Deep Mark 1: End of Topic Test - Surds and Indices Homework 2) End of Topic Test - Trigonometry Homework	Deep Mark 2: Homework End of Topic Test - Similarity and Congruence	Deep Mark 2: Homework End of Topic Test - Equations and Graphs	Deep Mark 1: AP1 Assessment (Mock) - Whole School Data Collection End of Topic Test - Further Statistics Homework	Deep Mark 1: AP2 Assessment (Mock) - Whole School Data Collection End of Topic Test - Circle Theorems Homework	Deep Mark 2: Homework End of Topic Test - More Algebra	Deep Mark 2: Homework End of Topic Test - Proportion and Graphs	Deep Mark 1: AP3 Assessment (Mock) - Whole School Data Collection End of Topic Test - Vectors and Geometric Proof Homework	GCSE Maths Exams		
Personal Empowerment	Virtue	***The opportunity to reflect, think deeply and critically about an issue.***	Friendliness & Civility	Justice & Truthfulness	Courage	Generosity	Gratitude	Good Speech	Good Temper & Humour	Self-Mastery		Compassion	Good Sense
	Link to Virtue		1) Students will look at the friendliness of surds and indices to see how they are applied to real life. 2) Students will demonstrate friendliness and civility to each other as they work together to extend their trigonometry knowledge.	Students will look at the relationship between truthfulness congruent and similar shapes.	Students will show courage as they extend their knowledge about how to solve quadratic equations both algebraically and graphically.	Students will be generous in their time and support of each other. They will also look at the generosity of cumulative frequency graphs, box plots and histograms.	Students will demonstrate gratitude for the angle and circle knowledge they already have in order to further support their circle theorems learning.	Students will use good speech as they explain to each other how to solve algebraic problems and ensuring they can demonstrate algebraic proof.	Students will need to show good temper and good humour as they build their knowledge on non-linear graphs, particularly as they extend onto trigonometric graphs and aim for those higher grades.	Students will spend their final topic mastering vectors, espeically vectors involving ratios and fractions. They will show their skills in understanding geometric proofs.	Students will be aiming to master any weaker areas in maths in the build up to the exams.		
Preparation for Work	Skill	***Transferable skills***	Listening	Leadership	Problem-Solving	Creativity	Staying Positive	Speaking	Staying Positive	Aiming High		Speaking	Teamwork
	Link to Skill		1) Students will need to listen to each other as they work together to solve increasingly difficult worded problems on surds and indices. This unit links to careers in analysis and engineering. 2) Students will need to support and listen to each other to ensure they can make progress in trigonometry This unit links to careers in architecture and design.	Students will demonstrate leadership as they work in groups to problem-solve with similar and congruent shapes. This unit links to careers in surveyancing, space and physics.	Students will use problem-solving as they solve quadratics graphically. They will also problem-solve as they rearrange, factorise and solve equations. This unit links to careers in statistics, research and weather.	Students will show creativity as they draw histograms from data. This unit links to careers in data analysis and comparison.	Students will need to stay positive as they tackle circle theorem questions that involve more than one theorem and, potentially, other angle rules as well. This unit links to careers in astrology and vehicle maintenance.	Students will use their speaking skills as they explain to each other how to solve algebraic problems and ensuring they can demonstrate algebraic proof. This unit links to careers in biochemistry, engineering and statistics.	Students will need to stay positive as they understand non-linear graphs. This unit links to careers in banking, analysis and finance.	Students will be aiming high as they finish building their knowledge in maths and developing their overall view of strengths and weaknesses of in maths. This unit links to careers analysis and engineering.	Students will be aiming high in their Higher tier exam so will be ensuring they target the Grade 7 to Grade 9 areas of weakness as a focus.		
Preparation for Citizenship	SMSC & British Values	*Developing opinions on current issues*	Social Cultural Mutual Respect	Social Moral Tolerance	Social Moral Individual Liberty	Social Rule of Law	Social Rule of Law	Social Democracy	Social Tolerance	Social Moral Mutual Respect	Social Individual Liberty		
	Link to SMSC & British Values		Students will use their social skills during paired and grouped work, especially when trying to find missing lengths or angles using trigonometry Students will demonstrate mutual respect to each other through the virtue of friendliness as they work together on tackling worded exam questions.	Students will use their social skills to help each other learn and progress throughout this topic and specifically the paired and group activities. Students will look at the moral consequences of finding scale factors. Students will demonstrate tolerance of each other as it can take some longer than others to understand this topic.	Students will need to use their social skills to make progress, particularly through solving quadratic equations. Students will look at moral repercussions of analysing data. Students will have the individual liberty to be able to choose the appropriate method to solve a quadratic.	Students will use their social skills and work together to make progress, particularly through identifying the correct statiscal diagram. Students will need to understand the 'law' cumulative frequency tables and how the totals are always accumulated.	Students will need to use their social skills as they work together in group activities. Students will need to understand the rules and processes associated with circle theorems, including how they relate to their already existing angle and circle facts.	Students will use their social skills for paired and group activities. Students will understand democracy through debate, discussion and decision about which process to follow and links with previous learning.	Students will use their social skills to support each other in understanding and proving concepts in geometry. Students will need to demonstrate tolerance for themselves as they may struggle to understand the purpose of 'proof'	Students will use their social skills in paired and group work. Students will look at moral dilemmas involving non-linear graphs. Students will demonstrate mutual respect for each other as they work together to aim high in their final GCSE grade.	Students will use their social skills to revise together and support each other in improving. Students will demonstrate individual liberty as they realise only they are responsible for their GCSE exam outcome.		