Curriculum Content Map — **Subject: Year 9 Maths**

			Term 1				Term 2				Term 3		
Month			September	October	November	December	January	February	March	April	May	June	July
			NUMBER	ALGEBRA	REVISION	DATA	NUMBER	SHAPE	ALGEBRA RATIO	SHAPE	ALGEBRA	DATA	SHAPE
	Units of Work		Indices & Standard Form	Continuing Expressions & Formulae	Gap Filling	Dealing with Data	Multiplicative Reasoning	Constructions	Sequences, Inequalities, Equations & Proportion	Circles, Pythagoras & Prisms	Graphs	Probability	Comparing shapes
Cultural Transmission	National Curriculum area - KS3		"use integer powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5 and distinguish between exact representations of roots and their decimal approximation" "interpret and compare numbers in standard form A x 10n 1≤A" "use approximation through rounding to estimate answers and calculate possible resulting errors expressed using inequality notation a<x≤b"	"substitute numerical values into formulae and expressions, including scientific formulae" "simplify and manipulate algebraic expressions to maintain equivalence by: collecting like terms multiplying a single term over a bracket taking out common factors expanding products of two or more binomials" "understand and use standard mathematical formulae; rearrange formulae to change the subject" "use algebraic methods to solve linear equations in one variable (including all forms that require rearrangement)"		"describe, interpret and compare observed distributions of a single variable through: appropriate graphical representation involving discrete, continuous and grouped data; and appropriate measures of central tendency (mean, mode, median) and spread (range, consideration of outliers)" "construct and interpret appropriate tables, charts, and diagrams, including frequency tables, bar charts, pie charts, and pictograms for categorical data, and vertical line (or bar) charts for ungrouped and grouped numerical data"	"draw and measure line segments and angles in geometric figures, including interpreting scale drawings" "identify and construct congruent triangles, and construct similar shapes by enlargement, with and without coordinate grids" "solve problems involving percentage change, including: percentage increase, decrease and original value problems and simple interest in financial mathematics" "use compound units such as speed, unit pricing and density to solve problems"	"derive and use the standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to a given line from/at a given point, bisecting a given angle); recognise and use the perpendicular distance from a point to a line as the shortest distance to the line" "identify and construct congruent triangles, and construct similar shapes by enlargement, with and without coordinate grids"	"recognise arithmetic sequences and find the nth term" "recognise geometric sequences and appreciate other sequences that arise" "recognise and use relationships between operations including inverse operations" "solve problems involving direct and inverse proportion, including graphical and algebraic representation"	"calculate and solve problems involving: perimeters of 2-D shapes (including circles), areas of circles and composite shapes" "apply angle facts, triangle congruence, similarity and properties of quadrilaterals to derive results about angles and sides, including Pythagoras' Theorem, and use known results to obtain simple proofs" "use Pythagoras' Theorem and trigonometric ratios in similar triangles to solve problems involving right-angled triangles" "use the properties of faces, surfaces, edges and vertices of cubes, cuboids, prisms, cylinders, pyramids, cones and spheres to solve problems in 3-D" "use approximation through rounding to estimate answers and calculate possible resulting errors expressed using inequality notation a<x≤b"	"reduce a given linear equation in two variables to the standard form y = mx + c; calculate and interpret gradients and intercepts of graphs of such linear equations numerically, graphically and algebraically" "use linear and quadratic graphs to estimate values of y for given values of x and vice versa and to find approximate solutions of simultaneous linear equations"	"enumerate sets and unions/intersections of sets systematically, using tables, grids and Venn diagrams" "generate theoretical sample spaces for single and combined events with equally likely, mutually exclusive outcomes and use these to calculate theoretical probabilities."	*"identify and construct congruent triangles, and construct similar shapes by enlargement, with and without coordinate grids"* *"use Pythagoras' Theorem and trigonometric ratios in similar triangles to solve problems involving right-angled triangles"*
	Substantive Knowledge	***The What!***	1) Index Laws Estimation with roots and powers Standard Form	Solving equations involving fractions Solving equations with unknowns on both sides Substitution involving roots & indices Using formulae Rearranging formulae Collecting like terms involving indices Factorise linear expressions involving indices Expanding double brackets		Types of Data Planning Research Questionnaire Averages from tables Averages from grouped data Back-to-back stem & leaf diagrams	Enlargement of a shape Multipliers Rearranging formulae Direct proportion	Perpendicular Bisector Angle Bisector Bisecting from a Point Constructing triangles using bisectors Constructing polygons	Using Nth Term Quadratic Sequences Inequalities on a Number Line Satisfying Inequalities (integers) Solving equations with fractions and powers on one or both sides Inverse proportion graphs Direct & Inverse proportion formulae	Circumference of a Circle Area of a Circle Pythagoras' Theorem Volume of Prism Surface Area of Prism Volume of Cylinder Surface Area of Cylinder Upper & Lower Bounds Error Intervals	Parallel line equations (y=mx+c) Cover Up Method Simultaneous Equations on graphs Quadratic graphs	Mutually Exclusive Events Theoretical Probability Sample Space Diagrams Venn Notation Probability from Venn Diagrams	Congruent Triangles Similar Shapes Similar Triangles Trigonometry
	Disciplinary knowledge	***The How!***	Using Four Operations Understanding powers Using Multiplication and Division by 10, 100, 1000	Using Inverse Operations Collecting Like Terms Expanding Brackets		Understanding processes for investigation Forming lines of enquiry Grouping Data	Using Scale Factors - Multiplication Converting decimals and percentages Balancing Understanding ratio	Using a compass Using a ruler	Understanding term-to-term rules Understanding Square numbers and square roots Understanding inequality symbols	Understanding pi Understanding Pythagoras' Theorem Using Rounding	Using y=mx+c Drawing & Plotting graphs	Understanding probability as part of 1 Drawing and completing Venn diagrams Understanding Probability Outcomes	Use and trigonometric ratios in similar triangles to solve problems involving right-angled triangles Differentiate between congruent shapes, which have identical size and shape, and similar shapes, which have proportional dimensions but may differ in size.
	Sequencing (How)	***Retrieval & Extension***	1) Builds from Y8: Simplifying Algebraic Expressions Expanding Brackets Estimation Further develops in Y10: Zero, Negative & Fractional Indices	Builds from Y7: Substitution Writing formulae Builds from Y8: Solving Equations – function machines and balancing Factorise linear expressions Further develops in Y10: Solving Inequalities		Builds from Y7: Line Graphs Builds from Y8: Frequency Tables Scatter Graphs Stem & Leaf Diagram Further develops in Y10: Time Series Sampling	Builds from Y7: Transformations Multiplication Skills Direct Proportion Builds from Y8: Percentages Formulae Proportion Builds from Y9: Rearranging Formulae Further develops in Y10 (Foundation): Simple Interest Transformations Further develops in Y10 (Higher): Rearranging formulae Ratio Transformations Scale Drawings	Builds from Y7: Constructing Triangles Angle Rules Scale Drawings Builds from Y8: Properties of 2D Shapes Angles in Polygons Further develops in Y10: Geometric Problem-Solving Loci	Builds from KS2: Inequalities Builds from Y7: Sequences Direct Proportion Builds from Y8: Solving equations Direct proportion graphs Further develops in Y10: Using equations, formulae and inequalities Quadratic Equations	Builds from KS2 & Y7: Rounding Builds from Y8: Area of Triangle Area of Parallelogram Area of Trapezium Volume of Cuboids Nets Surface Area of Cuboids Builds from earlier in Y9: Inequalities Further develops in Y10: Changing units in area and volume Sectors Pyramids Cones	Builds from Y7: Linear Graphs Using a table of values Substitution Builds from Y8: y=mx+c Builds from earlier in Y9: Inverse Proportion Graphs Further develops in Y10: More real-life graphs Gradient without a graph Cubic & Reciprocal Graphs	Builds from Y7: Calculating Probability Experimental Probability Builds from Y8: Venn Diagrams Further develops in Y10: Tree Diagrams	Builds from Y7: Congruency Builds from Y8: Scale Drawings Ratio Builds from earlier in Y9: Pythagoras Further develops in Y10: Transformations - Enlargement Combining transformations
	Summative Assessment		Deep Mark 1: Homework End of Topic Test - Indices & Standard Form	Deep Mark 2: End of Topic Test - Expressions & Formulae Homework	AP1 Assessment - Whole School Data Collection	Deep Mark 1: AP1 Assessment - Whole School Data Collection End of Topic Test - Dealing with Data Homework	Deep Mark 2 (Dec): Homework Deep Mark 1 (Jan): End of Topic Test - Multiplicative Reasoning	Deep Mark 2: Homework End of Topic Test - Constructions	Deep Mark 1: AP2 Assessment - Whole School Data Collection End of Topic Test - Sequences, Inequalities, Equations & Proportion	Deep Mark 2 (April): Homework Deep Mark 1 (May): End of Topic Test - Circles, Pythagoras & Prisms	Deep Mark 2: AP3 Assessment - Whole School Data Collection End of Topic Test - Graphs Homework	End of Topic Test - Probability	End of Topic Test - Comparing Shapes
Personal Empowerment	Virtue		Friendliness & Civility	Justice & Truthfulness	Courage	Generosity	Gratitude	Good Speech	Good Temper & Humour	Self-Mastery		Compassion	Good Sense
	Link to Virtue	***The opportunity to reflect, think deeply and critically about an issue.***	Students will demonstrate friendliness and civility as they work together in their functional skills task. Students will also need to support each other with friendliness as they work on standard form	Students will look at balancing an equation and how this idea of the 'scale' links with the scales of justice	Students will be courageous as they get ready for a challenging exam season.	Students will look at generosity of data as it is shared and different possessions are distributed.	Students will be thankful for the basic number and shape skills they learned in Y7 to allow them to develop their knowledge in this topic	Students needs to be able to interpret spoken instructions in order to construct accurately.	Students will channel good temper when working on quadratic sequences as a development of their previous sequencing skills.	Students will be mastering the use of Pi in formulae. Students will also develop their understanding of 3D shapes to fully master volume and surface area.	Students will need to master themseleves as they exercise patience whilst the master the complexity of solving equations using a graph	Students will need to use compassion whilst supporting each other with potential cultural/religious differences in understanding and awareness of probability as a concept	Students will need to use good sense when deciding with ratio to use in trigonometry as well as which arrangement of the trigonometric formula they need to solve the problem
Preparation for Work	Skill		Listening	Leadership	Problem-Solving	Creativity	Staying Positive	Speaking	Staying Positive	Aiming High		Speaking	Teamwork
	Link to Skill	***Transferable skills***	Students will need to listen to each other during the group work activity. Students will also need to listen to peer explanations of methods of working. This unit links to careers in computing and science.	Students will lead on carousel sessions to support each other in developing skills with rearranging equations. This unit continues to link to careers that using algebra such as broadcaster technicians and market research analysts.	Students will use problem solving to solve exam style questions when revising.	Students will use creativity questionnaires to practice collecting data skills with ther classmates.	Students will stay positive with complex positive and negative enlargements to create shapes, pictures and words by enlarging shapes. This unit links to careers in interior design, planning and product design.	Students needs to be able to interpret spoken instructions in order to construct accurately. This unit links to careers in architecture, interior design and construction.	Students will need to stay positive when developing their solving equation skills to work on equations with fractions and powers on one or both sides. This unit links to careers in computing and science.	Students will aim high when they investigate Pythagoras' Theorem to better understand where it originates from and not just knowing the theorem. Students will aim high when looking at upper and lower bounds as, although linked to rounding, it can be a difficult topic to grasp. This unit links to careers in architecture, natural sciences, computing and art.	Students will need to aim high to not just work out but explain and show others how they have calculated the outputs for the table of values in a quadratic graph. This unit links to careers in military, law enforcement and agriculture.	Students will use discussion skills to pull together ideas about how to solve probability problems and which probability technique is most appropriate. This unit links to careers in science, aviation and risk management.	Students will use teamwork to discuss and pull together ideas about how to solve shape problems. This unit links to careers in fashion design and CAD engineering.
Preparation for Citizenship	SMSC & British Values		Social Moral Cultural Mutual Respect	Social Moral Democracy	Social Individual Liberty		Social Cultural Rule of Law	Social Moral Cultural Tolerance	Social Moral Individual Liberty	Social Cultural Democracy	Social Mutual Respect	Social Rule of Law	Social Cultural Tolerance
	Link to SMSC & British Values	*Developing opinions on current issues*	Students will use all social skills as they demonstrate friendliness & civility to each other throughout the topic. .Students will need to show each other mutual respect as they learn from their mistakes.	Students will use their social skills as they work on paired and group activities. Students will look at justice and fairness in other cultures. Students will understand their own individual liberty through discussions about justice.	Students will need to use their independent learning skills when revising to demonstrate their individual liberty.	Students will need to ensure they demonstrate individual liberty but as they stand up for their methods as they communicate with each other, not getting frustrated when there is miscommunication.	Students will need to use their social skills work together in group activties. Students will discuss other countries / cultures and who uses what type of measurements, including why we use metric and imperial in the UK. Students will need to understand the rules and processes for solving equations, in particular focusing on inverse operations and balancing equations.	Students will need to use their social and tollerance skills in order to communicate verbal construction instructions to each other. Students will look at different constructions and architecture in different countries / cultures. Students will use of rule of law to understand methods and processes in order to deal with contruction skills	Students will need to use their independent learning skills to demonstrate their individual liberty. Students will need to understanding the 'laws' of sequences in order to use them appropriately as well as the processes of inverse operations when solving equations.	Students will need to utilise their social skills to help and support each other during the investigative work in this topic. Students will look at culture through the background of Pythagoras and the Ancient Greek contribution to mathematics. Students will demonstrate tolerance of both other cultures (Greek) and each other as they find the topic increasingly more difficult and need to exercise patience with each other.	Students will use their social skills for paired and group work activities. Students will discuss moral queries when graphs are misrepresented. Students will understand the freedom they have when choosing a scale on a graph and the impact this can have on the shape and data in the graph.	Students will support each other in making progress using their social skills. Students will look at the moral consequences of gambling based in probability. Students will use democracy to vote on which probability technique to use and whether or not it works.	Students will use their social and tolerance skills in supporting each other to make the right decisions about trigonometric ratios. Students will use democracy to discuss and debate on which trigonometric ratio to use and when it is appropriate to use trigonometry as opposed to Pythagoras' Theorem.