



# Long Term Plan Year 7 Maths

**Year 7 Intent / End Point:** Our Year 7 students will be able to recall and use notation, facts and definitions and perform multi-step procedures. They will be able to interpret and communicate by making deductions and use reasoning to obtain results. We enable our students to solve problems by translating simple mathematical and non-mathematical problems into mathematical processes and interpret results in the context of a given problem. Building blocks are key in every lesson as students develop their fluency to enable them to apply their skills and knowledge.

	<u>Half Term 1</u>	<u>Half Term 2</u>	<u>Half Term 3</u>	<u>Half Term 4</u>	<u>Half Term 5</u>	<u>Half Term 6</u>
<u>Strand</u>	<u>Number &amp; Shape</u>	<u>Number &amp; Algebra</u>	<u>Number</u>	<u>Algebra</u>	<u>Shape</u>	<u>Handling Data</u>
<b>Fluency</b>	Understand and use place value for decimals, measures and integers of any size Use Addition and Subtraction, including formal written methods, applied to integers, decimals Estimate calculations by rounding	Use Multiplication and Division, including formal written methods, applied to integers, decimals Use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple	Express one quantity as a fraction of another, where the fraction is less than 1 and greater than 1 Use addition and subtraction, including formal written methods, applied to proper and improper fractions, and mixed numbers Compare and order fractions by creating common denominators Interpret fractions as operators	Solve calculations requiring understanding of B-I-DM-AS (know that the inverse of squaring is 'square rooting') Use the basic rules of algebra Simplify and manipulate algebraic expressions to maintain equivalence by multiplying a single term over a bracket or by taking out common factors Substitute into simple formulae	Apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles Derive, describe and illustrate properties of triangles, quadrilaterals and other plane figures [for example, equal lengths and angles] using appropriate language and technologies Describe, sketch and draw regular polygons, and other polygons that are reflectively and rotationally symmetric	Read and plot coordinates in all 4 quadrants Describe, interpret and compare observed distributions of a single variable through the use of the mean Enumerate sets and unions/intersections of sets systematically, using tables, grids and Venn diagrams
<b>Application</b>	Problem solving with number Calculate and solve problems involving perimeters of rectangles and compound shapes (not circles) Standard units of length Standard Form	Derive and apply formulae to calculate and solve problems involving area of triangles and rectangles	Problem solve with fractions in real life contexts including money	Substitute into real life formulae e.g. cost if given an hourly rate Use previous area and perimeter work with algebra to solve problems	Use angle facts to solve algebraic problems Work with polygons involving algebra	Understand the purpose of finding a measure of central tendency and that as well as the mean, the other ones typically used are mode and median Worded problems, where a two way table is not given
<b>Middle Stake Testing</b>	6 question grids Try Nows	6 question grids Try Nows	6 question grids Try Nows	6 question grids Try Nows	6 question grids Try Nows	6 question grids Try Nows
<b>High Stake Testing</b>			<b>Assessment 1</b>			<b>Assessment 2</b>
<b>Skills Development</b>	We will work to ensure fluency in the basics across all 5 mathematical strands. Students will be able to recall and use notation, terminology, facts and definitions; perform routine procedures, including some multi-step procedures. Students will be taught to interpret results in the context of a given problem and make connections to other areas of mathematics. Standard written methods can be used in a variety of contexts and the effective use of a calculator is developed.					



# Long Term Plan Year 8 Maths

**Year 8 Intent / End Point:** Year 8 students can perform routine single- and multi-step procedures effectively by recalling, applying and interpreting notation, terminology, facts and definitions. Students can construct chains of reasoning and solve problems by translating them into mathematical processes. They understand and can make connections between different parts of mathematics and can interpret results effectively.

	<u>HT1</u>	<u>HT2</u>	<u>HT3</u>	<u>HT4</u>	<u>HT5</u>	<u>HT6</u>
<b>Strand</b>	Number	Algebra	Shape	Number	Shape/Data Handling	Shape/Data Handling
<b>Fluency</b>	Powers, roots, decimal approximations. Prime numbers, multiples, factors, HCF, LCM, prime factorisation. Round numbers and measure to an appropriate degree of accuracy Multiply, divide fractions and mixed numbers Use the equivalence of fractions, decimals and percentages	Use algebraic methods to solve linear equations in one variable Model situations or procedures by translating them into algebraic expressions or formulae and by using graphs. Coordinates and exploring algebraic relationships	Use standard units of mass, length, time, money and other measures, including with decimal quantities. Understand and use the relationship between parallel lines and alternate and corresponding angles. Calculate interior and exterior angles of (regular) polygons. Calculate and solve problems involving perimeters of 2-D shapes (including circles)	Understand that a multiplicative relationship between two quantities can be expressed as a ratio or a fraction. Solve problems involving percentage change, including: percentage increase, decrease and original value problems and simple interest in financial mathematics Divide a given quantity into two parts in a given part:part or part:whole ratio; express the division of a quantity into two parts as a	Derive and apply formulae to calculate and solve problems involving area of triangles, parallelograms, trapezia and (part)circles. Construct and interpret appropriate tables, charts, and diagrams, including frequency tables, bar charts, pie charts and vertical line (or bar) charts for ungrouped and grouped numerical data Describe, interpret and compare	Enumerate sets and unions/intersections of sets systematically, using tables, grids and Venn diagrams. Use the properties of faces, surfaces, edges and vertices of cubes, cuboids, prisms, cylinders, pyramids, cones and spheres to solve problems in 3-D Derive and apply formulae to calculate and solve problems involving volume of cuboids (including cubes) and other
<b>Application</b>	Word problems Functional problems for highest common factor and lowest common multiple Solve problems with fractions in real life context	Use formulae in a variety of contexts e.g. perimeter, area and angles Solve worded problems using algebra Understand straight line graphs in the context of real life problems Substitute into formulae such as SUVAT equations	Problem solve with area of circles in a real life context. Use angle facts to solve algebraic problems	Word problems Real life context, financial mathematics e.g. VAT and compound interest Solve problems with percentage change	Use pie charts in a variety of contexts Collect, record, group data and make inferences and draw conclusions	Volume questions in context e.g tank is emptying at a rate of.
<b>Middle Stake Testing</b>	6 question grids Try Nows	6 question grids Try Nows	6 question grids Try Nows	6 question grids Try Nows	6 question grids Try Nows	6 question grid Try Nows
<b>High Stake Testing</b>			<b>Assessment 1</b>			<b>Assessment 2</b>
<b>Skills Development</b>	By building on the skills and knowledge learned in year 7 we continue to ensure fluency across the 5 mathematical strands. Students build their knowledge through problem solving, constructing chains of reasoning and evaluating their methods. They can recall, apply and interpret information and perform single- and multi-step procedures. Application is a core skill for Y8 students as they learn how mathematics fits into the wider world. Students develop their proportional reasoning skills by making links to algebra, shape, space and measures and handling data. Students consolidate the links between algebra and arithmetic.					

# Long Term Plan Year 9 Maths

**Year 9 Intent / End Point:** Year 9 students can solve familiar and unfamiliar problems in a range of numerical, algebraic and graphical contexts. Students can make deductions, draw conclusions and construct chains of reasoning, including arguments and basic formal proofs. They can make and use connections between different parts of mathematics and evaluate methods, results and arguments. They will use step-by-step deduction and efficient techniques for solving a problem, including breaking down complex problems into simpler steps or a series of tasks, and working systematically. Statistics is based on purposeful enquiry and makes appropriate links to other subjects.

	HT1	HT2	HT3	HT4	HT5	HT6
<b>Unit Title</b>	Number		Algebra	Geometry	Ratio and Proportion	Probability & Statistics
<b>Fluency</b>	Squares, cubes, other powers and roots Decimals and Fractions (mixed) including 4 rules Percentages - including growth, interest, decay and reverse Use of a multiplier Product and prime factors HCF/LCM and Venn Diagrams Rounding, error intervals and estimation Use of a scientific calculator Standard form and Indices		Substitute into Formulae Expand, simplify and factorise including quadratics Solve equations Rearrange formulae Represent and Solve Inequalities Straight line graphs using $y=mx+c$	Describe and perform Transformations Properties of shapes and simple angle facts Perimeter and area of 2D shapes 3D forms Mensuration Angles in parallel lines and other angle facts Interior and exterior angles Pythagoras and Trigonometry	Best value Exchange rates Simplify Ratio and divide in a quantity Proportion - unitary method Pie charts - construct and interpret	Drawing and interpreting tables and charts Probability using F/D/P Two way tables - draw and complete Frequency trees Averages including from a table and estimating
<b>Application</b>	HCF/LCM in context Standard Form in real life context including very big and very small numbers Percentage profit/loss Compound Interest		Use formulae such as SUVAT equations Quadratics in the context of area Apply $y=mx+c$	Angles and Bearings in context Scale diagrams and maps Pythagoras and Trigonometry in context	Ratio and proportion in context e.g. recipes Apply exchange rates and best buys	Real life Data Comparing data and making inferences Probability in context
<b>Middle Stake Testing</b>	6 question grids End of Unit Tests Try Nows	6 question grids End of Unit Tests Try Nows	6 question grids End of Unit Tests Try Nows	6 question grids End of Unit Tests Try Nows	6 question grids End of Unit Tests Try Nows	6 question grids End of Unit Tests Try Nows
<b>High Stake Testing</b>			<b>Assessment 1</b>			<b>Assessment 2</b>
<b>Skills Development</b>	Year 9 students continue to build upon all the skills learnt in Year 7 and 8. They also develop their geometrical reasoning and construction skills, and an appreciation of logical deduction. They develop their algebraic reasoning by being provided with regular opportunities to practice and make links to arithmetic. Making links across all areas of mathematics is a key skill in Year 9 and provides students with the resources and resilience necessary to be successful at Key Stage 4.					



# Long Term Plan Year 10 Foundation Maths

**Year 10/F Intent / End Point:** A Foundation GCSE student will be able to accurately recall facts, terminology and definitions and carry out routine procedures. They will construct a chain of reasoning to achieve a given result, and interpret and communicate information accurately. They will translate problems in non-mathematical contexts into a series of mathematical processes, and make and use connections between different parts of mathematics.

	HT1	HT2	HT3	HT4	HT5	HT6
Unit Title	Number	Ratio/Proportion Algebra	Data Handling	Algebra Geometry	Geometry	Probability & Statistics
<b>Fluency</b>	Number, powers, roots, decimals, rounding Fractions and Percentages Product of prime factors HCF/LCM Multiples in context Rounding and error intervals Estimation Percentage of an amount Use of a calculator Reverse Percentages Fractions	Ratio - simplify, divide, express a multiplicative relationship Proportion - unitary method Expressions and substitution Expand, simplify and factorise one and two brackets Solving equations Subject of formula Represent and solve Inequalities	Probability - listing outcomes Understand probability as a fraction, decimal or percentage Sample space diagrams Construct Probability trees Construct Two Way Tables and Frequency trees Draw Venn diagrams and work out probabilities Drawing & interpreting tables and charts Frequency diagrams	Sequences - recognise and find nth term Plotting Coordinates Straight line graphs - plot and draw Properties of shapes and angle facts Angles in parallel lines Bearings Interior and exterior angles of polygons - apply formulae	Perimeter and area of 2D shapes Recall Area formulae 3D forms Circles, arcs and sectors Surface area and volume of 3D shapes Convert between metric measures Plans and elevations	Draw scatter graphs Construct Time Series Graphs Pie Charts Draw stem and leaf diagrams Averages from a list Averages From a Table including estimating
<b>Application</b>	HCF/LCM in context Standard Form in real life context including very big and very small numbers Percentage profit/loss Compound Interest Interest, growth and decay	Solve a ratio problem in context Proportion in context e.g. recipes Word problems for best buy and currency conversion Algebra in context - angles, area and perimeter and word problems	Real life Data Comparing data and making inferences Probability in context Use situations of interest and relevance and make appropriate links to other subjects	Generate sequences and find specific terms Coordinate Geometry - identify and interpret straight line graphs Solve locus problems with bearings	Perimeter and area in context - including money problems Problem solve with circles, arcs and sectors Real life context for surface area and volume	Interpret scatter graphs and correlation Interpret graphs and charts in a range of contexts Comparing data and making inferences
<b>Middle Stake Testing</b>	6 question grids End of Unit Tests Try Nows	6 question grids End of Unit Tests Try Nows	6 question grids End of Unit Tests Try Nows	6 question grids End of Unit Tests Try Nows	6 question grids End of Unit Tests Try Nows	6 question grids End of Unit Tests Try Nows
<b>High Stake Testing</b>		<b>Assessment 1</b>		<b>Assessment 2</b>		<b>Assessment 3</b>
<b>Skills Development</b>	A foundation student will continue to build upon the knowledge and skills gained at KS3. They will accurately carry out routine procedures in number by working interchangeably with fractions, decimals and percentages and making links between algebra and arithmetic. They can present an argument and translate problems in non-mathematical contexts into a series of mathematical processes. Students are taught many problem-solving skills to enable them to move fluently between different parts of mathematics, for example, recognising the need to first use Pythagoras's theorem in order to then find the volume of a prism.					

## Long Term Plan Year 10 Higher Maths

**Year 10/H Intent / End Point:** A higher GCSE student can perform procedures, and interpret and communicate complex information accurately. They can construct substantial chains of reasoning, including convincing arguments and formal proofs. They can generate efficient strategies to solve complex mathematical and non-mathematical problems by translating them into a series of mathematical processes. Higher tier students can make and use connections, which may not be immediately obvious between different parts of mathematics. They can critically evaluate methods, arguments, results and the assumptions made.

	HT1	HT2	HT3	HT4	HT5	HT6
Unit Title	Number	Algebra		Geometry	Probability & Statistics Algebra	Geometry
<b>Fluency</b>	Recurring Decimals Fractional and Negative Indices Product Rule for combinations Calculations with Bounds Calculating with Surds	Expanding & Factorising Quadratic Equations Rearranging Equations Sequences - Recognising types of sequences and nth term of linear and quadratic sequences Forming and Solving Equations Simultaneous Equations Solving Quadratics including the Formula, completing the square and Iteration Direct & Inverse Proportion - representing and solving problems algebraically		Plotting coordinates in 4 quadrants Finding the midpoint of a line segment Equation of a line ( $y=mx+c$ ) including that of parallel and perpendicular lines Graphs of linear, quadratic, cubic, and reciprocal functions - recognise, plot and sketch Circle Geometry - recognise and construct graphs of a circle	Frequency Diagrams Scatter Graphs Algebraic Fractions Relative Frequency Probability - Mutually Exclusive, Dependent and Independent Events Conditional Probability Probability Tree Diagrams Venn Diagrams and Set Notation	Describe and perform transformations Plans and Elevations Constructions and Loci Circles, arcs and sectors Surface area and volume of 3D shapes Similarity and congruence in 2D Similarity with Area and Volume
<b>Application</b>	Combinations in real life contexts Linking bounds to other topics Considering bounds in real life and problem solving contexts	Solve problems involving sequences from real life situations Form and solve equations in various contexts e.g. area, probability Relate algebraic solutions to graphical representations Solve simultaneous equations representing real-life situations Interpret solutions in the context of the problem Solve word problems involving direct and inverse proportion Use graphical representations of direct and inverse proportion to solve problems in context Interpret equations that describe direct and inverse proportion		Interpret and analyse information presented in linear graphs Interpret graphs of quadratic functions from real-life problems Solve equations representing a real-life situation graphically, and interpret the solution in the context of the problem	Recognise relationships displayed in frequency diagrams Use scatter graphs to investigate correlation in context Probability in real life Problem solve with probability	Link transformations to similarity and congruence Use constructions to solve real life loci problems Problem solve with circles, arcs and sectors Real life context for surface area and volume
<b>Middle Stake Testing</b>	6 question grids End of Unit Tests Try Nows	6 question grids End of Unit Tests Try Nows	6 question grids End of Unit Tests Try Nows	6 question grids End of Unit Tests Try Nows	6 question grids End of Unit Tests Try Nows	6 question grids End of Unit Tests Try Nows
<b>High Stake Testing</b>		<b>Assessment 1</b>		<b>Assessment 2</b>		<b>Assessment 3</b>
<b>Skills Development</b>	A higher student will extend the knowledge and skills gained at KS3 to more complexed topics, and an increasing range of problem solving contexts. They will accurately carry out single and multi-step procedures across a wide range of higher topics, making links between number, algebra and geometry. Students will be able to interpret real life problems and possess the skills to model these problems algebraically and geometrically in order to solve. They will also be able to interpret the solutions in the context of the real life situation. Students will have the understanding to recognise relationships displayed in mathematical graphs and diagrams and use their understanding to deduce, infer and draw conclusions in a real life context. Furthermore, students will gain the strategies required to develop formal proofs in order to draw convincing arguments.					



# Long Term Plan Year 11 Foundation Maths

**Year 11/F Intent / End Point:** A Foundation GCSE student will be able to accurately recall facts, terminology and definitions and carry out routine procedures. They will construct a chain of reasoning to achieve a given result, and interpret and communicate information accurately. They will translate problems in non-mathematical contexts into a series of mathematical processes, and make and use connections between different parts of mathematics.

	HT1	HT2	HT3	HT4	HT5	HT6
<b>Unit Title</b>	Number	Geometry/Algebra	Algebra/Geometry	Revision	Revision	
<b>Fluency</b>	Indices, powers and roots Index laws Standard form Transformations Vectors	Constructions Pythagoras Theorem Solving equations Simultaneous equations Trigonometry	Speed/Distance/Time Draw real life graphs Quadratic and Cubic graphs Similarity and congruence in 2D Direct and Inverse Proportion	Revision	Revision	
<b>Application</b>	Standard Form in real life context including very big and very small numbers Percentage profit/loss Fully describe a single transformation	Constructions to solve loci problems including with bearings Apply Pythagoras theorem and trigonometry in context Algebra in context e.g. Area problems and forming equations	Understand and use compound measures Interpret a range of real life graphs Prove congruency in triangles Rates of pay, solving word problems for proportion			
<b>Middle Stake Testing</b>	6 question grids End of Unit Tests Try Nows	6 question grids End of Unit Tests Try Nows	6 question grids End of Unit Tests Try Nows	6 question grids End of Unit Tests Try Nows	6 question grids End of Unit Tests Try Nows	6 question grids End of Unit Tests Try Nows
<b>High Stake Testing</b>			<b>Assessment 1</b>			<b>Assessment 2</b>
<b>Skills Development</b>	A foundation student will continue to build upon the knowledge and skills gained at KS3. They will accurately carry out routine procedures in number by working interchangeably with fractions, decimals and percentages and making links between algebra and arithmetic. They can present an argument and translate problems in non-mathematical contexts into a series of mathematical processes. They are taught many problem-solving skills to enable them to move fluently between different parts of mathematics, for example, recognising the need to first use Pythagoras's theorem in order to then find the volume of a prism.					



# Long Term Plan Year 11 High Maths

**Year 11/H Intent / End Point:** A higher GCSE student can perform procedures, and interpret and communicate complex information accurately. They can construct substantial chains of reasoning, including convincing arguments and formal proofs. They can generate efficient strategies to solve complex mathematical and non-mathematical problems by translating them into a series of mathematical processes. Higher tier students can make and use connections, which may not be immediately obvious between different parts of mathematics. They can critically evaluate methods, arguments, results and the assumptions made.

	HT1	HT2	HT3	HT4	HT5	HT6
<b>Unit Title</b>	Data Handling	Geometry	Algebra Vectors	Revision	Revision	
<b>Fluency</b>	Time Series Graphs Speed/Distance/Time & Compound Measures Real Life Graphs Gradient and Area under graphs Sampling Cumulative Frequency Diagrams Box Plots Histograms Functions including composite and inverse	Pythagoras Theorem & Trigonometry - in 2D and 3D Sine and Cosine Rules Trigonometric Graphs Circle Theorems	Algebraic Proof Congruence and Geometric Proof Vectors			
<b>Application</b>	Interpret time series graphs, commenting on trends Compound measures in context Draw, read and interpret graphs for real-life situations Interpret area under graphs in real-life contexts Linking gradient to the rate of change Use Cumulative Frequency Diagrams and Box Plots to compare and make inferences for real life data	Apply Pythagoras theorem and trigonometry in context Use Pythagoras Theorem and Trigonometry to solve 3D problems Investigate the relationship between angles in circles Prove the circle theorems	Solve proof questions in context including area, perimeter and volume Solve angle problems by first proving congruence Solve geometric problems in 2D involving vectors Produce geometrical proofs to prove points are collinear and vectors/lines are parallel			
<b>Middle Stake Testing</b>	6 question grids End of Unit Tests Try Nows	6 question grids End of Unit Tests Try Nows	6 question grids End of Unit Tests Try Nows	6 question grids End of Unit Tests Try Nows	6 question grids End of Unit Tests Try Nows	6 question grids End of Unit Tests Try Nows
<b>High Stake Testing</b>			<b>Assessment 1</b>			<b>Assessment 2</b>
<b>Skills Development</b>	A higher student will extend the knowledge and skills gained at KS3 to more complexed topics, and an increasing range of problem solving contexts. They will accurately carry out single and multi-step procedures across a wide range of higher topics, making links between number, algebra and geometry. Students will be able to interpret real life problems and possess the skills to model these problems algebraically and geometrically in order to solve. They will also be able to interpret the solutions in the context of the real life situation. Students will have the understanding to recognise relationships displayed in mathematical graphs and diagrams and use their understanding to deduce, infer and draw conclusions in a real life context. Furthermore, students will gain the strategies required to develop formal proofs in order to draw convincing arguments.					