Key Stage 4 Curriculum Mathematics

Year 10 Foundation

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
Fluency	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
Application	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
Middle Stake Testing	End of Unit Tests Do Nows	End of Unit Tests Do Nows	End of Unit Tests Do Nows	End of Unit Tests Do Nows	End of Unit Tests Do Nows	End of Unit Tests Do Nows
High Stake Testing	**Assessment 1**			**Assessment 2**		**Assessment 3**
Skills Development	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.					

Year 10 Higher

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
Fluency	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
Application	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
Middle Stake Testing	End of Unit Tests Do Nows	End of Unit Tests Do Nows	End of Unit Tests Do Nows	End of Unit Tests Do Nows	End of Unit Tests Do Nows	End of Unit Tests Do Nows
High Stake Testing	**Assessment 1**			**Assessment 2**		**Assessment 2**
Skills Development	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.					

Year 11 Foundation

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
Unit Title	Number	Geometry/Algebra	Algebra/Geometry	Revision	Revision	
Fluency	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	
Application	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			
Middle Stake Testing	End of Unit Tests Do Nows	End of Unit Tests Do Nows	End of Unit Tests Do Nows	End of Unit Tests Do Nows	End of Unit Tests Do Nows	End of Unit Tests Do Nows
High Stake Testing		**Assessment 1**	**Assessment 2**		**GCSE Examinations**	
Skills Development	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.					

Year 11 Higher

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
Unit Title	Data Handling	Geometry	Algebra Vectors	Revision	Revision	
Fluency	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			
Application	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			
Middle Stake Testing	End of Unit Tests Do Nows	End of Unit Tests Do Nows	End of Unit Tests Do Nows	End of Unit Tests Do Nows	End of Unit Tests Do Nows	
High Stake Testing		**Assessement 1**	**Assessment 2**		**GCSE Examinations**	
Skills Development	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.					