Curriculum Mapping: Maths

Vision Statement

Confident and Resilient Mathematicians 	The mathematics department aims to develop our students to reach their maximum potential through an engaging curriculum that is both supportive and challenging. We do this by fostering a curriculum that embeds a students ability to communicate mathematically as well as self-motivation and willingness to work both independently and collaboratively. We incorporate a strong emphasis on mathematical literacy to ensure student understanding of key terms relevant to their learning. In doing this we believe that our students will develop a positive attitude towards mathematics including confidence, enjoyment and resilience.
Problem Solvers 	The curriculum is designed so students are exposed to fluency, reasoning and problem solving every lesson. It is important that students can apply their knowledge and skills to solve a wide range of problems effectively and efficiently that will best prepare them for the real world. This is embedded through independent learning, in particular the Campsmount Challenge Zone.
Inquisitive and Curious Mathematical Explorers 	Students are encouraged to explore the different mathematical concepts they encounter during lessons, creating links between different mathematical skills. The curriculum allows students to develop a conceptual understanding of mathematics whilst applying their skills to real-life topics, careers and problems. They are asked 'why' on a regular basis during lessons and are encouraged to ask questions to increase both the breadth and depth of their understanding.

Maths	KS3 Endpoints	KS4 Endpoints	KS5 Endpoints
Curriculum end points:	**Students will be able to:**		
	Students will be able to use algebra to generalise the structure of arithmetic, including to formulate mathematical relationships alongside substituting into expressions, rearranging and simplifying expression and solving equations.	To extend their understanding of algebraic simplification and manipulation to include quadratic expressions. Students will also begin to use algebra to support and construct arguments including proofs.	To manipulate algebraic expressions and apply to other math's strands including proof
	Students will demonstrate an understanding of the number system and place value to include decimals, fractions, powers and roots. Students will also interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning. This will include multi step problems.	Extend students understanding of the number system and be able to select and use appropriate calculation strategies to solve increasingly complex problems, including in financial context. This will include multi step problems and interpret their solution in the context of a given problem.	To develop an initial understanding of logarithm's and a deeper understanding of exponentials and apply numerical skills to further math's problems.
	To be able to develop geometric skills including using geometric constructions. Students should also be able to use precise language and properties to describe 2D and 3D shapes.	To be able to apply geometric reasoning skills and apply knowledge of geometric facts with reasoning and problem-solving questions.	To effectively apply geometric skills to solve problems.
	To be able to develop an understanding of ratio and proportion and extend their knowledge of ratio and proportion in working with measures and geometry, and in formulating proportional relations algebraically.	To apply understanding of ratio and proportion and develop their mathematical knowledge to unfamiliar and non-routine problems by selecting appropriate methods, concepts and techniques.	To apply prior learning to more complex mathematical problems.
	To be able to develop an understanding of probability rules, terminology and representation and express arguments formally.	To select appropriate concepts, methods and techniques of probability to apply to problems reflecting on solutions and how it may have been affected by any assumptions.	Understanding new methods to calculate more complex probabilities.
	To be able to interpret, evaluate and represent statistical data in a range of different formats. Use precise language to analyse statistical representations.	To apply knowledge of statistical data to more complex situations and able to select an appropriate representation. Students should be able to explore what can and cannot be inferred in statistical settings and begin to express their arguments formally.	To extend knowledge of statistical data to understand statistical distributions.

Maths	Year 7	HT1	HT2	HT3	HT4	HT5	HT6
	End point:						
	Curriculum Related Expectation	Students will explore sequences in detail, using both diagrams and letters. Basic algebraic forms are introduced and worked to develop a deep understanding to move onto more complex expressions later. Students will deepen their understanding of working with multiplication and division in the context of factors multiples and stretching to more complex equations	Students will understand and use number lines, they are explored in depth to develop later into using axes. They will enhance the use of ordering numbers to include finding the range and median from data. Rounding with powers of ten and significant figures is cemented to progress in further topics. Students will deepen their knowledge of directed number from KS2. Students will develop an understanding of the meaning behind the operations with directed number and apply it to the previous topics such as Algebra.	Students will build on existing knowledge from KS2 and will strengthen their problem-solving skills drawn from the contexts of money, perimeter, bar charts and tables.. Students will strengthen their skills of calculating fractions and percentages of an amount and learn the links between the two methods.	Basic algebraic forms are introduced and worked to develop a deep understanding to move onto more complex expressions later. Students will build on existing knowledge from KS2 and will strengthen their problem-solving skills drawn from the contexts of money, perimeter, bar charts and tables	Students will build on their KS2 skills using rulers, protractors and other measuring tools to construct and measure increasingly complex diagrams. They will learn angle and shape notation and their properties. Students will be introduced to angle rules and use them to form short chains of reasoning.	Students will build on existing knowledge from KS2 and will strengthen their problem-solving skills drawn from the contexts of area and perimeter Factors and multiples will be revisited and stretch onto working with prime factorisation
	Students need to know	• how to explore sequences using both diagrams and lists of numbers • about graphs of linear and non-linear functions and how this links to patterns they have spotted • how to use letter notation to support in calculations • about basic algebraic forms such as expressions • calculation strategies to help to solve mathematical problems • that units are used to represent measures • how to convert between different standard units • how to use the four operations to solve problems	• and decimals to hundredths • how to use number lines in preparation for work on scales and axes. • how to round to the nearest given positive power of 10 • how to order numbers in preparation for the introduction of the median and range. • how to calculate operations with negative numbers using multiple representations and contexts • that percentages are expressed as a fraction of 100. • the link between fractions, decimals, and percentages so they can convert fluently between those most commonly seen in real life.	• that relationships between inverse operations can be used to manipulate and solve equations • that tables, charts and diagrams can be used to represent data in a variety of different ways • how to choose different calculation strategies to help to solve mathematical problems • that units are used to represent measures • how to convert between different standard units • that the mean can be used to compare different data sets • that letters are used to represent variables	• how to find basic fractions and percentages of an amount • that tables, charts and diagrams can be used to represent data in a variety of different ways • how to choose different calculation strategies to help to solve mathematical problems • that units are used to represent measures • how to convert between different standard units • that the mean can be used to compare different data sets • that letters are used to represent variables	• how to use protractors, rulers and other measuring equipment to construct and measure diagrams • basic mathematical notation such as hatch marks to show equality, three letter notation and arrows to indicate parallel lines • the names of polygons up to ten sides and the basic angle rules of triangles and quadrilaterals • draw and interpret pie charts to gain practice at drawing and measuring angles.	• how to use mental strategies with a focus on a known fact to find other facts • how to simplify complex calculations • how to use their knowledge of FDP to solve probability problems • the difference between sets, set notation and systematic listing strategies • how to draw and calculate probabilities from Venn diagrams • the difference between odd, even, multiple, factor, prime, square and triangular numbers • how to calculate multiples and factors to help them find prime numbers • how to form and test conjectures • how to explore fractions greater than 1
	Students should be able to	• different numerical, algebraic, graphical and diagrammatic representations • make and test conjectures about patterns and relationships • generate terms of sequences from a term-to-term rule • recognise arithmetic and geometric sequences and appreciate other sequences that arise • use algebra to generalise the structure of arithmetic, including to formulate mathematical relationships • use formal written methods, applied to positive integers and decimals • recognise and use relationships between operations including inverse operations • derive and apply formulae to calculate and solve problems • select and use appropriate calculation strategies to solve mathematical problems	• consolidate their understanding of the number system and place value to include decimals • understand and use place value for decimals, measures, and integers of any size • order positive and negative integers, decimals, and fractions • use the number line as a model for ordering of the real numbers • use the symbols =, ≠, , ≤, ≥ to compare numbers • work interchangeably with terminating decimals and their corresponding fractions • round numbers to an appropriate degree of accuracy, including rounding to significant figures. • use the four operations, including formal written methods, applied to integers, both positive and negative • recognise and use relationships between operations including inverse operations • move freely between different numerical representations (for example, equivalent fractions, fractions and decimals) • express one quantity as a fraction of another, where the fraction is less than 1 and greater than 1 • define percentage as 'number of parts per hundred', interpret percentages as a fraction or a decimal • compare two quantities using percentages including percentages greater than 100% • interpret pie charts, using fractions and percentages to understand proportion	• apply the four operators including formal written methods to integers, decimals, proper and improper fractions • interpret fractions and percentages as operators to solve problems • express one quantity as a fraction of another, where the fraction is less than 1 and greater than 1 • order positive and negative integers, decimals and fractions; use the number line as a model for ordering of the real numbers; use the symbols =, ≠, , ≤, ≥ • use the four operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative • work interchangeably with terminating decimals and their corresponding fractions	• recognise and use relationships between operations including inverse operations • model situations or procedures by translating them into algebraic expressions use and interpret algebraic notation • construct and interpret appropriate tables, charts, and diagrams, including frequency tables, bar charts and pictograms for categorical, and vertical line (or bar) charts for ungrouped data • select and use appropriate calculation strategies to solve mathematical problems • change freely between related standard units substitute numerical	• use language and properties precisely to analyse 2-d shapes • begin to reason deductively in geometry including geometrical constructions • draw and measure line segments and angles in geometric figures, including interpreting scale drawings • describe, sketch and draw using conventional terms and notations; points, lines, parallel lines, perpendicular lines, right-angles, regular polygons, and other polygons that are rotationally symmetric • use the standard conventions for labelling sides and angles • construct and interpret pie charts for categorical, ungrouped and grouped numerical data • identify and construct triangles • derive and illustrate properties of triangles, quadrilaterals, circles and other plane figures using appropriate language and technologies • apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles • apply angle facts, triangle similarity and properties of quadrilaterals to derive results about angles and sides and use known results to obtain simple proofs • understand and use the relationship between parallel lines and alternate and corresponding angles • derive and use the sum of angles in a triangle and use it to deduce the angle sum in any polygon, and to derive properties of regular polygons.	• apply the four operators including formal written method to work with area and perimeter of shapes • use the concepts and vocabulary of prime numbers, factors, multiples, common factors, HCF, LCM and prime factorisation • use integer powers and associated real roots, recognise powers of 2,3,4,5 • make and test conjectures about patterns and relationships; look for proofs or counterexamples
	Keywords	Arithmetic Coefficient Commutative Difference Equality Equals Equation Evaluate Expression Function Geometric Input Inverse Like Linear Non-Linear Operation Output Rule Sequence Solution Solve Substitute Term	Approximate Decimal Fraction Hundredth Integer Interval Median Negative Percentage Placeholder Place Value Range Recurring Sector Significant Figure Tenth	Commutative Difference Digit Equation Equivalence Estimate Even Factor Frequency Integer Inverse Loss Multiple Odd Operation Parallel Placeholder Place value Profit Product Scale Significant figure Sum Total	Subtract Product Square Denominator Improper fractions Negative Inverse Expression Equivalent Substitute Commutative Square Root Numerator Mixed numbers Place value	Angle Congruent Frequency Negative Polygon Regular polygon Scale Factor Sum Centre of enlargement Corresponding Isosceles Orientation Polygons Right-angled triangle Scalene triangle Transversal Compass Enlargement Isosceles triangle Parallel Protractor Rotation Sector	Factors Counter example Dividend Equation Element Mutually Exclusive Fair Prime HCF
	Key piece	Students will be assessed at the end of each block of learning (approx. every 8-10 lessons topic dependent)					
	Application of knowledge (Assessment)	**Assessment 1-KS3 Assessment Window GL Progress Text**		**Assessment 2-KS3 Assessment Window**		**Assessment 3-KS3 Assessment Window**	

	Revision Strategy	Knowledge organisers- Look, Cover, Write Check Correct		Flashcards-remember key formulas		Mind mapping-planning key ideas for content	
	Wider Links	GIN Day 1, sequences, graph theory – links to science and geography. Used in money and different problem-solving situations.	Fractional thinking, algebraic reasoning/thinking, applications of number, links to catering, science and DT. Wider links to data analysis, and money skills outside the classroom.	GIN Day 1, GIN Day 2, GIN Day 3, sequences, fractional thinking, percentages. Links to data and money problems outside of the classroom. Links to science, DT, Catering, IT, business.	GIN Day 3 – National Numeracy Day, Proportion, algebraic thinking. Links to catering (fractional thinking/proportion). Wider links to climate change/temperature.	GIN Day 2 – Pi Day, links to algebraic thinking/notation. Used in architecture/design outside of the classroom.	GIN Day 2 – Pi Day, GIN Day 3 – National Numeracy Day, algebraic thinking and basic number skills. Money and proportion calculations – links to life skills.

Maths

Year 8	HT1	HT2	HT3	HT4	HT5	HT6
End point:						
Curriculum Related Expectation	Students are introduced to the meaning of ratio with representations and progress onto sharing into a ratio and look at fractional relationship. Students will then progress on to linking ratios to scale and direct proportion linking graphs and conversion using maps and similar shapes. Students will progress on from the KS2 basic understanding on multiplying and dividing fractions and progress on to working with multiplying and dividing with an integer and mixed numbers.	Building on knowledge of co-ordinates from KS2 students will look at forming algebraic rules for straight lines, starting at lines parallel to the axes. They will begin to explore the notions of gradient and intercepts and introduce the similarities to sequences and lines. Students will progress their knowledge into using averages to interpret information expanding on their previous knowledge of the median and mean to introduce the mode and look at the most appropriate method of use. Students will extend ks2 knowledge of charts and graphs by introducing bivariate data and the idea of linear correlation. Students are introduced to the idea of probability looking at sample space tables	Building on knowledge from year 7 students will explore expanding and factorising with single brackets and they will deepen their knowledge of solving equations and inequalities. Students will be introduced to forming and solving inequalities learning the meaning of a solution set. Students will extend year 7 knowledge of sequences with more complex algebraic rules. The foundations of simplifying with indices is introduced to lay the groundwork of understanding.	Deepening understanding of the relationships between fractions, percentages and decimal equivalents and using these to find a percentage increase and decrease. All students will be introduced to the standard from notation and the use of indices within the topic. Estimation and working with powers of ten are revisited to deepen understanding.	Angle notation and relationships are revisited extending knowledge to angles in parallel lines and more complex angle problems. Students will enhance their knowledge of key area formula as they are introduced to the Pi and all are exposed to the area of a trapezium.	Students will deepen their understanding of symmetry by introducing reflections. Students will also deepen their understanding of algebraic rules drawing lines parallel to the axes, and other straight line graphs to reflect shapes in.
Students need to know	• the meaning of ratio and the various models that can be used to represent ratios • how ratio can be used to share values given the whole or one of the parts and how representations such as bar models can support with this when moving into problem solving • how to explore links between ratio and fractions and the use of equivalence to simplify • the meaning of ratio and scaling and how this links to direct proportion • about conversion graphs and how this relates to real life such as currency • how proportion and scale link to maps, scales and scale factors • how to multiply and divide fractions with an understanding of reciprocal	• A basic knowledge of co-ordinates • Algebraic rules for straight lines, starting with lines parallel to the axes and more general forms • How to explore the notions of gradient and intercepts, more specifically using equations to produce lines rather than interpretation • The similarities and differences between sequences, lists of co-ordinates and lines • calculations such as mean, median and mode • when and why each average should be used • how to use charts to compare different distributions using mean, median • how to consider outliers and the effect these have on measures studied • whether outliers should be included or excluded in calculations • how to calculate the mean from grouped and ungrouped frequency tables • What bivariate data is and can identify linear correlation • The ideas of probability e.g. the scale of 0-1 • How to use sample spaces and tables to represent probabilities	• how to build on equivalence seen in Year 7to begin exploring expanding single brackets and factorising • how to expand two binomials • how to extend knowledge of solving equations to include those with brackets and unknowns on both sides • the processes to solve formal inequalities and the meaning of a solution set • how to form and solve equations • how to use sequences with more complex algebraic rules with the increased familiarity of algebraic notation • the method to find the nth term of a sequence	• how to convert between fractions, decimals, and percentages • how to calculate percentage increase and decrease • how to express one number as a fraction or as a percentage of another • how to effectively calculate percentages with or without a calculator • how to calculate profit, loss and interest • how to find the original value, given the percentage or after a percentage change • the concept of standard form and how to convert numbers • how to convert metric units including area and volume units • how to solve problems involving time	• how to use angle notations and relationships, extending to explore angles in parallel lines. • the properties of polygons and quadrilaterals and use these to solve complex angle problems. • which formula to apply to the correct shape to find the area of plane figures and compound shapes • shape properties and their names	• how to draw lines from a given equation and use this to draw reflections • an enhanced knowledge of special triangles and quadrilaterals and have a deeper understanding of key vocabulary such as object, image and congruent
Students should be able to	• make connections between number relationships, and their algebraic and graphical representations • use scale factors, scale diagrams and maps • understand that a multiplicative relationship between two quantities can be expressed as a ratio or a fraction • 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 ratio • solve problems involving direct and inverse proportion • extend and formalise their knowledge of ratio and proportion in working with measures and in formulating proportional relations algebraically • interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning • use scale factors, scale diagram and maps • solve problems involving direct and inverse proportion • select and use appropriate calculation strategies to solve increasingly complex problems • use 4 operations, including formal written methods for proper, improper and mixed number fractions	• Move freely between different numerical, algebraic, graphical, and diagrammatic representations • Develop algebraic and graphical fluency, including understanding linear functions • Make connections between number relationships, and their algebraic and graphical representations • Substitute numerical values into formulae and expressions • Recognise, sketch and produce graphs of linear functions of one variable with appropriate scaling, using equations in x and y and the cartesian plane • describe, interpret, and compare observed distributions of a single variable • use appropriate graphical representation involving discrete, continuous, and grouped data • calculate and use appropriate measures of central tendency such as mean, mode and median • calculate measures of spread appropriately such as the range with and without consideration of outliers • construct and interpret appropriate tables, charts, and diagrams, including vertical line and bar charts for ungrouped and grouped numerical data • Describe simple mathematical relationships between two variables in observational and experimental contexts and illustrate using scatter graphs • Use language and properties precisely to analyse probability and statistics • Record, describe and analyse the frequency of outcomes of simple probability experiments involving randomness, fairness, equally and unequally likely outcomes using appropriate language	• identify variables and express relationships between variables algebraically • begin to model situations mathematically and express the results using a range of formal mathematical representations • substitute numerical values into formulae and expressions, rearrange, simplify and solve equations • use the vocab of expressions, equations, inequalities, terms and factors • simplify and manipulate algebraic expressions (collect like terms, multiply over a single bracket, take out common factors, expand products of two or more binomials) • understand and use standard mathematical formulae • use algebraic methods to solve linear equations in one variable • generate terms of a sequence from either a term-to-term or a position-to-term rule • recognise arithmetic sequences and find the nth term • recognise geometric sequences • use and interpret algebraic notation including indices • use language and properties precisely to analyse algebraic expressions • begin to model situations mathematically and express results using a range of formal mathematical representations	• develop their use of formal mathematical knowledge to interpret and solve problems, including in financial mathematics • work interchangeably with terminating decimals and their corresponding fractions • define percentage as 'number of parts per hundred', interpret percentages and percentage changes as a fraction or a decimal, interpret these multiplicatively, express one quantity as a percentage of another, compare two quantities using percentages, and work with percentages greater than 100% • 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 approximations • interpret and compare numbers in standard form $A \times 10n$, $1 \leq A < 10$, where n is a positive or negative integer or zero • use standard units of mass, length, time, money and other measures, including with decimal quantities • round numbers and measures to an appropriate degree of accuracy [for example, to a number of decimal places or significant figures] • use approximation through rounding to estimate answers and calculate possible resulting errors expressed using inequality notation $a < x \leq b$	• apply the properties of angles at a point angle on a straight line and vertically opposite angles and understand and use the relationship between parallel lines and alternate and corresponding angles • derive and use the sum of angles in a triangle and use it to deduce the angle sum in any polygon, and to derive the properties of regular polygons • understand the conventions for labelling the sides and angles of triangle ABC • derive and illustrate properties of triangles, quadrilaterals, circles, and other plane figures using appropriate language and technologies • derive and apply formulae to calculate problems including: perimeter and area of triangles, parallelograms and trapezia • calculate and solve problems involving, perimeters of 2D shapes, areas of circles and composite shapes.	• describe, sketch and draw using conventional terms and notations; points, lines parallel lines, perpendicular lines, right angles, regular polygons and other polygons that are reflectively and rotationally symmetric • identify the properties of, and describe the results of reflections applied to given figures

			• and the 0-1 probability scale • Generate theoretical sample spaces for single and combined events with equally-likely, mutually exclusive outcomes and use these to calculate theoretical probabilities • Use language and properties precisely to analyse probability and statistics				
	Keywords	approximation axes commutative conversion currency denominator dividend divisor equal parts equivalent factors non unit fraction numerator order part proportion quotient ratio scale scale factor unit fraction variable whole	Ascending Axis Coordinates Descending Diagonal Difference Direct Equation Gradient Graph Horizontal Incline Input Intercept Linear Multiplier Negative Origin Output Parallel Proportion Quadrant Ratio Sequence Scale Straight Line Substitute Unitary Vertical	arithmetic equivalent inequality position simplify coefficient geometric linear product substitute difference HCF non-linear sequence term	Percent Equivalent Integer Commutative Exponent Significant Underestimate Decimal Reduce Invest Base Indices Round Fraction Growth Standard Form Power Negative Overestimate Deposit Metric	Alternate Congruent Formula Infinity (∞) Mirror line Perimeter Polygons Sector Vertex Angle Constructions Horizontal Isosceles Object Perpendicular Reflect Sum Vertical Area Corresponding Image Line of symmetry Parallel Pi Regular polygon Transversal	average data hypothesis proportion spread consistent discrete data outlier represent total continuous data frequency primary data sampling
	Key piece	Students will be assessed at the end of each block of learning (approx. every 8-10 lessons topic dependent)					
	Application of knowledge (Assessment)	**Assessment 1-KS3 Assessment Window GL Progress Test**		**Assessment 2-KS3 Assessment Window**		**Assessment 3-KS3 Assessment Window**	
	Revision Strategy	**Knowledge organisers-Look, Cover, Write Check Correct**		**Flashcards-remember key formulas**		**Mind mapping-planning key ideas for content**	
	Wider Links	Fractional thinking, algebraic reasoning/thinking, applications of number/number theory, links to catering, science and DT. Wider links to data analysis, cooking/recipes and money skills outside the classroom. Scale links to art/scaled drawings in architecture.	GIN Day 1 – Fibonacci Day, algebra, sequences, links to science, speed distance time and money problems. Links to data representation and predicting situations/statistics.	GIN Day 1 – Fibonacci day, sequences, graph theory – links to science and geography. Used in money and different problem-solving situations outside of the classroom.	GIN Day 1 – Fibonacci Day, GIN Day 2 – Pi Day, GIN Day 3 – National Numeracy Day, sequences, fractional thinking, percentages. Links to data and money problems outside of the classroom. Links to science, DT, Catering, IT, business. Percentage increase/decrease links to investment/depreciation problems.	GIN Day 2 – Pi Day, links to algebraic thinking/notation. Used in architecture/design outside of the classroom.	GIN Day 1 – Fibonacci Day, links to sequences, algebraic representation/reasoning and statistics. Links to the practical elements within science. Often used within business to analyse performance.

Maths	Year 9	HT1	HT2	HT3	HT4	HT5	HT6
	End point:						
	Curriculum Related Expectation	Building on drawing simple straight line graphs students are introduced to $y=mx+c$ in abstract and real life concepts. This will lead on to students deepening their algebraic knowledge with forming and solving equations and introducing inequalities. Students will reinforce their understanding of formula's, equations, expressions and identities and their functions.	Students will extend their ks2 knowledge of 3d shapes by relating the shapes with area and volume. Students will begin to explore plans and elevation of 3d shapes to support this. Students will build on earlier ks3 topics in relation to constructions and extend their knowledge to look at loci.	Student will expand their knowledge of the number system including looking at real, rational and irrational numbers. Students will practice their number skills without the use of a calculator and revisit looking at the HCF and LCM. Students will further evaluate maths in real life contexts by relating percentages to tax and interest.	Students will revise and revisit their knowledge on angle rules and apply them to more complex angle problems. Students will build on their knowledge of symmetry from year 8 to understand rotation and translation of shapes understanding the importance of congruence. Students are introduced to the relationship of the sides on a right angled triangle and the Pythagoras theorem by consolidating their understanding of squares and roots whilst introducing the concept of $a^2+b^2=c^2$.	Students will develop their existing knowledge of transformations to include enlargement and learn mathematical meaning of similar. Some students will progress on to look at negative scale factors. Students will deepen their knowledge of inverse relationships by exploring speed/distance /time and density/mass/volume in both a numerical and graph format.	Students build upon their year 7 and year 8 knowledge to calculate the probabilities of single and combined events. Students look at a variety of probability representations and investigate the multiplication rule. Students extend their knowledge of graphs by initially looking at the quadratic graph and understanding the symmetry of the curve and interpreting xy values. Students are also introduced to cubic and reciprocal graphs and extend their linear graph knowledge on to shading inequality regions.
	Students need to know	• the meaning of • y=mx+c • as the general form of an equation of a straight line • the interpretation of m and c • in abstract and real life contexts • how to explore rearranging formulae and how this links to solving equations • the difference between equations, formulae, identities and expressions • how to test conjectures by development of algebraic skills by developing chains of reasoning	• How to draw plans and elevations of 3d shapes and use this to help to explore the surface area and volume of 3d shapes. • How to formally look at the idea of a locus and the standard constructions using a straight edge and a pair of compasses. • The meaning of congruency and the formal aspect of identifying congruent triangles. • The key formulas of volume and surface area for 3d shapes • Can identify plans and elevations and the shapes they represent.	• A deeper understanding of the number system including rational and real numbers, with the higher strand also looking at simple surds. • Number skills both with and without a calculator as necessary including standard form and HCF/LCM. • An extension on prior learning relating to fractions and decimals. • How to complete reverse percentage problems with higher attainers stretched by looking at repeated percentage change. • What decimals multipliers are and how to use them within calculations. • Number skills in various financial contexts. • The language of financial mathematics. • Simple ideas of taxes and wages and percentages applied in contexts including simple and compound interest.	• A deeper understanding of angle rules and properties, applying them to increasingly complex problems • In depth, the features of constructions and why they work • Further elements of rotational symmetry and reflection and start to study translations described in vector form. They compare the different effects of transformations studied so far, understanding that objects and images are congruent • The relationship between the sides of a right angled triangle and how to apply Pythagoras theorem	• how to develop their knowledge of transformations to include enlargements • the mathematical meaning of the word similar • how to find an unknown side in similar shapes • how to solve all types of ratio problems and make links with direct proportion • the meaning of inverse proportion • how to compare unit pricing problems using scaling • links between speed/distance/time formulae and density/mass/volume • other compound units including flow problems • how to convert compound units such as m/s to km/h including metric and imperial conversions	• how to interpret and create different types of graphs • a quadratic graph and how to interpret information from it including the symmetry of the curve and reading off x and y values • the context of reciprocal and exponential graphs and how to interpret • how to use graphing software to explore the general form of curves • how to use graphs to solve inequalities as well as simultaneous equations
	Students should be able to	• develop algebraic and graphical fluency, including understanding linear and simple quadratic functions • recognise and sketch graphs of linear and quadratic functions • calculate and interpret gradients and intercepts of graphs numerically, graphically and algebraically • use linear and quadratic graphs to estimate values of y for given values of x to find approximate solutions of simultaneous equations • solve problems involving direct and inverse proportion, including graphical and algebraic representations • understand and use standard mathematical formulae including rearranging formula to change the subject • model situations or procedures by translating them into algebraic expressions or formulae, and by using graphs • make and test conjectures about patterns and relationships; look for proofs and counter examples • begin to reason deductively in geometry, number and algebra • use the concepts and vocabulary of prime numbers, factors, multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation • simplify and manipulate algebraic expressions to maintain equivalency by expanding products of two or more binomials	• Use language and properties precisely to analyse numbers, algebraic expressions, 2D and 3D shapes • Use the properties of faces, surfaces, edges and vertices of cubes, cuboids, prisms, cylinders, pyramids, cones and spheres to solve problems in 3D • Derive and apply formulae to calculate and solve problems involving; perimeter and area of triangles, parallelograms, trapezia, volume of cuboids and other prisms • Draw and measure line segments and angles in geometric figures, including interpreting scale drawings • Derive and use the standard ruler constructions; recognise and use the perpendicular distance from a point to a line as the shortest distance to the line. • Describe, sketch and draw using conventional terms and notations; points, lines, parallel lines, perpendicular lines, right angles, regular polygons and other polygons that are reflective and rotationally symmetric • Use the standard conventions for labelling the sides and angles of a triangle ABC and know how to use the criteria for congruence of triangles.	• Use the four operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative. • Use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, HCF, LCM, prime factorisation, including using product notation and the unique factorisation property. • Interpret and compare numbers in standard form A×10^n, 1≤n<10 where n is a positive or negative integer or zero. • Appreciate the infinite nature of the sets of integers, real and rational numbers. • Define percentage as 'number of parts per hundred', interpret percentage changes as a fraction or a decimal, interpret these multiplicatively, express one quantity as a percentage of another, compare two quantities using percentages, and work with percentages greater than 100. • Interpret fractions and percentages as operators. • Solve problems involving percentage change, including percentage increase, decrease and original value problems and simple interest in financial mathematics. • Select and use appropriate calculation strategies to solve increasingly complex problems. • Interpret when the structure of a numerical problem requires additive, multiplicative, or proportional reasoning. • Develop their use of formal mathematical knowledge to interpret and solve problems, including in financial mathematics.	• 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 user the perpendicular distance from a point to a line as the shortest distance to the line • Describe, sketch and draw using conventional terms and notations; points, lines, parallel lines, perpendicular lines, right angles, regular polygons and other polygons that are reflectively and rotationally symmetric • Apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles • Understand and use the relationship between parallel lines and alternate and corresponding angles. • Identify properties of, and describe the results of, translations, rotations and reflections applied to given figures • Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems • se Pythagoras' theorem to solve problems involving right-angled triangles • 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 • Interpret mathematical relationships both algebraically and geometrically • Begin to reason deductively in geometry, number and algebra, including using geometrical constructions • Begin to model situations mathematically and express the results using a range of formal mathematical expressions	• construct similar shapes by enlargement, with and without coordinate grid • use scale factors, scale diagrams and maps • apply angle facts, triangle congruence, similarity, and properties of quadrilaterals to derive results about angles and sides • understand that a multiplicative relationship between two quantities can be expressed as a ratio or a fraction • use Pythagoras' theorem and trigonometric ratios in similar triangles to solve problems Involving right angles triangles • 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 ratio • solve problems involving direct and inverse proportion • use compound units and change freely between standard units	• recognise, sketch and produce graphs of quadratic functions of one variable with appropriate scaling • using quadratic and linear graphs to estimate values of x for given values of y and vica versa • find approximate solutions to contextual problems from given graphs of a variety of functions including exponential and reciprocal graphs • use linear graphs to find approximate solutions of simultaneous linear equations • understand and use the concepts of vocabulary of expressions, equations, inequalities terms and factors
	Keywords	asymptote binomial co-ordinate factor gradient	2D 3D Arc Bisector Congruent	Exponent Integer Multiple Positive Product	Adjacent Enlargement Invariant Orientation Scale Factor	Centre of enlargement Direct Multiplier Orientation Scale Factor	curve include parabola satisfy solution set

		HCF inequality intercept inverse linear multiples operation parallel perpendicular prime proof quadratic rearrange reciprocal solve substitute variable verify	Cross-section Dimensions Edge Equidistant Face Locus Net Perspective Perpendicular Plan Polygon Prism Protractor Rectangle Tetrahedron Vertex	Root Sum Difference Factor Inverse Negative Power Quotient Simplify Surd Directed Fraction Irrational Operation Prime Rational Square	Symmetry Centre of Enlargement Horizontal Negative Regular Square Number Vertex Corresponding Hypotenuse Opposite Rotate Square root Vertical	Constant Enlargement Negative Product Variable Corresponding Linear Non-Linear Ratio	vertex excluded inequality quadratic simultaneous symmetry exponential intersection reciprocal solution turning point
	Key piece	Students will be assessed at the end of each block of learning (approx. every 8-10 lessons topic dependent)					
	Application of knowledge (Assessment)	**Assessment 1-KS3 Assessment Window**		**Assessment 2-KS3 Assessment Window**		**Assessment 3-KS3 Assessment Window**	
	Revision Strategy	**Knowledge organisers-Look, Cover, Write Check Correct**		**Flashcards-remember key formulas**		**Mind mapping-planning key ideas for content**	
	Wider Links	GIN Day 1 – Fibonacci day, sequences, graph theory – links to science and geography. Used in money and different problem-solving situations outside of the classroom.	GIN Day 2 – Pi Day, algebraic reasoning. Links to DT, architecture/ engineering. Links to flow problems (science).	GIN Day 1 – Fibonacci Day, GIN Day 2 – Pi Day, GIN Day 3 – National Numeracy Day, sequences, fractional thinking, percentages. Links to data and money problems outside of the classroom. Links to science, DT, Catering, IT, business. Percentage increase/decrease links to investment/depreciation problems. Links to life skills lessons in tax/personal finance.	GIN Day 2 – Pi Day, links to algebraic thinking/notation. Used in architecture/design outside of the classroom. Pythagoras – technology, wider links in projectile motion/speed distance time calculations (physics).	Fractional thinking, algebraic reasoning/thinking, applications of number/number theory, links to catering, science and DT. Wider links to data analysis, cooking/recipes and money skills outside the classroom. Scale links to art/scaled drawings in architecture.	GIN Day 1 – Fibonacci Day, algebra, sequences, links to science, speed distance time and money problems. Links to data representation and predicting situations/statistics.

	Year 10	HT1	HT2	HT3	HT4	HT5	HT6
	End point:						
	Curriculum Related Expectation	Students develop previous knowledge of similarity and enlargement. Congruency and trigonometry is introduced with students gaining a secure understanding of the trig ratios and how to apply them to problem solving questions.	Students will reinforce techniques and deepen understanding of equations and inequalities. Students will find solutions to simultaneous equations both graphically and algebraically.	Students can interpret and use bearings in a range of contexts. Apply the formula for arc length and sector area as well as applying key formula to volume of sphere and cones. Students will be secure in using vectors and use this to describe 'journeys' within shapes using correct notation.	Students build on prior knowledge to be able to use methods in supporting answering increasingly complex problems that include information presented in a variety of formats. Students continue to develop understanding of probability and can apply this when completing and interpreting tree diagrams	Students build upon knowledge secured in KS3 and deepen understanding for the interpretation of data, particularly evaluating and criticising statistical methods, and diagrams.	Students can accurately use methods to find HCF/LCM and prime factor decomposition. Students can build upon knowledge of indices and apply this to standard form questions
	Students need to know	• How to look more formally at things like similar triangles building on their previous learning of enlargement and similarity. • How to use parallel line angle rules and apply this to similarity • That trigonometry can be used a special case of similarity within right angled triangles • How to calculate with trigonometry	• What the difference between equations and inequalities are • The difference between a solution and a solution set • How number lines and graphs can be used to represent the solutions to inequalities • How to form equations • How to factorise quadratics (Higher) • How to solve simultaneous equations by both algebraic and graphical methods using strategies such as substitution or elimination • How to find a solution to a pair of simultaneous equation where one is quadratic (Higher only)	• How to apply parallel line angle rules • How to apply their knowledge of Pythagoras and trigonometry in another context as well as model real life situations • How to use the formula for arc length and sector area (building upon a secure understanding of fractions) • Application of circle theorems (Higher only) • To use vectors to describe translations • To make sense of operations such as addition, subtraction and multiplication of vectors • To use vectors to form proofs (Higher tier only)	• How to highlight similarities and differences and links of ratio to other areas of mathematics including both algebra and geometry. • Use calculator methods for repeated percentage change/growth and decay problems. • Use financial contexts with percentages and interest • How to use diagrams to represent probabilities • How to use conditional probability (Higher tier only)	• How to represent data • How to interpret data • How to evaluate and criticise statistical methods and diagrams • Identify different types of data	• Students will know • How to use non calculator methods for the four operations with integers • How to use non calculator methods for the four operations with fractions and percentages • How to work with irrational numbers (higher tier only) • How to work with limits of accuracy.
Maths	**Students should be able to**	• extend and formalise their knowledge of ratio and proportion in working with measures and geometry • compare lengths, areas and volumes using ratio notation and/or scale factors; make links to similarity • interpret and use fractional {and negative} scale factors for enlargements • apply the concepts of congruence and similarity, including the relationships between lengths, {areas and volumes} in similar figures • use mathematical language and properties precisely • make and test conjectures about the generalisations that underlie patterns and relationships; look for proofs or counter-examples • develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems • extend and formalise their knowledge of ratio and proportion, including trigonometric ratios • 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 sin θ, cos θ, tan θ for required angles • know and apply the sine rule and cosine rule to find unknown lengths and angles (Higher tier only) • know and apply to calculate the area, sides or angles of any triangle (Higher tier only)	• understand algebraic simplification and manipulation to include quadratic expressions • translate simple situations or procedures into algebraic expressions or formulae; derive an equation, solve the equation and interpret the solution • select appropriate concepts, methods and techniques to apply to unfamiliar and non-routine problems; interpret their solution in the context of the given problem. • recognise, sketch and interpret graphs of linear functions, • factorising quadratic expressions of the form x^2+bx+c • solve quadratic equations algebraically by factorising (Higher only at this stage) • solve linear inequalities in one {or two} variable{s}, {and quadratic inequalities in one variable}; represent the solution set on a number line, {using set notation and on a graph} • extend their understanding of algebraic simplification and manipulation to include quadratic expressions • form algebraic expression, solve the equation and interpret the solution • interpret solutions in the context of the given problem • solve two simultaneous equations in two variables (linear/linear {or linear/quadratic}) algebraically; • recognise, sketch and interpret graphs of linear functions and quadratic functions.	• interpret and use bearings • compare lengths…using scale factors • apply Pythagoras' Theorem and trigonometric ratios to find angles and lengths in right-angled triangles (and, where possible, general triangles) in two dimensional figures • know and apply the sine rule and cosine rule to find unknown lengths and angles (Higher only) • use mathematical language and properties precisely • reason deductively in geometry, number and algebra, including using geometrical constructions • make and use connections between different parts of mathematics to solve problems • identify and apply circle definitions and properties, including: centre, radius, chord, diameter, circumference, tangent, arc, sector and segment • calculate arc lengths, angles and areas of sectors of circles • calculate surface areas and volumes of spheres, pyramids, cones and composite solids • apply and prove the standard circle theorems concerning angles, radii, tangents and chords, and use them to prove related results • describe translations as 2D vectors • 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 – higher only).	• understand algebraic simplification and manipulation to include quadratic expressions • translate simple situations or procedures into algebraic expressions or formulae; derive an equation, solve the equation and interpret the solution • select appropriate concepts, methods and techniques to apply to unfamiliar and non-routine problems; interpret their solution in the context of the given problem. • recognise, sketch and interpret graphs of linear functions, • factorising quadratic expressions of the form x^2+bx+c • solve quadratic equations algebraically by factorising (Higher only) • solve linear inequalities in one or two variable and quadratic inequalities in one variable represent the solution set on a number line • extend their understanding of algebraic simplification and manipulation to include quadratic expressions • form algebraic expression, solve the equation and interpret the solution • interpret solutions in the context of the given problem • recognise, sketch and interpret graphs of linear functions and quadratic functions. • use fraction arithmetic and convert between fractions, decimals and percentages. • understand and use of tree diagrams, Two-way tables and Venn diagrams • use conditional probability (Higher tier students.)	• use describe, interpret and compare observed distributions of a single variable through appropriate graphical representation involving discrete continuous and grouped data • 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 • 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) • infer properties of populations or distributions from a sample, whilst knowing the limitations of sampling • interpret and construct tables and line graphs for time series data • 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 apply statistics to describe a population. • interpret, analyse and compare the distributions of data sets from univariate empirical distributions through appropriate measures of central tendency (including modal class) and spread {including quartiles and inter quartile range}	• consolidate their numerical and mathematical capability from key stage 3 • calculate exactly with fractions, multiples of π and surds (Higher only) • change recurring decimals into their corresponding fractions and vice versa (Higher only) • apply and interpret limits of accuracy when rounding or truncating, including upper and lower bounds • develop their use of formal mathematical knowledge to interpret and solve problems, including in financial contexts • make and use connections between different parts of mathematics to solve problems • describe and continue sequences • recognise and use sequences of triangular, simple arithmetic progressions, Fibonacci type sequences, quadratic sequences, and simple geometric • deduce expressions to calculate the nth term of linear sequences and quadratic sequences (Higher only) • recognise and use sequences of square and cube numbers • estimate powers and roots of any given positive number • calculate with roots, and with integer and fractional (Higher only) • calculate with numbers in standard form $A\times10^n$, where $1\leq A<10$ and n is an integer • simplifying expressions involving sums, products and powers, including the laws of indices • simplify and manipulate algebraic expressions (including those involving surds and algebraic fractions by factorising quadratic expressions of the form x^2+bx+c Higher only) • 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 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
	Keywords	Enlarge Origin Scale Factor Object Ratio Image Reflection Negative scale factor Similar Alternate Co-interior Fractional Scale Factor Hypotenuse Congruence Proportion Correspond Parallel Centre of enlargement	Variable Equation Solve Expression Solution Inverse Balance Inequality Union Gradient Linear Plot Coordinate Solution Intersect Region Equation Substitute	Compass Angle Enlarge Protractor Similar Anticlockwise Bearing Clockwise Sine Cosine Perpendicular Radius Diameter Chord Segment Sector Scalar Magnitude Direction Parallel Multiplier Resultant Column Vector	Ratio Equivalent Proportion Equation Bearing Compare Convert Part Fraction Origin Scale Combine Unit Whole Gradient Exchange Integer	Populations Biased Midpoint Interval Sector Mean Outlier Trend Upper / Lower Quartile Origin Sample Random Endpoint Difference Frequency Density Median Average Range Interquartile Interpolation Representative Frequency Class Composite Distribution Mode Estimate Cumulative Correlation Extrapolate	Integer Area Index form Nth term cube Surd Co-efficient Factor Factorise Product Geometric Triangular Linear Term Multiples Prime Intersection Square Fibonacci Co-efficient Difference
	Key piece	Students will be assessed at the end of each block of learning (approx. every 8-10 lessons topic dependent)					
	Application of knowledge (Assessment)		**Assessment 1-KS4 Assessment Window**		**Assessment 2-KS4 Assessment Window**		**Assessment 3-KS4 Assessment Window**
	Revision Strategy		**Knowledge organisers-Look, Cover, Write Check Correct**		**Flashcards-remember key formulas**		**Mind mapping-planning key ideas for content**
	Wider Links	GIN Day 2 – Pi Day, algebraic reasoning. Links to DT, architecture/ engineering. Links to flow problems (science). Trigonometry links to projectile motion/speed distance.	Sequences, graph theory – links to science and geography. Used in money and different problem-solving situations outside of the classroom. Inequality problems used in finance and problem-solving questions in geometry and statistics/data.	Links to algebraic thinking/notation. Used in architecture/design outside of the classroom.	Fractional thinking, algebraic reasoning/thinking, applications of number/number theory, links to catering, science and DT. Wider links to data analysis, cooking/recipes and money skills outside the classroom. Scale links to art/scaled drawings in architecture. Links with 'games of chance' and chance of events.	Algebraic representation, graph theory, percentage problems. Links to geography and science.	Sequences, fractional thinking, percentages. Links to data and money problems outside of the classroom. Links to science, DT, Catering, IT, business. Percentage increase/decrease links to investment/depreciation problems. Indices links to compound interest (mortgages/loans/interest)

Maths

Year 11	HT1	HT2	HT3	HT4	HT5	HT6
End point:						
Curriculum Related Expectation	Students build upon previous knowledge of linear graphs and use this to explore non linear graphs and recognise graphs with different shapes. Students will also be able to apply this to real life graphs such as conversions graphs and speed/distance/time	Students review knowledge expanding single brackets before moving onto quadratics. They then consolidate learning on changing the subject incorporating this into inequalities. Students are also formally introduced to function notation.	Personalised curriculum • Staples lesson • QLA lesson • Formula lesson • Fluency lesson All lessons use information from pupil progress to highlight gaps in learning and lessons are planned around this information	Personalised curriculum • Staples lesson • QLA lesson • Formula lesson • Fluency lesson All lessons use information from pupil progress to highlight gaps in learning and lessons are planned around this information	Exam prep	Exam prep
Students need to know	• How to plot and interpret straight line graphs from an equation • Higher tier will also study perpendicular lines • How to sketch linear, quadratic and simple cubic graphs • How to find the roots of quadratic graphs • How to interpret real life graphs including speed/distance/time • Investigate the area under a curve	• The difference between and equation and an identity • How to simplify and manipulate algebraic expressions • How to identify roots and deduce roots algebraically • Higher tier will know how to identify roots and deduce roots and turning point by completing the square • How to solve quadratic equations by factorising • Higher tier will know how to solve quadratic equations by using the quadratic formula • How to solve two simultaneous equations algebraically and find approximate solutions using a graph • Higher tier will know how to solve simultaneous equations including a quadratic • How to substitute into functions				
Students should be able to	• Plot and interpret graphs • Interpret the gradient of a straight line as a rate of change • Identify parallel and perpendicular lines alongside finding the equation of such lines • Find approximate solutions to simultaneous equations (linear/non-linear) using graphs • Recognise, sketch and interpret graphs of linear/quadratic/simple cubic and reciprocal functions (exponential for higher only) • Find approximate solutions using a graph • Identify and interpret roots, intercepts of quadratic functions graphically • Recognise and use equation of a circle with centre at the origin (Higher only) • Plot and interpret graphs of non-standard functions in real contexts, to find approximate solutions to problems such as distance, speed and acceleration. • Interpret the gradient at a point on a curve as the instantaneous rate of change (gradients and tangents and chords) Higher only • Estimate gradients of graphs and areas under graphs and interpret (Higher only)	• Solve linear inequalities in one variable • Know the difference between and equation and an identity and argue mathematically to show algebraic expressions are equivalent: (higher tier will use proofs) • Identify and interpret roots and turning point, deduce roots algebraically (Higher will use identify the turning point by completing the square. • Solve two simultaneous equations in two variables linear/linear (higher could be linear/quadratic) algebraically and find approximate solutions from a graph. • Translate simple situations or procedures into algebraic expressions or formulae; derive an equation (or two simultaneous equations), solve and interpret the solution. • Interpret simple expressions as functions with input and output including inverse. • Higher only Interpret the succession of two functions as a composite function • Solve linear inequalities in on or two variables and represent on a number line • Higher only – repre4sent one linear and one quadratic inequality and represent on a graph				
Keywords	Parallel Horizontal Intercept Linear Equation Gradient Reciprocal Quadratic Equation Horizontal Estimate Substitute Cubic Reciprocal Reflection Mirror Proportion Distance Speed Time Scale	Expand Bracket Simplify Expression Solutions Surd Inequality Rearrange Factorise HCF Like/Unlike terms Term Equation Formula Perimeter Inverse Coefficient Binomial Quadratic Product Roots Significant Figures Area Subject				
Key piece	Students will be assessed at the end of each block of learning (approx. every 8-10 lessons topic dependent)		Student are assessed at regular intervals as deemed appropriate following the personalised curriculum			
Application of knowledge (Assessment)		**Assessment 1-KS4 Assessment Window**		**Assessment 2-KS4 Assessment Window**		
Revision Strategy		**Knowledge organisers- Look, Cover, Write Check Correct**		**Flashcards-remember key formulas**		
Wider Links	Algebraic representation/reasoning, data representation. Links with speed, distance, time and money problems. Links to life skills (personal finance) science, and geography.	Sequences, graph theory – links to science and geography. Used in money and different problem-solving situations outside of the classroom. Inequality problems used in finance and problem-solving questions in geometry and statistics/data.	Links to geometry, algebraic representation and number theory.	Links to algebraic representation and reasoning, geometrical reasoning and number theory.		