



Topic name	Term	Skills developed	Prior Learning	Next link in curriculum
Similarity and Congruence	Spring	<ul style="list-style-type: none">Develop their understanding of similarity studied in KS3<ul style="list-style-type: none">How to prove congruence?What makes two shapes similar?Understand the relationship between scale factors for length, area and volume	<ul style="list-style-type: none">Y9 Autumn – Constructions and CongruencyY9 Summer – Enlargement and Similarity	<ul style="list-style-type: none">Use of scale factors applied to 2D and 3D shapes to solve increasingly challenging problems
Trigonometry	Autumn	<ul style="list-style-type: none">Use sine, cosine and tangent ratios to calculate missing sides and angles in right-angled triangles.Calculate sides in right-angled triangles using Pythagoras' Theorem.Use Trigonometry and Pythagoras in 3D	<ul style="list-style-type: none">Y9 Similar shapes and enlargement	<ul style="list-style-type: none">Using trigonometry and Pythagoras/ Theorem to calculate missing sides and angles in any triangle.
Further Trigonometry	Autumn	<ul style="list-style-type: none">Accuracy and boundsGraphs of trigonometric functionsFurther trigonometry<ul style="list-style-type: none">Area of a triangle using $0.5 ab \sin C$Sine ruleCosine rule	<ul style="list-style-type: none">Y9 legacy SOW - Trigonometry	<ul style="list-style-type: none">Using upper and lower bounds to complete calculations.Transformations of functions.Use sin cos and tan to calculate angles of any size.



		<ul style="list-style-type: none">○ Trigonometry without a calculator○ 3D trigonometry		
Quadratics, expanding more than two brackets, sketching graphs, graphs of circles, cubes and quadratics	Autumn	<ul style="list-style-type: none">● Understanding of expanding brackets will be developed so that students will be able to multiply together two or three brackets with more than one term in them.● Pupils will develop their understanding of solving quadratics using the following methods<ul style="list-style-type: none">○ Factorising (seen before)○ Quadratic Formula (seen before)○ Completing the square● An introduction to sketching functions<ul style="list-style-type: none">○ Sketching quadratics and cubics○ Finding the turning point of a quadratic by completing the square● Solve linear and quadratic simultaneous equations graphically. This builds on their understanding of how to achieve the same outcome algebraically.● Solve more complex equations by using recursive iteration.	<ul style="list-style-type: none">● Y9 legacy SOW – Expanding Brackets and Solving Equations● Y10 Autumn – Quadratic, Cubic and other Graphs	<ul style="list-style-type: none">● Further work on graphs of various functions will be seen throughout the GCSE course.● The study of polynomials and other functions is seen at A-level and finding maximum and minimum points on these graphs are found using differentiation at this stage.



Angles	Spring	<ul style="list-style-type: none"> ● Measure and read bearings ● Make scale drawings using bearings ● Calculate bearings using angle rules ● Solve bearings problems using trigonometry and Pythagoras. 	<ul style="list-style-type: none"> ● Y10 Autumn term 	<ul style="list-style-type: none"> ● Using Pythagoras' Theorem and Trigonometry is developed further at A level.
Expanding and Factorising	Spring	<ul style="list-style-type: none"> ● Factorise quadratic expressions by completing the square. ● Solve quadratic equations by completing the square and using the quadratic formula. 	<ul style="list-style-type: none"> ● Y10 quadratics 	<ul style="list-style-type: none"> ● Sketching and transforming Functions in Y11.
Circles	Spring	<ul style="list-style-type: none"> ● Learn all necessary circle theorems for the GCSE syllabus. ● Apply the circle theorems to increasingly challenging problems. ● Be able to prove circle theorems. 	<ul style="list-style-type: none"> ● Y9 Spring – Area of Trapezia and Circles ● Y8 Summer – Angles in Parallel Lines and Polygons 	<ul style="list-style-type: none"> ● Apply the circle theorems to unfamiliar questions that involve other techniques learned earlier in the course such as Pythagoras' Theorem and trigonometry.
Ratio	Spring	<ul style="list-style-type: none"> ● Solve problems involving ratios, fractions and algebra. ● Solve best buy problems ● Calculate with ratio with area and volume 	<ul style="list-style-type: none"> ● Y9 Summer 1 – Solving ratio and proportion problems 	<ul style="list-style-type: none"> ● Y11 Spring – Multiplicative reasoning
Multiplicative Reasoning	Spring	<ul style="list-style-type: none"> ● Compound interest and depreciation ● Multiplication and division to calculate problems with compound measures ● Direct and inverse proportion 	<ul style="list-style-type: none"> ● Y9 Spring – Using Percentages ● Y9 Summer – Solving Ratio and Proportion Problems 	<ul style="list-style-type: none"> ● Link iterative methods to compound growth and decay. ● Pupils use their understanding to explain their answers in context.
Probability	Spring	<ul style="list-style-type: none"> ● Calculating probabilities <ul style="list-style-type: none"> ○ Combined events 	<ul style="list-style-type: none"> ● Y9 Summer - Probability 	<ul style="list-style-type: none"> ● Solve complex questions related to probability out of context that include algebra or surds.



		<ul style="list-style-type: none">○ Independent and mutually exclusive events● Relative frequency● Conditional probabilities including tree diagrams● Venn diagram notation and finding probabilities using Venn diagrams		
Collecting data	Summer	<ul style="list-style-type: none">● Understand what is being asked in a variety of problems<ul style="list-style-type: none">○ What and how to collect data○ Understand primary and secondary data○ Consider fairness● Pupils will learn what a population and sample is<ul style="list-style-type: none">○ Sample size will be discussed and how it may affect the reliability of some data● Plan how best to minimise bias in data collection and the reason for wanting to do so● Understand how to perform Capture-Recapture and see examples of when it is used	<ul style="list-style-type: none">● Y8 Autumn – Representing Data● Y8 Summer – The Data Handling Cycle	<ul style="list-style-type: none">● Use these techniques to carry out a survey and collect data.● Be able to explain, in context, how sample size, type of data, bias, etc may have affected a particular set of data that has been collected.



<p>Cumulative frequency, box plots and histograms</p>	<p>Summer</p>	<ul style="list-style-type: none"> ● Pupils will learn how to draw and interpret a number of data presentation techniques <ul style="list-style-type: none"> ○ Cumulative Frequency Diagrams ○ Box plots ○ Histograms ● Pupils will develop their understanding of averages and measures of spread by calculating these from statistical diagrams and will also be introduced to interquartile range ● By the end of this topic pupils will be able to estimate the mean from a histogram. This process is developed from calculating averages from frequency tables. 	<ul style="list-style-type: none"> ● Y8 Autumn – Representing Data ● Y8 Summer – The Data Handling Cycle 	<ul style="list-style-type: none"> ● Pupils should be able to apply their new learning to questions posed to them out of context; it is particularly important for them to be able to distinguish the difference between each statistical diagram. ● A number of these statistical diagrams are studied at A-level as well as required in GCSE examinations. ● Further work on measures of spread is seen in year 12 including standard deviation.
<p>Non-Calculator methods</p>	<p>Summer</p>	<ul style="list-style-type: none"> ● Pupils will understand how to use and calculate with surds and upper and lower bounds ● Understand limits of accuracy ● Solve financial maths problems 	<ul style="list-style-type: none"> ● Y9 Spring – Maths and Money 	<ul style="list-style-type: none"> ● Many GCSE questions require pupils to be able to identify a range of possible solutions or to work out the error bounds of solutions.
<p>Indices and roots</p>	<p>Summer</p>	<ul style="list-style-type: none"> ● Work with fractional indices ● Calculate with numbers in standard form 	<ul style="list-style-type: none"> ● KS3 work on positive and negative indices and standard form 	<ul style="list-style-type: none"> ● Working with Indices is a fundamental area of mathematics. Indices appear throughout many types of questions and problems at Ks4 and KS5.
<p>Manipulating Expressions</p>	<p>Summer</p>	<ul style="list-style-type: none"> ● Learn how to add, subtract, multiply and divide algebraic fractions 	<ul style="list-style-type: none"> ● KS3 work on solving equations 	<ul style="list-style-type: none"> ● This topic is widening the array of equations and inequalities which



		<ul style="list-style-type: none">• Solve equations involving algebraic fractions• Be able to form and solve equations and inequalities with fractions• Use algebraic proof	<ul style="list-style-type: none">• Y10 Autumn – work on solving equations and inequalities	pupils can solve. This is developed further at A level.
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Number	Geometry	Ratio & proportion	Algebra	Statistics
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