



Intent: To extend the core concepts met in Years 7 and 8, providing a strong foundation for the most challenging concepts in Years 10 and 11.

Mathematics

Year 9	Number	Algebra	Geometry	Ratio & Proportion	Statistics & Probability
Knowledge (facts, information, concepts and key terminology)	Indices, surds, standard form, factors and multiples, calculations with fractions.	Expanding and simplifying expressions, factorising into one and two brackets, substitution, solving linear and quadratic equations, rearranging formulae.	Angle properties, Pythagoras' Theorem, trigonometry.	Linear functions, percentages of amounts, percentage change, reverse percentages, repeated percentage change.	Theoretical and experimental probability, mutually exclusive and independent events, two-way tables, frequency trees, Venn diagrams, tree diagrams. Statistical diagrams, measures of average, measures of spread.
Understanding (ability to connect and synthesise knowledge within a context)	The transferability of numerical concepts. Students will appreciate that many different contexts can still follow the same procedure.	That numerical methods can be generalised into abstract concepts. Algebra follows the same principles as numerical calculations.	Core relationships that interlink right-angled triangles, namely lengths and/or angles.	The equivalence between fractions, decimals, percentages and ratios. Subtleties within contexts which affect calculation.	Despite probability being a product of randomness, there is a theoretical approach to calculating chance. Learners will understand the different contexts to probabilities and the diagrams associated. The reasons for using different statistical diagrams.
Skills (successful application of knowledge and understanding to a specific task)	Apply foundational knowledge of the number system to answer a variety of questions using the most efficient method. Transfer numerical calculations to other areas of mathematics.	Translate concrete problems into abstract questions and follow procedures to solve generalised problems.	Identify the appropriate technique to find missing information related to shapes. Use combination of topic areas to solve more challenging problems.	Fluently interchange between fractions, decimals, percentages and ratios in order to answer challenging questions based upon the most efficient method. Apply knowledge to contextual problems.	Apply the appropriate method to answer different types of questions. Evaluate the likelihood of outcomes based upon calculations. Use mathematics to make sensible predictions. Be able to accurately draw statistical diagrams.
Formal Assessments (those done by all/vast majority of the cohort)	Termly cumulative assessments covering content from start of year 7. Topic Assessments after each topic has been delivered.				

By the end of the year students on course for at least a grade 5 will... be proficient in fundamental procedures and have a strong understanding of core concepts in number, algebra, geometry, ratio and proportion, and statistics and probability.

The timings and order of delivery shown are approximate, these may change on a class-by-class basis

Term 1

<u>Topic</u>	<u>Breakdown</u>
Percentages (non-calculator)	Percentage change
	Percentages of amounts
	Percentage increase and decrease
	Reverse percentages
	Making decisions
Equations and Formulae	Solving equations recap
	Solving equations with fractions
	Writing formulae from worded problems
	Substituting into formulae
	Rearranging formulae
Angles in parallel lines	Basic angles
	Corresponding
	Alternate
	Co-interior
	All angles in parallel lines
Indices	Basic rules
	Negative powers and zero
	Fractional powers
	Combining rules

Term 2

<u>Topic</u>	<u>Breakdown</u>
Standard Form	Converting to and from standard form
	Adding and subtracting in standard form
	Multiplying and dividing in standard form
Expanding and Factorising	Factorising single brackets
	Expanding double brackets
	Factorising double brackets
	Simplifying algebraic fractions
	Expanding three brackets
Surds	Applications of expanding
	Simplifying surds
Pythagoras' Theorem	Multiplying surds
	Finding hypotenuse
	Finding a shorter side
	Making a decision and applications

Term 3

<u>Topic</u>	<u>Breakdown</u>
Statistics	Basic Averages
	Averages from frequency tables
	Interpreting basic graphs and charts
	Frequency Polygons
	Pie Charts
	Range, Quartiles and IQR
	Cumulative Frequency Graphs and Boxplots
Percentages (calculator)	Amounts as percentages
	Percentages of amounts
	Percentages with multipliers
	Percentage increase and decrease
	Repeated percentage change
	Reverse percentages
	Making decisions
Right-angled Trigonometry	Introduction and labelling triangles
	Finding the missing angle
	Finding the missing side (numerator)
	Find the missing side (denominator)
	Making decisions and applications
Probability	Introduction
	Probability of simple events and total probability
	Expectation
	Relative frequency
	Venn diagrams and set notation
	Sample space diagrams and product rule of counting
	Probability trees