Mathematics	**Intent: To build a deep understanding of fundamental concepts within mathematics. Learners will use the strong numerical foundations established in Year 7 to develop fluency in other key subject areas, primarily Number, Ratio and Proportion, Geometry and Algebra.**			
Year 8	**Number**	**Ratio and Proportion**	**Geometry**	**Algebra**
Knowledge (facts, information, concepts and key terminology)	Powers, brackets, indices, products and sums, rounding to place value, rounding to significant figures, bounds, estimation.	Converting between fractions, decimals and percentages, simplifying and sharing ratios, proportional reasoning, maps and scales, pie charts, capture-recapture.	Units, quantities, areas and perimeters of compound shapes. Circles, circumference, area, basic sectors, 3D shapes, volume, surface area, angles properties, angles in shapes, properties of shapes, angles in parallel lines.	Solve linear, one and two-step equations, equations involving brackets, equations with unknowns on both sides, solve inequalities. Types of sequences, nth term of linear sequences, plotting sequences, expanding brackets, solving equations, writing, substituting into and rearranging formulae.
Understanding (ability to connect and synthesise knowledge within a context)	The order in which calculations must be performed. The differences between types of rounding. Approximation can simply a problem when checking.	The equivalence between fractions, decimals, percentages and ratios. How bar models and ratio tables can support learning in order to simplify problems when necessary.	Calculations for area and perimeter are simply an application of adding and multiplication. The properties of 2D and 3D shapes which make them unique. Confidence with the concept of space relating to 2D and 3D shapes. Angles are a numerical representation of a turn and they take different properties depending on where they are present.	The concept of equality and the balancing method for solving equations. Numerical and pictorial sequences can be generalised using algebraic notation. Links between two or more variables can also be represented algebraically.
Skills (successful application of knowledge and understanding to a specific task)	Use an in-depth knowledge of the number system to perform calculations in a number of different ways. Use intervals with rounded values.	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.	Use knowledge of shapes and angles to efficiently solve problems. Find links between shapes in order to lighten the cognitive load when remembering key properties. Apply knowledge and understanding in order to real-life problems.	Successfully interpret contexts to solve problems and transition between solving equations and inequalities. Use algebraic representations to efficiently find any term of a sequence. Being able to transfer numerical skills used in calculations and solving equations to even more abstract concepts, notably generating and rearranging formulae.
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… have developed a fluency and a deep understanding of fundamental concepts in number, proportional reasoning, geometry and algebra.				

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

Term 1

Topic	Breakdown
Order of Operations	Powers
	Order of operations
Rounding and Estimation	Rounding to 'place value'
	Rounding to significant figures
	Bounds
	Estimation
Perimeter and Area 1	Converting simple units
	Perimeters of compound shapes
	Estimating basic quantities
	Areas of compound shapes
Equations and Inequalities	Forming Equations
	Solving linear equations
	Solving linear equations involving expanding brackets
	Solving linear equations with unknowns on both sides
	Solving linear inequalities

Term 2

Topic	Breakdown
Fractions, Decimals and Percentages	Fractions - Decimals
	Fractions -> Decimals –> Percentages
	Percentages -> Decimals -> Fractions
	Using a calculator
Ratio and Proportion	Fractions of amounts
	Introduction
	1:n/n:1
	Share
	Proportional reasoning
	Capture-recapture
	Pie Charts (not drawing)
	Maps and scales
Substitution	Substituting values into formulae
	Substitute and solve
Perimeter and Area 2	Area of Parallelograms
	Area of Triangles
	Area of Trapeziums
	Labelling circles
	Circumference
	Area of circles
	Fractions of circles

Term 3

Topic	Breakdown
Sequences	Describing types of sequences (term to term)
	Position to term
	Applying nth term
	Sequences from patterns
Angles	Introduction to angles
	Angles in triangles
	Properties of triangles
	Angles in quadrilaterals
	Properties of quadrilaterals
	Properties of polygons
3D Shapes	3D Shapes and Vertices, Edges and Faces
	Nets
	Surface Area
	Volume of prisms