

## Year 7 Mathematics Curriculum Rationale

Year 7 learning is built upon the mathematical foundations established in Key Stage 2. All students work to develop a deep and connected understanding of Mathematics, develop procedural fluency and conceptual understanding in tandem and to develop fluent knowledge of key facts and techniques. All students are expected to practise, be resilient and persevere when approaching all areas of Mathematics.

Unit	Core knowledge/skill development	Sequence	Assessment	Literacy, numeracy, PSHE, FBV, other links	ACP and VAA development	Home learning and enrichment
Sequences	Recognise linear and non-linear sequences. Generate sequences from an algebraic rule. Technology is used to produce graphs to link linear and non linear to patterns.	This is an introduction to algebraic techniques and builds on the skills taught in year 6. Calculator skills are developed so that number skills are not a barrier to learning.	End of block assessment		Hardworking – Practice  Linking- Connection finding  Analysing - Critical or logical thinking.	Mathswatch.  Mymaths.  Worksheets.  Challenges.
Algebraic notation	Using function machines with numbers and letters. Use and interpret algebraic notation. Understand and use inverse operations. Form and substitute into expressions. Represent functions graphically.	Students have been introduced to these skills at KS1 and KS2 with numbers. This progresses to use of letters for generalisation to develop a deep understanding of the basic algebraic forms. Extension of sequences to nth term rule.	End of block assessment		Linking - Connection finding  Hardworking- Practice  Realising- Automaticity  Analysing - Critical or logical thinking.	Mathswatch.  Mymaths.  Worksheets.  Challenges.

Unit:	Core knowledge/skill development:	Sequence:	Assessment:	Literacy, numeracy, PSHE, FBV, other links	ACP and VAA development:	Home learning and enrichment
Equality and Equivalence	Understand equivalence. Form and solve one step equations. Collect like terms.	This builds on the previous unit and will lead to more complex equations. Extending calculator use.	End of block assessment		Hardworking- Practice  Analysing - Critical or logical thinking.	Mathswatch.  Mymaths.  Worksheets.  Challenges.
Place value and ordering integers and decimals	Recognise and use place value to 1 billion. Recognise and use decimal place value. Find the range and median. Rounding including to significant figures.	This builds on KS2 work to place value 1 million and extends the number of decimal places. It looks at the decimal base system. Rounding moves on to significant figures and will lead to bounds and truncation.	End of block assessment		Hardworking- Practice	Mathswatch.  Mymaths.  Worksheets.  Challenges. Including binary and standard index form.
Fraction, decimal and percentage equivalence.	Interchange between common decimals, fractions and percentages. Interpret pie charts. Equivalent fractions.	This builds on work done in KS2 and moves on to solving equations with fractional coefficients and extends sequences using fractions. It	End of block assessment		Linking – generalisation Hardworking- Practice  Analysing- Complex and multi-step problem solving  Analysing - Critical or logical thinking.	Mathswatch.  Mymaths.  Worksheets.  Challenges.

Unit:	Core knowledge/skill development:	Sequence:	Assessment:	Literacy, numeracy, PSHE, FBV, other links	ACP and VAA development:	Home learning and enrichment
		also builds on the work done on decimals in the previous section and the focus is to develop a deep understanding of the links between FDP so that students can convert fluently between those most commonly seen in real life.				
Four operations	Application of addition and subtraction including money, perimeter, frequency trees and tables. Application of multiplication and division including area, mean, finding fractions and percentages of amounts. Using the order of operations correctly	This builds on the formal methods laid out in KS1 and 2 and leads to using a calculator correctly and working with negative numbers.	End of block assessment		<p>Linking – Abstraction Hardworking- Practice</p> <p>Analysing – Critical or logical thinking</p> <p>Analysing –Precision Analysing- Complex and multi-step problem solving</p>	<p>Mathswatch.</p> <p>Mymaths.</p> <p>Worksheets.</p> <p>Challenges including standard form, HCF and LCM of algebraic expressions.</p>
Directed number	Order directed number in	Students have had limited experience	End of block assessment		Linking – Connection finding	Mathswatch.

Unit:	Core knowledge/skill development:	Sequence:	Assessment:	Literacy, numeracy, PSHE, FBV, other links	ACP and VAA development:	Home learning and enrichment
	contextualised and abstract situations. Revise four operations using negative numbers. Using a calculator with directed numbers. Solve 2 step equations.	of directed number at primary school, so this unit extends and deepens their understanding. It also builds on work with algebra and four operations. Includes inequality number lines which leads to truncation and error intervals. It revisits sequences, substitution and equations			Analysing – Precision Hardworking- Practice	Mymaths. Worksheets. Challenges
Fractional thinking	Converting mixed numbers and improper fractions. Adding and subtracting fractions.	This unit builds on the Autumn term study of key FDPs. It provides more experience of equivalence and introduces addition and subtraction of fractions. Leading to exploration of fractions greater than one. Revisiting substitution into algebraic formula			Hardworking- Practice Analysing –Precision	Mathswatch. Mymaths. Worksheets. Challenges.

Unit:	Core knowledge/skill development:	Sequence:	Assessment:	Literacy, numeracy, PSHE, FBV, other links	ACP and VAA development:	Home learning and enrichment
		and forming and solving linear equations.				
Constructing, measuring and using geometric notation	Understand and use letters and labelling notation for lines and angles. Draw and measure lines and angles accurately. Classify angles. Identify and draw parallel and perpendicular lines. Recognise types of polygons Construct triangles using SSS, SAS and ASA Draw and interpret pie charts	Builds on KS2 skills using rulers, protractors and other measuring equipment to construct and measure increasingly complex diagrams using correct mathematical notation. Pie charts are studied to gain further practice at drawing and measuring angles. Revisits work on four operations	End of block assessment		Analysing –Precision  Linking - Imagination  Hardworking- Practice	Mathswatch.  Mymaths.  Worksheets.  Challenges
Develop geometric reasoning	Calculate and use angles at a point, straight line and vertically opposite. Calculate missing angles.	This unit covers basic geometric language, introducing angle rules and investigating parallel line rules.	End of block assessment		Creating – Flexible thinking Hardworking- Practice  Creating – Intellectual playfulness	Mathswatch.  Mymaths.  Worksheets.  Challenges

Unit:	Core knowledge/skill development:	Sequence:	Assessment:	Literacy, numeracy, PSHE, FBV, other links	ACP and VAA development:	Home learning and enrichment
		Revisits forming and solving linear equations and addition and subtraction.				Derive simple proofs using angle rules
Developing number sense	Mental arithmetic strategies, using known facts to derive other facts. Evaluate algebraic expressions given a related fact. Use of estimation.	Review and extension of mental strategies. Exploration of simplifying complex calculations. Extended into algebraic facts.	End of block assessment		Creating – Intellectual playfulness  Realising – Automaticity Hardworking- Practice	Mathswatch.  Mymaths.  Worksheets.  Challenges.
Sets and probability	Understand and use set notation. Draw and interpret Venn diagrams. Understand and use the language of probability. Calculate the probability of a single event. Use the sum of probabilities of an event is 1.	This unit revisits FDP equivalence. Students learn about sets, notation and systematic listing strategies. Revisits forming and solving equations and adding and subtracting fractions.	End of block assessment		Metathinking – Metacognition  Hardworking- Practice  Linking – Big picture thinking	Mathswatch.  Mymaths.  Worksheets.  Challenges.
Prime numbers and proof	Recognise prime, square and triangle numbers. Express a number as a product of prime factors.	Revisits factors and multiples and extends to use of Venn diagrams to solve more complex	End of block assessment		Linking – Big picture thinking  Linking – generalisation	Mathswatch.  Mymaths.  Worksheets.

Unit:	Core knowledge/skill development:	Sequence:	Assessment:	Literacy, numeracy, PSHE, FBV, other links	ACP and VAA development:	Home learning and enrichment
	Powers and roots. Make and test conjectures. Understand and use counter examples.	HCF and LCM problems. Use of types of number to form and test conjectures.			Linking – Abstraction  Linking – Imagination  Hardworking- Practice	Challenges.