

Mathematics Year 7 Curriculum Overview

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Algebraic Thinking						Place Value and Proportion					
	Sequences		Understand and use algebraic notation		Equality and equivalence		Place value and ordering integers and decimals			Fraction, decimal and percentage equivalence		
Spring	Applications of Number						Directed Number		Fractional Thinking			
	Solving problems with addition & subtraction		Solving problems with multiplication and division		Fractions & percentages of amounts		Operations and equations with directed number			Addition and subtraction of fractions		
Summer	Lines and Angles						Reasoning with Number					
	Constructing, measuring and using geometric notation		Developing geometric reasoning				Developing number sense		Sets and probability		Prime numbers and proof	

	Autumn		Spring		Summer	
	Learning Cycle 1	Learning Cycle 2	Learning Cycle 3	Learning Cycle 4	Learning Cycle 5	Learning Cycle 6
Topic	Algebraic Thinking	Place Value & Proportion	Applications of number	Directed Number Fractional Thinking	Lines & Angles	Reasoning with Number
Critical Prior Knowledge	6A2 - Generate & describe linear number sequences 6A1 – Use simple formulae 6A4 - Find pairs of numbers that satisfy an equation with two unknowns	6NPV-1 to 4 - All aspects of place value 6F-11 - Recall & use equivalences between simple fractions, decimals & percentages, including in different contexts	6NASMD 1-4, 6-8 all aspects of ASMD (mental & written) including BIDMAS 5F1 – find non-unit fractions of quantities 6RP2- solve problems involving the calculations of percentages	6NPV – Use negative numbers in context & calculate intervals across zero 6F1-3 simplify fractions, compare & order fractions, add & subtract fractions with different denominators & mixed numbers	6G3 – Compare & classify geometric shapes based on their properties & sizes & find unknown angles in any triangles, quadrilaterals & regular polygons 6G5 – recognise angles where they meet at a point, are on a straight line, or are vertically opposite & find missing angles	6NASMD 1-4, 6-8 all aspects of ASMD (mental & written) including BIDMAS 6NASMD5 – Identify common factors, common multiples & primes
Overall Intent (Big ideas & key concepts)	Sequences <i>Understand & use algebraic notation</i> Equality & equivalence.	Place value <i>Fraction, decimal & percentage equivalence</i>	Solving problems with addition, subtraction, multiplication & division <i>Fractions & percentages of amounts</i>	Operations & equations with directed number <i>Addition & subtraction of fractions</i>	Constructing, measuring & using geometric notation <i>Developing geometric reasoning</i>	Developing number sense <i>Sets & probability</i> Prime numbers & proof

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Essential Knowledge milestones (What students must master)	Describe & continue a sequence given diagrammatically Predict & check the next term(s) of a sequence Represent sequences in tabular & graphical forms Recognise the difference between linear & non-linear sequences Continue numerical linear & non-linear sequences Explain the term-to-term rule of numerical sequences in words Find missing numbers within sequences <i>Given a numerical input, find the output of a single</i>	Recognise the place value of any number in an integer up to one billion Understand & write integers up to one billion in words & figures Work out intervals on a number line Position integers on a number line Round integers to the nearest power of ten Compare two numbers using =, $\neq$, $\leq$, $\geq$ Order a list of integers Find the range of a set of numbers Find the median of a set of numbers Understand place value for decimals Position decimals on a number line	Properties of addition, subtraction, multiplication & division Mental strategies for addition, subtraction, multiplication & division Use formal methods for addition, subtraction multiplication & division of integers & decimals Choose the most appropriate method: mental strategies, formal written or calculator Solve problems in the context of perimeter Solve financial maths problems	Understand & use representations of directed numbers Order directed numbers using lines & appropriate symbols Perform calculations that cross zero Add, subtract, multiply & divide directed numbers Use a calculator for directed number calculations Evaluate algebraic expressions with directed number Introduction to two-step equations Solve two-step equations Use order of operations with directed numbers Roots of positive numbers	Understand & use letter & labelling conventions including those for geometric figures Draw & measure line segments including geometric figures Understand angles as a measure of turn Classify angles Draw & measure angles up to 180° Draw & measure angles between 180° & 360° Identify perpendicular & parallel lines Recognise types of triangle Recognise types of quadrilateral Identify polygons up to a decagon Construct triangles using SSS	Know & use mental addition, subtraction, multiplication & division strategies for integers Know & use mental arithmetic strategies for decimals & fractions Use factors to simplify calculations Use estimation as a method for checking mental calculations Use known number facts to derive other facts Use known algebraic facts to derive other facts Know when to use a mental strategy, formal written method or a calculator

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	<i>function machine</i> <i>Use inverse operations to find the input given the output</i> <i>Use diagrams & letters to generalise number operations</i> <i>Use diagrams & letters with single function machines</i> <i>Find the function machine given a simple expression</i> <i>Substitute values into single operation expressions</i> <i>Find numerical inputs & outputs for a series of two function machines</i> <i>Use diagrams & letters with a series of two function machines</i> <i>Find the function machines given a two-step expression</i>	Compare & order any number up to one billion Round a number to 1 significant figure Write 10, 100, 1000 etc. as powers of ten Write positive integers in the form $A \times 10^n$ Investigate negative powers of ten Write decimals in the form $A \times 10^n$ <i>Represent tenths & hundredths as diagrams & on number lines</i> <i>Interchange between fractional & decimal number lines</i> <i>Convert between fractions & decimals – tenths & hundredths</i> <i>Convert between</i>	Solve problems involving tables & timetables Solve problems with frequency trees Solve problems with bar charts & line charts Add & subtract numbers given in standard form Properties of multiplication & division Understand & use factors & multiples Multiply & divide integers & decimals by powers of 10 Multiply by 0.1 & 0.01 Convert metric units. Understand & use order of operations Solve problems	Explore higher powers & roots <i>Understand representations of fractions</i> <i>Convert between mixed numbers & fractions</i> <i>Add & subtract fractions with the same denominator</i> <i>Add & subtract fractions from integers expressing the answer as a single fraction</i> <i>Understand & use equivalent fractions</i> <i>Add & subtract fractions where denominators share a simple common multiple</i> <i>Add & subtract fractions with any denominator</i> <i>Add & subtract improper fractions</i>	Construct triangles using SSS, SAS & ASA Construct more complex polygons Interpret simple pie charts using proportion Interpret pie charts using a protractor Draw pie charts <i>Understand & use the sum of angles at a point</i> <i>Understand & use the sum of angles on a straight line</i> <i>Understand & use the equality of vertically opposite angles</i> <i>Know & apply the sum of angles in a triangle</i> <i>Know & apply the sum of angles in a quadrilateral</i>	<i>Identify & represent sets</i> <i>Interpret & create Venn diagrams</i> <i>Understand & use the intersection of sets</i> <i>Understand & use the union of sets</i> Understand & use the complement of a set <i>Know & use the vocabulary of probability</i> <i>Generate sample spaces for single events</i> <i>Calculate the probability of a single event</i> <i>Understand & use the probability scale</i> <i>Know that the sum of probabilities of all possible outcomes is 1</i>

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	<i>Substitute values into two-step expressions</i> <i>Generate sequences given an algebraic rule</i> <i>Represent one- & two-step functions graphically</i> Understand the meaning of equality Understand & use fact families, numerically & algebraically Solve one-step linear equations involving $+/ -$ using inverse operations Solve one-step linear equations involving $\times / \div$ using inverse operations Understand the meaning of like & unlike terms Understand the	<i>fractions & decimals – fifths & quarters</i> Convert between fractions & decimals – eighths & thousandths <i>Understand the meaning of percentage using a hundred square</i> <i>Convert fluently between simple fractions, decimals & percentages</i> <i>Use & interpret pie charts</i> <i>Represent any fraction as a diagram & number lines</i> <i>Identify & use simple equivalent fractions</i> <i>Understand fractions as division</i> <i>Convert fluently between fractions,</i>	using the area of rectangles & parallelograms Solve problems using the area of triangles Solve problems using the area of trapezia Solve problems using the mean <i>Find a fraction of a given amount</i> <i>Use a given fraction to find the whole &/or other fractions</i> <i>Find a percentage of a given amount using mental methods</i> <i>Find a percentage of a given amount using a calculator</i> <i>Solve problems with fractions greater than 1 & percentages greater than 100%</i>	<i>& mixed numbers</i> <i>Use fractions in algebraic contexts</i> <i>Use equivalence to add & subtract decimals & fractions</i> Add & subtract simple algebraic fractions	<i>Solve angle problems using properties of triangles & quadrilaterals</i> <i>Solve complex angle problems</i> Find & use the angle sum of any polygon Investigate angles in parallel lines Understand & use parallel line angle rules Use known facts to obtain simple proofs.	Find & use multiples Identify factors of numbers & expressions Recognise & identify prime numbers Recognise square & triangular numbers Find common factors of a set of numbers including the HCF Find common multiples of a set of numbers including the LCM Write a number as a product of its prime factors Use a Venn diagram to calculate the HCF & LCM Make & test conjectures Use counter examples to

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	meaning of equivalence Simplify algebraic expressions by collecting like terms, using the $\equiv$ symbol	<i>decimals & percentages</i> Explore fractions above one, decimals & percentages				disprove a conjecture
Cultural Capital	Y7 Enriching mathematics 1	Y7 Enriching mathematics 2	Y7 Enriching mathematics 3	Y7 Enriching mathematics 4	Y7 Enriching mathematics 5	Y7 Enriching mathematics 6
Mode of Retrieval	Flashback starters Combined unit tests; knowledge & application covering the previous 2 units	Closing the knowledge gaps assessment (using SATS paper)	Flashback starters Combined unit tests; knowledge & application covering the previous 2 units	Formal assessment of Autumn Term application of knowledge	Flashback starters Combined unit tests; knowledge & application covering the previous 2 units	Formal assessment of Spring Term application of knowledge
ECC Student Characteristics	Always endeavour to show resilience . Be aspirational . Be knowledgeable & able to deeply understand & recall information easily & be skilled in applying this knowledge in a range of circumstances . Have confidence & communicate effectively Know how to behave well & respect other members of our community when sharing ideas remembering to be mutually tolerant & empathetic					

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Connection to future learning (When is this developed / revisited)?	Year 7 learning cycle 4 (Year 7 learning cycle 6) Year 8 learning cycle 3	Year 8 learning cycle 2 Year 8 learning cycle 4	Year 7 learning cycle 4 Year 8 learning cycle 1	Year 8 learning cycle 1 Year 9 learning cycle 3	Year 8 learning cycle 5	Year 8 learning cycle 4