Maths Primary - Curriculum and Methodology Pathway

The policy outlines a clear progression of calculation skills and related vocabulary across the four strands of: addition, subtraction, multiplication, and division. Each strand will include an overview of year-by-year progression, key representations, and expected understanding with national curriculum guidelines.

The curriculum follows the concrete-pictorial-abstract (CPA) approach used by White Rose, however the methods taught have been adapted to reflect the SEMH needs present within classes. Namely, limiting the quantity of methods taught and teaching them to greater depth, ensuring the taught methods progress logically, and ensuring that the methods allow students to apply mathematics to a wide context of problems.

Core Principles

- CPA method is to be used consistently across classes, where possible each approach should be taught in each lesson. Start with objects/manipulatives, moves to pictures/diagrams, then progress into written methods.
- Use vocabulary conssitent with the strand and year group level.
- Encourage pattern-spotting and reasoning, and check understanding through verbal explanation. (Ask "why")

Across School Progression

The broader journey staff should anticipate includes students revisiting ideas throughout primary in increasingly complex forms.

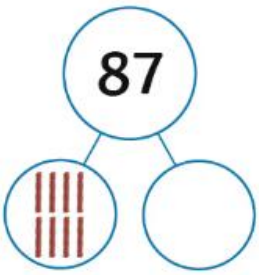
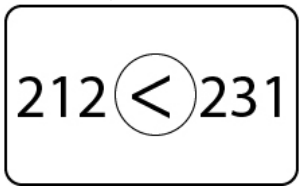
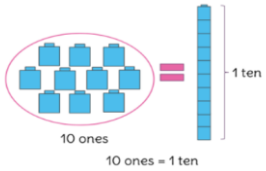
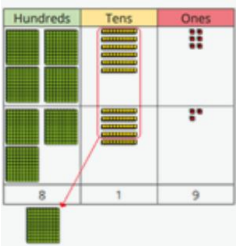
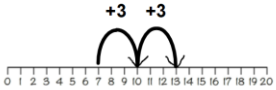
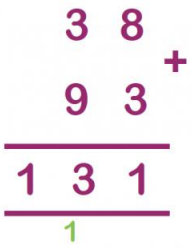
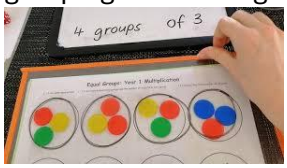
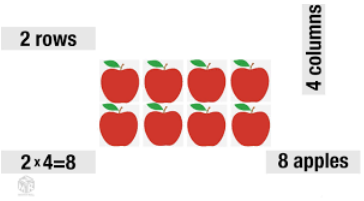
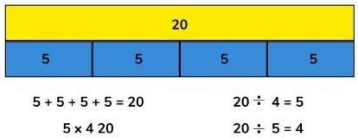
Addition	**EYFS**	-Subitising -Counting -Combining Groups -Making Numbers -1 more
	KS1	-Number bonds -Related facts -Adding across 10 -Additing 2-digit numbers -Missing number problems
	LKS2	-Mental addition with 1s/10s/100s -Column addition -Complements to 100 -Fractions with demonator -Time duration
	UKS2	-Larger integers -Decimals -Complements to 1

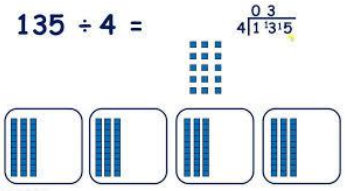
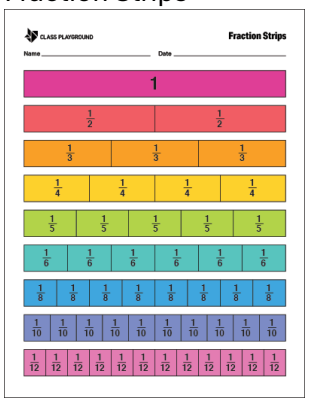
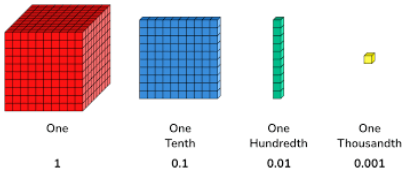
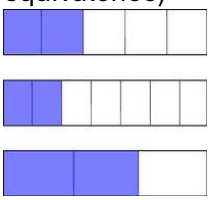
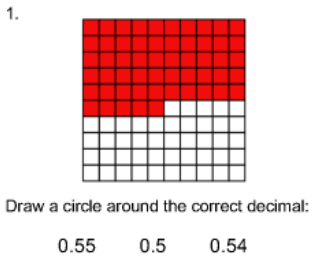
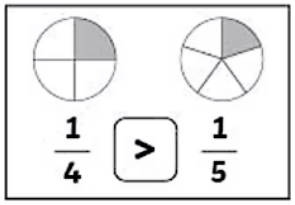
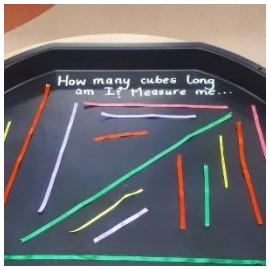
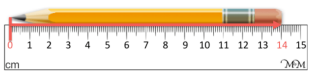
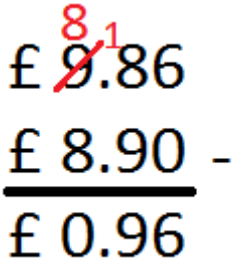
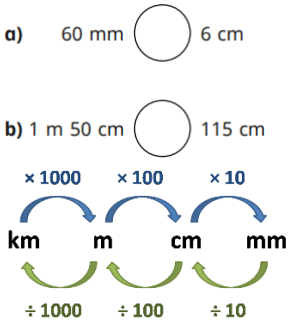
		-Fractions with different denominators -Order
Subtraction	**EYFS**	-1 less -partitioning -taking away -noticing composition
	KS1	-subtraction facts -related facts -subtracting across 10 -finding missing parts
	LKS2	-mental subtraction with place value -formal written subtraction -complements to 100 - fractions with same denominator
	UKS2	-larger numbers -decimals -fractions -operation order -calculations crossing zero
Multiplication	**EYFS**	-doubles and making equal groups
	KS1	-counting in 2s/5s/10s -equal groups -arrays -doubles -link repeated addition to multiplication
	LKS2	-secure times tables -begin formal multiplication -scaling and correspondence problems
	UKS2	-factors/multiples -square/cube numbers -larger formal multiplication -multiplying by powers of 10 -fractions, decimals, ratio
Division	**EYFS**	-sharing and grouping -equal groups -halves and quarters
	KS1	-division facts linked to times tables -missing numbers -unit/non-unit fractions of amounts -division with and without remainders
	LKS2	-division facts to 12x12 -divide by 1/self

		-divide by 10/100/1000 -short division -mental strategies -fractions of amounts
	UKS2	-short and long division -interpreting remainders in context -decimal answers - fractions/decimals -equivalents -percentages -ratio -order of operations

CPA Method Map

To limit demands on working memory, and afford students with SEMH needs the opportunity to master maths – we limit the quantity of methods taught across primary. This allows teaching staff to deliver, and students to comprehend at a greater depth, a selection of core methods that feed into each other throughout primary and can be applied successfully across a range of contexts. This allows students to focus more on comprehending the question (particularly in written questions), finding key information, and understanding their reasoning than using an excess of methods.

Strand	Concrete	Pictorial	Abstract
Place Value	Base-10 blocks on place value mat with physical exchange (10 ones = 1 ten)  Human number line for 1 more 1 less	Place value counters on place value chart  Part-whole/partition bars 	Expanded form statements 234 = 200 + 30 + 4 Standard Notation Expanded Notation Compare/order using <, >, = with justification 
Addition and Subtraction	Base-10 combine/remove with visible exchange for crossing 10/100/1000 (using physical blocks)  Object stories with stable stem 	Base-10 combine/remove with visual exchange for crossing 10/100/1000 (using place value representations)  Structured number line jumps (to next ten and add the ones) 7 + 6 = 13 	Equations in both orientations (4 + 2 = 6 AND 2 + 4 = 6) Column method as recording when exchange is understood 
Multiplication and Division	Equal groups in cups/pots for grouping and sharing  Block tile arrays (change orientation to show commutativity)	Drawn arrays with labelled rows and columns  Bar models for grouping 	Fact families and inverse sentences 6 x 2 = 12 2 x 6 = 12 12 ÷ 2 = 6 12 ÷ 6 = 2 Short division 

		Short division using base 10 representation (exchange 1 ten for 10 ones) 135 ÷ 4 = 	
Fractions, Decimals, and Percentages	Fraction Strips  Base 10 tenths/hundredths  One 1 · One Tenth 0.1 · One Hundredth 0.01 · One Thousandth 0.001	Shaded fraction bars (size and equivalence)  Hundred squares for fraction-decimal-percent links  Draw a circle around the correct decimal: 0.55 0.5 0.54 (utilise base 10 and understanding from number line jumps i.e. 10s then 1s = 10ths and 100ths, using same structured jumps)	Equivalence statements after understanding visual proof e.g. 0.5 = ½ = 50% Same/different denominator fraction rules taught when denominator and unit fraction understanding is secure  1/4 > 1/5
Measures	Real/replica shopping  Measuring stations (rulers/scales/jug) with one tool and one recording focus 	Partitioning money into £'s and pence – making whole pounds and feeding from prior addition and subtraction knowledge. Number lines to support addition where necessary  Annotated diagrams  14 cm	Written calculations  Comparisons and conversion after scale understanding 

Vocabulary

Teachers use consistent vocabulary across year groups to ensure students are able to access prior schemas surrounding a given concept. Further, it prevents misconceptions arising around how operations are conducted (e.g. adding zeros rather than moving up a place value for multiplying by powers of 10).

Please see the vocabulary pathway for what terminology is used and in what year it is introduced in a given strand.

Subject Overview

Year Group	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	Place Value (within 10)	Addition and Subtraction (within 10) Shape	Place Value (within 20) Addition and Subtraction (within 20)	Place Value (within 50) Length and Height Mass and Volume	Multiplication and Division Fractions Position and Direction	Place Value (within 100) Money Time
Year 2	Place Value Addition and Subtraction	Addition and Subtraction Shape	Money Multiplication and Division	Length and Height Mass, capacity, and temperature	Fractions Time	Statistics Position and Direction
Year 3	Place Value Addition and Subtraction	Addition and Subtraction Multiplication and Division A	Multiplication and Division B Length and Perimeter	Fractions A Mass and Capacity	Fractions B Money Time	Shape Statistics
Year 4	Place Value Addition and Subtraction	Area Multiplication and Division A	Multiplication and Division B Length and Perimeter	Fractions Decimals A	Decimals B Money Time	Shape Statistics Position and Direction
Year 5	Place Value Addition and Subtraction	Multiplication and Division A Fractions A	Multiplication and Division B Fractions B	Decimals and Percentages Perimeter and Area Statistics	Shape Position and Direction Decimals	Negative Numbers Converting Units Volume
Year 6	Place Value Addition, Subtraction, Multiplication, and Division	Fractions A Fractions B Converting Units	Ratio Algebra Decimals	Fractions, decimals, and percentages Area, perimeter, and volume Statistics	Shape Position and Direction	Themed Projects, Consolidation, and Problem Solving