HVPA Maths Updated Sequence of Learning Progression – Year 5

This overview breaks down each of the Programmes of Study and domains covered by Year 5 and shows the approximate amount of weeks expected in the teaching of each area. Time is built in for consolidation and extension (based on the security of pupils' understanding & readiness to move on, challenge through problem solving and reasoning) and assessment within each term. Year 5 progression: compared with the first edition, the units for the first half of Term A are familiar but the units for the second half of Term A have changed, now including two Fractions units, which would previously have fallen in Term B. The Fractions units and Multiplication & Division units are now interspersed (as there were some teachers/children who found the 3 consecutive Fractions units quite intense!). The six-week fractions block from the Spring term in version 2 of the schemes has been split into two; with the steps on adding and subtracting fractions moved to here in the Autumn term and the steps on multiplication and division of fractions in a separate block in the Spring term. The blocks on statistics and perimeter and area have been moved to later in the year.

Changes within the Learning Progressions:

Place Value Within 1 000 000

- Roman numerals is now first to serve as a reminder of place value with smaller numbers, and comparing systems. The steps have been grouped together by type rather than swapping back and fore.
- The structure of numbers of all the sizes is covered first, and later comparing and ordering numbers followed is explored before rounding.
- There is new step specifically aimed and reading and writing numbers to 1 million.
- Negative numbers are now covered in a separate short block later in the year.

Addition and subtraction

- Mental strategies are revised first. This revision of key number relationships will support the use of formal methods in the upcoming steps.
- Although the steps focus on numbers with more than four digits, the key learning sections begin with numbers with fewer digits as revision and to identify any gaps/need for intervention before moving on these more involved calculations.
- The step building on the rounding learning from the place value block is now more explicitly focused on estimation to check answers.
- Two new steps have been added to support the development of mental flexibility through using known facts to deduce, rather than work out, other facts.

Multiplication & Division

- An extra step has been added in to focus on common multiples, mirroring the structure of the steps on factors.
- There is another Year 5 block on multiplication and division, the first block in the Spring term. This second block focuses on the formal methods of multiplication and division and makes use of the times-tables facts and effect of multiplying by powers of 10 in this block.

Fractions

- More introductory work on equivalent fractions has been included.
- Mental methods are emphasised alongside formal written methods.
- Adding three or more fractions incorporated into other steps rather than treated separately.
- The other Year 5 block on fractions is the second block in the Spring term.

Autumn Term					
Strand	**PM Unit**	**PM Unit Title**	**Lesson**	**NC Objective 1**	**NC Objective 2**
Number – Number and Place Value (approx. 3 weeks)	1	Place Value – within 1 000 000 (1) (8 lessons)	Roman numerals	Read Roman numerals to 1000 (M) and recognise years written in Roman numerals	
			Numbers to 10,000	Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit	
			Numbers to 100,000		
			Numbers to 1,000,000		
			Read and write 5- and 6-digit numbers		
			Powers of 10	Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000	
			10/100/1,000/ 10,000/100,000 more or less		
			Partition numbers to 1,000,000	Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit	
	2	Place Value – within 1 000 000 (2)	Number line to 1,000,000	Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit	

		(6 lessons)	Compare and order numbers to 100,000		
			Compare and order numbers to 1,000,000		
			Round numbers to the nearest 100,000	Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000	
			Round numbers to the nearest 10,000		
			Round numbers to the nearest 10, 100 and 1,000		
Number – Addition & Subtraction (approx. 2½ weeks)	**3**	Addition and subtraction (12 lessons)	Mental strategies (addition)	Add and subtract numbers mentally with increasingly large numbers	
			Mental strategies (subtraction)		
			Add whole numbers with more than 4 digits (1)	Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)	
			Add whole numbers with more than 4 digits (2)		
			Subtract whole numbers with more than 4 digits (1)		
			Subtract whole numbers with more than 4 digits (2)		
			Round to check answers	Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy	
			Inverse operations (addition and subtraction)	Estimate and use inverse operations to check answers to a calculation	
			Multi-step addition and subtraction problems (1)	Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	
			Multi-step addition and subtraction problems (2)		
			Solve missing number problems		
			Solve comparison problems		
Number – multiplication & division (approx. 2 weeks)	**4**	Multiplication & Division (1) (10 lessons)	Multiples	Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers	
			Common multiples		
			Factors		
			Common factors		
			Prime numbers	Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers	
			Square numbers	Recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)	
			Cube numbers		
			Multiply by 10, 100 and 1,000	Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	
			Divide by 10, 100 and 1,000		
			Multiples of 10, 100 and 1,000		
Number – fractions (including decimals & percentages) (approx. 4 weeks)	**5**	Fractions 1 (8 lessons)	Equivalent fractions 1	Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths	
			Equivalent fractions 2 – unit and non-unit fractions		
			Equivalent fractions 3 – families of equivalent fractions		
			Improper fractions to mixed numbers	Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, 2/5 + 4/5 = 6/5 = 1 1/5]	
			Mixed numbers to improper fractions		
			Compare fractions less than 1	Compare and order fractions whose denominators are all multiples of the same number	
			Order fractions less than 1		
			Compare and order fractions greater than 1		
	6	Fractions 2 (11 weeks)	Add and subtract fractions	Add and subtract fractions with the same denominator and denominators that are multiples of the same number	
			Add fractions within 1		Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1
			Add fractions with total greater than 1		
			Add to a mixed number		

			Add two mixed numbers		as a mixed number [for example, 2/5 + 4/5 = 6/5 = 1 1/5]
			Subtract fractions within 1		
			Subtract from a mixed number		
			Subtract from a mixed number – breaking the whole		
			Subtract two mixed numbers		
			Solve fraction problems	Add and subtract fractions with the same denominator and denominators that are multiples of the same number	
			Solve multi-step fraction problems		
Spring Term					
Strand	**PM Unit**	**PM Unit Title**	**Lesson**	**NC Objective 1**	**NC Objective 2**
Number – multiplication and division (approx. 2 weeks)	**7**	Multiplication & Division (2) (10 lessons)	Multiply a number up to 4 digits by a 1-digit number	Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers	
			Multiply 2-digit numbers (area model)	Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers	Multiply and divide numbers mentally drawing upon known facts
			Multiply 2-digit numbers		
			Multiply a 3-digit number by a 2-digit number		
			Multiply a 4-digit number by a 2-digit number		
			Divide a number up to 4 digits by a 1-digit number (1)	Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context	
			Divide a number up to 4 digits by a 1-digit number (2)		
			Divide with remainders		
			Efficient division		
			Solve problems with multiplication and division		Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers
Number – Fractions - (including decimals and percentages (approx. 4½ weeks)	**8**	Fractions (3) (7 lessons)	Multiply unit fractions by an integer	Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, 2/5 + 4/5 = 6/5 = 1 1/5]
			Multiply non-unit fractions by an integer		
			Multiply mixed numbers by integers (1)		
			Multiply mixed numbers by integers (2)		
			Fraction of an amount		
			Finding the whole		
			Using fractions as operators		Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, 2/5 + 4/5 = 6/5 = 1 1/5]
	9	Decimals & Percentages (15 lessons)	Write decimals up to 2 decimal places – less than 1	Read, write, order and compare numbers with up to three decimal places	
			Write decimals up to 2 decimal places – greater than 1		
			Equivalent fractions and decimals – tenths	Read and write decimal numbers as fractions [for example, 0.71 = 71/100]	
			Equivalent fractions and decimals – hundredths		
			Equivalent fractions and decimals		
			Thousandths as fractions	Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents	
			Thousandths as decimals		
			Thousandths on a place value grid		
			Compare and order decimals – same number of decimal places	Read, write, order and compare numbers with up to three decimal places	
			Compare and order any decimals with up to 3 decimal places		
			Round to the nearest whole number	Round decimals with two decimal places to the nearest whole number and to one decimal place	

			Round to one decimal place		
			Understand percentages	Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal	
			Percentages as fractions and decimals		
			Equivalent fractions, decimals and percentages		Solve problems which require knowing percentage and decimal equivalents of ½, ¼, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25
Measurement – perimeter & area (approx. 2 weeks)	**10**	Perimeter & Area (8 lessons)	Perimeter of rectangles	Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres	
			Perimeter of rectilinear shapes (1)		
			Perimeter of rectilinear shapes (2)		
			Perimeter of polygons		
			Area of rectangles (1)	Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes	
			Area of rectangles (2)		
			Area of compound shapes		
			Estimate area		
Statistics – Graphs & Tables	**11**	Graphs & Tables (6 lessons)	Draw line graphs	Solve comparison, sum and difference problems using information presented in a line graph	
			Read and interpret line graphs (1)		
			Read and interpret line graphs (2)		
			Read and interpret tables	Complete, read and interpret information in tables, including timetables	
			Two-way tables		
			Timetables		

Summer Term

Strand	PM Unit	PM Unit Title	Lesson	NC Objective 1	NC Objective 2
Geometry – (approx. 3½ weeks)	**12**	Properties of Shapes (12 lessons)	Understand and use degrees	Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles	Identify: – angles at a point and one whole turn (total 360°) – angles at a point on a straight line and 1 2 a turn (total 180°) – other multiples of 90°
			Measure acute angles		
			Measure angles up to 180°		Draw given angles, and measure them in degrees (°)
			Draw lines and angles accurately	Draw given angles, and measure them in degrees (°)	
			Calculate angles around a point	Identify: – angles at a point and one whole turn (total 360°) – angles at a point on a straight line and ½ a turn (total 180°) – other multiples of 90°	
			Calculate angles on a straight line		
			Lengths and angles in shapes	Use the properties of rectangles to deduce related facts and find missing lengths and angles	
			Regular and irregular polygons	Distinguish between regular and irregular polygons based on reasoning about equal sides and angles	
			Parallel lines	Identify horizontal and vertical lines and pairs of perpendicular and parallel lines (Year 3)	
			Perpendicular lines		
			Investigate lines		
			3D shapes	Identify 3D shapes, including cubes and other cuboids, from 2D representations	
	13	Position & Direction (6 lessons)	Read and plot coordinates	Describe positions on a 2D grid as coordinates in the first quadrant (Year 4)	Plot specified points and draw sides to complete a given polygon (Year 4)
			Problem solving with coordinates		
			Translate shapes	Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed	
			Translate points		
			Reflection		
			Reflection in horizontal & vertical lines		
Number – fractions (including decimals and percentages) (approx. 4 weeks)	**14**	Decimals (15 lessons)	Add and subtract decimals within 1 (1)	Solve problems involving number up to three decimal places	
			Add and subtract decimals within 1 (2)		
			Complements to 1		
			Add and subtract decimals across 1		
			Add decimals with the same number of decimal places		
			Subtract decimals with the same number of decimal places		
			Add decimals with a different number of decimal places		

			Subtract decimals with a different number of decimal places		
			Problem solving with decimals (1)		
			Problem solving with decimals (2)		
			Decimal sequences	Read, write, order and compare numbers with up to three decimal places	
			Multiply by 10	Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents	Solve problems involving number up to three decimal places
			Multiply by 10, 100 and 1,000		
			Divide by 10		
			Divide by 10, 100 and 1,000		
	15	Negative numbers (4 lessons)	Understand negative numbers	Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero	
			Count through zero		
			Compare and order negative numbers		
			Find the difference		
Measure – Converting Units (approx. 3½ weeks)	**16**	Converting Units (10 lessons)	Kilograms and kilometres	Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)	
			Millimetres and millilitres		
			Convert units of length		
			Imperial units of length	Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints	
			Imperial units of mass		
			Imperial units of capacity		
			Convert units of time	Solve problems involving converting between units of time	
			Timetables – calculating		
			Problem solving – units of measure (1)	Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling	
			Problem solving – units of measure (2)		
	17	Measure Volume (6 lessons)	Cubic centimetres	Estimate volume [for example, using 1 cm3 blocks to build cuboids (including cubes)] and capacity [for example, using water]	
			Compare volumes		
			Estimate volume		