Maths skills overview and progression chart- Year 5

Y5	Number – number & place value	Number – addition and subtraction	Number – multiplication and division	Number – fractions, decimals & %	Measurement	Geometry – properties of shapes	Geometry – Position & direction	Statistics
Focus/ Number size	up to 1 million 3dps Negatives Roman numeral to 1000 and read years,	Up to 6 digits 3dp	4 by 1 digit 2 by 2 digits Division – 4 by 1 distributive a(b+c) = ab+ac equivalence statements (4x35 = 2x2x35)	denominators up to 100 decimal and % equivalents of: 1/2,1/3 1/4s, 1/5s,1/8, 1/10, 1/100	**Conversions-** metric and imperial Roman numerals to 100 **Perimeter:** composite rectilinear shapes **Area**: rectangle and irregular shapes. **Time:** mix of units	**2d:** range of regular & irregular polygons **3d:** range of polyhedron Id from 2d rep. **Draw & measure:** to nearest mm / degree. Mark parallel lines with //	2 quadrants Equal and unequal scales on both axis Reflection should be parallel to axis.	Scale: 1, 2, 5,10 time graphs Begin to choose most appropriate representation.
Key method	Partitioning	column addition and subtraction	Column multiplication (expanded) Bus stop	Bar model: emphasise link to division (1/100 = 1 ÷ 100)	X ÷ 10,100,1000 for conversions.			Time graphs, Bar and line graphs, Timetable
Representations	Partition Part whole models Bar model Number line Base Ten Place value counters Missing numbers			Bar model Missing numbers Part whole models Number line Cuisenaire rods Shape Objects	Rectilinear shapes Irregular shapes Horizontal, vertical and circular scales, Timetable/ Calendar Analogue and digital, number line	2d and 3d, Nets Drawings	2 quadrants Reflection, rotation and translation	bar /line graph, tally chart, table, pictogram, Venn, Carroll continuous/ discrete data

Mental maths	Number – number & place value	Number – addition, subtraction	Number – multiplication division	Number – fractions, decimals & %	Measurement	Geometry properties of shapes
	count forwards or backwards in steps of powers of 10 for any given number, including over zero to negative numbers find 0.1 10,100,1000 more/less than a given 4 digit number Round to nearest 10,100,1000	Add/ subtract 1dp numbers Add/subtract multiple of 10,100,1000	Use known facts, including multiples and factors to multiply/ divide (3 x 5 = 15 so 300 x 5 = 1500; Half/ doubling: mental division/multi strategies (58 x 5 = half of 58 x 10) multiply or divide a given number by 10, 100, 1000,	Recall key equivalents Find fractions of amounts	Read Roman numeral to 1000 Money: Calculate change using near multiple of 1/10 . Convert between metric units(x ÷10,100,1000) Calculate time difference (to 5 minutes)	2d name and their properties 3d – id from 2d representation/ nets

Key vocabulary – Yr 5

Number – number and place value	**Number – addition and subtraction**	**Number – multiplication and division**	**Number – fractions**	**Measurement**	**Geometry – properties of shapes**	**Geometry – Position & direction**	**Statistics**
< > , partition place value, recombine, *cardinal/ordinal numbers, consecutive, rounding, thousands, tenths, hundredths, decimal, round to nearest .., negative integer, through zero, roman numerals (I to C)* powers of 10, thousandths, ascending, descending equation, integer, Roman Numeral to 1000(M)	add, more, plus, make, sum, total, altogether, Column addition, exchange, commutative, addend subtract, minus, take away, fewer, difference, less, Column subtraction, *inverse, efficient* *Compensate Approximate*	product, times, multiple , multiply, repeated addition, lots, groups of, double, array, commutative share, group, divide, equal, repeated subtraction, remainder, left over, half *factor, quotient, efficient, inverse, derive, short division (bus stop)* factor pairs, composite/ prime/prime factors/square/cu bed /triangular fact boxes inverse, distributive equivalence	Numerator, denominator, Unit fraction, non-unit fraction, Compare, whole, half to twelfths, equivalent, equal *tenths, hundredths, decimal equivalent, common denominator, simplify* proper, improper mixed numbers, percentages, ratio, expressing proportion. % and decimal equivalents	capacity, length, am/pm, 12 hour/24 hour, morning, afternoon, midnight, noon, half past, quarter past, seconds ,o'clock, minutes, hours, day, months, Leap year, scales, weight, perimeter, heavier/lighter, mm/cm/m, m/km, g/kg, ml/l, £/p, *Roman numerals (13-100); convert, area, width, estimate, decimal* volume, imperial: inches, pounds, pints breadth, dimensions, volume cm3, composite rectilinear shapes	angle, face, vertices, clockwise, anti-clockwise, full/ half/quarter turn, degrees, right angle, acute, obtuse, horizontal, vertical, perpendicular, parallel *regular, irregular, adjacent, bisect, diagonal, line of symmetry orientation, all quadrilateral all triangles* congruent, reflex, interior /exterior angles, dodecagon, intersect, polyhedron	*polygon, plot , coordinates, translation, quadrant, x-axis, y-axis, tessellation, origin, integer labels* reflection, dimensions, rotational symmetry,	tally, vote, graph, title, label, common, popular, pictogram, represent, sort, chart, bar chart, frequency table, Axis, *continuous data , line graph, Carroll, Venn diagrams, x y axis* *discrete, Time graph*

Year 5 NC objectives (linked to progression maps)

Number – number and place value	**Number – addition and subtraction**	**Number – multiplication and division**	**Number – fractions**	**Measurement**	**Geometry – properties of shapes**	**Geometry – Position & direction**	**Statistics**	**Algebra**
COUNTING interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 COMPARING read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit *(also appears in Reading and Writing Numbers)* IDENTIFY, REPRESENT, ESTIMATE -	MENTAL CALCULATIONS add and subtract numbers mentally with increasingly large numbers WRITTEN METHODS add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) INVERSE, ESTIMATE, CHECK use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy	MULTIPLICATION & DIVISION FACTS *count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 (copied from Number and Place Value)* MENTAL CALCULATIONS multiply and divide numbers mentally drawing upon known facts multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 WRITTEN METHODS 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 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	COUNTING - RECOGNISE recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents *(also appears in Equivalence)* COMPARE compare and order fractions whose denominators are all multiples of the same number COMPARE DECIMALS read, write, order and compare numbers with up to three decimal places ROUNDING round decimals with two decimal places to the nearest whole number and to one decimal place	COMPARE AND ESTIMATE calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes (*also included in measuring)* estimate volume (e.g. using 1 cm^3 blocks to build cubes and cuboids) and capacity (e.g. using water) MEASURE & CALCULATE use all four operations to solve problems involving measure (e.g. **length, mass, volume, money**) using decimal notation including scaling.	IDENTIFY SHAPES AND PROPERTIES identify 3-D shapes, including cubes and other cuboids, from 2-D representations DRAW & CONSTRUCT draw given angles, and measure them in degrees (^{o}) COMPARE & CLASSIFY use the properties of rectangles to deduce related facts and find missing lengths and angles distinguish between regular and irregular polygons based on reasoning about equal sides and angles	POSITION & DIRECTION 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	INTERPRET, CONSTRUCT & PRESENT Complete, read and interpret information in tables, including timetables PROBLEM SOLVING solve comparison, sum and difference problems using information presented in a line graph	*use the properties of rectangles to deduce related facts and find* ***missing lengths and angles*** *(copied from Geometry: Properties of Shapes)*

Number – number and place value	**Number – addition and subtraction**	**Number – multiplication and division**	**Number – fractions**	**Measurement**	**Geometry – properties of shapes**
READ & WRITE read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (*appears also in Comparing Numbers)* read Roman numerals to 1 000 (M) and recognise years written in Roman numerals. UNDERSTAND PLACE VALUE read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit *(appears also in Reading and Writing Numbers)* *recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents* (copied from Fractions) ROUNDING round any number up to 1 000 000 to the nearest 10, 100, 1 000, 10 000 and 100 000 *round decimals with two decimal places to the nearest whole number and to one decimal place* *(copied from Fractions)*		PROPERTIES OF NUMBER • identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. • know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers • establish whether a number up to 100 is prime and recall prime numbers up to 19 • recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)	EQUIVALENCE identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths read and write decimal numbers as fractions (e.g. 0.71 = $^{71}/_{100}$) recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents 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 as a decimal fraction ADD & SUBTRACT FRACTIONS add and subtract fractions with the same denominator and multiples of the same number recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number (e.g. $^{2}/_{5} + ^{4}/_{5} = ^{6}/_{5} = 1^{1}/_{5}$) MULTIPLICATION AND DIVISON OF FRACTIONS multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	measure and calculate the **perimeter** of composite rectilinear shapes in centimetres and metres calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes *recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})* (copied from Multiplication and Division) TELLING THE TIME solve problems involving converting between units of time (also in problem solving) CONVERTING convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) solve problems involving converting between units of time (also in problem solving) understand and use equivalences between metric units and common imperial units such as inches, pounds and pints	ANGLES 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 ½ a turn (total 180°) * other multiples of 90°

PROBLEM SOLVING OBJECTIVES

Number – number and place value	**Number – addition and subtraction**	**Number – multiplication and division**	**Number – fractions**	**Measurement**
solve number problems and practical problems that involve all of the above	solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates	solve problems involving numbers up to three decimal places solve problems which require knowing percentage and decimal equivalents of $^1/_2$, $^1/_4$, $^1/_5$, $^2/_5$, $^4/_5$ and those with a denominator of a multiple of 10 or 25.	solve problems involving converting between units of time (also in problem solving) solve problems involving converting between units of time (also in problem solving)
Missing numbers/ information Odd one out True/false Explain how (give a reason and prove it)			How many more/less Use different representations Use less familiar vocabulary How do you know it is wrong? 2/3 step problems Extra (not relevant) info	

Yr 5 Problem solving

NRICH Problems

Number – number and place value	Number – addition and subtraction	Number – multiplication and division	Number – fractions	Measurement	Geometry – properties of shapes	Geometry – Position & direction	Statistics
Swimming Pool *	Maze 100 **	All the Digits **	Round the Dice Decimal	Cubes *	How Safe Are You? *	Transformations on a Pegboard *	
Tug Harder! (G) *	Twenty Divided Into Six	Trebling *	Tumbling Down *	Making Boxes **	Six Places to Visit *	More Transformations on a Pegboard (I) **	
Sea Level *	Reach 100 **	Division Rules *	Linked Chains *	Numerically Equal **	The Numbers Give the Design *		
Space Distances *	Six Ten Total **	Pebbles **	A4 Fraction Addition **	Fitted ***	Olympic Turns ***		
Roman Numerals *	Six Numbered Cubes **	Sweets in a Box *	A4 Fraction Subtraction	Brush Loads *	Bracelets *		
	Subtraction Surprise *	Abundant Numbers *	Balance of Halves *	Shaping It *	Egyptian Rope **		
		Flashing Lights *	Forgot the Numbers **	Ribbon Squares ***	Estimating Angles (I) *		
		Multiplication Squares *	Route Product **	Pouring Problem **	Making Rectangles **		
		Which Is Quicker? *		Area and Perimeter *	Guess What? *		
		Factors and Multiples Game	Matching Fractions, Dec	Through the Window **			
		Three Dice *		Cubes *			
		Factor Track **		Making Boxes **			
		Two Primes Make One Square **		Numerically Equal **			
		One Wasn't Square **		Fitted ***			
		Cycling Squares **		Brush Loads *			
		Up and Down Staircases *		Shaping It *			
		Picture a Pyramid ... **		Ribbon Squares ***			
		Square Subtraction ***					
		Cubes Within Cubes ***					
		Odd Squares *					
		Curious Number ***					
		Division Rules *					
		Highest and Lowest *					
		Make 100 **					
		Four Goodness Sake ***					

Other resources

White Rose maths RPS
Third space learning
Twinkl challenges
Testbase

(WODNB) WhIch One Does not Belong: https://wodb.ca/numbers.html