Maths Pathway

Number and place value Addition and subtraction Multiplication and division Fractions Measurement Properties of shapes Position and direction Statistics Mathematical vocabulary	Nursery *Birth to 3* *3-4 year olds*	Reception	Year 1 **Statutory curriculum guidance** *Non-statutory curriculum guidance*	Year 2 **Statutory curriculum guidance** *Non-statutory curriculum guidance* Teacher assessment framework	Expectation
Counting	*Combine objects like stacking blocks and cups. Put objects inside others and take them out again.* *Take part in finger rhymes with numbers.* *React to changes of amount in a group of up to three items.* *Develop counting-like behaviour, such as making sounds, pointing or saying some numbers in sequence.* *Count in everyday contexts, sometimes skipping numbers – '1-2-3-5'.* Recite numbers past 5. Say one number for each item in order: 1,2,3,4,5. Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle'). Show 'finger numbers' up to 5.	Count objects, actions and sounds. Count beyond ten.	To count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. To identify one more and one less than a given number. *To count in multiples of twos, fives and tens from different multiples to develop their recognition of patterns in the number system, including varied and frequent practice through increasingly complex questions.* *To recognise and create repeating patterns with objects and with shapes.*	To count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward.	
Identifying, representing	Develop fast recognition of up to 3 objects, without having to count them individually	Subitise. Understand the 'one more than/one less than' relationship			

and estimating numbers	('subitising').	between consecutive numbers.			
Reading and writing numbers	Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5. Experiment with their own symbols and marks as well as numerals.	Link the number symbol (numeral) with its cardinal number value.	To read and write numbers from 1 to 20 in numerals and words. To count, read and write numbers to 100 in numerals.	To read and write numbers to at least 100 in numerals and in words.	
Compare and order numbers	*Compare amounts, saying 'lots', 'more' or 'same'.* Compare quantities using language: 'more than', 'fewer than'.	Compare numbers.		To compare and order numbers from 0 up to 100; use <, > and = signs.	
Understanding place value				To recognise the place value of each digit in a two-digit number (tens, ones) to *become fluent and apply their knowledge of numbers to reason with, discuss and solve problems.* *To begin to understand zero as a place holder.*	
Solve problems	Solve real world mathematical problems with numbers up to 5.		*To practise ordinal numbers and solve simple concrete problems.*	To use place value and number facts to solve *related* problems *to develop fluency.*	
Mental calculations		Explore the composition of numbers to 10.	To add and subtract one-digit and two-digit numbers to 20, including zero. *To realise the effect of adding or subtracting zero.*	*To extend the language of addition and subtraction to include sum and difference.* To show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot. To add and subtract numbers using an efficient strategy, explaining their method verbally using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones, a two-digit number and tens, two two-digit	

				numbers, add three one-digit numbers.	
Number bonds		Automatically recall number bonds for numbers 0–5 and some to 10.	To *memorise*, represent and use number bonds and related subtraction facts within 20.	To recall all number bonds to and within 10 and use these to reason with and calculate bonds to and within 20, recognising other associated additive relationships. To recall and use addition and subtraction facts to 20 *to become fluent in deriving associative facts (e.g. 10 – 7 = 3, 100 – 70 = 30)* and derive & use related facts up to 100.	
Written calculations			To read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs.	*To begin to record addition and subtraction in columns to support place value and prepare for formal written methods with larger numbers.*	
Inverse operations, estimating and checking answers				To recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	
Solve problems			To *discuss* and solve one-step problems *(in familiar practical contexts)* that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems. *Problems include the terms: put together, add, altogether, total, take away, distance between, difference between, more than and less than, so that pupils develop the concept of addition and subtraction and are enable to use these operations flexibly.*	To solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures applying their increasing knowledge of mental and written methods.	
Mental calculations				*To begin to use other multiplication tables and recall multiplication facts, including using related division facts to perform written and mental calculations.* *To begin to relate multiplication and*	

				division facts to fractions and measures (e.g., 40 ÷ 2 = 20, 20 is a half of 40). To show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot, *to develop multiplicative reasoning*.	
Multiplication and division facts				*To make connections between arrays, number patterns, and counting in twos, fives and tens.* *Through grouping and sharing small quantities, pupils begin to understand: multiplication and division; doubling numbers and quantities; and finding simple fractions of objects, numbers and quantities.*	*To use a variety of language to describe multiplication and division.* To count from 0 in multiples of 4, 8, 50 and 100. To recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers and use them to solve simple problems, demonstrating an understanding of commutativity as necessary. *To connect the 10 multiplication table to place value, and the 5 multiplication table to the divisions on the clock face.*	
Written calculations					To calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs. *To begin to use other multiplication tables and recall multiplication facts, including using related division facts to perform written and mental calculations.*	
Solve problems				To solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and	To solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems	

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				arrays with the support of the teacher.	in contexts.	
Counting					*To count in fractions up to 10, starting from any number and using the $\frac{1}{2}$ and $\frac{2}{4}$ equivalence on the number line.*	
Recognising, finding and naming fractions				To recognise, find and name a half as one of two equal parts of an object, shape or quantity *by solving problems*. To recognise, find and name a quarter as one of four equal parts of an object, shape or quantity *by solving problems*. *To connect halves and quarters to the equal sharing and grouping of sets of objects and to measures, as well as recognising and combining halves and quarters as parts of a whole.*	To recognise, find, name, identify and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$ and $\frac{3}{4}$ of a length, number, shape, set of objects or quantity and know that all parts must be equal parts of the whole. *To connect unit fractions to equal sharing and grouping, to numbers when they can be calculated, and to measures, finding fractions of lengths, quantities, sets of objects or shapes. They meet $\frac{3}{4}$ as the first example of a non-unit fraction.*	
Equivalence					To write simple fractions for example, $\frac{1}{2}$ of 6 = 3 and recognise the equivalence $\frac{2}{4}$ and $\frac{1}{2}$.	
Describe, measure, compare and solve	*Compare sizes, weights etc. using gesture and language - 'bigger/little/smaller', 'high/low', 'tall', 'heavy'.* Make comparisons between objects relating to size, length, weight and capacity.	Compare length, weight and capacity.		To compare, describe and solve practical problems for: lengths and heights, mass/weight, capacity and volume, time. To measure and begin to record the following: lengths and heights, mass/weight, capacity and volume, time. *To move from using and comparing different types of quantities and measures using non-standard units, including*	To choose and use appropriate standard units *with increasing accuracy using their knowledge of the number system* to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels. *To use the appropriate language and record using standard abbreviations.*	

			discrete (for example, counting) and continuous (for example, liquid) measurement, to using manageable common standard units using measuring tools, such as a ruler, weighing scales and containers.	To compare and order lengths, mass, volume/capacity and record the results using >, < and =. *To compare measures including simple multiples such as 'half as high'; 'twice as wide'.*	
Telling the time			To sequence events in chronological order using language. To recognise and use language relating to dates, including days of the week, weeks, months and years. To tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.	To read, tell and write the time to five minutes, including quarter past/to the hour/half hour and draw the hands on a clock face to show these times. *To become fluent in telling the time on analogue clocks and recording it.* To know the number of minutes in an hour and the number of hours in a day. To compare and sequence intervals of time.	
Money			To recognise and know the value of different denominations of coins and notes.	*To become fluent in counting and recognising coins.* To recognise and use symbols for pounds (£) and pence (p) *accurately, recording pounds and pence separately*; combine amounts to make a particular value. To find and use different combinations of coins that equal the same amounts of money. To solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.	
Recognise 2D and 3D shapes and their properties	Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: 'sides', 'corners'; 'straight', 'flat',	Select, rotate and manipulate shapes to develop spatial reasoning skills.	To recognise, *handle* and name common 2D and 3D shapes *in different orientations/sizes and relate everyday objects fluently*. *To recognise that rectangles,*	Pupils read and write names for shapes that are appropriate for their word reading and spelling. To *handle*, identify and describe the properties of 2D shapes, including	

	'round'.		*triangles, cuboids and pyramids are not always similar to each other.*	the number of sides and line symmetry in a vertical line. To *handle*, identify and describe the properties of 3D shapes, including the number of edges, vertices and faces. To identify 2D shapes on the surface of 3D shapes.	
Compare and classify shapes	Select shapes appropriately: flat surfaces for building, a triangular prism for a roof, etc. Combine shapes to make new ones – an arch, a bigger triangle, etc.	Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can.		To *identify*, compare and sort common 2D and 3D shapes and everyday objects *on the basis of their properties and use vocabulary precisely.*	
Drawing 2D shapes and constructing 3D shapes				*Pupils draw lines and shapes using a straight edge.*	
Position, direction and movement	*Climb and squeeze themselves into different types of spaces. Build with a range of resources. Complete inset puzzles.* Understand position through words alone – for example, "The bag is under the table," – with no pointing. Describe a familiar route. Discuss routes and locations, using words like 'in front of' and 'behind'.		To describe position, direction and movement, including whole, half, quarter and three-quarter turns *in both directions and connect clockwise with the movement on a clock face.* *To use the language of position, direction and motion, including: left and right, top, middle and bottom, on top of, in front of, above, between, around, near, close and far, up and down, forwards and backwards, inside and outside.*	To use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anticlockwise).	
Patterns	*Notice patterns and arrange things in patterns.* Talk about and identify the patterns around them. For example: stripes on clothes, designs on rugs and wallpaper. Use informal language like 'pointy', 'spotty', 'blobs', etc.	Continue, copy and create repeating patterns.		To order and arrange combinations of mathematical objects and *shapes, including those in different orientations,* in patterns and sequences.	

	Extend and create ABAB patterns – stick, leaf, stick, leaf. Notice and correct an error in a repeating pattern. Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then...'				
Record, present and interpret data				To record, interpret, collate, organise and compare information. To interpret and construct simple pictograms, tally charts, block diagrams and simple tables *(e.g. many-to-one correspondence in pictograms with simple ratios 2, 5, 10 scales).* To ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity. To ask and answer questions about totalling and comparing categorical data.	
Mathematical Vocabulary			To read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at year 1.	To read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.	

Agreed use of vocabulary to ensure consistency across the school:

Geometry: 2D shapes have <u>corners</u> where the sides meet; 3D shapes have <u>vertices</u> (singular: <u>vertex</u>) where the edges meet; A 2D shape with 4 right angles and 2 longer and 2 shorter sides is called an <u>oblong</u>; both oblongs and squares are types of <u>rectangle</u>

Place Value: In place value work the terms hundreds, tens and <u>ones</u> will be used (not units)

Number Formation: Number formation stories:

- 0 - Around and around and around we go...when we get home we have a zero
- 1 - Go straight down and you are done, that is how you make a one
- 2 - Around and back on a rail road track… two two two
- 3 - Around a tree, around a tree, that's the way we make a three
- 4 - Down, across and down some more, that is how you make a 4
- 5 - Make a hat, make his back, make five's tummy round and fat
- 6 - Down we go and make a loop, number six has a hoop
- 7 - Seven is like a bus carpool, over to the children and slide down to school
- 8 - Make an s but do not wait, go back up and that's an eight
- 9 - Make a loop, then a line, that is how we make a nine

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