Pentland Infant and Nursery School

End of Year Expectations for Maths

3-4 Year Olds	Reception	Year 1	Year 2
Mathematical Vocabulary			
Use a wider range of vocabulary Understand why questions such as "why do you think…? Understand a question or instruction that has two parts, such as: "Get your coat and wait at the door".	Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. Use new vocabulary in different contexts	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.
Number and Place Value			
Counting			
Recite numbers past 5 Say one number for each item in order: 1, 2, 3, 4, 5 Know that they last number reached when counting a small set of objects tells you how many there are in total (cardinal principle)	Counts objects, actions and sounds Count beyond ten Verbally count beyond 20, recognising the pattern of the counting system (ELG)	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 count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward.

		To recognise and create patterns with objects and with shapes.	
Identifying, Representing and Estimating Numbers			
Develop fast recognition of up to 3 objects, without having to count them individually (subitising) Show 'finger numbers' up to 5 Link numerals and amounts; for example, sowing the right number of objects to match the numeral, up to 5	Subitise Link the number symbol (numeral) with its cardinal number value Subitise (recognise quantities without counting) up to 5		
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 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 quantities using language 'more than', 'fewer than' Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then'	Compare numbers Understand the 'one more than/one less than' relationship between consecutive numbers Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity (ELG)		To compare and order numbers from 0 up to 100; use <> and = signs
Understanding Place Value / Rounding			

	Understand the 'one more than/one less than' relationship between consecutive numbers Explore the composition of numbers to 10 Have a deep understanding of numbers to 10, including the composition of each number (ELG)		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 number up to 5 Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then'	To practise ordinal numbers and solve simple concrete problems	To use place value and number facts to solve related problems to develop fluency

Addition and Subtraction

Mental Calculations

Develop fast recognition of up to 3 objects, without having to count them individually (subitising) 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' to 5	Subitise Explore the composition of numbers to 10 Automatically recall number bonds to 5 and some to 10 Automatically recall (without reference to rhymes, counting or other aids), number bonds to 5 (including subtraction facts) and some number bonds	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

| | to 10, including double facts (ELG)

Have a deep understanding of numbers to 10, including the composition of each number (ELG)

Subitise up to 5 (ELG) | | two-digit number and tens, 2 two-digit numbers |
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| **Number bonds** | | | |
| Develop fast recognition of up to 3 objects, without having to count them individually (subitising)

Show 'finger numbers' up to 5 | Subitise

Explore the composition of numbers to 10

Automatically recall number bonds to 5 and some to 10

Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts (ELG)

Have a deep understanding of numbers to 10, including the composition of each number (ELG)

Subitise to 5 (ELG) | 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 and use related facts up to 100 |
| **Written Calculations** | | | |
| | | To read, write and interpret mathematical statements involving | To begin to record addition and subtraction in columns to support place value and |

		addition (+), subtraction (-) and equals (=) signs.	prepare for formal written methods with larger numbers
Inverse Operations, Estimating and checking answers			
Develop fast recognition of up to 3 objects, without having to count them (subitise)	Explore the composition of numbers to 10		To recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems
Solve Problems			
Solve real world mathematical problems with number up to 5

Begin to describe a sequence of events, read or fictional, using words such as 'first', then'... | Explore and represent patterns within numbers up to 1, including evens and odds, double facts and how quantities can be distributed evenly (ELG) | To discuss and solve one-step problems 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 |
| **Multiplication and Division** | | | |
| **Mental Calculations** | | | |
| | Explore the composition of numbers to 10

Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed evenly (ELG) | | 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. $40 \div 2 = 20$, 20 is half of 40) |

			To show that multiplication of two numbers can be done in any order and division of one number by another cannot

Multiplication and Division Facts

	Explore the composition of numbers to 10 Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed evenly (ELG) Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts (ELG)	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.

Written Calculation

			To calculate statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) signs.

Solve Problems

	Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how	To solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial	To solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and

		quantities can be distributed evenly (ELG)	representations and arrays with the support of the teacher	multiplication and division facts, including problems in contexts
Fractions, Decimals and Percentages				
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 measure, as well as recognising and combining halves and quarters as parts of a whole	To recognise, find, name, identify and write fractions of a length, number, shape, set of objects or quantity and know that all parts must be equal parts of the whole.
Measurement				
Describe, Measure, Compare and Solve				
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 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 compare and order lengths, mass, volume/capacity and record the results using > < and +
		Telling Time	
Begin to describe a sequence of events, real or fictional, using words, such as 'first'. 'then'…		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 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
		Properties of Shapes	
		Recognising 2D and 3D Shapes and their Properties	
Talk about and explore 2D and 3D shapes using informal and mathematical language (sides, corners, straight, flat, round)	Select, rotate and manipulate shapes in order 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, triangle, cuboids and pyramids are not always similar to each other	Pupils read and write names for shapes that are appropriate for their word reading and spelling To identify 2D shapes on the surface of 3D shapes. To handle, identify and describe the properties of 2D and 3D shapes
		Compare and Classify Shapes	
Talk about and explore 2D and 3D shapes using informal and	Compose and decompose shapes so that children recognise a shape can have		To identify, compare and sort common 2D and 3D shapes and everyday objects on the

mathematical language (sides, corners, straight, flat and round)	other shapes within it, just as numbers can		basis of their properties and use the correct precisely.

Position and Direction			
Position, Direction and Movement			
Understand position through words alone (e.g. the bag is under the table) Describe a familiar route Discuss routes and locations, using words like 'in front of' and 'behind'	Draw information from a simple map	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			
Talk about and identify the patterns around them (e.g. stripes on clothes, wallpaper). Use informal language like 'pointy' 'spotty' Extend and create ABAB patterns Notice and correct an error in a repeating pattern	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
Statistics			
Record, Present and Interpret Data			

			To record, interpret, collate, organise and compare information
			To interpret and construct simple pictograms, tally charts, clock diagrams and simple tables
			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