Mathematics End of Year Milestones Nursery – Development Matters

Pupils at the expected level will:

Mathematical Vocabulary	• Use a wider range of vocabulary • Understand 'why' questions, like 'why do you think the caterpillar is so fat?'
Number and Place Value	• Recite numbers past 5 • Say one number name 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 9cardinal principle). • Develop fast recognition of up to 3 objects, without having to count them individually (subitising) • Show 'finger numbers' up to 5. • Experiment with their own symbols and marks as well as numerals. • Link numerals and amounts up to 5 • Experiment with their own symbols and marks as well as numerals. • Compare quantities using language 'more than', 'fewer than'. • Solve real world Mathematical problems with numbers up to 5.
Measurement & Properties of Shape	• Make comparisons between objects relating to size, length, weight and capacity. • Begin to describe a sequence of events, real or fictional, using words such as first, then etc. • Talk about and explore 2D and 3D shapes (circles, rectangles, triangles, cuboids) using informal and mathematical language – sides, corners, straight, flat, round etc • Select shapes appropriately: flat surface for a building, triangular for roof • Combine shapes to make new ones.

Position and Direction Statistics	- Understand position through words alone – 'under the table' - Describe a familiar route - Discuss routes and locations using words like 'in front of' and 'behind' - Talk about ad identify patterns around them (stripes on clothes, designs on wallpaper. Use informal language like 'spotty', 'blobs', 'pointy' etc - Extend and create ABAB patterns - Notice and correct an error in a repeating pattern. - Experiment with their own symbols, marks and numerals

Mathematics End of Year Milestones ELG (Reception)

Pupils at the expected level will:

Number	- Count objects, actions and sounds, up to and beyond 10. - Link the number symbol (numeral) with its cardinal value - Have a deep understanding of numbers to 10, including the composition of each number - Subitise up to 5 - Automatically recall number bonds to 5 including subtraction facts and some bonds to 10, including some double facts.
Numerical patterns	- Verbally count beyond 20, recognising the pattern of the number system - Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as. - Explore and represent patterns within numbers up to 10, including evens and odds, doubles and how numbers can be distributed equally.
Shape and Measure	- Select, rotate and manipulate shapes to develop spatial reasoning skills - Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can - Continue, copy and create repeating patterns - Compare length, weight and capacity

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Number and place value	Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. Count and read numbers to 100 in numerals. Count and write numbers to 100 in numerals Count in multiples of twos, fives and tens. Identify one more and one less of a given number.	Count in steps of 2, 3, and 5 from 0, and in 10s from any number, forward and backward. Compare and order numbers from 0 up to 100; use <,>and = signs. Use place value and number facts to solve problems.	Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number Recognise the place value of each digit in a three-digit number (hundreds, tens, ones). Solve number problems and practical problems involving these ideas	Count in multiples of 6, 7, 9, 25 and 1000 Count backwards through zero to include negative numbers Order and compare numbers beyond 1000 Round any number to the nearest 10, 100 or 1000	Read, write, order and compare numbers up to at least 1,000,000 and determine the value of each digit Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero.	Round any whole number to a required degree of accuracy. Use negative numbers in context, and calculate intervals across zero

Addition and subtraction	Represent and use number bonds within 20 Represent and use subtraction facts within 20.	Solve problems with addition and subtraction using concrete objects and pictorial representations, including those involving numbers, quantities and measures. Solve problems with addition and subtraction, applying his/her increasing knowledge of mental and written methods. Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100.	Add and subtract numbers mentally, including a three-digit number and ones. Add and subtract numbers mentally, including a three-digit number and tens. Add and subtract numbers mentally, including a three-digit number and hundreds.	Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why	Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction). Add and subtract numbers mentally with increasingly large numbers. Solve addition and subtraction multi-step problems in context, deciding which operations and methods to use and why	Solve multi-step problems in contexts, deciding which operations and methods to use and why Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

Multiplication and division		Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers. Solve problems involving multiplication and division, using concrete materials and mental methods Solve problems involving multiplication and division using arrays, repeated addition and multiplication and division facts, including problems in contexts	Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. Write and calculate mathematical statements for multiplication and division, using the multiplication tables that he/she knows, including for two-digit numbers times one-digit numbers, using mental methods and progressing to formal written methods.	Recall multiplication and division facts for multiplication tables up to 12 x 12	Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. Solve problems involving multiplication and division, including using their knowledge of factors and multiples, squares and cubes. Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates	Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

Fractions	Recognise, find and name a half as one of two equal parts of an object, shape or quantity	Recognise, find, name and write fractions 1/3, 1/4, 2/4 and 3/4 of a length, shape, set of objects or quantity	Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10. Recognise, find and write fractions of a discrete set of objects: including unit fractions and non-unit fractions with small denominators. Recognise and show, using diagrams, equivalent fractions with small denominators.	Recognise and show, using diagrams, families of common equivalent fractions. Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. Round decimals with one decimal place to the nearest whole number Solve simple measure and money problems involving fractions, and decimals to two decimal places.	Compare and order fractions whose denominators are all multiples of the same number. Read and write decimal numbers as fractions e.g. 0.71 = 71/100. Read, write, order and compare numbers with 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 fractions with a denominator of a multiple of 10 or 25.	Use written division methods in cases where the answer has up to two decimal places. Solve problems which require answers to be rounded to specified degrees of accuracy. Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.

Measurement	Compare, describe and solve practical problems for lengths and heights e.g. long/short, longer/shorter, tall/short, double/half Compare, describe and solve practical problems for mass/weight e.g. heavy/light, heavier than, lighter than. Compare, describe and solve practical problems for capacity and volume e.g. full/empty, more than, less than, half, half full, quarter Compare, describe and solve practical problems for time e.g. quicker, slower, earlier, later Recognise and use language relating to dates, including days of the week, weeks, months and years.	Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.	Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) Add and subtract amounts of money to give change, using both £ and p in practical contexts Tell the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks Write the time using an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks.	Convert between different units of measure e.g. kilometre to metre, hour to minute.	Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm²) and square metres (m²), and estimate the area of irregular shapes	Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation up to three decimal places.

Properties of shape	Recognise and name common 2-D shapes e.g. rectangles (including squares), circles and triangles Recognise and name common 3-D shapes e.g. cuboids (including cubes), pyramids and spheres.	Compare and sort common 2-D and 3-D shapes and everyday objects	Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle	Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes Identify lines of symmetry in 2-D shapes presented in different orientations.	Draw given angles and measure them in degrees (°). Distinguish between regular and irregular polygons based on reasoning about equal sides and angles	Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons.
Position and direction		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 anti-clockwise).		Plot specified points and draw sides to complete a given polygon		Draw and translate simple shapes on the coordinate plane, and reflect them in the axis

Statistics		Ask and answer questions about totalling and comparing categorical data	Interpret and present data using bar charts, pictograms and tables	Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.	Complete, read and interpret information in tables, including timetables	Interpret and construct pie charts and line graphs and use these to solve problems. Calculate and interpret the mean as an average
Ratio and proportion						Solve problems involving the calculation of percentages e.g. of measures, such as 15% of 360 and the use of percentages for comparison. Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples
Algebra						Use simple formula.