

SKILLS PROGRESSION: Mathematics



Strand	40- 60 Months	ELG	YEAR 1	YEAR 2	YEAR 3
Mathematical Vocabulary	<p>Use a wider range of vocabulary</p> <p>Understand why questions such as “why do you think...?”</p> <p>Understand a question or instruction that has two parts, such as: “Get your coat and wait at the door”.</p>	<p>Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen.</p> <p>Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen.</p> <p>Use new vocabulary in different contexts</p>	<p>To read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at year 1.</p>	<p>To read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.</p>	<p>To read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.</p>
Number: Counting	<p>Recite numbers past 5.</p> <p>Say one number for each item in order: 1,2,3,4,5.</p> <p>Know that the last number reached when counting a small set of objects tells you how many there are in total (‘cardinal principle’).</p>	<p>Count objects, actions and sounds.</p> <p>Count beyond ten.</p> <p>Verbally count beyond 20, recognising the pattern of the counting system.</p>	<p>To count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number.</p> <p>To identify one more and one less than a given number.</p> <p>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</p>	<p>To count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward.</p>	<p><i>To continue to count in ones, tens and hundreds, so that pupils become fluent in the order and place value of numbers to 1000.</i></p> <p><i>To count from 0 in multiples of 4, 8, 50 and 100.</i></p>

			increasingly complex questions. To recognise and create repeating patterns with objects and with shapes.		
Number & Place Value: Identifying, Representing and Estimating Numbers	Experiment with their own symbols and marks as well as numerals.	Subitise. Link the number symbol (numeral) with its cardinal number value. Subitise (recognise quantities without counting) up to 5.			
Number & Place Value: 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.	To read and write numbers up to 1000 in numerals and in words.
Number & Place Value: 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.		To compare and order numbers from 0 up to 100; use <, > and = signs.	To compare and order numbers up to 1000.
Number & Place Value:		Understand the 'one more than/one less than'		To recognise the place value of each digit in a two-digit number (tens, ones) to	To recognise the place value of each digit in a three-digit number (hundreds, tens,

<p>Understanding Place Value</p>		<p>relationship between consecutive numbers.</p> <p>Explore the composition of numbers to 10.</p> <p>Have a deep understanding of numbers to 10, including the composition of each number.</p>		<p><i>become fluent and apply their knowledge of numbers to reason with, discuss and solve problems.</i></p> <p><i>To begin to understand zero as a place holder.</i></p>	<p>ones) and apply partitioning related to place value using varied and increasingly complex problems, building on work in year 2 (for example, $146 = 100 + 40$ and 6, $146 = 130 + 16$).</p>
<p>Number & Place Value: Solve Problems</p>		<p>Solve real world mathematical problems with numbers up to 5.</p> <p>Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then...'</p>	<p><i>To practise ordinal numbers and solve simple concrete problems.</i></p>	<p>To use place value and number facts to solve related problems to develop fluency.</p>	<p>To solve number problems and practical problems involving these ideas.</p>
<p>Addition & Subtraction: Mental Calculations</p>	<p>Develop fast recognition of up to 3 objects, without having to count them individually ('subitising').</p> <p>Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle').</p> <p>Show 'finger numbers' up to 5.</p>	<p>Subitise.</p> <p>Explore the composition of numbers to 10.</p> <p>Automatically recall number bonds 0-5 and some to 10.</p> <p>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.</p> <p>Have a deep understanding of numbers to 10, including</p>	<p>To add and subtract one-digit and two-digit numbers to 20, including zero.</p> <p><i>To realise the effect of adding or subtracting zero.</i></p>	<p><i>To extend the language of addition and subtraction to include sum and difference.</i></p> <p>To show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.</p> <p>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,</p>	<p>To add and subtract numbers mentally, including: two-digit numbers, where the answers could exceed 100, a three-digit number and ones, a three-digit number and tens and a three-digit number and hundreds.</p>

		<p>the composition of each number.</p> <p>Subitise (recognise quantities without counting) up to 5.</p>		<p>two two-digit numbers, add three one-digit numbers.</p>	
<p>Addition & Subtraction: Number Bonds</p>	<p>Develop fast recognition of up to 3 objects, without having to count them individually ('subitising').</p> <p>Show 'finger numbers' up to 5.</p>	<p>Subitise.</p> <p>Explore the composition of numbers to 10.</p> <p>Automatically recall number bonds 0-5 and some to 10.</p> <p>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.</p> <p>Have a deep understanding of numbers to 10, including the composition of each number.</p> <p>Subitise (recognise quantities without counting) up to 5.</p>	<p>To <i>memorise</i>, represent and use number bonds and related subtraction facts within 20.</p>	<p>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.</p> <p>To recall and use addition and subtraction facts to 20 <i>to become fluent in deriving associative facts (e.g. $10 - 7 = 3$, $100 - 70 = 30$)</i> and derive and use related facts up to 100.</p>	
<p>Addition & Subtraction: Written Calculations</p>			<p>To read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs.</p>	<p><i>To begin to record addition and subtraction in columns to support place value and prepare for formal written methods with larger numbers.</i></p>	<p><i>To use the understanding of place value and partitioning to enable adding and subtracting numbers with up to three digits, using formal written methods of columnar addition and</i></p>

					subtraction <i>to become fluent</i> .
Addition & Subtraction: Inverse Operations, Estimating and Checking Answers	Develop fast recognition of up to 3 objects, without having to count them individually ('subitising').	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.	To estimate the answer to a calculation and use inverse operations to check answers.
Addition & Subtraction: Solve Problems	Solve real world mathematical problems with numbers up to 5. Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then...'	Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed evenly.	To <i>discuss</i> and solve one-step problems (<i>in familiar practical contexts</i>) that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems. <i>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 able to use these operations flexibly.</i>	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.		<i>To begin to use other multiplication tables and recall multiplication facts, including using related division facts to perform written and mental calculations.</i> <i>To begin to relate multiplication and division facts to fractions and measures (e.g., $40 \div 2 = 20$, 20 is a half of 40).</i>	To write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using <i>efficient mental methods</i> , for example, using <i>commutativity and associativity</i> , and progressing to formal <i>reliable</i> written

				To show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot, <i>to develop multiplicative reasoning.</i>	methods of <i>short multiplication and division.</i>
Multiplication and Division: Facts		<p>Explore the composition of numbers to 10.</p> <p>Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed evenly.</p> <p>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.</p>	<p><i>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.</i></p>	<p><i>To use a variety of language to describe multiplication and division.</i></p> <p>To count from 0 in multiples of 4, 8, 50 and 100.</p> <p>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.</p> <p><i>To connect the 10 multiplication table to place value, and the 5 multiplication table to the divisions on the clock face.</i></p>	<p>To recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables <i>when they are calculating mathematical statements in order to improve fluency.</i></p> <p><i>To connect the 2, 4 and 8 multiplication tables through doubling.</i></p>
Multiplication and Division: Written Calculations				To calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals (=) signs.	To write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using <i>efficient</i>

				<i>To begin to use other multiplication tables and recall multiplication facts, including using related division facts to perform written and mental calculations.</i>	<i>mental methods, for example, using commutativity and associativity, and progressing to formal reliable written methods of short multiplication and division. (included in mental calculation section)</i>
Multiplication and Division: Solve Problems		Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed evenly.	To solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.	To solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.	To solve <i>simple</i> problems in contexts, deciding which of the four operations to use and why. These include missing number problems, involving multiplication and division, including <i>measuring</i> and positive integer scaling problems and correspondence problems in which n objects are connected to m objects.
Fractions, decimals and percentages: Counting				<i>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.</i>	To 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 ten.
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 <i>by solving problems</i> . To recognise, find and name a quarter as one of four equal parts of an object, shape or quantity <i>by solving problems</i> .	To recognise, find, name, identify and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$, $\frac{1}{2}$ 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. <i>To connect unit fractions to equal sharing and grouping,</i>	<i>To understand the relation between unit fractions as operators (fractions of), and division by integers.</i> To recognise, <i>understand</i> and use fractions as numbers: unit fractions and non-unit fractions with small denominators <i>as numbers on the number line (going beyond</i>

			<i>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.</i>	<i>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.</i>	<i>0 -1 and relating this to measure), and deduce relations between them, such as size and equivalence.</i> To recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.
Fractions, decimals and percentages: Comparing/ ordering, adding/ subtracting fractions					To compare and order unit fractions, and fractions with the same denominators. To add and subtract fractions with the same denominator within one whole <i>through a variety of increasingly complex problems to improve fluency.</i>
Fractions, decimals and percentages: Equivalence				To write simple fractions for example, $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$	To recognise and show, using diagrams, equivalent fractions with small denominators.
Measurement: Describe, Measure, Compare and Solve (All Strands)	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 <i>with increasing accuracy using their knowledge of the number system</i> to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit,	To measure <i>using the appropriate tools and units</i> , compare (<i>including simple scaling by integers</i>) add and subtract <i>using mixed units</i> : lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml).

			<p><i>To move from using and comparing different types of quantities and measures using non-standard units, including 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.</i></p>	<p>using rulers, scales, thermometers and measuring vessels.</p> <p><i>To use the appropriate language and record using standard abbreviations.</i></p> <p>To compare and order lengths, mass, volume/capacity and record the results using >, < and =.</p> <p><i>To compare measures including simple multiples such as 'half as high'; 'twice as wide'.</i></p>	
<p>Measurement: Telling the time</p>	<p>Begin to describe a sequence of events, real or fictional, using words, such as 'first', 'then...'</p>		<p>To sequence events in chronological order using language.</p> <p>To recognise and use language relating to dates, including days of the week, weeks, months and years.</p> <p>To tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.</p>	<p>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.</p> <p>To become fluent in telling the time on analogue clocks and recording it.</p> <p>To know the number of minutes in an hour and the number of hours in a day.</p> <p>To compare and sequence intervals of time.</p>	<p>To tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks.</p> <p>To begin to use digital 12-hour clocks and record their times in preparation for using digital 24-hour clocks in year 4.</p> <p>To estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours.</p>

					<p>To use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight.</p> <p>To know the number of seconds in a minute and the number of days in each month, year and leap year.</p> <p>To compare durations of events.</p>
Geometry- properties of shapes	Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: 'sides', 'corners'; 'straight', 'flat', 'round'.	Select, rotate and manipulate shapes in order to develop spatial reasoning skills	<p>To recognise, handle and name common 2D and 3D shapes in different orientations/sizes and relate everyday objects fluently.</p> <p>To recognise that rectangles, triangles, cuboids and pyramids are not always similar to each other.</p>	<p>Pupils read and write names for shapes that are appropriate for their word reading and spelling.</p> <p>To handle, identify and describe the properties of 2D shapes, including the number of sides and line symmetry in a vertical line.</p> <p>To handle, identify and describe the properties of 3D shapes, including the number of edges, vertices and faces.</p> <p>To identify 2D shapes on the surface of 3D shapes.</p>	<p>To describe the properties of 2D and 3D shapes using accurate language.</p> <p>To extend knowledge of the properties of shapes is extended at this stage to symmetrical and non-symmetrical polygon and polyhedron.</p> <p>To recognise 3D shapes in different orientations and describe them.</p>
Geometry: Compare and classify shapes	Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language:	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	

	'sides', 'corners'; 'straight', 'flat', 'round'.			use vocabulary precisely.	
Geometry: Drawing 2D Shapes and Constructing 3D Shapes	<p>Select shapes appropriately: flat surfaces for building, a triangular prism for a roof etc.</p> <p>Combine shapes to make new ones - an arch, a bigger triangle etc.</p>	<p>Select, rotate and manipulate shapes in order to develop spatial reasoning skills.</p> <p>Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can.</p>		<i>Pupils draw lines and shapes using a straight edge.</i>	<p>To connect decimals and rounding to drawing and measuring straight lines in centimetres, in a variety of contexts.</p> <p>To identify horizontal and vertical lines and pairs of perpendicular and parallel lines.</p> <p>To draw 2D shapes and make 3D shapes using modelling materials.</p>
Geometry – position, direction and movement	<p>Understand position through words alone – for example, “The bag is under the table,” – with no pointing.</p> <p>Describe a familiar route.</p> <p>Discuss routes and locations, using words like ‘in front of’ and ‘behind’.</p>	Draw information from a simple map.	<p>To describe position, direction and movement, including whole, half, quarter and three-quarter turns <i>in both directions and connect clockwise with the movement on a clock face.</i></p> <p><i>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.</i></p>	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).	

<p>Geometry: Patterns</p>	<p>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.</p> <p>Extend and create ABAB patterns – stick, leaf, stick, leaf.</p> <p>Notice and correct an error in a repeating pattern.</p>	<p>Continue, copy and create repeating patterns.</p>		<p>To order and arrange combinations of mathematical objects and <i>shapes, including those in different orientations</i>, in patterns and sequences.</p>	
<p>Statistics</p>				<p><i>To record, interpret, collate, organise and compare information.</i></p> <p>To interpret and construct simple pictograms, tally charts, block diagrams and simple tables (<i>e.g. many-to-one correspondence in pictograms with simple ratios 2, 5, 10 scales</i>).</p> <p>To ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity.</p> <p>To ask and answer questions about totalling and comparing categorical data.</p>	<p>To interpret and present data using bar charts, pictograms and tables <i>and use simple scales with increasing accuracy.</i></p>