Fairfield Infant and Nursery School

Maths Knowledge and skills progression

Knowledge and Skills Progression	Nursery	Reception	Year 1	Year 2	Year 3
Number and Place Value	Babies, toddlers and young children will be learning to: • 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 the amount in a group of up to 3 items • compare amounts, saying 'lots', 'more' or 'same' • 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'	• count objects, actions and sounds • subitise • link the number symbol (numeral) with its cardinal number value • count beyond 10 • compare numbers • understand the 'one more than or one less than' relationship between consecutive numbers • explore the composition of numbers to 10 • automatically recall number bonds for numbers 0 to 5 and some to 10	• count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number • count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens • given a number, identify one more and one less • use the language of: equal to, more than, less than (fewer), most, least • identify and represent numbers using objects and pictorial representations including the number line • read and write numbers from 1 to 20 in numerals and words.	• count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward • compare and order numbers from 0 up to 100; use and = signs • identify, represent and estimate numbers using different representations, including the number line • read and write numbers to at least 100 in numerals and in words • recognise the place value of each digit in a two-digit number (tens, ones) • 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 • compare and order numbers up to 1000 • identify, represent and estimate numbers using different representations • read and write numbers up to 1000 in numerals and in words • tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks (copied from Measurement)

	• 3 and 4-year-olds will be learning to: • develop fast recognition of up to 3 objects, without having to count them individually ('subitising') • 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 • 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 • solve real-world mathematical problems with numbers up to 5 • compare quantities using language 'more than' and 'fewer than'				• recognise the place value of each digit in a threedigit number (hundreds, tens, ones) • solve number problems and practical problems involving these ideas.

Addition and subtraction	•	•	• represent and use number bonds and related subtraction facts within 20 • add and subtract onedigit and two-digit numbers to 20, including zero • read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Written Methods) • read, write and interpret	• recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 • add and subtract numbers using concrete objects, pictorial representations, and mentally, including: * a two-digit number and ones * a two-digit number and tens * two two-digit numbers * adding three one-digit numbers	• add and subtract numbers mentally, including: * a three-digit number and ones * a three-digit number and tens * a three-digit number and hundreds • add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction

			mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Mental Calculation) • solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = * - 9	• show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot • recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. • 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 • solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change (copied from Measurement)	• estimate the answer to a calculation and use inverse operations to check answers • solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction

Multiplication and Division	•	•	• count in multiples of twos, fives and tens (copied from Number and Place Value) • 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	• count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward (copied from Number and Place Value) • recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers • show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot • calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs • solve problems involving multiplication and division, using materials, arrays,	• count from 0 in multiples of 4, 8, 50 and 100 (copied from Number and Place Value) • 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 they know, including for two-digit numbers times onedigit numbers, using mental and progressing to formal written methods (appears also in Written Methods) • write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including

				repeated addition, mental methods, and multiplication and division facts, including problems in contexts	for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods (appears also in Mental Methods) • estimate the answer to a calculation and use inverse operations to check answers (copied from Addition and Subtraction) • solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects
Fractions	•	•	• recognise, find and name a half as one of two equal parts of an object, shape or quantity	• Pupils should count in fractions up to 10, starting from any number and using the1/2 and 2/4 equivalence on the	•

			• recognise, find and name a quarter as one of four equal parts of an object, shape or quantity	number line (Non Statutory Guidance) • recognise, find, name and write fractions 1 / 3 , 1 / 4 , 2 / 4 and 3 / 4 of a length, shape, set of objects or quantity • write simple fractions e.g. 1 / 2 of 6 = 3 and recognise the equivalence of 2 / 4 and 1 / 2 .	
Measurement	• **Babies, toddlers and young children** will be learning to: • climb and squeeze themselves into different types of spaces • build with a range of resources • complete inset puzzles • compare sizes, weights etc. using gesture and language - 'bigger, little, smaller', 'high or low', 'tall', 'heavy' • notice patterns and arrange things in a pattern	• compare length, weight and capacity	• compare, describe and solve practical problems for: * lengths and heights [e.g. long/short, longer/shorter, tall/short, double/half] * mass/weight [e.g. heavy/light, heavier than, lighter than] * capacity and volume [e.g. full/empty, more than, less than, half, half full, quarter] * time [e.g. quicker, slower, earlier, later] • sequence events in chronological order using language [e.g. before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]	• compare and order lengths, mass, volume/capacity and record the results using >, < and = • compare and sequence intervals of time • choose and use appropriate standard units 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 • recognise and use symbols for pounds	• compare durations of events, for example to calculate the time taken by particular events or tasks • estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight (appears also in Telling the Time)

			• measure and begin to record the following: * lengths and heights * mass/weight * capacity and volume * time (hours, minutes, seconds) • recognise and know the value of different denominations of coins and notes • tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. • recognise and use language relating to dates, including days of the week, weeks, months and years	(£) and pence (p); combine amounts to make a particular value • find different combinations of coins that equal the same amounts of money • solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change • tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times. • know the number of minutes in an hour and the number of hours in a day. (appears also in Converting) • know the number of minutes in an hour and the number of hours in a day. (appears also in Telling the Time)	• measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) • measure the perimeter of simple 2-D shapes • add and subtract amounts of money to give change, using both £ and p in practical contexts • tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks • estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon

					and midnight (appears also in Comparing and Estimating) • know the number of seconds in a minute and the number of days in each month, year and leap year
Geometry – property of shapes	3 and 4-year-olds will be learning to: • talk about and identify the patterns around them, for example, stripes on clothes or designs on rugs and wallpaper • use informal language like 'pointy', 'spotty' or 'blobs' • 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…' • talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using	• 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 • select, rotate and manipulate shapes to develop spatial reasoning skills	• recognise and name common 2-D and 3-D shapes, including: * 2-D shapes [e.g. rectangles (including squares), circles and triangles] * 3-D shapes [e.g. cuboids (including cubes), pyramids and spheres].	• identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line • identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces • identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid] • compare and sort common 2-D and 3-D shapes and everyday objects	• draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them • recognise angles as a property of shape or a description of a turn • identify right angles, recognise that two right angles make a halfturn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle

	informal and mathematical language such as: o sides o corners o straight o flat o round				• identify horizontal and vertical lines and pairs of perpendicular and parallel lines
Geometry – Position and direction	3 and 4-year-olds will be learning to: • 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' • make comparisons between objects relating to size, length, weight and capacity • select shapes appropriately such as flat surfaces for building or a triangular prism for a roof • combine shapes to make new ones, for example, an arch or a bigger triangle	•	• describe position, direction and movement, including half, quarter and three-quarter turns.	• 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) • order and arrange combinations of mathematical objects in patterns and sequences	•

Statistics	•	•	•	• interpret and construct simple pictograms, tally charts, block diagrams and simple tables • ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity • ask and answer questions about totalling and comparing categorical data	• interpret and present data using bar charts, pictograms and tables • solve one-step and twostep questions [e.g. 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.
Algebra	•	•	• solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ∗ - 9 (copied from Addition and Subtraction) • represent and use number bonds and related subtraction facts within 20 (copied from Addition and Subtraction)	• recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems. (copied from Addition and Subtraction) • recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 (copied from Addition and Subtraction)	• solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. (copied from Addition and Subtraction) • solve problems, including missing number problems, involving multiplication and division, including integer scaling (copied from

			• sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening (copied from Measurement)	• compare and sequence intervals of time (copied from Measurement) • order and arrange combinations of mathematical objects in patterns (copied from Geometry: position and direction)	Multiplication and Division)