



Curriculum and Progression in Maths

Intent

Maths teaching at Rothbury First School is geared towards enabling each child to develop mastery; not only the mathematics skills and understanding required for later life, but also an enthusiasm and fascination about maths itself. We aim to increase children's confidence in maths and aim for all pupils to develop a deep conceptual and procedural understanding of mathematics to ensure sustained learning. We believe that all pupils are capable of understanding and doing mathematics successfully, given sufficient time. We are continually aiming to raise the standards of achievement of all children in our school to give them the best possible life-chances. We encourage children to think deeply, which helps them to problem solve more effectively – a great life-skill that will support them with all future learning. Across the key stages children explore number, geometry, measure, statistics, fractions and percentages. Lessons provide a wide range of opportunities, which encourage children to work collaboratively, construct their own learning and discover their own rules, by offering them rich and sophisticated problems in a well-supported, focused but fun environment.

Progression of Skills

	EYFS	Year 1	Year 2	Year 3	Year 4
Maths Vocabulary	Use a wider range of vocabulary. Understand why questions such as "why do you think...? Understand a question or instruction that has	To read and spell mathematical vocabulary, at a level consistent with their increasing word	To read and spell mathematical vocabulary, at a level consistent with their increasing word	To read and spell mathematical vocabulary correctly and confidently, using their growing word	To read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and

	<p>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 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</p>	reading and spelling knowledge at year 1.	reading and spelling knowledge at key stage 1.	reading knowledge and their knowledge of spelling.	their knowledge of spelling.
Counting	<p>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’). Count objects, actions and sounds. Count beyond ten. Verbally count beyond 20, recognising the pattern</p>	<p>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</p>	<p>count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward</p>	<p>count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number.</p>	<p>count in multiples of 6, 7, 9, 25 and 1000 find 1000 more or less than a given number count backwards through zero to include negative numbers</p>

	of the counting system.				
Place Value	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, showing 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.		recognise the place value of each digit in a two-digit number compare and order numbers from 0 up to 100; use <, > and = signs	recognise the place value of each digit in a three-digit number compare and order numbers up to 1000	recognise the place value of each digit in a four-digit number order and compare numbers beyond 1000 round any number to the nearest 10, 100 or 1000
Representing Number	Experiment with their own symbols and marks as well as numerals. Talk about and identify the patterns around them. For example: stripes on clothes, designs on rugs and wallpaper. Use informal language like 'pointy', 'spotty',	identify and represent numbers using objects and pictorial representations including the number line, & use language of: equal to, more than, less than (fewer), most, least read and write numbers from 1 to 20	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	identify, represent and estimate numbers using different representations read and write numbers up to 1000 in numerals and in words	identify, represent and estimate numbers using different representations read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value

	<p>'blobs' etc. Extend and create ABAB patterns – stick, leaf, stick, leaf. Notice and correct an error in a repeating pattern. Continue, copy and create repeating patterns.</p>	<p>in numerals and words read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs</p>			
Number Facts (+/-)	<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>given a number, identify one more and one less represent and use number bonds and related subtraction facts within 20</p>	<p>use place value and number facts to solve problems recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100</p>		
Mental (+/-)		<p>add and subtract one-digit and two-digit numbers to 20, including zero</p>	<p>add and subtract numbers using concrete objects, pictorial representations, and mentally, including: TU+U, TU+T, TU+TU and U+U+U show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot</p>	<p>add and subtract numbers mentally, including: HTU+U, HTU+T and HTU+H</p>	

Written (+/-)				add and subtract numbers with up to three digits, using formal written methods of column addition and subtraction	add and subtract numbers with up to 4 digits using the formal written methods of column addition and subtraction where appropriate
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...'	solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$.	solve problems with addition and subtraction, using concrete, pictorial and abstract representations recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	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	estimate and use inverse operations to check answers to a calculation solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why
Number Facts (x/-)			recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers	recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	recall multiplication and division facts for multiplication tables up to 12×12
Mental (x/-)			calculate mathematical statements for multiplication and	write and calculate mathematical statements for	use place value, known and derived facts to multiply and divide mentally,

			division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals (=) signs show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot	multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental methods	including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers recognise and use factor pairs and commutativity in mental calculations
Written (x/-)				Progress to formal written methods calculations as above	multiply two-digit and three-digit numbers by a one-digit number using formal written layout
Problems (x/-)		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.	solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	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.	solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects
Recognising Fractions		recognise, find and name a half as one of two equal parts of an	recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a	count up and down in tenths; recognise that tenths	count up and down in hundredths; recognise that hundredths

		object, shape or quantity recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.	length, shape, set of objects or quantity	arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10	arise when dividing an object by one hundred and dividing tenths by ten.
Comparing Fractions				compare and order unit fractions, and fractions with the same denominators recognise and show, using diagrams, equivalent fractions with small denominators	recognise and show, using diagrams, families of common equivalent fractions
Finding Fractions of Quantities				recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators	
Fraction Calculations			write simple fractions for example, $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and	add and subtract fractions with the same denominator within one whole [for	add and subtract fractions with the same denominator

			1/2.	example, $5/7 + 1/7 = 6/7$]	
Decimals as Fractional Amounts					<p>recognise and write decimal equivalents of any number of tenths or hundredths</p> <p>recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$</p> <p>find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths</p>
Ordering Decimals					<p>round decimals with one decimal place to the nearest whole number</p> <p>compare numbers with the same number of decimal places up to two decimal places</p>
Calculating with Decimals					
Percentages					
Fraction Problems				solve problems using all fraction knowledge	solve simple measure and money problems involving fractions and decimals to two decimal places
Ratio and Proportion					
Algebra					

Measures	make comparisons between objects relating to size, length, weight and capacity. Compare length, weight and capacity.	compare, describe and solve practical problems for: length/height, weight/mass, capacity/volume & time measure and begin to record length/height, weight/mass, capacity/volume & time	choose and use appropriate standard units to estimate and measure length/height (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels compare and order lengths, mass, volume/capacity and record the results using >, < and =	measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)	Convert between different units of measure estimate, compare and calculate different measures, including money in pounds and pence
Mensuration				measure the perimeter of simple 2-D shapes	measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres find the area of rectilinear shapes by counting squares
Money		recognise and know the value of different denominations of coins and notes	recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value find different combinations of coins that equal the same	add and subtract amounts of money to give change, using both £ and p in practical contexts	

			amounts of money solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change		
Time	begin to describe a sequence of events, real or fictional, using words, such as 'first', 'then...'	sequence events in chronological order using language recognise and use language relating to dates, including days of the week, weeks, months and years tell the time to the hour and half past the hour and draw the hands on a clock face to show these times	compare and sequence intervals of time 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	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 and hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight •know the number of seconds in a minute and the number of days in each month, year and leap year compare durations of events	Convert between different units of measure (e.g. Hours to minutes) read, write and convert time between analogue and digital 12- and 24-hour clocks solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days

Shape Vocabulary	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	recognise and name common 2-D shapes (e.g. Square, circle, triangle) recognise and name common 3-D shapes (e.g. Cubes, cuboids, pyramids & spheres)	vertices, edges, faces, symmetry	identify horizontal and vertical lines and pairs of perpendicular and parallel lines	
Properties of 2D Shape	Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can. 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.		identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line. compare and sort common 2-D and 3-D shapes and everyday objects.	draw 2-D shapes	compare and classify geometric shapes, including quadrilaterals and triangles, based on properties and sizes identify lines of symmetry in 2-D shapes presented in different orientations complete a simple symmetric figure with respect to a specific line of symmetry.

Properties of 3D Shape	Select, rotate and manipulate shapes in order 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.		<p>identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces</p> <p>identify 2-D shapes on the surface of 3-D shapes.</p> <p>compare and sort common 2-D and 3-D shapes and everyday objects.</p>	<p>make 3-D shapes using modelling materials</p> <p>recognise 3-D shapes in different orientations and describe them</p>	
Angles				<p>recognise angles as a property of shape or a description of a turn</p> <p>identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn</p> <p>identify whether angles are greater or less than right angle</p>	<p>identify acute and obtuse angles and compare and order angles up to two right angles by size</p>
Position and Direction	understand position through words alone – for example, “The bag	describe position, direction and movement, including	order and arrange combinations of mathematical objects		describe positions on a 2-D grid as coordinates in the first quadrant

	is under the table,” – with no pointing. Describe a familiar route. Discuss routes and locations, using words like ‘in front of and ‘behind’. Draw information from a simple map.	whole, half, quarter and three-quarter turns.	in patterns and sequences. 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 $\frac{3}{4}$ turns		describe movements between positions as translations of a given unit to the left/right and up/down plot specified points and draw sides to complete a given polygon
Interpreting Data			interpret and construct simple pictograms, tally charts, block diagrams and simple tables	interpret and present data using bar charts, pictograms and tables	interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs
Extracting Info From Data			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	solve one-step and two-step questions [for example, ‘How many more?’ and ‘How many fewer?'] using information presented in scaled bar charts and pictograms and tables	solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs

Vocabulary

EYFS	Year 1	Year 2	Year 3	Year 4
<p>Number One, two, three to twenty and beyond. None Count on/up/to/from/down Before, after More, less, many, few, fewer, fewest, smaller, smallest Equal to, the same as Odd, even Digit Numeral Compare Order Size Value Between, halfway between, Number line Add, more, plus, make, sum, total, altogether Double Half, halve Equals, is the same (including equals sign) How many more to make...? How many more is,,, then,,,? How much more is...? Subtract, take away, minus, Odd, even Double, halve Share, share equally Group in pairs Equal groups of Divide, Full, half, empty Holds Container Weigh, weighs, balance Heavy, heavier, heaviest, light, lighter, lightest Scales Time Days of the week: Monday, Tuesday etc. Seasons: Spring, Summer, Autumn, Winter Days, week, month, year, weekend Birthday, holiday Morning, afternoon, evening, night Bedtime,</p>	<p>Greater, lesser Pair Units, ones, tens Ten more/less Figure (s) In order/ A different order Above, below, Number bonds Inverse Near doubles Difference between How many fewer is...than...? How much less is...? Once, twice, three times. Five times. Count in tens (forwards from/ backwards from) How many times? Lots of, groups of Multiple of, times, multiply, multiply by Repeated addition Array, row, column Group in twos, threes, etc Divided by, left, left over, Midnight Now, soon, early, late Quick, quicker, quickly, fast, slow, slower Old, older, oldest, new, newer, newest Takes longer, takes less time Hour, o'clock, half past Watch, hands How long ago? How long will it be to...? How long will it take to...? How often? Always, never, often, sometimes, usually Once, Twice... First, second, third, etc, Close to, about the same as, just over, just</p>	<p>As Year 1 with the addition of Numbers to 100, hundreds, partition, recombine, hundred more/less, quarter past/to, m/km, g/kg, ml/l Temperature degrees, size, bigger, larger, smaller, symmetrical, line of symmetry, fold, match, mirror line, reflection, patter, repeating pattern, three quarters, one third, a third, equivalence, equivalent, count, tally, sort, vote, graph, block graph, pictogram, represent, group, set, list, table, label, title, most popular, most common, least popular, least common, predict, describe the pattern, describe the rule, find, find all, find different, investigate</p>	<p>As Year 2 with the addition of Numbers to one thousand, column addition, column subtraction, product, multiples of four, eight, fifty and one hundred, scale up, leap year, twelve hour/twenty four hour clock, roman numerals I to XIII, greater/less than ninety degrees, orientation, horizontal, vertical, perpendicular, parallel lines, numerator, denominator, unit fraction, non unit fraction, compare and order, tenths, chart, bar chart, frequency table, carroll diagram, venn diagram, axis, axes, diagram</p>	<p>As Year 3 with the addition of Tenths, hundredths, decimal, round the the nearest, thousand more/less than, negative integers, count through zero, roman numerals, multiplication facts to 12 x 12, division facts, inverse, derive, convert, coordinates, translation, quadrant, x axis, y axis, perimeter and area, quadrilaterals, triangles, right angle, acute and obtuse angles, equivalent decimals and fractions, continuous data, line graph.</p>

<p>dinnertime, playtime Today, yesterday, tomorrow Before, after, next, last Quickest, fastest, slowest Clock Once First, second, third Estimate Too many, too few Length, height Longer, longest, shorter, shortest, taller, tallest, higher, highest Money, coin, penny, pence, pound, price, cost, buy, sell, spend, spent, pay, change How much? How many? Total, Over, under, underneath, above, below, top, bottom, side On, in, outside, inside In front, behind Front, back Before, after Beside, next to Middle Up, down, forwards, backwards. Sideways Close, far Through Towards, away from Side, roll, turn, Sort Cube, cuboid, pyramid, sphere, cone, cylinder, circle, triangle, square Shape Flat, curved, straight, round Solid Corner Face, side Make, build, draw, Whole Equal One half, Listen, join in Say, think, imagine, remember Start from Look at, point to Put What comes next? Find, use, make, build Tell me,</p>	<p>under Enough, not enough Width, depth Long, short, tall, high Low, wide, narrow, deep, shallow, thick, thin Far, near, close Metre, ruler, metre stick Costs more, costs less, dear(er), cheaper, costs the same as, Position Around Opposite Apart Between, edge, centre Corner Direction Journey Left, right Across Near Along To, from Movement Whole turn, half turn Stretch, bend, Group Hollow Point, pointed Edge, Equal parts, four equal parts Two halves A quarter, two quarters, Place, fit Arrange, rearrange Change, change over Split, separate Carry on, continue, repeat Choose, collect Record, trace, copy, complete, finish, end Fill in, shade, colour, cross, draw, draw a line between, join (up), arrow Answer, check, same number(s), different number(s), missing number(s) Number facts Abacus, rods Best way, another way, Not all, every, each</p>			
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describe, pick out, talk
about, explain, show me
Read, write Tick, draw a line,
ring Cost Count, work out
Number line, number track,
number square, number
cards, Counters, cubes,
blocks, die, dice, dominoes,
pegs, peg board Same way,
different way In order, in a
different order

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