Maths Mastery Curriculum

Year 1 and 2 overview

Key Resources to use:

Nrich activities

These ideas are linked with National Curriculum objectives and may be a good place to start with introducing problem solving and reasoning when applying a learnt skill. Click on the link to take you to the activity where there are suggestions on how to extend and simplify the problem to make it suitable at all levels or give you ideas of how to set up your own problem. The letters after each of the activities means: G= game, P= problem and I= investigation.

Assessment

The NCETM mastery assessment documents give some really good ideas on activities that can be used to assess the level of mastery of the children within particular mathematical areas. These include mastery activities and mastery at greater depth so you can extend the higher achievers. These are designed as activities, not to be used as a test.

Models and images

These models and images gives ideas that can be used to support explanations of new concepts, as a fluency based starter or a game. In the folder, there are examples of the bar method that can be used to support the children in visualising what each of the four operations mean when working on extended problems.

Problem solving and reasoning books

These books were handed out towards the end of last year. They include 14 key strategies to develop reasoning within every lesson. These strategies can be used for starters, plenaries and as a whole class skill. They also include investigations to develop these skills and the disks include further ideas on how to develop this within your class as well as giving powerpoint examples of each problem.

Calculation policy

The Calculation Policy should be used when teaching calculations to ensure consistency and progression across the school and within phases. Whilst there may be methods that cover Year 3 and 4 for example, a discussion should take place between the teachers of the Year 3 class and the Year 4 class about the calculation used during units to ensure progression. Always go back as far as is needed for SEN or children that are struggling. The key is understanding rather than pushing a procedural method.

Unit overview

For each unit, it will be useful to plan out the progression of objectives across the period of a whole unit. The link above will take you to a blank layout for you to use to design the progression across a unit. This should make weekly planning easier as you come to do it.

Stepping stones document

This document can be useful in breaking an objective down into smaller steps to support the learning and development of the concept.

Term	Unit	Year 1 objectives	Year 2 objectives	Links with other mathematical concepts and contextualised themes
Autumn	Place value (2-3 weeks)	• count to 100, forwards and backwards, beginning with 0 or 1, or from any given number • count, read and write numbers to 20 in numerals and words • identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least • given a number, identify one more and one less • count in multiples of twos, 5s and 10s • count, read and write numbers to 100 in numerals VOCAB Numeral, twenty-one…one hundred, forwards, backwards, equal to, equivalent to, most, least, many, multiple of, Ones, tens, digit, the same number as, larger, bigger, greater, fewer, smaller, less, fewest, smallest, least, most, biggest, largest, greatest, greater than, less than, compare,	• use place value and number facts to solve problems (• recognise the place value of each digit in a two-digit number (tens, ones) • identify, represent and estimate numbers to 100 using different representations, including the number line • compare and order numbers from 0 up to 100; use <, > and = signs • read and write numbers to at least 100 in numerals and in words • count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward VOCAB Ones, tens, digit, the same number as, larger, bigger, greater, fewer, smaller, less, fewest, smallest, least, most, biggest, largest, greatest, greater than, less than, compare, order, size Between, equal to, the same as, **place, place value**	Nrich activities Models and images used Contextualised themes

		order, size, between, equal to, the same as,	**stands for, represents, exchange**, count on in multiples of twos, threes, fives**,** forwards, backwards, **partition, estimate** **Bold words show new vocabulary**	
	Addition and subtraction (2 weeks)	• represent and use number bonds and related subtraction facts [within 10] • add and subtract one-digit … numbers [to 10], including zero • read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs • solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems VOCAB add, more, sum, total, altogether, double, addition, near double, half, halve, take away, subtract, difference between, equals, is the same as, number bonds/pairs, missing number, problem, problem solving, mental, mentally, explain your thinking, one digit, two digit	• recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 • show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot • 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 VOCAB add, more, sum, total, altogether, double, addition, near double, one more, two more… ten more, how many more to make…? , how many more is _ than _ ?, how much more is _?, take away, subtract, difference between, half, halve, how many are left / left over? , one less, two less… ten less, how many fewer is _ than _?, how much less is _?, equals, is the same as, number bonds/pairs, missing number **number facts, tens boundary**	• Nrich activities
	Exploring calculation strategies and problem solving	• represent and use number bonds and related subtraction facts within 20 • add and subtract one-digit and two-digit numbers to 20, including zero • read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs	• 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	• Nrich activities

	(addition and subtraction) (2 weeks)	• solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as • 7 = ○ – 9 VOCAB add, more, sum, total, altogether, double, addition, near double, half, halve, take away, subtract, difference between, equals, is the same as, number bonds/pairs, missing number, problem, problem solving, mental, mentally, explain your thinking, one digit, two digit	measures; applying their increasing knowledge of mental and written methods • estimate the answer to a calculation and use inverse operations to check answers • applying their increasing knowledge of mental and written methods VOCAB add, more, sum, total, altogether, double, addition, near double, half, halve, take away, subtract, difference between, equals, is the same as, number bonds/pairs, missing number, problem, problem solving, mental, mentally, explain your thinking, one digit, two digit Exact, exactly, roughly one hundred more, one hundred less, number facts, tens boundary,	
	Multiplication and division (3 weeks)	• use grouping and sharing of small quantities to understand the process of multiplication and division • doubling and halving of quantities and linking this with multiplying and dividing by 2 • make connections between using concrete objects, pictorial representations and arrays and counting in 2s, 5s and 10s. • solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays.	• 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, repeated addition, mental methods, and multiplication and division facts, including problems in contexts • show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot • recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers VOCAB groups of, times, once twice, three times… ten times, repeated addition, divide, divided by, divided, into, share, share equally, left, left over, one each, two each, three each… ten each, group in	• Nrich activities

		VOCAB Multiplication, multiply, multiplied by, multiple, division, dividing, grouping, array, double, half	pairs, threes… tens, equal groups of, row, column, multiplication table, multiplication fact, division fact	
	Measuring and length (links with place value through comparison) (3 weeks)	• compare, describe and solve practical problems for: lengths and heights [for example, long/short, longer/shorter, tall/short, double/half]; mass/weight [for example, heavy/light, heavier than, lighter than]; capacity and volume [for example, full/empty, more than, less than, half, half full, quarter] • measure and begin to record the following: lengths and heights; mass/weight; capacity and volume VOCAB Measure, size, compare, guess, estimate, enough, not enough, too much, too little, too many, too few, nearly, close to, about the same as, just over, just under Metre, length, height, width, depth, long, short, tall, high, low, wide, narrow, thick, thin, longer, shorter, taller, higher etc., longest, shortest, tallest, highest etc., far, near, close Weigh(s), balances, heavy, light, heavier than, lighter than, heaviest, lightest, scales Full, empty, half full, holds, container **Measurement, roughly, centimetre, ruler, metre stick,**	• 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 • compare and order lengths, mass, volume/capacity and record the results using >, < and = VOCAB measuring scale, further, furthest, tape measure, gram, millilitre, contains, temperature, degree Measurement, roughly, centimetre, ruler, metre stick, kilogram, half kilogram, litre, half litre, capacity, volume, more than, less than, quarter full	Nrich activities

		kilogram, half kilogram, litre, half litre, capacity, volume, more than, less than, quarter full		
	Statistics (2 weeks- potential to link in with previous unit on measurement)	No specific Yr 1 objectives stated in the national curriculum, however, the following objectives can be used • Become familiar with different ways of recording statistics such as pictograms, tally charts, block diagrams and simple tables • Begin to interpret and construct simple pictograms, tally charts, block diagrams and simple tables • Begin to answer simple questions by counting the number of objects in each category and sorting the categories by quantity VOCAB Vote, table, tally, graph, block graph, pictogram, represent, label, title. most popular, most common, least popular, least common	• 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 VOCAB Vote, table, tally, graph, block graph, pictogram, represent, label, title. most popular, most common, least popular, least common	Nrich activities
Spring	Geometry: (Faces, shapes and	• **recognise and name common 2-D shapes including: rectangles (including squares), circles and triangles**	• **identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line**	• Nrich activities

	patterns; main focus) (3 weeks)	• **recognise and name common 3-D shapes including cuboids (including cubes), pyramids and spheres** • **compare and sort common 2-D and 3-D shapes and everyday objects** • describe position, direction and movement, including whole, half, quarter and three-quarter turns VOCAB Underneath, centre, journey, quarter, turn, three-quarter turn, point, pointed, cuboid, cylinder, symmetry, symmetrical pattern shape pattern, flat, curved, straight, round, hollow, solid, sort, make, build, draw, size, bigger, larger, smaller, symmetrical, pattern, repeating pattern, match, corner, side, rectangle (including square), circle, triangle, face, edge, vertex, vertices, cube, pyramid, sphere, cone, pattern, puzzle, what could we try next? how did you work it out? Recognise, describe, draw, compare, sort	• **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** • order and arrange combinations of mathematical objects 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 three-quarter turns (clockwise and anticlockwise) VOCAB Surface, line, symmetry, rectangular, circular, pentagon, hexagon, octagon, route, higher, lower, clockwise, anti-clockwise, right angle, straight line face, edge, vertex, vertices, cube, pyramid, sphere, cone, recognise, describe, draw, compare, sort	
	Fractions (3 weeks)	• recognise, find and name a half as one of two equal parts of an object, shape or quantity (make explicit links with dividing by 2) • recognise, find and name a quarter as one of four equal parts of an object, shape or quantity	• recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity (2.3.a., 2.3.a.2) • write simple fractions for example, $\frac{1}{2}$ of 6 = 3(2.3.c.1) • recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$ (2.3.b.1) (Throughout the unit, make explicit links between fractions and division)	• Nrich activities

		(make explicit links with dividing by 4 and how this connects with dividing by 2) VOCAB Fraction, equal part, equal grouping, equal sharing, one of two equal parts, one of four equal parts	VOCAB equivalent fraction, mixed number, numerator, denominator, two halves, two quarters, three quarters, one third, two thirds, one of three equal parts	
	Exploring calculation strategies **through measures** (2 weeks)	• represent and use number bonds and related subtraction facts within 20 • add and subtract one-digit and two-digit numbers to 20, including zero • read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs • solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as • 7 = ○ – 9 VOCAB Addition, near double, half, halve, subtract, equals, is the same as, number bonds/pairs, missing number, one digit, two digit	• 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 • **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 VOCAB one hundred more, one hundred less, number facts, tens boundary, Addition, near double, half, halve, subtract, equals, is the same as, number bonds/pairs, missing number, one digit, two digit	• Nrich activities
	Money (links with calculation strategies)	• recognise and know the value of different denominations of coins and notes • begin to solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change (Yr 2 obj)	• 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 amounts of money	• Nrich activities

	(2 weeks)	VOCAB Change, dear, costs more, cheap, costs less, cheaper, costs the same as, how much…? how many…? Total Addition, near double, half, halve, subtract, equals, is the same as,	• solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change VOCAB Change, dear, costs more, cheap, costs less, cheaper, costs the same as, how much…? how many…? Total Addition, near double, half, halve, subtract, equals, is the same as, bought, sold	
	Time (2 weeks)	• 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 • compare, describe and solve practical problems for time [for example, quicker, slower, earlier, later] and measure and begin to record time (hours, minutes, seconds • sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening] VOCAB months of the year, seasons: spring, summer, autumn, winter, weekend, month, year, earlier, later, first, midnight, date, how long ago? how long will I be to…? how long will it take to…? how often? always, never, often, sometimes, usually, once, twice, half past, quarter past, quarter to, clock	• 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 • compare and sequence intervals of time VOCAB Fortnight, 5, 10, 15… minutes past, digital, analogue, timer, months of the year, seasons: spring, summer, autumn, winter, weekend, month, year, earlier, later, first, midnight, date, how long ago? how long will I be to…? how long will it take to…? how often? always, never, often, sometimes, usually, once, twice, half past, quarter past, quarter to, clock face, hour hand, minute hand, hours, minutes	

		face, hour hand, minute hand, hours, minutes		
Summer	Reasoning within multiplication and division- focus on problem solving (2 weeks)	• use grouping and sharing of small quantities to understand the process of multiplication and division • doubling and halving of quantities and linking this with multiplying and dividing by 2 • make connections between using concrete objects, pictorial representations and arrays and counting in 2s, 5s and 10s. • **solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays.** • **Recognise odd and even numbers** VOCAB Multiplication, multiply, multiplied by, multiple, division, dividing, grouping, array, odd even, problem, problem solving	• 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, repeated addition, mental methods, and multiplication and division facts, including problems in contexts** • show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot • recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers VOCAB groups of, times, once twice, three times… ten times, repeated addition, divide, divided by, divided into, share, share equally, left, left over, one each, two each, three each… ten each, group in pairs, threes… tens, equal groups of, row, column, multiplication table, multiplication fact, division fact	Nrich activities

	Fractions and problem solving (2 weeks)	• recognise, find and name a half as one of two equal parts of an object, shape or quantity (make explicit links with dividing by 2) • recognise, find and name a quarter as one of four equal parts of an object, shape or quantity (make explicit links with dividing by 4 and how this connects with dividing by 2) VOCAB Fraction, equal part, equal grouping, equal sharing, one of two equal parts, one of four equal parts	• recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity • write simple fractions for example, $\frac{1}{2}$ of 6 = 3 • recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$ (Throughout the unit, make explicit links between fractions and division) VOCAB equivalent fraction, mixed number, numerator, denominator, two halves, two quarters, three quarters, one third, two thirds, one of three equal parts	Nrich activities
	Reasoning and problem solving (using calculation strategies) (2 weeks)	• **solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays.** • solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as • 7 = ○ – 9 VOCAB Problem solving, problem, explain your thinking, calculation	• 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 • recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems • solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts VOCAB Inverse, problem, problem solving, explain your thinking, show how you… explain your method, mental calculation, written calculation	• Nrich activities

	Geometry (**main focus position and direction**) (2 weeks)	• recognise and name common 2-D shapes including: rectangles (including squares), circles and triangles • recognise and name common 3-D shapes including cuboids (including cubes), pyramids and spheres • compare and sort common 2-D and 3-D shapes and everyday objects • **describe position, direction and movement, including whole, half, quarter and three-quarter turns** **VOCAB** Underneath, centre, journey, quarter turn, three-quarter turn shape pattern, flat, curved, straight, round, hollow, solid, sort, make, build, draw, size, bigger, larger, smaller, symmetrical, pattern, repeating pattern, match, corner, side, rectangle (including square), circle, triangle, face, edge, vertex, vertices, cube, pyramid, sphere, cone, pattern, puzzle, what could we try next? how did you work it out? Recognise, describe, draw, compare, sort	• 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 • **order and arrange combinations of mathematical objects 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 three-quarter turns (clockwise and anticlockwise)** **VOCAB** Route, higher, lower, clockwise, anti-clockwise, right angle, straight line, rectangular, circular, pentagon., hexagon, octagon, surface, line symmetry, pattern, sequence, rotation, right angle	• Nrich activities

	Consolidation of areas of weakness (2 weeks)	Consolidation of areas of weakness/investigations	Consolidation of areas of weakness/investigations	Consolidation of areas of weakness