Maths Mastery Curriculum

Year 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 2 objectives	Links with other mathematical concepts and contextualised themes
Autumn	Place value (2-3 weeks)	• 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** **stands for, represents, exchange**, count on in multiples of twos, threes, fives, forwards, backwards, **partition, estimate** **Bold words show new vocabulary**	Nrich activities Models and images used Contextualised themes

	Addition and subtraction (2 weeks)	• 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 (addition and subtraction) (2 weeks)	• 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 • 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 , inverse, check Exact, exactly, roughly one hundred more, one hundred less, number facts, tens boundary,	• Nrich activities
	Multiplication and division (3 weeks)	• 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, repeated subtraction, 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	• Nrich activities

		• 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	
	Measuring and length (links with place value through comparison) (3 weeks)	• 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
	Statistics (2 weeks- potential to link in with previous unit on measurement)	• 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 patterns; main focus) (3 weeks)	• **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 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	• Nrich activities
	Fractions (3 weeks)	• 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)** VOCAB	• Nrich activities

		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)	• 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) (2 weeks)	• 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 • 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	• Nrich activities

	Time (2 weeks)	• 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	
Summer	Reasoning within multiplication and division (2 weeks)	• calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs (2.2.e.2) • 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, 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 $\frac{1}{2}$ 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 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)	• 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]	• Nrich activities

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