

	Number – number and place value	Number – addition, subtraction, multiplication and division	Number – fractions (including decimals and percentages)	Measurement	Geometry – properties of shapes	Geometry – position and direction	Statistics	Ratio and proportion	Algebra
<b>Key info/ new skills</b>	numbers to ten million, 3dp negative numbers multiply and divide decimals by 10,100,1000 give answers to 3dp <b>Check link to fraction objectives</b>	<b>NEW-COMBINED</b> <b>Number size:</b> up to 6 digit Multiplication: up to 4 digit by 2 digit Division: up to 4 digits by 2 digits Mentally: mixed operations and large numbers ; identify common factors, multiples and prime numbers <b>Formal methods:</b> column addition and subtraction, condensed column multiplication, short division with remainders as R, fraction, rounding. <b>Other methods:</b> numberline -subtraction/ division, Multiplication- empty array/ lattice bar model for problem solving (Base Ten as concrete/pictorial) <b>Problems:</b> multi-step using most efficient method and explaining why; order of operations (BODMAS)	<b>Fraction size:</b> denominators up to include 100th. Associate fractions with division and calculate decimal $3/8 = 3 \div 8 = 0.375$ <b>Representations:</b> bar model, Part-whole mode, numberline, set of objects, division, counting up and down. <b>New concepts</b> multiply simple pairs of proper fractions ( $1/4 \times 1/2 = 1/8$ ) Divide proper fractions by whole numbers ( $1/3 \div 2 = 1/6$ ) multiply 2whole numbers by decimals with 2dp Divide where answers will has up to 2dp <b>Problems:</b> Round to specific degrees recall and use equivalent fractions, % and fractions	<b>conversions:</b> use multiplication/ division to convert (x10/100/1000) metric: length:km-m-cm-mm; mass: kg-g capacity: l-dl-ml money: p-£ Imperial: inches, pounds, pints Connect with tenth and hundredths <b>representations:</b> numberline, scales (horizontal/vertical and circular), decimals <b>Perimeter</b> - calculate perimeter of composite rectilinear shapes in cm and m <b>Area</b> -calculate area of rectanglesand estimate regular shapes using cm <sup>2</sup> and m <sup>2</sup> <b>Volume:</b> estimate volume and capacity using 1cm <sup>3</sup> blocks <b>Problems:</b> all 4 operations using decimal notation, including scaling, missing lengths, working backwards ( $1/4$ 36cm then whole is 36 x4),	Draw 2D shapes with accuracy Build simple 3D shapes, including making nets classify all shapes find unknown angles of shapes, lines etc Name parts of a circle <b>Problems:</b> explain how to derive missing angles using opposing angle on parallel lines, points and properties of shapes, use algebra ( $4s+2 \times r$ ; $a 180-(b+c)$ ) identifying nets	Four quadrants	<b>representations:</b> line graph with 2 variable, pie charts Average Graph showing conversion of km to miles	<b>NEW STRAND</b> recognise proportionality in context (ie link use % or 360° to pie charts notion of a:b to record their work use unequal quantities ( 1 egg for every 3 spoons of flour, 3:5 are boys)	<b>NEW STRAND</b> introduce use of symbols and letters to represent variables and unknowns in familiar context; missing angles, sides, co-ordinates; formulae in maths and science; equivalents $a+b=b+a$ ; number patterns and puzzles.
<b>New Vocab</b>	digital root, gross, composite numbers, score	order of operations (BODMAS), common factors, common multiples,	simplify	miles / Km, conversion, cubic, formulae,	circumference, radius, diameter, base angles, nets	four quadrants, co ordinate plane, origin,	average, median, mode, mean, pie chart, construct, degree of accuracy, 2 variables, mile to km	ratio and proportion, pie charts, a:b	algebra, formulae, linear number sequence, substitute, variables, symbol, known value
<b>NC objectives</b>	read, write, order and compare numbers up to 10 000 000 and determine the value of each digit	solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	use common factors to simplify fractions; use common multiples to express fractions in the same denomination	solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate	draw 2-D shapes using given dimensions and angles	describe positions on the full coordinate grid (all four quadrants)	interpret and construct pie charts and line graphs and use these to solve problems	solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts	use simple formulae
	round any whole number to a required degree of accuracy	perform mental calculations, including with mixed operations and large numbers	compare and order fractions, including fractions > 1	use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation up to up to three decimal places	recognise, describe and build simple 3-D shapes, including making nets	draw and translate simple shapes on the coordinate plane, and reflect them in the axes.	calculate and interpret the mean as an average.	solve problems involving the calculation of percentages (for example, of measures, and such as 15% of 360) and the use of percentages for comparison	generate and describe linear number sequences
	use negative numbers in context, and calculate intervals across zero	solve problems involving addition, subtraction, multiplication and division	add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions	convert between miles and kilometres	compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons			solve problems involving similar shapes where the scale factor is known or can be found	express missing number problems algebraically
	solve number and practical problems that involve all of the above.	use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.	multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, one quarter x one half = one eighth]	recognise that shapes with the same areas can have different perimeters and vice versa	illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius			solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.	find pairs of numbers that satisfy an equation with two unknowns
		multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication	divide proper fractions by whole numbers [ for example, $1.3 \div 2 = 1/6$ ]	recognise when it is possible to use formulae for area and volume of shapes	recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles				enumerate possibilities of combinations of two variables
		divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context	associate a fraction with division and calculate decimal fraction equivalents [ for example, $0.375$ for a simple fraction [ for example $3/8$ ]	calculate the area of parallelograms and triangles					
		divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context	identify the value of each digit in numbers given to 3 decimal places and multiply and divide numbers by, 10, 100 and 1000 giving answers up to 3 decimal places	calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm <sup>3</sup> ) and cubic metres (m <sup>3</sup> ), and extending to other units [for example, mm <sup>3</sup> and km <sup>3</sup> ].					
		identify common factors, common multiples and prime numbers	multiply one digit numbers with up to 2 decimal places by whole numbers						
		use their knowledge of the order of operations to carry out calculations involving the four operations	use written division methods in cases where the answer has up to 2 decimal places						
			solve problems which require answers to be rounded to specific degrees of accuracy						
			recall and use equivalences between simple fractions, decimals and percentages, including in different contexts						

## Links to NRICH maths problems

	Number – number and place value	Number – addition, subtraction, multiplication and division	Number – fractions (including decimals and percentages)	Measurement	Geometry – properties of shapes	Geometry – position and direction	Statistics	Ratio and proportion	Algebra
	Round the Four Dice *	Planning a School Trip *	More Fraction Bars **	Next Size Up **	Making Cuboids **		Match the Matches **	Pumpkin Pie Problem **	Two and Two ***
	Number Lines in Disguise **	Always, Sometimes or Never? Number *	Extending Fraction Bars **		Cut Nets **		Birdwatch *	Rectangle Tangle *	Plenty of Pies *
			Doughnut Percents **		Baraville **			Orange Drink **	Different Deductions **
			Fraction Lengths **		Making Spirals ***			Fraction Fascination ***	Price Match **
			Would You Rather? *		Shape Draw *			Jumping *	Duplication *
					Sponge Sections **				Diagonal Sums **
					Quadrilaterals ***				Finding 3D Stacks ***
					Where Are They? *				Break It Up! *
									Holes *
									Button-up Some More **
									Domino Sets *