

Year Five

It is expected that all children will take part in a daily mathematics lesson and additionally take part in 'Quick Maths' activities each day. An extended problem solving lesson or investigation should be planned weekly. N.B. Problem solving and reasoning should continue to be evident in everyday lesson planning when applicable – see examples given below.

Autumn 1	Weeks	Learning Outcomes
Year 4 Key Concepts		Recognise the place value in a four-digit number including tenths and hundredths;
		Compare numbers with the same number of decimal places up to 2 decimal places
		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
	2	Count backwards through zero to include negative numbers;
		Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate
		Estimate and use inverse operations to check answers to a calculation
		Multiply two-digit and three-digit numbers by a one-digit number using formal written layout
		Recognise and show, using diagrams, families of common equivalent fractions

Number and Place Value	2	Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit
		Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000
		Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000

Multiplication and Division	Taught with place value above	Multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000
	1	Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context (Whole integer answers only)
	On-going	Recall multiplication and division facts for multiplication tables up to 12×12
Fractions	2	Identify, name and write equivalent fractions of a given fraction
		Compare and order fractions whose denominators are all multiples of the same number
Problem Solving (Weekly)		Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why
		Pupils solve multi-step problems in contexts, deciding which of the 4 operations to use and why.
		Solve problems in relation to understanding of place value to 1,000,000
		Solve problems relating to fractions Regular opportunities to demonstrate independent use of previously taught concepts away from the point of teaching.

Autumn 2	Weeks	Learning Outcomes
Number and Place Value	1	Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through 0
Addition & Subtraction	2	Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)
		Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy
		Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
Multiplication & Division	1	Identify multiples and factors, including finding all factor pairs of a number, and common factors of 2 numbers
	1	Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers
	On-going	Establish whether a number up to 100 is prime and recall prime numbers up to 19
Fractions	1	Recall multiplication and division facts for multiplication tables up to 12×12
		Add and subtract fractions with the same denominator, and denominators that are multiples of the same number
Measurement	1	Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$]
		Calculate and compare the area of rectangles (including squares), including using standard units, square centimetres (cm ²) and square metres (m ²), and estimate the area of irregular shapes

Problem Solving (Weekly)		Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
		Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign
		Regular opportunities to demonstrate independent use of previously taught concepts away from the point of teaching.
Spring 1		Learning Outcomes
Multiplication and Division	1	Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers
	On-going	Multiply and divide numbers mentally, drawing upon known facts
Fractions	2	Read and write decimal numbers as fractions [for example, $0.71 = 71/100$]
		Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents
		Read, write, order and compare numbers with up to 3 decimal places
		Round decimals with 2 decimal places to the nearest whole number and to 1 decimal place
Measurement	1	Convert between different units of metric measure [for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre]
Geometry – Properties of shape	1	Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
		Draw given angles, and measure them in degrees ($^{\circ}$)
Statistics	1	Solve comparison, sum and difference problems using information presented in a line graph
		Complete, read and interpret information in tables, including timetables
Problem Solving (Weekly)		Solve problems involving multiplication and division, including using their knowledge of factors and multiples, squares and cubes
		Investigations into properties of shapes/angles
		Solve problems involving number up to 3 decimal places
		Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling
		Regular opportunities to demonstrate independent use of previously taught concepts away from the point of teaching.

Summer 2		Learning Outcomes
Multiplication and Division	1	Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers
		Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context
Fractions	2	Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per 100', and write percentages as a fraction with denominator 100, and as a decimal fraction
		Read, write, order and compare numbers with up to 3 decimal places
		Round decimals with 2 decimal places to the nearest whole number and to 1 decimal place
		Connect multiplication by a fraction to using fractions as operators (fractions of), and to division, building on work from previous years.
Geometry – properties of shape	1	Identify 3-D shapes, including cubes and other cuboids, from 2-D representations.
Geometry – position and direction	1	Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.
	2	
Problem Solving (Weekly)		Use all 4 operations in multi-step problems involving time and money, including conversions (for example, days to weeks, expressing the answer as weeks and days).
		Problems requiring the use of multiplication and division as inverse operations.

Spring 2		Learning Outcomes	Learning Outcomes
Number and Place Value	1	Read Roman numerals to 1,000	$\frac{1}{2} \frac{1}{4} \frac{1}{5} \frac{2}{5} \frac{4}{5}$
		Read, write, order and compare numbers to 10,000	
		Round any number up to 1,000	
Addition & Subtraction	1	Add and subtract numbers with addition and subtraction	
		On-going	
Multiplication and Division	On-going	Multiply and divide numbers mentally	
		On-going	
Fractions	1	Recognise the per cent symbol and the denominator 100, and as a fraction	
Geometry – position and shape	2	Identify: <ul style="list-style-type: none"> Angles at a point and 1 v Angles at a point on a straight line Other multiples of 90° Use the properties of rectangles 	
		<ul style="list-style-type: none"> solve problems which require mental calculations or 25 Solve problems related to geometry Use the properties of rectangles distinguish between regular polygons Use all four operations to solve problems Solve problems involving conversion of units Regular opportunities to demonstrate independent use of previously taught concepts away from the point of teaching. 	
Problem Solving (Weekly)			
Summer 1			
Number and Place Value	1	Recognise and describe linear number sequences, including those involving fractions and decimals and identify the rule.	
Addition & Subtraction	On-going	Add and subtract numbers mentally with increasingly large numbers	
Multiplication and Division	On-going	Multiply and divide numbers mentally, drawing upon known facts	
Fractions	1	Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	
Measurement	1	Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres	
	1	Estimate volume [for example, using 1 cm ³ blocks to build cuboids (including cubes)] and capacity [for example, using water]	
		Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints	
Problem Solving (Weekly)		<ul style="list-style-type: none"> Investigations relating to area and perimeter Solve problems related to place value Regular opportunities to demonstrate independent use of previously taught concepts away from the point of teaching. Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling 	