

End of Year 5 Mathematics expectations

Calculation Policy	To add whole numbers with more than 4 digits using formal written methods.
	To solve addition problems involving numbers up to three decimal places
	To add more than two multi-digit numbers
	To subtract whole numbers with more than 4 digits using formal written methods.
	To solve subtraction problems involving numbers up to three decimal places
	To multiply numbers up to 4 digits by a one-digit number using a formal written method
	To multiply numbers up to four digits by a two-digit number using a formal written method of long multiplication
	To divide numbers up to four digits by a one-digit number using the formal written method of short division
Mental calculations	To interpret remainders from division appropriately for the context (rounding, or using remainders)
	To begin to divide by teens numbers
	To multiply and divide numbers mentally drawing upon known facts
	To recognise simple non-integer answers as fractions and decimals
	To add and subtract numbers mentally with increasingly large numbers
Calculating	To rehearse all multiplication tables to maintain speed and accuracy
	To confidently use multiplication and division facts to make larger calculations
	To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
	To solve problems involving addition, subtraction, multiplication and division and a combination of these
	To solve problems involving multiplication and division using knowledge of factors, multiples, squares and cubes
	To understand the meaning of the equals sign when solving problems (balancing equations)
	To solve number and practical problems that involve rounding appropriate to this level
	To use formal methods to solve multistep problems (including the use of fractions, decimals and real life contexts)
	To solve problems involving numbers up to three decimal places
	To solve number and practical problems involving large numbers appropriate to this level
Place value	To solve number and practical problems involving negative numbers appropriate to this level
	To solve number and practical problems involving conversion appropriate to this level
	To use rounding to check answers to calculations
	To read and write numbers up to 1 000 000
	To order and compare numbers up to 1 000 000
	To know the value of each digit in numbers up to 1 000 000
	To count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000
	To read and write numbers down to 0.01
To order and compare numbers down to 0.01	
Number system	To know the value of each digit in numbers down to 0.01
	To multiply and divide whole numbers and decimals by 10, 100 and 1000
	To continue and complete number sequences (including those involving fractions and decimals)
	To recognise and describe linear number sequences
	To find the term-to-term rule for linear number sequences
	To round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000
	To round decimals with two decimal places to the nearest whole number and to one decimal place
	To calculate decimal compliments to 1
	To identify multiples and factors, of numbers
	To find all factor pairs of a number
	To compare common factors of two numbers
	To understand the terms factor, multiple, prime, square and cube numbers
	To know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers
	To establish whether a number up to 100 is prime
	To recall prime numbers up to 19
	To recognise and use square numbers, and the notation for squared (2)
	To recognise and use some cube numbers, and the notation for cubed (3)
To interpret negative numbers in context	
To count forwards and backwards with positive and negative whole numbers (including through zero)	
To recognise years written in Roman numerals	
To read Roman numerals to 1000 (M)	
Fractions	To relate using fractions as operators (fractions of) to division (unit and non-unit)
	To compare and order fractions whose denominators are all multiples of the same number
	To identify and write equivalent fractions of a given fraction represented (including tenths and hundredths)
	To recognise mixed numbers and improper fractions
	To convert between mixed numbers and improper fractions
	To write mathematical statements > 1 as a mixed number ($2\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$)
	To add fractions with the same denominator
	To add fractions with denominators that are multiples of the same number
	To subtract fractions with the same denominator
	To subtract fractions with denominators that are multiples of the same number
	To multiply proper fractions by whole numbers, supported by materials and diagrams
	To multiply mixed fractions by whole numbers, supported by materials and diagrams
	To multiply simple pairs of proper fractions, writing the answer in its simplest form
To add and subtract fractions with different denominators using the concept of equivalent fractions	

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Decimals and Percentages	To read and write decimal numbers as fractions ($0.71 = \frac{71}{100}$)
	To recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents
	To recognise the per cent symbol % and what it represents
	To write percentages as a decimal
	To write percentages as a fraction with denominator 100
Ratio and proportion	To solve problems which require knowing percentage and decimal equivalents of simple known fractions ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{3}{4}$, $\frac{4}{5}$, $\frac{6}{10}$, $\frac{12}{25}$)
	To understand simple ratio
	To know that fractions, decimals and percentages are all ways of expressing proportion
	To solve problems involving multiplication and division by scaling by simple fractions
	To solve problems involving multiplication and division involving simple rates
Algebra	To solve problems involving direct proportion by scaling up/down (e.g. scaling up a recipe)
	To represent unknowns in a sequence using symbols
	To understand distributivity $a(b + c) = ab + ac$
	To use the equals sign to express equivalence through missing number problems
	To express missing measure problems algebraically (e.g. a shape has a perimeter of $4 + 2b = 20$)
	To substitute integers into simple formulae
Measure	To solve missing number problems that begin to use letters to represent the unknowns
	To find an answer that can satisfy a set of statements
	To draw lines accurately to the nearest mm
	To convert between different units of metric measure
	To read and write standard units (length, mass, volume and time - up to 2 decimal places)
	To use all four operations to solve problems involving measure using decimal notation (including scaling)
	To solve problems involving converting between units of time
	To read and interpret information in timetables
Shape	To estimate capacity (using apparatus)
	To understand and use equivalences between metric units and common imperial units
	To distinguish between regular and irregular polygons (knowledge of equal sides and angles)
	To name and give properties of common geometric shapes
	To use conventional symbols to mark parallel lines and right angles
	To recognize and describe simple 3-D shapes
Area, Perimeter and Volume	To identify 3-D shapes from 2-D representations (including cubes and other cuboids)
	To know some properties of a circle
	To use the language of radius and diameter when describing circles
	To calculate the area of rectangles using standard units
	To compare the area of rectangles using standard units
	To estimate the area of irregular shapes
	To calculate the area from scale drawings using given measurements
	To calculate the perimeter of rectangles using standard units
Angles	To measure the perimeter of composite rectilinear shapes in centimetres and metres
	To calculate the perimeter of composite rectilinear shapes in centimetres and metres
	To use the properties of rectangles to deduce related facts (missing lengths and angles)
	To estimate volume of cubes (using apparatus)
	To know angles are measured in degrees
	To estimate and compare acute obtuse and reflex angles
	To draw given acute and obtuse angles
	To use a protractor to measure acute and obtuse angles in degrees
Position and direction	To identify angles at a point and in one whole turn
	To calculate angles in half turn or straight line (total 180°)
	To identify angles that are multiples of 90°
	To calculate angles in a triangle
	To describe and plot coordinate positions in 2 quadrants
Statistics	To read and draw the position of a shape following a reflection using the appropriate language
	To read and draw the position of a shape following a translation, using the appropriate language
	To know that the shape has not changed after a translation or reflection
	To reflect a shape in a line parallel to the axis
Statistics	To complete, read and interpret information in tables
	To solve comparison, sum and difference problems using information presented in a line graph
	To recognize why a data representation might not be appropriate
	To calculate the mean as an average