

Mathematics



	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Number & Place Value	Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number.	Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward.	Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number.	Count in multiples of 6, 7, 9, 25 and 1000.	Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit.	Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit.
	Count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens.	Recognise the place value of each digit in a two-digit number (tens, ones).	Recognise the place value of each digit in a three-digit number (hundreds, tens, ones).	Find 1000 more or less than a given number.	Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000.	Round any whole number to a required degree of accuracy.
	Given a number, identify one more and one less	Identify, represent and estimate numbers using different representations, including the number line.	Compare and order numbers up to 1000.	Count backwards through zero to include negative numbers.	Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers through zero.	Use negative numbers in context, and calculate intervals across zero.
	Identify and represent numbers using concrete objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least.	Compare and order numbers from 0 up to 100; use <, > and = signs.	Identify, represent and estimate numbers using different representations.	Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones).	Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000.	Solve number problems and practical problems that involve all elements of place value.
		Read and write numbers to at least 100 in numerals and in words.	Read and write numbers up to 1000 in numerals and in words.	Order and compare numbers beyond 1000.	Solve number problems and practical problems that involve all elements of the place value domain.	
		Use place value and number facts to solve problems.	Solve number problems and practical problems involving these ideas (appropriate for place value).	Identify, represent and estimate numbers using different representations.  Round any number to the nearest 10, 100 or 1000.  Solve number and practical problems that involve all of the above and with increasingly large positive numbers.  Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.	Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.	
Number - Addition & Subtraction	Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs.	Solve one-step 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.	Add and subtract numbers mentally, including: a three-digit number and ones; a three-digit number and tens; a three-digit number and hundreds.	Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate.	Add and subtract whole numbers with more than 4 digits, including using efficient written methods (columnar addition and subtraction).	Use their knowledge of the order of operations to carry out calculations involving the four operations.
	Represent and use number bonds and related subtraction facts within 20.	Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100.	Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction.	Estimate and use inverse operations to check answers to a calculation solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.	Add and subtract numbers mentally with increasingly large numbers.	Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
	Add and subtract one-digit and two-digit numbers to 20, including zero.	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.	Estimate the answer to a calculation and use inverse operations to check answers.	Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.	Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.	Solve problems involving addition, subtraction, multiplication and division.
	Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = ? - 9$ .	Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.  Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.		Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.	Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.
Number - Multiplication and Division	Solve one-step problems involving multiplication and division, calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.	Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.	Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.	Recall multiplication and division facts for multiplication tables up to $12 \times 12$ .	Identify multiples and factors, including finding all factor pair.	Use their knowledge of the order of operations to carry out calculations involving the four operations.

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		<p>Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) signs.</p> <p>Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.</p> <p>Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.</p>	<p>Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.</p> <p>Solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems in which n objects are connected to m objects.</p>	<p>Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers.</p> <p>Recognise and use factor pairs and commutativity in mental calculations.</p> <p>Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.</p> <p>Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as when n objects are connected to m objects.</p>	<p>Solve problems involving multiplication and division where larger numbers are used by decomposing them into their factors.</p> <p>Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.</p> <p>Establish whether a number up to 100 is prime and recall prime numbers up to 19.</p> <p>Multiply numbers up to 4 digits by a one- or two-digit number using an efficient written method, including long multiplication for two-digit numbers.</p> <p>Multiply and divide numbers mentally drawing upon known facts.</p> <p>Use the efficient written method of short division and interpret remainders appropriately for the context.</p> <p>Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.</p> <p>Recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3).</p> <p>Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.</p> <p>Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.</p>	<p>Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication.</p> <p>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.</p> <p>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 context.</p> <p>Perform mental calculations, including with mixed operations and large numbers.</p> <p>Identify common factors, common multiples and prime numbers.</p>
Number - Fractions including Decimals & Percentages	Recognise, find and name a half as one of two 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.	Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10.	Recognise and show, using diagrams, families of common equivalent fractions.	Compare and order fractions whose denominators are all multiples of the same number.	Use common factors to simplify fractions; use common multiples to express fractions in the same denominator.
		Write simple fractions e.g. $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of two quarters and one half.	Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.	Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.	Recognise mixed numbers and improper fractions and convert from one form to the other.	Compare and order fractions, including fractions >1.
			Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators.	Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number.	Add and subtract fractions with the same denominator >1 as a mixed number (e.g. $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$ ).	Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.
			Recognise and show, using diagrams, equivalent fractions with small denominators.	Add and subtract fractions with the same denominator.	Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.	Multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$ ).
			Add and subtract fractions with the same denominator within one whole (e.g. $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$ ).	Recognise and write decimal equivalents of any number of tenths or hundredths.	Read and write decimal numbers as fractions (e.g. $0.71 = \frac{71}{100}$ ).	Divide proper fractions by whole numbers (e.g. $\frac{1}{3} \div 2 = \frac{1}{6}$ ).
			Compare and order unit fractions, and fractions with the same denominator.	Recognise and write decimal equivalents to $\frac{1}{4}$ $\frac{1}{2}$ $\frac{3}{4}$ .	Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.	Associate a fraction with division to calculate decimal fraction equivalents (e.g. $0.375$ ) for a simple fraction (e.g. $\frac{3}{8}$ ).
			Solve problems involving all the elements of the fractions domain.	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.	Round decimals with two decimal places to the nearest whole number and to one decimal place.	Identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places.
		Round decimals with one decimal place to the nearest whole number.	Read, write, order and compare numbers with up to three decimal places.	Multiply one digit numbers with up to two decimal places by whole numbers.		
		Compare numbers with the same number of decimal places up to two decimal places.	Solve problems involving number up to three decimal places	Use written division methods in cases where the answer has up to two decimal places.		

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				Solve simple measure and money problems involving fractions and decimals to two decimal places.	recognise the per cent symbol (%) and understand that per cent relates to "number of parts per hundred", and write percentages as a fraction with denominator hundred, and as a decimal fraction  solve problems which require knowing percentage and decimal equivalents of 1/2, 1/4, 1/5, 2/5, 4/5 and those with a denominator of a multiple of 10 or 25.	Solve problems which require answers to be rounded to specified degrees of accuracy.  Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.
Ratio & Proportion						Solve problems involving the relative sizes of two quantities, where missing values can be found by using integer multiplication and division facts.  Solve problems involving the calculations of percentages (e.g. of measures) such as 15% of 360 and the use of percentages for comparison.  Solve problems involving similar shapes, where the scale factor is known or can be found.  Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.
Algebra						Express missing number problems algebraically.  Use simple formulae expressed in words.  Generate and describe linear number sequences.  Find pairs of numbers that satisfy number sentences involving two unknowns.  Enumerate all possibilities of combinations of two variables.
Measurement	Compare, describe and solve practical problems for: lengths and heights (e.g. long/short, longer/shorter, tall/short, double/half) mass or weight (e.g. heavy/light heavier than, lighter than) capacity/volume (full/empty, more than, less than, quarter) time (quicker, slower, earlier, later).	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	measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)	Convert between different units of measure [for example, kilometre to metre; hour to minute]	convert between different units of measure (e.g. kilometre and metre; metre and centimetre; centimetre and millimetre; kilogram and gram; litre and millilitre)	Solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate.
	Measure and begin to record the following: lengths and heights mass/weight capacity and volume time (hours, minutes, seconds).	compare and order lengths, mass, volume/capacity and record the results using >, < and =	measure the perimeter of simple 2-D shapes	measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres	understand and use basic equivalences between metric and common imperial units and express them in approximate terms	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 to up to three decimal places.
	Recognise and know the value of different denominations of coins and notes.	recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value	add and subtract amounts of money to give change, using both £ and p in practical contexts	find the area of rectilinear shapes by counting squares	measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres	Convert between miles and kilometres.
	Sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening.	find different combinations of coins that equal the same amounts of money	tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks	estimate, compare and calculate different measures, including money in pounds and pence	calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm <sup>2</sup> ) and square metres (m <sup>2</sup> ) and estimate the area of irregular shapes	Recognise that shapes with the same areas can have different perimeters and vice versa.
	Recognise and use language relating to dates, including days of the week, weeks, months and years.	solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change	estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight	read, write and convert time between analogue and digital 12- and 24hour clocks	recognise and estimate volume (e.g. using 1 cm <sup>3</sup> blocks to build cubes and cuboids) and capacity (e.g. using water)	Calculate the area of parallelograms and triangles.
	Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.	compare and sequence intervals of time	know the number of seconds in a minute and the number of days in each month, year and leap year	solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.	solve problems involving converting between units of time	Calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm <sup>3</sup> ) and cubic metres (m <sup>3</sup> ) and extending to other units, such as mm <sup>3</sup> and km <sup>3</sup> .
	Recognise and name common 2-D and 3-D shapes, including: 2-D shapes (e.g. rectangles (including squares), circles and triangles) 3-D shapes (e.g. cuboids (including cubes), pyramids and spheres).	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.	compare durations of events, for example to calculate the time taken by particular events or tasks.		solve problems involving addition and subtraction of units of measure (e.g. length, mass, volume, money) using decimal notation.	

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		know the number of minutes in an hour and the number of hours in a day				
Geometry - properties of shapes	recognise and name common 2-D and 3-D shapes, including: 2-D shapes (e.g. rectangles (including squares), circles and triangles) 3-D shapes (e.g. cuboids (including cubes), pyramids and spheres).	identify and describe the properties of 2-D shapes, including the number of sides and symmetry in a vertical line	draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations; and describe them	compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes	identify 3-D shapes, including cubes and cuboids, from 2-D	Draw 2-D shapes using given dimensions and angles.
		identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces	recognise that angles are a property of shape or a description of a turn	identify acute and obtuse angles and compare and order angles up to two right angles by size	know angles are measured in degrees; estimate and measure them and draw a given angle, writing its size in degrees (°)	Recognise, describe and build simple 3-D shapes, including making nets.
		identify 2-D shapes on the surface of 3-D shapes, for example a circle on a cylinder and a triangle on a pyramid		identify lines of symmetry in 2-D shapes presented in different orientations	identify: - multiples of 90° - angles at a point on a straight line and 1/2 a turn (total 180°) - angles at a point and one whole turn (total 360°) - reflex angles - and compare angles	Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons.
		compare and sort common 2-D and 3-D shapes and everyday objects		complete a simple symmetric figure with respect to a specific line of symmetry.	draw shapes using given dimensions and angles state and use the properties of a rectangle (including squares) to deduce related facts distinguish between regular and irregular polygons based on reasoning about equal sides and angles.	Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius.
Geometry - position & direction	Describe position, direction and movement, including whole, half, quarter and three quarter turns.	order and arrange combinations of mathematical objects in patterns	identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle	describe positions on a 2-D grid as coordinates in the first quadrant	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.	Describe positions on the full coordinates grid (all four quadrants).
		use mathematical vocabulary to describe position, direction and movement, including distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise), and movement in a straight line	identify horizontal and vertical lines and pairs of perpendicular and parallel lines	describe movements between positions as translations of a given unit to the left/right and up/down		Draw and translate simple shapes on the coordinates plane, and reflect them in the axes.
				plot specified points and draw sides to complete a given polygon.		
Statistics		interpret and construct simple pictograms, tally charts, block diagrams and simple tables	interpret and present data using bar charts, pictograms and tables	interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.	solve comparison, sum and difference problems using information presented in line graphs complete, read and interpret information in tables, including timetables.	interpret and construct pie charts and line graphs and use these to solve problems.
		ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity	solve one-step and two-step questions such as "How many more?" and "How many fewer?" using information presented in scaled bar charts and pictograms and tables	solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs		Calculate and interpret the mean as an average.
		ask and answer questions about totalling and compare categorical data.				