

Progression in Mathematics

Menu	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Counting	*count reliably with numbers from 1 to 20 *place numbers 1 to 20 in order	*count to and across 100, forwards and backwards, beginning from 0 or 1, or from any given number *count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens	*count in steps of 2, 3 and 5 from 0 and in tens from any number, forwards and backwards	*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 *find 1000 more or less than a given number *count backwards through zero to include negative numbers	*count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000 *interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero	*use negative numbers in context, and calculate intervals across zero
Place Value		*demonstrate an understanding of place value for 2 digit numbers through the use of apparatus	*recognise the place value of each digit in a two-digit number *compare and order numbers from 0 up to 100; use < > and = signs	*recognise the place value of each digit in a three-digit number *compare and order numbers up to 1000	*recognise the place value of each digit in a four-digit number *order and compare numbers beyond 1000 *round any number to the nearest 10, 100 or 1000	*read, write, order and compare numbers up to 1,000,000 and determine the value of each digit *round any number up to 1,000,000 to the nearest 10, 100, 1000, 10000 and 100000	*read, write, order and compare numbers up to 10,000,000 and determine the value of each digit *round any whole number to a required degree of accuracy
Representing Number		*identify and represent numbers using objects and pictorial representations including the number line, and use language of: equal to, more than, less than, fewer, most, least *read and write numbers from 1 to 20 in numerals and words *read, write and interpret mathematical statements involving + - and = signs	*identify, represent and estimate numbers using different representations, including the number line *read and write numbers to at least 100 in numerals and in words	*identify, represent and estimate numbers using different representations *read and write numbers up to 1000 in numerals and in words	*identify, represent and estimate numbers using different representations *read Roman numerals to 100 (I to C) and know that over time the numeral systems changed to include the concept of zero and place value	*read Roman numerals to 1000 (M) and recognise years written in Roman numerals *recognise and use square numbers and cube numbers and the notation for squared (²) and cubed (³)	
Number Facts (+ / -)	*Say which number is one more or one less than a given number between 1 and 20	*given a number, identify one more and one less *represent and use number bonds and related subtraction facts within 20	*use place value and number facts to solve problems *Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100				
Mental +/-	*using quantities and objects, add and subtract two single-digit numbers and count on or back to find the answer	*add and subtract one-digit and two-digit numbers to 20, including 0	*add and subtract numbers using concrete objects, pictorial representations, and mentally, including: TU + U, TU + T, TU + TU and U+U+U *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 mentally including: HTU+U, HTU+T and HTU+H		*add and subtract numbers mentally with increasingly large numbers	*perform mental calculations, including with mixed operations and large numbers
Written +/-				*add and subtract numbers with up to three digits using formal written methods of columnar addition and subtraction	*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 formal written methods	
Problems +/-	*solve problems including doubling, halving and sharing – numbers within 20 and using concrete objects	*solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = □ - 9	*solve problems with addition and subtraction, using concrete, pictorial and abstract representations *recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems	*estimate the answer to a calculation and use inverse operations to check answers *solve problems, including missing number problems, using number facts, place value and more complex 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	*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	

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Number facts (\times / \div)		*begin to recall and use multiplication facts for the 2, 5 and 10 multiplication tables (linked to counting in multiples of twos, fives and tens)	*recall and use multiplication and division facts for 2, 5 and 10 multiplication tables, including recognising odd and even numbers	*Recall and use multiplication and division facts for 3, 4 and 8 multiplication tables	*recall multiplication and division facts for multiplication tables up to 12x12	*identify multiples and factors, including finding all factor pairs of a number and common factors of two numbers *know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers *establish whether a number up to 100 is prime and recall prime numbers up to 19	*identify common factors, common multiples and prime numbers
Mental \times / \div			*calculate mathematical statements for multiplication and division within the multiplication tables and write them using $\times \div$ and = *show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot	*write and calculate mathematical statements for \times and \div using the tables that they know, including for two-digit numbers times one-digit numbers, using mental methods	*use place value, known and derived facts to \times and \div mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers *recognise and use factor pairs and commutativity in mental calculations	*multiply and divide numbers mentally drawing upon known facts *multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	*perform mental calculations, including with mixed operations and large numbers
Written \times / \div				*Progress to formal written methods calculations as above	*multiply two-digit and three-digit numbers by a one-digit numbers using formal written layout	*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	*multiply multi-digit numbers by up to 4 digits by a two-digit whole number using the formal written method of long multiplication *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 *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
Problems \times / \div		*solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher	*solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	*solve problems, including missing number problems, involving \times and \div , including positive integer scaling problems and correspondence problems in which n objects are connected to m objects	*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 n objects are connected to m objects	*solve problems involving \times and \div including using their knowledge of factors and multiples, squares and cubes *solve problems involving $+$ $-$ \times \div and a combination of these, including understanding the meaning of the $=$ sign *solve problems involving \times and \div , including scaling by simple fractions and problems involving simple rates	*use their knowledge of the order of operations to carry out calculations involving the four operations *solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why *solve problems involving $+$ $-$ \times \div *use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

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Recognising Fractions		*recognise, find and name a half as one of two equal parts of an object, shape or quantity *recognise, find and name a quarter as one of four 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	*count up and down in hundredths *recognise that hundredths arise when dividing an object by 100 and dividing tenths by 10	*recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements >1 as a mixed number	
Comparing Fractions				*compare and order unit fractions, and fractions with the same denominators *recognise and show, using diagrams, equivalent fractions with small denominators	*recognise and show, using diagrams, families of common equivalent fractions	*compare and order fractions whose denominators are all multiples of the same number *identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths	*use common factors to simplify fractions *use common multiples to express fractions in the same denomination *compare and order fractions, including fractions > 1
Finding fractions of quantities				*recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators *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		
Fraction calculations			*write simple fractions such as $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$	*add and subtract fractions with the same denominator within one whole eg: $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$	*add and subtract fractions with the same denominator	*add and subtract fractions with the same denominator and denominators that are multiples of the same number *multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	*add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions *multiply simple pairs of proper fractions, writing the answer in its simplest form *divide proper fractions by whole numbers
Decimals as fractional amounts					*recognise and write decimal equivalents for any number of tenths or hundredths *recognise and write decimal equivalents for $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$ *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	*read and write decimal numbers as fractions	*associate a fraction with division and calculate decimal fraction equivalents (eg: 0.375) for a simple fraction *identify the value of each digit in numbers given to three decimal places
Ordering decimals					*round decimals with one decimal place to the nearest whole number *compare numbers with the same number of decimal places up to two decimal places	*recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents *round decimals with two decimal places to the nearest whole number and to one decimal place *read, write, order and compare numbers with up to three decimal places	

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Calculation with decimals							<ul style="list-style-type: none"> *multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places *multiply one-digit numbers with up to two decimal places by whole numbers *use written division methods in cases where the answer has up to two decimal places
Percentages						<ul style="list-style-type: none"> *recognise the per cent symbol (%) and understand that per cent relates to “number of parts per hundred” and write percentages as a fraction with a denominator 100, and as a decimal 	<ul style="list-style-type: none"> *solve problems involving the calculation of percentages (for example, of measures, and such as 15% of 360) and the use of percentages for comparison
Fraction Problems				<ul style="list-style-type: none"> *solve problems using all fraction knowledge 	<ul style="list-style-type: none"> *solve simple measure and money problems involving fractions and decimals to two decimal places 	<ul style="list-style-type: none"> *solve problems involving number up to three decimal places *solve problems which require knowledge of percentage and decimal equivalents of $\frac{1}{2}$ $\frac{1}{4}$ $\frac{1}{5}$ $\frac{2}{5}$ $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25 	<ul style="list-style-type: none"> *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 and Proportion							<ul style="list-style-type: none"> *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 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							<ul style="list-style-type: none"> *use simple formulae *generate and describe linear number sequences *express missing number problems algebraically *find pairs of numbers that satisfy an equation with two unknowns *enumerate possibilities of combinations of two variables

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Measures	*use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems *recognise, create and describe patterns	*compare, describe and solve practical problems for length/height; weight/mass; capacity/volume and time *measure and begin to record length/height; weight/mass; capacity/volume and time	*choose and use appropriate standard units to estimate and measure length/height (m/cm); mass (kg/g); temperature (°C); capacity (l/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 =	*measure, compare, add and subtraction: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)	*convert between different units of measure *estimate, compare and calculate different measures, including money in £ and p	*convert between different units of metric measure *understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints *estimate volume and capacity	*solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate *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 three decimal places *convert between miles and km
Mensuration				*measure the perimeter of simple 2D shapes	*measure and calculate the perimeter of a rectilinear figure (including squares) in cm and m *find the area of rectilinear shapes by counting squares	*measure and calculate the perimeter of composite rectilinear shapes in cm and m *calculate and compare the area of rectangles (including squares) and including using standard units, cm ² and m ² and estimate the area of irregular shapes	*recognise that shapes with the same areas can have different perimeters and vice versa *recognise when it is possible to use formulae for area and volume of shapes *calculate the area of parallelograms and triangles *calculate, estimate and compare volume of cubes and cuboids using standard units, including cm ³ and m ³ , and extending to other units
Money		*recognise and know the value of different denominations of coins and notes	*recognise and use symbols for £ and 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	*add and subtract amounts of money to give change, using both £ and p in practical contexts		*use all four operations to solve problems involving measure using decimal notation, including scaling (length, mass, volume, money etc...)	
Time		*sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening *recognise and use language relating to dates, including days of the week, weeks, months and years *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 *tell and write the time to 5 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	*tell and write the time from an analogue clock, including using Roman numerals, and 12-hour and 24-hour clocks *estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, am/pm, morning, afternoon, noon, midnight *know the number of seconds in a minute and the number of days in each month, year and leap year *compare durations of events	*convert between different units of measure (eg: hours to minutes) *read, write and convert time between analogue and digital 12 and 24 hour clocks *solve problems involving converting from hours to mins; mins to seconds; years to months; weeks to days	*solve problems involving converting between units of time	

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Shape vocabulary	*explore the characteristics of everyday objects and shapes and use mathematical language to describe them *recognise, create and describe patterns	*recognise and name common 2D shapes such as square, circle, triangle *recognise and name common 3D shapes such as cubes, cuboids, pyramids and spheres	*vertices, edges, faces, symmetry	*identify horizontal and vertical lines and pairs of perpendicular and parallel lines			*illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
Properties of 2D shapes			*identify and describe the properties of 2D shapes including the number of sides and line symmetry in a vertical line *compare and sort common 2D and 3D shapes and everyday objects	*draw 2D shapes	*compare and classify geometric shapes, including quadrilaterals and triangles, based on properties and sizes *identify lines of symmetry in 2D shapes in different orientations *complete a simple symmetrical figure with respect to a specific line of symmetry	*use the properties of rectangles to deduce related facts and find missing lengths and angles *distinguish between regular and irregular polygons based on reasoning about equal sides and angles	*draw 2D shapes using given dimensions and angles *compare and classify geometric shapes based on their properties and sizes
Properties of 3D shapes			*identify and describe the properties of 3D shapes including number of edges, vertices, faces *identify 2D shapes on the surface of 3D shapes *compare and sort common 2D and 3D shapes and everyday objects	*make 3D shapes using modelling materials *recognise 3D shapes in different orientations and describe them		*identify 3D shapes, including cubes and other cuboids, from 2D representations	*recognise, describe and build simple 3D shapes, including making nets *find unknown angles in any triangles, quadrilaterals and regular polygons
Angles				*recognise angles as a property of a shape or a description of a turn *identify right angles, recognise that two right angles make a half-turn, three make three-quarters of a turn and four make a complete turn *identify whether angles are greater or less than a right angle	*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 compare acute, obtuse and reflex angles *draw given angles, and measure them in degrees (°) *identify angles at a point and one whole turn total 360°; at a point on a straight line and ½ a turn total 180° *identify other multiples of 90°	*recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles
Position and Direction		*describe position, direction and movement, including whole, half, quarter and three-quarter turns	*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 as right angles for ¼ ½ ¾ turns		*describe positions on a 2D grid as coordinates in the first quadrant *describe movements between positions as translations of a given unit to the left/right and up/down *plot specified points and draw sides to complete a given polygon	*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 changes	*describe positions on the full coordinate grid (all four quadrants) *draw and translate simple shapes on the coordinate plane, and reflect them in the axes
Interpreting data			*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, such as bar charts / time graphs	*complete, read and interpret information in tables, including timetables	*interpret and construct pie charts and line graphs *calculate and interpret the mean as an average
Extract information from data			*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	*solve one-step and two-step questions using information presented in scaled bar charts and pictograms as well as tables	*solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs	*solve comparison, sum and difference problems using information presented in a line graph	*use pie charts and line graphs to solve problems