

Mathematics Progression Document 2022-2023

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Place Value: Counting	<p>Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number.</p> <p>Count numbers to 100 in numerals; count in multiples of twos, fives and tens.</p>	<p>Count in steps of 2, 3 and 5 from 0, and in tens from any number, forwards and backwards.</p>	<p>Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number.</p>	<p>Count in multiples of 6, 7, 9, 25 and 1,000.</p> <p>Count backwards through zero to include negative numbers.</p>	<p>Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000.</p> <p>Count forwards and backwards with positive and negative whole numbers, including through zero.</p>	
Place Value: Represent	<p>Identify and represent numbers using objects and pictorial representations.</p> <p>Read and write numbers to 100 in numerals.</p> <p>Read and write numbers from 1-20 in numerals and words.</p>	<p>Read and write numbers to at least 100 in numerals and in words.</p> <p>Identify, represent and estimate numbers using different representations including a number line.</p>	<p>Identify, represent and estimate numbers using different representations.</p> <p>Read and write numbers up to 1,000 in numerals and in words.</p>	<p>Identify, represent and estimate numbers using different representations.</p> <p>Read Roman numerals to 100 and know that over time, the numeral system changed to include the concept of zero and place value.</p>	<p>Read and write numbers to at least 1,000,000 and determine the value of each digit.</p> <p>Read Roman numerals to 1,000 and recognise years written in Roman numerals.</p>	<p>Read and write numbers to at least 10,000,000 and determine the value of each digit.</p>
Place Value: Use Place Value and Compare	<p>Given a number, identify one more and one less.</p>	<p>Recognise the place value of each digit in a two-digit number.</p> <p>Compare and order numbers from 0 up to 100; use $<$, $>$ and $=$ signs.</p>	<p>Recognise the place value of each digit in a three-digit number.</p> <p>Compare and order numbers up to 1,000.</p>	<p>Find 1,000 more or less than a given number.</p> <p>Recognise the place value of each digit in a four-digit number.</p> <p>Order and compare numbers beyond 1,000.</p>	<p>Order and compare numbers to at least 1,000,000.</p>	<p>Order and compare numbers to at least 10,000,000.</p>

<p>Place Value: Problems and Rounding</p>		<p>Use place value and number facts to solve problems.</p>	<p>Solve number problems and practical problems.</p>	<p>Round any number to the nearest 10, 100 and 1000.</p> <p>Solve number and practical problems that involve all of the above with increasingly large positive numbers.</p>	<p>Interpret negative numbers in context.</p> <p>Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000.</p> <p>Solve number and practical problems that involve all of the above.</p>	<p>Round any whole number to the required degree of accuracy.</p> <p>Use negative numbers in context and calculate intervals across zero.</p> <p>Solve number and practical problems that involve all of the above.</p>
<p>Addition and Subtraction: Recall, Represent and Use</p>	<p>Read, write and interpret mathematical statements involving addition, subtraction and equals signs.</p> <p>Represent and use number bonds and related subtraction facts within 20.</p>	<p>Recall and use addition and subtraction facts to 20 fluently and derive related facts up to 100.</p> <p>Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.</p>	<p>Estimate the answer to a calculation and use inverse operations to check answers.</p>	<p>Estimate and use inverse operations to check answers to a calculation.</p>	<p>Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.</p>	
<p>Addition and Subtraction: Calculations</p>	<p>Add and subtract one-digit and two-digit numbers to 20, including zero.</p>	<p>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-digit numbers and adding three one-digit numbers.</p>	<p>Add and subtract numbers mentally, including: a three-digit number and ones; a three-digit number and tens; a three-digit number and hundreds.</p> <p>Add and subtract numbers with up to three digits, using formal written methods.</p>	<p>Add and subtract numbers with up to 4-digits using the formal written method, where appropriate.</p>	<p>Add and subtract whole numbers with more than 4-digits, including formal written methods.</p> <p>Add and subtract numbers mentally with increasingly large numbers.</p>	<p>Perform mental calculations, including with mixed operations and large numbers.</p> <p>Use knowledge of order of operations to carry out calculations involving the four operations.</p>
<p>Addition and Subtraction: Solve Problems</p>	<p>Solve one-step problems that involve addition and subtraction, using</p>	<p>Solve problems with addition and subtraction: using concrete objects and</p>	<p>Solve problems, including missing number problems, using number facts,</p>	<p>Solve addition and subtraction two-step problems in contexts, deciding which</p>	<p>Solve addition and subtraction multi-step problems in context, deciding which</p>	<p>Solve addition and subtraction multi-step problems in contexts, deciding which</p>

	concrete objects and pictorial representations and missing number problems.	pictorial representations, including those involving numbers, quantities and measures and applying their increasing knowledge of mental and written methods.	place value and more complex addition and subtraction.	operations and methods to use and why.	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.	operations and methods to use and why.
Multiplication and Division: Recall, Represent and Use		Recall and use multiplication and division facts for the 2,5 and 10 multiplication tables, including recognising odd and even numbers. Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another number cannot.	Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.	Recall multiplication and division facts for the multiplication tables up to 12x12. 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. Recognise and use factor pairs and commutativity in mental calculations.	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 numbers. Establish whether a number up to 100 is prime and recall primes up to 19. Recognise and use square numbers and cube numbers and the notation for squared and cubed.	Identify common factors, common multiples and prime numbers. Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.
Multiplication and Division: Calculations		Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication,	Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit	Multiply two-digit and three-digit numbers by a one-digit number using a formal written layout.	Multiply numbers up to four-digits by a one-digit or two-digit number using a formal written method, including long multiplication for two-digit numbers.	Multiply multi-digit numbers up to four-digits by a two-digit whole number using the formal written method of long multiplication.

		division and equals signs.	numbers times one-digit numbers, using mental and progressing to formal written methods.		<p>Multiply and divide numbers mentally drawing upon known facts.</p> <p>Divide numbers up to four-digits by a one-digit number using the formal 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>Divide numbers up to four-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 four-digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context.</p> <p>Perform mental calculations, including with mixed operations and large numbers.</p>
Multiplication and Division: Solve Problems	Solve one-step problems involving multiplication and division by calculating the answer using concrete objects, pictorial representations and arrays with adult support.	Solve problems involving multiplication and division using materials, arrays, repeated addition, mental methods and multiplication and division facts.	Solve problems, including missing number problems involving multiplication and division including positive integer scaling problems and correspondence problems.	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.	<p>Solve problems involving multiplication and division including using the knowledge of factors and multiples, squares and cubes.</p> <p>Solve problems involving multiplication and division , including scaling by simple fractions and problems involving simple rates.</p>	Solve problems involving addition, subtraction, multiplication and division.
Multiplication and Division:					Solve problems involving addition, subtraction,	Use knowledge of the order of operations to carry out calculations

Combined Operations					multiplication and division and a combination of these, including the understanding of the equals sign.	involving the four operations.
Fractions: Recognise and Write	<p>Recognise, find and name a half as one of two equal parts of an object, shape or quantity.</p> <p>Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.</p>	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.	<p>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.</p> <p>Recognise, find and write fractions of a discrete set of objects including unit and non-unit fractions with small denominators.</p> <p>Recognise and use fractions as numbers including unit and non-unit fractions with small denominators.</p>	Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.	<p>Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.</p> <p>Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements >1 as a mixed number.</p>	
Fractions: Compare		Recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$.	<p>Recognise and show, using diagrams, equivalent fractions with small denominators.</p> <p>Compare and order unit fractions and fractions with the same denominator.</p>	Recognise and show, using diagrams, families of common equivalent fractions.	Compare and order fractions whose denominators are multiples of the same number.	<p>Use common factors to simplify fractions.</p> <p>Use common multiples to express fractions in the same denomination.</p> <p>Compare and order fractions including fractions > 1.</p>
Fractions: Calculations		Write simple fractions, for example $\frac{1}{2}$ of 6 = 3.	Add and subtract fractions with the same denominator within one whole.	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.	Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.

					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. Divide proper fractions by whole numbers.
Fractions: Solve Problems			Solve problems that involve all of the above.	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.		
Decimals: Represent and Write				Recognise and write decimal equivalents of any number of tenths or hundredths. Recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$.	Read and write decimal numbers as fractions. Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.	Identify the value of each digit in numbers given to three decimal places.
Decimals: Compare				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.	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.	
Decimals: Calculations and Problems				Find the effect of dividing a one or two-digit number by 10 or 100, identifying the value of the digits in the answer as ones, tenths and hundredths.	Solve problems involving numbers up to three decimal places.	Multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places.

						<p>Multiply one-digit numbers with up to two decimal places by whole numbers.</p> <p>Use written division methods in cases where the answer has up to two-decimal places.</p> <p>Solve problems which require answers to be rounded to specified degrees of accuracy.</p>
Fractions, Decimals and Percentages				<p>Solve simple measure and money problems involving fractions and decimals to two decimal places.</p>	<p>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 100 and as a decimal.</p> <p>Solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{3}{5}$ and those fractions with a denominator of a multiple of 10 or 25.</p>	<p>Associate a fraction with division and calculate decimal fraction equivalents.</p> <p>Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.</p>
Ratio and Proportion						<p>Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts.</p> <p>Solve problems involving the calculation of percentages and the</p>

						<p>use of percentages for comparison.</p> <p>Solve problems involving similar shapes where the scale factor is known or can be found.</p> <p>Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.</p>
Algebra	<p>Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations and missing number problems.</p>	<p>Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.</p>	<p>Solve problems, including missing number problems.</p>			<p>Use simple formulae.</p> <p>Generate and describe linear number sequences.</p> <p>Express missing number problems algebraically.</p> <p>Find pairs of numbers that satisfy an equation with two unknowns.</p> <p>Enumerate possibilities of combinations of two variables.</p>
Measurement: Using Measures	<p>Compare, describe and solve practical problems for lengths and heights, mass/weight, capacity and volume and time.</p> <p>Measure and begin to record the following: length, mass/weight, capacity and volume and time.</p>	<p>Choose and use appropriate standard units to estimate and measure length/height in any direction, mass, temperature, capacity to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels.</p>	<p>Measure, compare, add and subtract lengths, mass, volume and capacity.</p>	<p>Convert between different units of measure.</p> <p>Estimate, compare and calculate different measures.</p>	<p>Convert between different units of metric measure.</p> <p>Understand and use approximate equivalences between metric units and common imperial units.</p>	

		Compare and order length, mass, volume/capacity and record the results using $>$, $<$ and $=$.			Use all four operations to solve problems involving measure using decimal notation, including scaling.	
Measurement: Money	Recognise and know the value of different denominations of coins and notes.	Recognise and use symbols for pounds and pence. Combine amounts to make a particular value. Find different combinations of coins that equal the same amount 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.	Estimate, compare and calculate different measures, including money in pounds and pence.	Use all four operations to solve problems involving money.	
Measurement: Time	Sequence events in chronological order using language, for example: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening.	Compare and sequence intervals of time. Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on the clock face to show these times.	Tell and write the time from an analogue clock, including Roman numerals from I to XII and the 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, a.m./p.m,	Read, write and convert time between analogue and 12 and 24-hour clocks. Solve problems involving converting from hours to minutes; minutes to seconds; years to months and weeks to days.	Solve problems involving converting between units of time.	Use, read, write and convert between standard units, converting measurements of time from a smaller unit of measure to a larger unit and vice versa.

			<p>morning, afternoon, noon and midnight.</p> <p>Know the number of seconds in a minute and the number of days in each month, year and leap year.</p> <p>Compare duration of events.</p>			
Measurement: Perimeter, Area and Volume			<p>Measure the perimeter of simple 2-D shapes.</p>	<p>Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres.</p> <p>Find the area of rectilinear shapes by counting squares.</p>	<p>Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres.</p> <p>Calculate and compare the area of rectangles (including squares) in standard units (cm^2 and m^2).</p> <p>Estimate the area of irregular shapes.</p> <p>Estimate volume and capacity.</p>	<p>Recognise that shapes with the same areas can have different perimeters and vice versa.</p> <p>Recognise when it is possible to use formulae for area and volume of shapes.</p> <p>Calculate the area of parallelograms and triangles.</p> <p>Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm^3) and cubic metres (m^3) and extend to other units, for example mm^3 and km^3.</p>
Geometry: 2-D Shapes	<p>Recognise and name common 2-D shapes.</p>	<p>Identify and describe the properties of 2-D shapes, including the number of sides and lines of symmetry in a vertical line.</p>	<p>Draw 2-D shapes.</p>	<p>Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes.</p> <p>Identify lines of symmetry in 2-D</p>	<p>Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.</p> <p>Use the properties of rectangles to deduce related facts and find</p>	<p>Draw 2-D shapes using given dimensions and angles.</p> <p>Compare and classify geometric shapes based on their properties and sizes.</p>

		<p>Identify 2-D shapes of the surface of 3-D shapes.</p> <p>Compare and sort common 2-D shapes and everyday objects.</p>		<p>shapes presented in different orientations.</p>	<p>missing lengths and angles.</p>	<p>Illustrate and name parts of a circle, including radius, diameter and circumference and know that the diameter is twice the radius.</p>
Geometry: 3-D Shapes	<p>Recognise and name common 3-D shapes.</p>	<p>Recognise and name common 3-D shapes.</p> <p>Compare and sort common 3-D shapes and everyday objects.</p>	<p>Make 3-D shapes using modelling materials.</p> <p>Recognise 3-D shapes in different orientations and describe them.</p>		<p>Identify 3-D shapes, including cubes and other cuboids, from 2-D representations.</p>	<p>Recognise, describe and build simple 3-D shapes, including making nets.</p>
Geometry: Angles and Lines			<p>Recognise angles as a property of shape or description of a turn.</p> <p>Identify right angles, recognise that two right angles make a half-turn, three make three-quarters of a turn and four a complete turn.</p> <p>Identify whether angles are greater than or less than a right angle.</p> <p>Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.</p>	<p>Identify acute and obtuse angles and compare and order angles, up to two right angles, by size.</p> <p>Identify lines of symmetry in 2-D shapes presented in different orientations.</p> <p>Complete a simple symmetric figure with respect to a specific line of symmetry.</p>	<p>Know angles are measured in degrees.</p> <p>Estimate and compare acute, obtuse and reflex angles.</p> <p>Draw given angles and measure them in degrees.</p> <p>Identify angles at a point and one whole turn (360°).</p> <p>Identify angles at a point on a straight line and $\frac{1}{2}$ a turn (180°).</p> <p>Identify other multiples of 90°.</p>	<p>Find unknown angles in any triangles, regular quadrilaterals and regular polygons.</p> <p>Recognise angles where they meet at a point; are on a straight line or are vertically opposite and find missing angles.</p>
Geometry: Position and Direction	<p>Describe position, direction and movement including whole, half, quarter and three-quarter turns.</p>	<p>Order and arrange combinations of mathematical objects in patterns and sequences.</p> <p>Use mathematical vocabulary to describe</p>		<p>Describe positions of a 2-D grid as coordinates in the first quadrant.</p> <p>Describe movements between positions as translations of a given</p>	<p>Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the</p>	<p>Describe positions on the full coordinate grid (all four quadrants).</p> <p>Draw and translate simple shapes on the coordinate plane and</p>

		position, direction and movement, including movement in a straight line and distinguish between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise).		unit to the left/right and up/down. Plot specified points and draw sides to complete a given polygon.	shape has not changed.	reflect them in the axes.
Statistics: Present and Interpret		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.	Complete, read and interpret information in tables, including timetables.	Interpret and construct pie charts and line graphs and use these to solve problems.
Statistics: Solve Problems		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, pictograms and 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.	Calculate and interpret the mean as an average.