

Progression in Maths

Purpose of study

Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

Aims

The national curriculum for mathematics aims to ensure that all pupils:

♣ become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.

♣ **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language

♣ can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Number	<p>Recognising numbers to 5. Count reliably to 5. Sorting/comparing to 5. Recognising numbers to 10.</p> <p>Count reliably to 10. Sorting/comparing to 10. Recognising numbers to 20.</p> <p>Count reliably to 20. Sorting/comparing to 20. Counting irregular arrangements within 10. Odds and evens.</p>	<p>To use the making 10 strategy to count numbers above 10; to represent numbers on a number line.</p> <p>To use the ten-frame method of organisation and place-value cards to assist pupils in writing numbers to 40; to encourage multiple ways of counting, including counting by 2, 5 and 10.</p> <p>To understand that digits represent tens and ones; to represent numbers using Base 10 materials and numbers.</p> <p>To use place value to compare two or three numbers and determine which number is bigger/smaller; to arrange three numbers in order of size.</p> <p>To compare numbers using number bonds, 100-squares and number lines to determine how much more/less.</p> <p>To observe and use number patterns; to see number lines in conjunction with number squares in order to create visual proportionality.</p> <p>To count in sequences of 10 followed by counting ones; to increase confidence with number lines and Base 10 materials in order to count numbers to 100.</p> <p>To understand the value of the tens and ones digits in a number; to use multiple methods of representing and constructing a number.</p> <p>To review and extend skills and strategies related to number comparison; to place numbers in order from smallest to greatest and vice versa.</p> <p>To see patterns of numbers when increasing or decreasing by 1, 2 or 5; to use a number line, a 100-chart and Base 10 materials to represent numbers.</p>	<p>To count numbers up to 100 using concrete objects: counting up by ones and tens.</p> <p>To understand each digit in a number has its own value.</p> <p>To be able to compare numbers using place-value knowledge gained from previous lessons.</p> <p>To use the number bond strategy to deepen understanding of place value.</p> <p>To recognise and describe patterns with more complex numbers, in particular 3 and 5.</p> <p>To use place-value knowledge to think about the effects of each digit in a number.</p>	<p>To learn to count in hundreds and understand the place value. Pupils will also understand how many hundreds are needed to make 1000.</p> <p>To compose and decompose numbers consisting of hundreds, tens and ones.</p> <p>To understand the value of each digit in a 3-digit number.</p> <p>To be able to compare and order numbers.</p> <p>To be able to count in fifties.</p> <p>To recognise, describe and continue a number pattern.</p> <p>To be able to recognise, describe and complete more complicated number patterns.</p> <p>To be able to count in fours and eights.</p>	<p>To count in hundreds and twenty-fives.</p> <p>To count in thousands.</p> <p>To count in thousands, hundreds, tens and ones.</p> <p>To use an understanding of place value to count.</p> <p>To understand place value in a 4-digit number.</p> <p>To compare and order numbers.</p> <p>To compare and order 4-digit numbers.</p> <p>To make number patterns (100, 10, 1 more and less).</p> <p>To make number patterns (4-digit numbers).</p> <p>To count in sixes, sevens and nines.</p> <p>To round numbers to the nearest 1000.</p> <p>To round numbers to the nearest 10, 100 and 1000.</p> <p>To round numbers to estimate.</p>	<p>To read and represent numbers to 100 000.</p> <p>To read and represent numbers to 1 000 000.</p> <p>To read and represent numbers to 1 000 000 using number discs.</p> <p>To compare numbers to 1 000 000 using place value.</p> <p>To compare numbers to 1 000 000 using pictorial representations and proportionality.</p> <p>To compare numbers to 1 000 000 from pictorial representations, using lists and number lines.</p> <p>To make and identify patterns in numbers using knowledge of place value.</p> <p>To make number patterns that decrease in multiples of 10 000 or 100 000.</p> <p>To make number patterns that decrease in multiples of 10 000 or 100 000.</p> <p>To round numbers to the nearest 10 000 using number lines and bar graphs.</p> <p>To round numbers to the nearest 100, 1000, 10 000 and 100 000 using number lines.</p>	<p>To create and identify numbers to 10 000 000 ; to write in numerals and words numbers to 10 000 000.</p> <p>To construct and record numbers to 10 000 000; to recognise the value of digits to 10 000 000.</p> <p>To recognise and construct numbers to 10 000 000 using an abacus; to recognise the value of digits in numbers to 10 000 000 and write numbers using numerals and words.</p> <p>To compare numbers to 10 000 000 using place value.</p> <p>To compare and order numbers to 10 000 000; to create combinations of numbers using a fixed number of digits.</p> <p>To round numbers to 10 000 000 to the nearest million, hundred thousand and ten thousand.</p> <p>To round numbers to the nearest appropriate number up to and including millions; to determine when rounding is appropriate and to which value.</p>
Addition and Subtraction (Integers)	<p>Number bonds to 5.</p> <p>One more/One less to 5. Number bonds to 10.</p> <p>One more/One less to 10. Number bonds to 20.</p> <p>One more/One less to 20. Using quantities and objects, subtract 2 single digit numbers and count on or back to find the answer.</p>	<p>To understand that a number is made up of other numbers; to find as many ways possible to construct a number.</p> <p>To use number bonds for storytelling.</p> <p>To add by counting on.</p> <p>To complete number sentences and gain an understanding of inverse operations.</p> <p>To be able to make addition stories using correct vocabulary.</p>	<p>To be able to add a 1-digit number to a 2-digit number without regrouping the ones.</p> <p>To add tens by recognising its relationship to adding ones.</p> <p>To add 2-digit numbers where one is a multiple of 10.</p> <p>To add with tens and ones where the ones are both more than zero.</p> <p>To add 1-digit numbers to a 2-digit number resulting in renaming of ones.</p>	<p>To understand the commutative law of addition and the corresponding addition and subtraction facts.</p> <p>To add a 3-digit number to a 1-digit number with no regrouping or renaming.</p> <p>To add a 3-digit number to a multiple of 10 (2-digit number) without regrouping or renaming.</p> <p>To add multiples of 100 to a 3-digit number. without regrouping or renaming.</p>	<p>To find totals and sums.</p> <p>To add with renaming (in hundreds, tens and ones).</p> <p>To add using mental strategies.</p> <p>To find the difference.</p> <p>To subtract with renaming.</p> <p>To subtract using mental strategies.</p> <p>To solve addition and subtraction word problems.</p> <p>To solve multi-step word problems.</p>	<p>To add using the 'counting on' strategy with concrete materials and number lines.</p> <p>To subtract using the 'counting backwards' strategy with concrete materials.</p> <p>To add numbers within 1 000 000 using rounding and concrete materials.</p>	

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		<p>To be able to solve addition problems through pictures.</p> <p>To understand that subtraction can be done by crossing out or taking away.</p> <p>To be able to subtract using number bonds.</p> <p>To be able to solve a subtraction equation by counting back, using a number line as support.</p> <p>To be able to make subtraction sentences.</p> <p>To be able to solve picture problems involving subtraction.</p> <p>To solve problems in the context of addition and subtraction and to find the corresponding number families.</p> <p>To learn to add by counting on from the largest number.</p> <p>To add to numbers by first making 10 and then adding on the remainder.</p> <p>To add by separating the ones and ten. This enables pupils to add the sum of the ones to the ten.</p> <p>To learn how to subtract by counting back from the largest number.</p> <p>To learn how to subtract by subtracting from only the ones column.</p> <p>To decide whether addition or subtraction is the most appropriate operation; to use and apply number bonds and visual representations to solve word problems.</p> <p>To use and apply concepts of how many more and how many fewer/less; to apply number bonds and the guess-and-check method to solve word problems.</p> <p>To develop number sentences based on word problems; to improve the use of number bonds and one-to-one bar model representations to suit the question.</p> <p>To use pictorial representations to help solve word problems; to choose the correct operation to solve a word problem.</p> <p>To use visual representations and patterns to solve word problems; to develop precision in model drawing to recognise similarities and differences.</p> <p>To apply addition and subtraction to multi-step word problems; to use number bonds to make 10 when adding.</p>	<p>To add two 2-digit numbers where renaming is expected.</p> <p>To subtract ones from a 2-digit number.</p> <p>To subtract 2-digit multiples of 10 from 2-digit multiples of 10.</p> <p>To subtract tens from a 2-digit number with the ones being more than zero.</p> <p>To subtract a 2-digit number by another 2-digit number.</p> <p>To subtract a 2-digit number by a 1-digit number with renaming.</p> <p>To subtract a 2-digit number by another 2-digit number where renaming has to occur.</p> <p>To add three 1-digit numbers.</p>	<p>To add with renaming in ones and tens.</p> <p>To subtract with regrouping tens and hundreds.</p> <p>To subtract a 3-digit number with zeros.</p> <p>To solve addition and subtraction problems using the bar model.</p> <p>To use the bar model to solve problems.</p> <p>To solve complicated problems involving addition and subtraction using a comparative bar model heuristic.</p> <p>To solve more complicated problems involving addition and subtraction using a comparative bar model heuristic.</p>		<p>To use addition and subtraction to solve comparison problems with numbers to 1 000 000.</p> <p>To add numbers within 1 000 000 using the column method of addition.</p>	
<p>Multiplication and Division (Integers)</p>	<p>Halving.</p> <p>Sharing.</p> <p>Doubling.</p> <p>Grouping and counting in 2s, 5s, 10s.</p>	<p>To identify equal groupings as the first step in multiplying; to reinforce the idea that the arrangement of objects does not impact on the number of objects.</p> <p>To understand we can count groups of the same quantity more efficiently; to find multiple ways of counting groups of the same quantity.</p> <p>To organise objects into equal rows in order to begin counting equal numbers efficiently.</p> <p>To understand that doubling is creating an identical number to the one you started with; to understand that doubling is the</p>	<p>To realise that multiplication is the same as repeated addition with equal groups.</p> <p>To focus on understanding and learning the 2 times table.</p> <p>To use concrete materials and pictorial representations to multiply by 2.</p> <p>To cover the basics of the 5 times table and to highlight multiplication visually as equal groups.</p> <p>To recall and use the 5 times table.</p> <p>To introduce the 10 times table by focusing on the numbers found in the 10 times table.</p>	<p>To multiply by 3 using relational properties.</p> <p>To multiply by 4 and 8.</p> <p>To find relationships between multiplication and division.</p> <p>To divide by 4 and 8.</p> <p>To solve more word problems involving multiplication and division using the bar model heuristic.</p>	<p>To multiply by 6.</p> <p>To multiply by 7.</p> <p>To multiply by 9.</p> <p>To multiply by 9 (relational understanding).</p> <p>To multiply by 11.</p> <p>To multiply by 12.</p> <p>To divide by 6.</p> <p>To divide by 7.</p> <p>To divide by 9.</p> <p>To multiply and divide by 11 and 12.</p> <p>To divide with remainders.</p> <p>To solve word problems involving multiplication and division.</p>	<p>To define and find common factors of numbers to 100.</p> <p>To identify and name the prime numbers; to recognise prime numbers as numbers that only have 2 factors.</p> <p>To define and determine prime numbers to 100.</p> <p>To create and determine square and cubed numbers.</p> <p>To multiply 1- and 2-digit numbers by 10, 100 and 1000.</p> <p>To multiply a 4-digit number by a 1-digit number, with regrouping from the ones,</p>	<p>To use multiple operations and create expressions from a picture; to use the order of operations to solve expressions.</p> <p>To create and solve expressions using the four operations.</p> <p>To multiply numbers by multiples of 10; to use number bonds as a key strategy in multiplication.</p> <p>To multiply 3- and 4-digit numbers by 2-digit numbers without regrouping or renaming; to use both number bonds and the column method as key strategies.</p> <p>To multiply 3- and 4-digit numbers by 2-digit numbers without regrouping or</p>

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		<p>same as saying two groups of the same amount.</p>	<p>To look at the 10 times table in more detail by looking at patterns and relationships. To use knowledge of the 2, 5 and 10 times tables to further investigate commutative law. To use the 2, 5 and 10 times tables to solve word problems. To be able to divide by 2. To be able to divide by 5 and identify links with multiplying by 5. To be able to divide by 10 and identify links with multiplying by 10. numbers can be divisible by 2, 5 or 10. To use multiplication and division knowledge in problem solving and to create equations from questions.</p>	<p>To solve problems involving multiplication and division. To solve multi-step problems (in the context of measures). To solve problems involving multiplication and division (all possibilities). To solve problems involving multiplication and division (multi-step). To solve problems involving multiplication and division (scaling/comparison). To multiply by 0 and 1. To divide by 1. To understand commutativity. To multiply three numbers. To multiply with multiples of 10.</p>	<p>tens and hundreds, using multiple methods. To multiply a 3-digit number by a 2-digit number with regrouping, using the column method as the key strategy. To divide 3 and 4-digit numbers by 1-digit numbers, using long division, short division and mental methods, that give rise to remainders.</p>	<p>renaming; to use both number bonds and the column method as key strategies. To multiply 3- and 4-digit numbers by 2-digit numbers with regrouping and renaming; to use number bonds and pattern recognition as key strategies for multiplication. To estimate products of multiplying 3- and 4-digit numbers by a 2-digit numbers; to use knowledge of multiplication to create specific products. To divide 3-digit numbers by 2-digit numbers using a variety of strategies; to use number bonds, long division and bar models to facilitate division by 2-digit numbers. To divide 4-digit numbers by 2-digit numbers; to use number bonds and long division as the key strategies. To divide 4-digit numbers by 2-digit numbers using a variety of methods; to use number bonds, long and short division as key methods. To divide 3-digit numbers by 2-digit numbers giving rise to remainders; to use number bonds and long and short division as key strategies to solve division problems. To divide 4-digit numbers by 2-digit numbers giving rise to a remainder; to represent the remainder as part of a whole amount of money or decimal. To use the bar model heuristic to solve word problems involving multiplication and division. To solve word problems using division as the main strategy; to use pictorial representations to support word problems. To solve word problems involving multiple operations, including multiplication and division. To find common multiples in real-life situations; to use common multiples in tandem with knowledge of time. To use common multiples to solve problems; to organise mathematical thinking into tables and lists. To find the largest common factor of 3-digit numbers; to use multiplication and division to find largest common factors. To find common factors using concrete materials. To use prime numbers to create other numbers; to explore prime numbers above 100. To explore prime numbers using concrete materials; to identify prime numbers using multiplication or division.</p>
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Fractions	<p>Halving. Sharing. Doubling. Grouping and counting in 2s, 5s, 10s.</p>	<p>To split an object (shape) into two equal parts; to identify shapes that have been split into two equal parts. To split an object (shape) into four equal parts; to identify shapes that have been split into four equal parts. To share and group objects into halves and quarters; to determine half of a number and a quarter of a number.</p>	<p>To show and recognise halves and quarters. To show and identify more than one quarter using materials and pictures. To show and identify thirds in shapes; to use the vocabulary 'numerator' and 'denominator' when referring to fractions. To identify and name fractions by looking at the number of pieces and how many are shaded in. To recognise equivalent fractions in quarters, thirds and halves. To compare and order similar fractions by looking at the size of the pieces shaded. To compare and order fractions with different denominators. To count the number of wholes and parts to form mixed numbers. To count in halves and place halves onto a number line using pictures. To count in quarters and place quarters onto a number line using pictures. To count in thirds and place thirds onto a number line using pictures. To find fractions (half) of whole numbers. To find a fraction (third) of a whole number. To find a fraction (quarter) of a number. To find a fraction (half, third, quarter) of a quantity (length).</p>	<p>To count in tenths; to recognise tenths and be able to determine how many tenths are shaded. To make number pairs to create 1; to combine fractions to make 1. To add fractions with the same denominator. To subtract fractions with the same name. To find equivalent fractions through paper folding and shading. To find equivalent fractions; to place fractions on a number line. To find fractions equivalent to $\frac{1}{2}$; to use pictorial representations and multiplication to show equivalence. To find equivalent fractions using concrete objects and pictorial representations. To find equivalent fractions using pictorial representations and multiplication. To find the simplest fraction using visualisation and concrete materials. To find the simplest fraction using pictorial representations and division. To find equivalent fractions using multiplication and division; to determine whether or not a fraction is equivalent. To compare fractions using pictorial representations; to understand the numerical nature of the numerator. To compare fractions with different names (denominators) using pictorial representations and number lines. To add fractions using pictorial representations; to simplify fractions after adding them. To subtract fractions using pictorial representations; to simplify fractions after they have been subtracted. To subtract fractions from a whole amount; to use pictorial representations of whole numbers to help subtract fractions. To determine a fraction of a whole number using pictorial representations. To find a fraction of a whole number using pictorial representations, multiplication and concrete objects. To consolidate finding the fraction of a whole number. To divide 1 between more than 1; to share 1 whole equally between more than 1. To share more than 1 using pictorial representations and division. To share more than 1; to recognise a whole and its parts using pictures and number lines. To show more than 1 whole after sharing a number of items equally; to use pictorial representations to share whole items equally. To apply bar modelling to represent fractions in word problems; to solve word problems using pictorial representations and abstract methods.</p>	<p>To count in hundredths. To write mixed number fractions. To show mixed number fractions on a number line. To find equivalent fractions. To simplify mixed number fractions. To simplify improper fractions. To add fractions. To add fractions (recording answers as a mixed number). To add fractions (simplest form). To subtract fractions. To subtract fractions (equivalence). To solve word problems.</p>	<p>To divide whole numbers to create fractions; to create mixed numbers and improper fractions when dividing whole numbers. To write improper fractions and mixed numbers using a number line and pictorial methods. To find equivalent fractions using pictorial methods. To compare and order fractions using the pictorial method. To compare and order improper fractions using the pictorial method. To compare mixed numbers using pictorial representations; to find common denominators where one fraction is already the common denominator for all fractions in the question. To make number pairs (number bonds) with fractions with different denominators. To add unlike fractions by finding a common denominator using pictorial methods. To add together unlike fractions where the sum is greater than 1, creating mixed numbers or improper fractions. To add unlike fractions which create improper fractions and mixed numbers that give rise to simplification. To subtract fractions with different denominators; to subtract fractions from whole numbers. To subtract fractions where the denominators are not the same; to use bar models as a key strategy for subtracting fractions. To subtract fractions and mixed numbers from mixed numbers with different denominators. To multiply fractions by whole numbers creating other fractions, mixed numbers or improper fractions. To multiply fractions by whole numbers where the product is an improper fraction or mixed number. To multiply mixed numbers by whole numbers, creating larger mixed numbers. To multiply mixed numbers by whole numbers in multi-step word problems.</p>	<p>To use concrete materials to simplify fractions; to recognise equivalence in fractions to $\frac{1}{4}$. To simplify fractions using division and common factors; to represent fractions using concrete materials and pictorial representations. To compare fractions and place them in order from smallest to largest. To compare and order fractions by finding common denominators. To compare and order fractions using common factors. Adding and subtracting fractions with different denominators; using pictorial representations to compare fractions and add/subtract. To add and subtract fractions with different denominators; to add and subtract mixed numbers. To multiply fractions using pictorial representations and abstract methods. To determine if the commutative law applies to fractions; to multiply fractions using concrete materials and pictorial representations. To use concrete materials to understand and solve the multiplication of fractions; to simplify equations using pattern blocks. To divide fractions by a whole number; to use pictorial representations to support division.</p>
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				<p>To use bar models to solve word problems involving the fraction $\frac{1}{2}$.</p> <p>To use bar models to solve word problems involving the fractions $\frac{1}{3}$ and $\frac{1}{5}$.</p>			
Decimals					<p>To record tenths.</p> <p>To record in tenths (in different ways).</p> <p>To write hundredths.</p> <p>To write hundredths (in different ways).</p> <p>To write decimal numbers.</p> <p>To compare and order decimal numbers.</p> <p>To create number sequences.</p> <p>To round decimal numbers.</p> <p>To write fractions as decimal numbers.</p> <p>To divide whole numbers by 10.</p> <p>To divide whole numbers by 100.</p>	<p>To write decimal numbers.</p> <p>To read and write decimals.</p> <p>To compare tenths and hundredths written as decimals.</p> <p>To order and compare decimals.</p> <p>To compare and order decimals of amounts.</p> <p>To write fractions as decimals.</p> <p>To add and subtract amounts in decimals.</p> <p>To add and subtract decimals to find the smallest possible sum and difference.</p> <p>To add and subtract decimals; to find number pairs that add up to 1.</p> <p>To add and subtract the perimeter of an object using decimals.</p> <p>To round decimals to the nearest whole number; to round numbers to nearest tenth.</p>	<p>To read and write decimals to thousandths; to use concrete materials to represent decimals.</p> <p>To divide whole numbers by larger whole numbers; to use Base 10 materials to represent tenths, hundredths and thousandths.</p> <p>To divide whole numbers that give rise to decimals; to calculate decimal fraction equivalents using long division.</p> <p>To convert fractions into decimals using bar models and long division.</p> <p>To write fractions as decimals; to use long division as the key strategy for turning fractions into decimals.</p> <p>To multiply decimals by whole numbers using partitioning or the worded method to help find the solution.</p> <p>To multiply whole numbers that include a decimal by other whole numbers; to use partitioning and the worded method as key strategies.</p> <p>To multiply decimals by whole numbers, including regrouping and renaming.</p> <p>To multiply decimals by whole numbers using a variety of methods; to use the heuristic 'making a list' to help solve a problem.</p> <p>To divide decimals using number bonds and number discs as the key strategies.</p> <p>To divide decimals using bar models, number bonds and long division as key strategies, including regrouping and renaming.</p> <p>To multiply decimals by a 2-digit whole number using number discs and the column method.</p> <p>To divide decimals by 2-digit numbers using number bonds and the worded method.</p> <p>To divide decimals by 2-digit whole numbers using number bonds and the worded method.</p>
Percentages						<p>To compare quantities; to compare fractions, decimals and percentages; to convert fractions to decimals and percentages.</p> <p>To convert values of an amount into percentages; to convert fractions into percentages.</p>	<p>To find the percentage of a whole number using division and multiplication; to use bar modelling as a pictorial approach to calculating percentage.</p> <p>To find the percentage of a quantity; to use bar model diagrams to support the division and multiplication of numbers towards the percentage.</p> <p>To find the percentage change in an amount over time; to calculate the percentage change where the number gives rise to a decimal.</p>

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							To use percentage, bar models and fractions to compare amounts.
Length and Height	<p>Children use everyday language to talk about size, weight, capacity and distance. Compare quantities and objects and to solve problems. Ordering by weight, height, length and capacity.</p>	<p>To compare height and length by using key terminology.</p> <p>To be able to measure objects using other items, such as pencils or books.</p> <p>To be able to measure items using other things - parts of the body in particular.</p> <p>To introduce the concept of using rulers for measuring.</p>	<p>To measure length in centimetres.</p> <p>To be able to compare length for objects using 'greater than' and 'less than' symbols.</p> <p>To be able to compare different lengths using centimetres as the unit of measure.</p> <p>To be able to compare and measure various line lengths: both straight and curvy.</p> <p>To be able to solve problems involving measurement in the context of word problems.</p> <p>To be able to solve addition and multiplication word problems involving measurement.</p> <p>To be able to solve addition and division word problems involving measurement.</p>	<p>To use metres and centimetres to measure objects.</p> <p>To write length in centimetres only by converting metres to centimetres.</p> <p>To convert kilometres to metres.</p> <p>To convert length from metres to kilometres and metres.</p> <p>To compare two lengths.</p> <p>To solve measurement-related word problems.</p> <p>To solve other word problems.</p> <p>To solve word problems further, involving multiplication.</p> <p>To solve word problems associated with length using division.</p>	<p>To measure length.</p> <p>To convert units of length.</p>	<p>To convert units of length.</p> <p>To convert units of length, including centimetres and metres.</p> <p>To solve problems by converting units of length.</p>	
Area and Perimeter				<p>To measure the perimeter of a shape using 1 cm grid paper.</p> <p>To determine the perimeter of different shapes; to create shapes with a specific perimeter.</p> <p>To calculate the perimeter of a shape using a ruler to measure the side lengths.</p> <p>To calculate the perimeter of a rectangle using multiplication and addition.</p> <p>To calculate the perimeter of rectangles and irregular shapes by adding up the length of each side.</p> <p>To consolidate learning about perimeter using practical word problems; to calculate the perimeter of a rectangle using properties of shapes.</p> <p>To calculate the perimeter of a square and a rectangle using information previously learned about the properties of shapes.</p> <p>To calculate the perimeter of a rectangle when a square piece has been removed; to determine the lengths of sides that are not marked based on information about the piece removed.</p>	<p>To find area (by measuring surface coverage).</p> <p>To measure area (counting squares).</p> <p>To measure area (counting squares and half squares).</p> <p>To measure area (using multiplication).</p> <p>To measure area (shapes in different orientations).</p>	<p>To find the perimeter of shapes.</p> <p>To find shapes with a specific perimeter.</p> <p>To find the perimeter of different shapes.</p> <p>To use scale diagrams to find the perimeter of a shape.</p> <p>To measure the area of shapes by counting squares.</p> <p>To measure the area of squares.</p> <p>To measure the area of a shape.</p> <p>To measure area in square metres.</p> <p>To find the area of shapes in square metres.</p> <p>To make an estimation of area in kilometres.</p>	<p>To find the area and perimeter of rectangles; to calculate perimeter using the known area and vice versa.</p> <p>To find and calculate the area of a parallelogram; to use concrete materials and prior understanding of area to construct a formula for the area.</p> <p>To use prior knowledge of area to determine and solve the area of a triangle; to use and apply the formula for the area of a rectangle to solve problems involving triangles.</p> <p>To calculate the area of a triangle using a formula; to calculate the area of a triangle in multiple ways.</p> <p>To use multiple methods to solve the area of a triangle.</p> <p>To find the area of a parallelogram using an understanding of triangles; to use concrete materials to find the area of a parallelogram.</p>
Volume		<p>To compare volume and capacity using the terms 'more than' and 'less than', 'full' and 'empty'.</p> <p>To find the volume and capacity of a container using non-standard ones.</p> <p>To describe volume using the terms 'half' and 'quarter'.</p>	<p>To compare volume in different-sized containers using the terms 'greater than,' 'less than,' 'greatest' and 'least.'</p> <p>To compare the volume of different containers using non-standard units.</p> <p>To measure volume using litres and determine whether an amount is 'more than,' 'less than' or 'equal to' a litre.</p> <p>To measure volume using millilitres and litres; to determine how many ml there are in 1 l.</p> <p>To solve word problems involving bar models with litres as the standard unit.</p> <p>To solve word problems using ml and l, including problems involving difference.</p> <p>To solve word problems involving volume and multiplication.</p>	<p>To measure volume in millilitres.</p> <p>To measure capacity in millilitres.</p> <p>To measure volume using millilitres and litres.</p> <p>To measure volume in millilitres and litres from a 'homemade' bottle with markings.</p> <p>To measure volume using millilitres and litres in comparison to 1 l.</p> <p>To measure larger capacity in litres and millilitres.</p> <p>To solve basic word problems related to volume.</p> <p>To solve more word problems.</p> <p>To solve word problems through division.</p> <p>To solve two-step word problems.</p>	<p>To measure volume.</p> <p>To convert units of volume.</p>	<p>To understand the volume of solids.</p> <p>To find the volume of 3-D shapes.</p> <p>To find the volume of solids.</p> <p>To find the capacity of a cuboid.</p> <p>To find the capacity of rectangular boxes.</p> <p>To compare and convert units of volume.</p> <p>To convert units of volume (metric and imperial).</p> <p>To solve word problems involving volume.</p>	<p>To find the volume of cubes and cuboids using concrete materials.</p> <p>To determine the formula for the volume of cubes and cuboids and apply it to calculate the volume of shapes.</p> <p>To estimate the volume of objects and spaces; to calculate the volume of boxes using the formula for volume of cubes and cuboids.</p> <p>To calculate the volume of boxes using the formula for volume of a cube; to expose common misconceptions in volume through a 3-box arrangement.</p> <p>To solve word problems involving the volume of cubes and cuboids; to apply the formula for the volume of a cube or cuboid.</p>

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Mass	<p>Use everyday language to talk about size and position.</p> <p>Create and describe patterns with common shapes.</p> <p>Children use positional language.</p> <p>Explore characteristics of everyday objects and 2D and 3D shapes and use mathematical language to describe them.</p>	<p>To compare the mass of objects using the terms 'heavy' and 'light', 'heavier than', 'lighter than' and 'as heavy as'.</p> <p>To find the mass of an object using non-standard ones; to use visualisation skills to estimate the number of ones.</p>	<p>To understand that mass is measured in kilograms and by using weighing scales.</p> <p>To be able to measure mass in grams and to understand that it is a smaller unit of measure than a kilogram.</p> <p>To be able to measure mass accurately in grams using weighing scales.</p> <p>To be able to compare the mass of two different objects accurately.</p> <p>To be able to compare the mass of three objects and use the appropriate vocabulary.</p> <p>To solve word problems in the context of mass.</p>	<p>To measure mass using weighing scales and compare the mass of objects using grams and kilograms.</p> <p>To use weighing scales to measure mass when the mass is between multiples of 100 g.</p> <p>To read values on a scale which are 1 kg or more.</p> <p>To weigh heavier items where the markers in the scales represent 200 g each.</p> <p>To solve word problems relating to mass with addition and subtraction.</p> <p>To solve word problems relating to mass using multiplication.</p> <p>To solve word problems relating to mass using division.</p>	<p>To measure mass.</p> <p>To convert units of mass.</p>	<p>To convert units of mass.</p> <p>To convert units of mass, including grams into kilograms.</p> <p>To convert units of mass, including kilograms and pounds.</p>
Temperature			<p>To be able to accurately read temperature in Celsius.</p> <p>To be able to estimate temperature and to read thermometers to confirm the estimate.</p>			<p>To read the temperature on a thermometer.</p>
Time			<p>To tell and write time to 5-minute intervals.</p> <p>To tell time to 5-minute intervals and to the hour.</p> <p>To sequence events of the day by looking at analogue clocks and pictures.</p> <p>To draw hands on an analogue clock to show the correct time.</p> <p>To find the duration of time using an analogue clock in 30- and 60-minute intervals.</p> <p>To find the duration of time to 5-minute intervals.</p> <p>To find the ending of a duration of time from different 5-minute starting points.</p> <p>To find the ending time in intervals of 5 minutes from delayed starts.</p> <p>To find the starting time from 30-minute and 1-hour interval durations.</p> <p>To find the start of multiple durations of time using a common end time.</p> <p>To compare durations of time from the least amount to the most amount of time and vice versa.</p>	<p>To use the terms 'a.m.' and 'p.m.' correctly to identify morning or afternoon/evening.</p> <p>To learn to tell time to the minute; to understand the relationship between the minute hand and hour hand.</p> <p>To consolidate and apply a variety of vocabulary used to express the time.</p> <p>To compare analogue and digital time; to represent time using both analogue and digital methods.</p> <p>To tell time before the hour using the hour and minute hands.</p> <p>To learn to tell time using 24-hour notation; to use analogue time and 24-hour notation interchangeably.</p> <p>To tell the time on an analogue clock using Roman numerals.</p> <p>To measure time in seconds and milliseconds.</p> <p>To measure time in seconds using a stopwatch; to consolidate previous learning about seconds.</p> <p>To consolidate measuring time in seconds; to conduct a time experiment using seconds.</p> <p>To measure time in hours using an analogue clock.</p> <p>To consolidate the measurement of time in hours.</p> <p>To measure time in hours using analogue clocks and timelines; to count backwards in time by the hour.</p> <p>To measure the passage of time in minutes using an analogue clock and a timeline.</p> <p>To measure time to the minute when it crosses into the next hour; to use number bonds to calculate the passage of time.</p> <p>To measure time in minutes, counting backwards to determine the starting point; to use number bonds and timelines to calculate the passage of time.</p>	<p>To tell the time on a 24-hour clock.</p> <p>To convert between minutes and seconds.</p> <p>To convert between hours and minutes.</p> <p>To solve time problems.</p> <p>To convert between units of time.</p> <p>To solve word problems (duration).</p>	<p>To convert units of time.</p> <p>To convert units of time from days into weeks and months.</p> <p>To solve problems by converting units of time.</p>

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				<p>To determine how many seconds are in a minute; to use multiplication to calculate the number of seconds in a number of minutes.</p> <p>To convert seconds into minutes using number bonds.</p> <p>To calculate the number of days in a month; to learn which months have 31, 30 and 28/29 days.</p> <p>To find the duration of days for different activities.</p>		
Money			<p>To identify standard UK coins and notes and write their names.</p> <p>To count notes in sequences of 5 and 10; to recognise the value of notes by appearance.</p> <p>To count coins in sequences of their value; to recognise the value of coins by appearance.</p> <p>To represent amounts of money using coins and notes; to count coins and notes using their denominations.</p> <p>To create equal amounts of money using different coins.</p> <p>To exchange denominations of money for different coins.</p> <p>To compare different amounts of money using coins.</p> <p>To add money together to determine the total amount.</p> <p>To calculate change from £100 or less; to use the bar model approach to represent amounts of money.</p> <p>To solve more complex word problems using bar modelling as a primary method.</p>	<p>To consolidate previous learning about denominations of both notes and coins; to use simple addition to count amounts of money.</p> <p>To name amounts of money including coins above 100p; to regroup and rename 100p as £1 as a key strategy.</p> <p>To find multiple ways of showing an amount of money.</p> <p>To add money by adding together the pounds and pence separately.</p> <p>To add amounts of money together using different methods; to consolidate the addition of pounds and pence separately.</p> <p>To consolidate 'making a pound' as a strategy for adding amounts of money where the coins equal more than 99p.</p> <p>To learn the 'make a pound' strategy with number bond diagrams; to consolidate the strategies associated with the addition of money.</p> <p>To use multiple methods for subtracting amounts of money, including concrete materials and the column method.</p> <p>To use visual comparison to subtract amounts of money; to consolidate column subtraction where there is no regrouping of pence required.</p> <p>To use number bonds to subtract amounts of money; to develop number sense through decision making.</p> <p>To use number bonds as the primary strategy for subtracting amounts of money; to split pounds and pence simultaneously when subtracting amounts of money.</p> <p>To learn the 'counting on' strategy for calculating change; to consolidate the number bonds strategy for calculating change.</p> <p>To solve word problems involving money using bar modelling as the key strategy; to learn how to use comparative models where pupils are solving by seeing the smaller amount inside of the larger amount.</p> <p>To use part-whole bar models to represent word problems; to apply addition and subtraction strategies to solve word problems.</p>	<p>To record amounts of money.</p> <p>To compare total amounts of money.</p> <p>To round to the nearest pound (whole number).</p> <p>To solve money problems (addition and subtraction).</p> <p>To solve money problems (multiplication).</p> <p>To solve money problems (comparison).</p> <p>To estimate amounts of money.</p>	

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Geometry	<p>To describe the position of objects in relation to one another using varied vocabulary.</p> <p>To describe movements of objects using varied language.</p> <p>To understand how to make turns using mathematical language and connect this knowledge to time.</p>	<p>To identify the number of sides on basic 2-D shapes.</p> <p>To identify and count the vertices in regular polygons.</p> <p>To identify lines of symmetry in basic 2-D shapes.</p> <p>To construct shapes using pattern blocks that have lines of symmetry.</p> <p>To sort shapes based on number of sides, vertices and other factors.</p> <p>To draw shapes using square grid and dot grid paper; to copy shapes from sight using grid paper.</p> <p>To recognise patterns of familiar shapes and colours of up to three objects.</p> <p>To describe patterns using ordinal numbers and shape names.</p> <p>To move shapes on a square grid from one position to another using common language.</p> <p>To turn objects using quarter, half and three-quarter turns both clockwise and anticlockwise on a square grid.</p> <p>To recognise 3-D shapes by identifying their properties.</p> <p>To describe 3-D shapes and classify them using faces, vertices and edges.</p> <p>To describe 3-D shapes based on the number of faces and the 2-D shapes of these faces; to construct nets of shapes into 3-D shapes.</p> <p>To group 3-D shapes by similar properties.</p> <p>To form 3-D structures using multiple 3-D objects.</p> <p>To make and recognise patterns using 3-D shapes.</p>	<p>To learn what makes an angle and identify angles in objects.</p> <p>To see angles on the inside and outside of objects; to find angles in letters.</p> <p>To find angles in shapes; to determine the relationship between the number of angles in a shape and the number of sides.</p> <p>To find right angles in everyday objects; to understand what makes a right angle.</p> <p>To compare angles using the terms 'right' angle and 'acute' angle; to identify acute angles as smaller angles than right angles.</p> <p>To identify right angles and acute angles; to recognise and define an obtuse angle.</p> <p>To make turns using angles vocabulary; to align the language of angles and fractions to describe turns.</p> <p>To identify, define and create perpendicular lines; to find perpendicular lines in everyday objects.</p> <p>To identify, define and create parallel lines; to find parallel lines in everyday objects.</p> <p>To define and identify vertical and horizontal lines; to find vertical and horizontal lines in everyday life.</p> <p>To describe 2-D shapes using familiar vocabulary about lines and angles.</p> <p>To draw 2-D shapes in proportion to their size; to identify how big a shape is.</p> <p>To create 3-D shapes out of nets; to use vocabulary related to 3-D shapes and their properties.</p> <p>To construct 3-D shapes out of clay and discuss their properties.</p> <p>To describe 3-D shapes using familiar terms; to identify properties of 3-D shapes.</p>	<p>To identify types of angles.</p> <p>To compare angles.</p> <p>To classify triangles.</p> <p>To classify quadrilaterals.</p> <p>To identify symmetrical figures.</p> <p>To draw lines of symmetry.</p> <p>To draw symmetrical figures.</p> <p>To make symmetrical figures.</p> <p>To complete symmetrical figures.</p> <p>To sort shapes.</p>	<p>To know the names and qualities of acute, right, obtuse and reflex angles.</p> <p>To measure angles using a protractor.</p> <p>To draw, measure and add angles using a protractor.</p> <p>To measure angles using a protractor; to identify two angles which add up to 180 degrees on a straight line.</p> <p>To investigate angles that, when combined, make 360 degrees.</p> <p>To draw angles using a protractor.</p> <p>To draw lines and angles with a high level of accuracy.</p> <p>To describe the sides and angles of both rectangles and squares.</p> <p>To investigate the angles of various quadrilaterals, including squares and rectangles.</p> <p>To solve problems involving angles in rectangles.</p> <p>To solve problems involving angles.</p> <p>To use our understanding of angles to solve problems.</p> <p>To investigate regular polygons.</p>	<p>To investigate opposite angles; to use prior knowledge of angles to solve problems involving angles.</p> <p>To solve problems involving angles using the bar model heuristic; to solve problems involving angles without protractors.</p> <p>To determine and show the sum of the angles inside a triangle.</p> <p>To investigate and determine angles in quadrilaterals.</p> <p>To use the knowledge of angles inside a triangle and a quadrilateral to solve problems involving angles in other shapes.</p> <p>To name the parts of a circle; to calculate diameter and radius using parts of a circle.</p> <p>To solve problems involving angles in a circle.</p> <p>To draw quadrilaterals with specific side lengths and parallel lines; to find the perimeter of shapes and name trapeziums and parallelograms.</p> <p>To draw triangles using measurements and angles as the starting point; to use a protractor to draw triangles using angles.</p> <p>To construct triangles using a protractor and ruler; to use ratio to determine the dimensions of a triangle.</p> <p>To construct the nets of 3-D shapes by identifying the faces and the 2-D shapes that construct them.</p>
Position and Movement				<p>To describe position.</p> <p>To plot coordinates.</p> <p>To describe movements.</p> <p>To describe movements (coordinates).</p>	<p>To name and plot points.</p> <p>To describe the position of a shape following a translation.</p> <p>To describe movements and reflecting shapes.</p> <p>To describe the movement of a 2-D shape when reflected.</p> <p>To reflect a shape more than once.</p>	<p>To represent negative numbers on both vertical and horizontal number lines.</p> <p>To describe the positions of objects on a coordinate grid; to use x and y axes to determine the position of objects on a grid.</p> <p>To describe the position of points using coordinates on a grid.</p> <p>To draw polygons on a coordinate grid; to recognise polygons on a coordinate grid.</p> <p>To describe the translation of shapes on a coordinate grid.</p> <p>To describe reflection using a mirror line and the terms 'object' and 'image'.</p> <p>To reposition objects so they can be reflected in the x and y axis as the mirror line.</p> <p>To describe the movement of objects using the terms 'translation' and 'reflection'.</p> <p>To use algebra to describe the positions of coordinates in relationship to one another.</p> <p>To represent translation and reflection using algebraic notation.</p>
Statistics		<p>To be able to read a picture graph with confidence.</p> <p>To be able to read and interpret a picture graph with confidence.</p> <p>To be able to read and interpret a picture graph where the value of the picture can represent more than 1.</p>	<p>To construct picture graphs from a set of data; to present data with pictures that represent more than one item.</p> <p>To construct bar graphs from a set of data; to use proportion to reflect precise difference in quantity.</p>	<p>To draw and read picture graphs and bar graphs.</p> <p>To draw and read bar graphs.</p> <p>To draw and read line graphs.</p> <p>To draw and read line graphs (drawing focus).</p>	<p>To read the information presented in a table and interpret its meaning.</p> <p>To read and respond to information presented in a table.</p> <p>To read and interpret information provided in a line graph where a single line represents the data.</p>	<p>To convert miles into kilometres and kilometres into miles.</p> <p>To calculate the average (mean) of sets of values.</p> <p>To calculate the mean.</p> <p>To solve problems involving the mean; to use the mean and the number of values to</p>

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			To be able to read, interpret and create a picture graph where the value of the picture can represent more than 1.	To read and interpret information from a bar graph; to use and understand vocabulary related to bar graphs. To read bar graphs where the scale is not a multiple of all quantities measured. To read bar graphs where the scale is made up of larger increments.		To read and interpret information presented on a line graph where the data is represented by more than one line.	calculate the total; to use given information to find unknown values. To show information on graphs; to transfer information from a table to a pie chart. To read and interpret pie charts. To use percentages in pie charts. To use knowledge of angles to interpret pie charts. To interpret the information in line graphs that show distance and time. To answer questions about the information in line graphs.
Roman Numerals					To write Roman numerals (to 20). To write Roman numerals to 100.	To write Roman numerals to 1000. To write numbers in their thousands in Roman numerals.	
Negative Numbers							To add and subtract negative numbers using a number line. To create number stories using negative numbers.
Algebra							To use a table to identify a repeating pattern; to express a rule using a letter or symbol. To express the relationship between consecutive numbers in terms of a symbol or letter. To express unknown numbers in terms of a letter or symbol, including using a number before a letter for multiplication. To write algebraic expressions using each of the four operations. To evaluate algebraic expressions including the use of inverse operations. To evaluate algebraic expressions with two steps. To write and use formulae. To use formulae to solve problems; to replace a letter/variable with a number then solve the equation To use inverse operations to solve equations. To solve equations To use equations to find unknown values.
Ratio and Proportion							To use ratios and fractions to compare objects; to find the relationship between ratios, percentages and fractions. To determine the ratio of a quantity using concrete materials; to simplify ratios using concrete materials in addition to division. To compare more than two quantities using the term 'ratio'; to use bar models to express ratios where there is more than one quantity. To compare quantity using both fractions and ratios; to use bar model diagrams to represent ratios. To compare quantities using bar models and common factors; to use multiplication and division to simplify ratios. To compare numbers using ratios; to make decisions about simplifying ratios using division. To solve word problems using a variety of heuristics including guess-and-check and bar models; to apply knowledge of ratios to word problems. To solve word problems using the bar model heuristic; to employ division and multiplication as primary strategies when solving word problems visually. To apply the guess-and-check and advanced bar model heuristic to ratio word problems.

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