

	Foundation	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Mathematical vocabulary	Learn new vocabulary Use new vocabulary throughout the day Participate in small group, class and one-to-one discussions	To read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at year 1.	To read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.	To read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.	To read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.	To read, spell and pronounce mathematical vocabulary correctly.	To read, spell and pronounce mathematical vocabulary correctly.
reading and writing number	Link the number symbol (numeral) with its cardinal number value.						
Counting	Count objects, actions and sounds count beyond 10 Verbally count beyond 20, recognising the pattern of the counting system	Count to and across 100, forwards and backwards, beginning with 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, forward and backward	Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number.	Count in multiples of 6, 7, 9, 25 and 1000 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	Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity. Understand the 'one more than/one less than' relationship between consecutive numbers. Explore the composition of numbers to 10 Have a deep understanding of numbers to 10, including the composition of each number		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, 10 000 and 100 000	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	Subitise up to 5 Link the number symbol (numeral) with its cardinal number value.	Identify and represent numbers using objects and pictorial representations including the number line, & 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 addition (+), subtraction (-) and equals (=) 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 system 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 (+/-)		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 +/-		Add and subtract one-digit and two-digit numbers to 20, including zero	Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: 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 +/-	Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed evenly.	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	
Number facts (x/÷)			Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers	Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	Recall multiplication and division facts for multiplication tables up to 12 × 12	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 (x/÷)			Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs 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 multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental methods	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	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 (x/÷)				Progress to formal written methods calculations as above	Multiply two-digit and three-digit numbers by a one-digit number 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 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 (x/÷)		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 multiplication and division, 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 multiplication and division including using their knowledge of factors and multiples, squares and cubes Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign Solve problems involving multiplication and division, 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 addition, subtraction, multiplication and division Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy
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	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	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 for example, $\frac{1}{2}$ 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 [for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$]	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 of any number of tenths or hundredths Recognise and write decimal equivalents to $\frac{1}{2}$, $\frac{1}{5}$ and $\frac{1}{10}$ 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 [for example, 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	

Calculating with decimals							Multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places Multiply one-digit number 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						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	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				Solve problems using all fraction knowledge	Solve simple measure and money problems involving fractions and decimals to two decimal places	Solve problems involving number up to three decimal places Solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{3}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25	Solve problems which require answers to be rounded to specified degrees of accuracy Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.
Ratio & Proportion							Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts Solve problems involving 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							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.
Measures	Compare length, weight and capacity	Compare, describe and solve practical problems for: length/height, weight/mass, capacity/volume & time Measure and begin to record length/height, weight/mass, capacity/volume & time	Choose and use appropriate standard units to estimate and measure length/height (m/cm); mass (kg/g); temperature (°C); capacity (litres/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 subtract: 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 pounds and pence	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 to up to three decimal places convert between miles and kilometres
Mensuration				Measure the perimeter of simple 2-D shapes	Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres find the area of rectilinear shapes by counting squares	Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm ²) and square metres (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 cubic centimetres (cm ³) and cubic metres (m ³), and extending to other units.
Shape	Select, rotate and manipulate shapes in order to develop spatial reasoning skills. Compose and decompose shapes so that children can recognise a shape can have other shapes within it, just as numbers can.	To recognise, handle and name common 2D and 3D shapes in different orientations/sizes and relate everyday objects fluently To recognise that rectangles, triangles, cuboids and pyramids are not always similar to each other. To identify, compare and sort common 2D and 3D shapes and everyday objects on the basis of their properties and use vocabulary precisely.	Pupils read and write names for shapes that are appropriate for their word reading and spelling. To handle, identify and describe the properties of 2D shapes, including the number of sides and line symmetry in a vertical line. To handle, identify and describe the properties of 3D shapes, including the number of edges, vertices and faces. To identify 2D shapes on the surface of 3D shapes.	To describe the properties of 2D and 3D shapes using accurate language. To extend knowledge of the properties of shapes is extended at this stage to symmetrical and non-symmetrical polygon and polyhedron. To recognise 3D shapes in different orientations and describe them.	To identify lines of symmetry in 2D shapes presented in different orientations. To recognise line symmetry in a variety of diagrams, including where the line of symmetry does not dissect the original shape. To compare lengths and angles to decide if a polygon is regular or irregular. To compare and classify geometric shapes, including different quadrilaterals and triangles, based on their properties and sizes.	To identify 3D shapes, including cubes and other cuboids, from 2D representations To distinguish between regular and irregular polygons based on reasoning about equal sides and angles.	To illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius. To express algebraically the relationship between angles and lengths. To compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons using known measurements.

Drawing and constructing shape				<p>To connect decimals and rounding to drawing and measuring straight lines in centimetres, in a variety of contexts.</p> <p>To identify horizontal and vertical lines and pairs of perpendicular and parallel lines.</p> <p>To draw 2D shapes and make 3D shapes using modelling materials.</p>	<p>To draw with increasing accuracy and develop mathematical reasoning to analyse shapes and their properties and confidently describe the relationships between them.</p> <p>To complete a simple symmetric figure with respect to a specific line of symmetry.</p>	<p>To become accurate in drawing lines with a ruler to the nearest millimetre, and measuring with a protractor.</p> <p>To use conventional markings for parallel lines and right angles</p>	<p>To draw 2D shapes and nets accurately using given dimensions and angles using measuring tools, conventional markings and labels for lines and angles.</p> <p>To recognise, describe and build simple 3D shapes, including making nets.</p>
Angles				<p>To recognise angles as a property of shape or a description of a turn.</p> <p>To 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>To identify whether angles are greater than or less than a right angle.</p>	<p>To identify acute and obtuse angles and compare and order angles up to two right angles by size in preparation for using a protractor.</p>	<p>To know angles are measured in degrees; estimate and compare acute, obtuse and reflex angles. To draw given angles, and measure them in degrees.</p> <p>To identify: angles at a point and one whole turn (total 360°), angles at a point on a straight line and $\frac{1}{2}$ a turn (total 180°) and other multiples of 90°.</p> <p>To use the term diagonal and make conjectures about the angles formed between sides, and between diagonals and parallel sides.</p> <p>To use the properties of rectangles to deduce related facts and find missing lengths and angles by using angle sum facts and other properties to make deductions about missing angles and relate these to missing number problems.</p>	<p>To recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.</p>
Position and direction	Draw information from a simple map	<p>To describe position, direction and movement, including whole, half, quarter and three-quarter turns in both directions and connect clockwise with the movement on a clock face.</p> <p>To use the language of position, direction and motion, including: left and right, top, middle and bottom, on top of, in front of, above, between, around, near, close and far, up and down, forwards and backwards, inside and outside.</p>	<p>To use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anticlockwise).</p>		<p>To describe positions on a 2D grid as coordinates in the first quadrant.</p> <p>To draw a pair of axes in one quadrant, with equal scales and integer labels.</p> <p>To read, write and use pairs of coordinates, including using coordinate plotting ICT tools.</p> <p>To plot specified points and draw sides to complete a given polygon.</p> <p>To describe movements between positions as translations of a given unit to the left/right and up/down.</p>	<p>To identify, describe and represent the position of a shape following a reflection (in lines that are parallel to the axes) or translation, using the appropriate language, and know that the shape has not changed.</p>	<p>To draw and label a pair of axes in all four quadrants with equal scaling. To describe positions on the full coordinate grid (all four quadrants).</p> <p>To draw and label simple shapes - rectangles (including squares), parallelograms and rhombuses, specified by coordinates in the four quadrants, predicting missing coordinates using the properties of shapes.</p> <p>To translate simple shapes where coordinates may be expressed algebraically on the coordinate plane and reflect them in the axes.</p>
Patterns	Continue, copy and create repeating patterns		<p>To order and arrange combinations of mathematical objects and shapes, including those in different orientations, in patterns and sequences.</p>				
Time		<p>To sequence events in chronological order using language.</p> <p>To recognise and use language relating to dates, including days of the week, weeks, months and years.</p> <p>To tell the time to the hour and half past the hour and draw the hands on a clock face to show these times</p>	<p>To read, tell and write the time to five minutes, including quarter past/to the hour/half hour and draw the hands on a clock face to show these times.</p> <p>To become fluent in telling the time on analogue clocks and recording it.</p> <p>To know the number of minutes in an hour and the number of hours in a day.</p> <p>To compare and sequence intervals of time.</p>	<p>To tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks.</p> <p>To begin to use digital 12-hour clocks and record their times in preparation for using digital 24-hour clocks in year 4.</p> <p>To estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours.</p> <p>To use vocabulary such as o'clock, a.m. /p.m., morning, afternoon, noon and midnight.</p> <p>To know the number of seconds in a minute and the number of days in each month, year and leap year.</p>	<p>To read, write and convert time between analogue and digital 12- and 24-hour clocks.</p> <p>To solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.</p>	<p>To solve problems involving converting between units of time.</p>	
Record present and interpret data		<p>Interpret and construct simple pictograms, tally charts, block diagrams and simple tables.</p> <p>Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity</p> <p>Ask and answer questions about totaling and comparing categorical data</p>	<p>To record, interpret, collate, organise and compare information.</p> <p>To interpret and construct simple pictograms, tally charts, block diagrams and simple tables (e.g. many-to-one correspondence in pictograms with simple ratios 2, 5, 10 scales).</p> <p>To ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity.</p> <p>To ask and answer questions about totaling and comparing categorical data.</p>	<p>To interpret and present data using bar charts, pictograms and tables and use simple scales with increasing accuracy.</p>	<p>To understand and use a greater range of scales in data representations.</p> <p>To interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.</p>	<p>To begin to decide which representations of data are most appropriate and why.</p> <p>To connect coordinates and scales to the interpretation of time graphs.</p> <p>To complete, read and interpret information in tables, including timetables.</p>	<p>To connect conversion from kilometres to miles in measurement to its graphical representation.</p> <p>To connect work on angles, fractions and percentages to the interpretation of pie charts.</p> <p>To interpret and construct pie charts and line graphs (relating to two variables) and use these to solve problems.</p>

Statistics				To solve one-step and two-step questions using information presented in scaled bar charts and pictograms and tables.	To solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.	To solve comparison, sum and difference problems using information presented in a line graph.	To know when it is appropriate to find the mean of a data set. To calculate and interpret the mean as an average.
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