

Maths Progression Map

Place Value

EYFS Range 4 (Nursery)

Comparison

• Beginning to compare and recognise changes in numbers of things, using words like *more*, *lots* or *same*

Counting

• Begins to say numbers in order, some of which are in the right order (ordinality)

Cardinality (*How many*?)

- In everyday situations, takes or gives two or three objects from a group
- Beginning to notice numerals (number symbols)
- Beginning to count on their fingers.

Range 5

Comparison

• Compares two small groups of up to five objects, saying when there are the same number of objects in each group, e.g. You've got two, I've got two. Same!

Counting

- May enjoy counting verbally as far as they can go
- Points or touches (tags) each item, saying one number for each item, using the stable order of 1,2,3,4,5.
- Uses some number names and number language within play, and may show fascination with large numbers
- Begin to recognise numerals 0 to 10

Cardinality

- Subitises one, two and three objects (without counting)
- Counts up to five items, recognising that the last number said represents the total counted so far (cardinal principle)
- Links numerals with amounts up to 5 and maybe beyond
- Explores using a range of their own marks and signs to which they ascribe mathematical meanings

Range 6

Comparison

- Uses number names and symbols when comparing numbers, showing interest in large numbers
- Estimates of numbers of things, showing understanding of relative size

Counting

- Enjoys reciting numbers from 0 to 10 (and beyond) and back from 10 to 0
- Increasingly confident at putting numerals in order 0 to 10 (ordinality)

Cardinality

- Engages in subitising numbers to four and maybe five
- Counts out up to 10 objects from a larger group.
- Matches the numeral with a group of items to show how many there are (up to 10)

Early Learning Goals

- Have a deep understanding of number to 10, including composition of each number
- Subitise (recognise quantities without counting) up to 5
- Verbally count beyond 20, recognising the pattern of the counting system
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity
- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally

	Counting	Represent	Use PV and Compare	Problems and Rounding
Year 1	 Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. Count numbers to 100 in numerals; count in multiples of twos, fives and tens. 	 Identify and represent numbers using objects and pictorial representations. Read and write numbers to 100 in numerals. Read and write numbers from 1-20 in numerals and words. 	Given a number, identify one more and one less.	
Year 2	Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward	 Read and write numbers to at least 100 in numerals and in words. Identify, represent and estimate numbers using different representations, including the number line. 	 Recognise the place value of each digit in a two-digit (tens, ones). Compare and order numbers from 0 up to 100. Use and = signs. 	Use place value and number facts to solve problems

Year 3	 Count from 0 in multiples of 4, 8, 50 and 100. Find 10 or 100 more or less than a given number 	 Identify, represent and estimate numbers using different representations Read and write numbers up to 1000 in numerals and in words. 	 Recognise the place value of each digit in a three-digit number (hundreds, tens, ones) Compare and order numbers up to 1000. 	Solve number problems and practical problems involving these ideas
Year 4	 Count backwards through zero to include negative numbers Count in multiples of 6, 7, 9, 25 and 1000 	 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. 	 Find 1000 more or less than a given number. Recognise the place value of each digit in a 4-digit number (thousands, hundreds, tens, ones). Order and compare numbers beyond 1000 	 Round any number to the nearest 10, 100 or 1000. Solve number and practical problems that involve all of the above and with increasingly large numbers
Year 5		 Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit. Read Roman numerals to 1000 (M) and recognise years written in Roman numerals. 	Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit.	 Interpret negative numbers in context. Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000. Solve number problems and practical problems that involve all of the above
Year 6		Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit.	Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit.	 Round any whole number to a required degree of accuracy. Use negative numbers in context and calculate intervals across zero.

		Solve number and practical
		problems that involve all of
		the above.

Addition and Subtraction

EYFS Range 5

Composition

- Through play and exploration, beginning to learn that numbers are made up (composed) of smaller numbers
- Beginning to use understanding of number to solve practical problems in play and meaningful activities
- Beginning to recognise that each counting number is one more than the one before Separates a group of three or four objects in different ways, beginning to recognise that the total is still the same

Range 6

Composition

- Shows awareness that numbers are made up (composed) of smaller numbers, exploring partitioning in different ways with a wide range of objects
- Begins to conceptually subitise larger numbers by subitising smaller groups within the number, e.g. sees six raisins on a plate as three and three
- In practical activities, adds one and subtracts one with numbers to 10
- Begins to explore and work out mathematical problems, using signs and strategies of their own choice, including (when appropriate) standard numerals, tallies and "+" or "-"

Early Learning Goals

• 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

	Recall, Represent, Use	Calculations	Solve Problems
Year 1	 Read, write and interpret mathematical statements involving addition, subtraction and equals signs. 	Add and subtract 1-digit and 2-digit numbers to 20, including zero.	Solve one-step problems that involve addition and subtraction, using concrete

Year 2	 Represent and use number bonds and related subtraction facts within 20. Recall and use addition and subtraction facts to 20 fluently and derive and use related facts up to 100. Show that addition of two numbers in any order (commutative) and subtraction of one number from another cannot. Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve 	 Add and subtract numbers using concrete objects, pictorial representations and mentally, including: - A 2-digit number and ones. A 2-digit number and tens. Two- 2-digit numbers. Adding three 1-digit numbers. 	 objects and pictorial representations and missing number problems. Solve problems with addition and subtraction: Using concrete objects and pictorial representations, including those involving numbers, quantities and measures. Applying their increasing knowledge of mental and written methods
Year 3	 Estimate the answer to a calculation and use inverse operations to check answers. 	 Add and subtract numbers mentally, including: 3-digit number and ones. 3-digit number and tens. 3-digit number and hundreds Add and subtract numbers with up to 3-digits, using formal written methods of columnar addition and subtraction. 	Solve problems, including missing number problems, using number facts, place value and more complex addition and subtraction.
Year 4	Estimate and use inverse operations to check answers to a calculation	Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate.	Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.
Year 5	Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.	 Add and subtract whole numbers with more than 4 digits, including using formal written methods. Add and subtract numbers mentally with increasingly large numbers. 	 Solve addition and subtraction multistep problems in contexts, deciding which operations and methods to use and why. Solve problems involving addition and subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign

Year 6	•	Perform mental calculations, including	•	Solve addition and subtraction multistep
		with mixed operations and large numbers.		problems in contexts, deciding which
	•	Use their knowledge of the order of		operations and methods to use and why.
		operations to carry out calculations		
		involving the four operations.		

Multiplication and Division

EYFS **Early Learning Goals**

• Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally

	Recall, Represent, Use	Calculations	Solve Problems	Combined Operations
Year 1			 Solve one step problems involving multiplication and division using objects, pictures and arrays, with support from the teacher. 	
Year 2	 Recall and use multiplication and division facts for the 2, 5 and 10 times 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 cannot. 	Calculate mathematical statements for multiplication and division within the x tables and write them using the correct signs	Solve problems involving multiplication and division using objects, arrays, repeated addition, mental methods and facts.	
Year 3	 Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. 	Write and calculate mathematical statements for multiplication and division	Solve problems including missing number problems involving multiplication and	

		using the x tables that they know, including for 2-digit numbers x 1-digit numbers, using mental and progressing to formal written methods	division, integer scaling and correspondence problems.	
Year 4	 Recall multiplication and division facts for multiplication tables up to 12 x 12. Use place value, known and derived facts to multiply and divide mentally, including by 0 and 1, dividing by 1, multiplying together three numbers. Recognise and use factor pairs and commutativity in mental calculations. 	Multiply 2-digit and 3-digit numbers by a 1-digit number using formal written layout.	Solve problems involving multiplying and adding, including using the distributive law to multiply 2-digit by 1- digit, integer scaling problems and harder correspondence problems.	
Year 5	 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 numbers, and composite (non-prime) numbers. Establish whether a number up to 100 is prime and recall prime number up to 19. • Recognise and use square numbers and cube numbers and use the correct notation. 	 Multiply numbers up to 4-digits by a 1-digit number using a formal written method. Multiply and divide numbers mentally drawing upon known facts. Divide numbers up to 4-digits by a 1-digit number using a formal written method and interpret remainders. Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. 	Solve problems involving multiplication and division including using their knowledge of factors, multiples, squares and cubes and solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.	Solve problems involving addition, subtraction, multiplication and division and a combination of these.

Year 6	Identify common factors,	Multiply multi-digit numbers up	Solve problems involving addition,	Use their knowledge of the order
	common multiples and prime	to 4-digits by a 2-digit using a	subtraction, multiplication and	of operations to carry out
	numbers. • Use estimation to	formal written method of long	division.	calculations involving the four
	check answers to calculations.	multiplication. • Divide numbers		operations
		up to 4-digits by a 2-digit whole		
		number using long division		
		including remainders. • Divide		
		numbers up to 4-digit by a 2-digit		
		number using short division and		
		interpreting remainders.		

	Fractions				
EYFS	 Early Learning Goals Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally 				
	Recognise and write	Compare	Calculations	Solve Problems	
Year 1	 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 				
Year 2	 Recognise, find, name and write fractions 1/3, ¼, 2/4, and ¾ of a length, shape, set of objects or quantity. 	• Recognise the equivalence of 2/4 and ½.	Write simple fractions.		

Year 3	 Count up and down in tenths. Recognise that tenths arise from dividing an objects into 10 equal parts and in dividing 1-digit numbers or quantities by 10. Recognise, find and write fractions of a discrete set of objects: unit and non-unit fractions with small denominators Recognise and use fractions as numbers: unit and non-unit fractions with small denominators. 	 Recognise and show, using diagrams, equivalent fractions with small denominators. Compare and order unit fractions and fractions with the same denominators. 	Add and subtract fractions with the same denominator within one whole.	Solve problems that involve all of the above.
Year 4	 Count up and down in hundredths. Recognise that hundredths arise when dividing an object by one hundred and dividing by ten. 	Recognise and show, using diagrams, families of common equivalent fractions.	Add and subtract fractions with the same denominator.	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
Year 5	 Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements >1 as a mixed number. 	Compare and order fractions whose denominators are all multiples of the same number.	 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. 	

Year 6	Use common factors to	Add and subtract fractions	
	simplify fractions.	with different denominators	
	 Use common multiples to 	and mixed numbers, using the	
	express fractions in the same	concept of equivalent	
	denomination	fractions.	
	Compare and order fractions,	 Multiply simple pairs of 	
	including >1.	proper fractions, writing the	
	_	answer in its simplest form.	
		Divide proper fractions by	
		whole numbers	

Decimals, Percentages, Algebra

EYFS				
	Calculations and Problems (Decimals)	Fractions, Decimals and Percentages	Ratio and Proportion	Algebra
Year 1				
Year 2				
Year 3				
Year 4	Find the effect of dividing a 1 or 2-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths.	Solve simple measure and money problems involving fractions and decimals to two decimal places.		
Year 5	Solve problems involving number up to three decimal places.	Recognise the per cent symbol and understand that per cent relates to 'number of parts per whole'.		

		 Write percentages as a fraction with a denominator of 100 and as a decimal. Solve problems which require knowing percentage and decimal equivalents of ½, ¼, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25. 		
Year 6	 Multiply and divide numbers by 10, 100 and 100 giving answers up to three decimal places. Multiply 1-digit numbers with up to two decimal places by whole numbers. Use written division methods in cases where the answers has up to two decimal places. Solve problems which require answers to be rounded to specific degrees of accuracy. 	 Associate a fraction with division and calculate decimal fraction equivalents. Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts 	 Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts. Solve problems involving the calculation of percentages and the use of percentages for comparison. Solve problems involving similar shapes where the scale factor is known or can be found. Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples. 	 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.

EYFS Range 4 (Nursery)

- Explores differences in size, length, weight and capacity
- Beginning to understand some talk about immediate past and future
- Beginning to anticipate times of the day such as mealtimes or home time

Range 5

- In meaningful contexts, finds the longer or shorter, heavier or lighter and more/less full of two items
- Recalls a sequence of events in everyday life and stories

Range 6

- Enjoys tackling problems involving prediction and discussion of comparisons of length, weight or capacity, paying attention to fairness and accuracy
- Becomes familiar with measuring tools in everyday experiences and play
- Is increasingly able to order and sequence events using everyday language related to time
- Beginning to experience measuring time with timers and calendars

Although shape, space and measure have been removed from the ELGs, planning should ensure that 'the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measure.

	Using Measure	Money	Time	Perimeter, Area, Volume
Year 1	 Compare, describe and solve practical problems for lengths and heights, mass/weight, capacity and volume, time. Measure and begin to record length, height, mass/weight, capacity and volume and time. 	Recognise and know the value of different denominations of coins and notes.	 Sequence events in chronological order using language Recognise and use language relating to dates, days, weeks, months, years. Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. 	
Year 2	 Choose and use appropriate standard units to estimate 	 Recognise and use symbols for pounds and pence 	 Compare and sequence intervals of time. 	

	and measure length/height in any direction, mass, temperature, capacity to the nearest appropriate unit using rules, scales, thermometers and measuring vessels Compare and order lengths, mass, volume/capacity and record the results using and =.	 combine amounts to make a particular value. Find different combinations of coins that equal the same amounts of money. Solve simple problems in a practical content involving addition and subtraction of money of the same unit, including giving change. 	 Tell and write the time to five minutes, quarter past/to and draw the hands on a clock face to show these times. Know the number of minutes in an hour and the number of hours in a day. 	
Year 3	Measure, compare, add and subtract lengths, mass, volume/capacity.	Add and subtract amounts of money to give change, using both £ and p in practical contexts.	 Tell and write the time from an analogue clock, including Roman numerals and 24 hr clocks. Estimate and read time with increasing accuracy to the nearest minute. Record and compare time in terms of seconds, minutes, hours and use vocab relating to these. Know the number of seconds in a minute and the number of days in each year and leap year. Compare durations of events. 	Measure the perimeter of simple 2D shapes
Year 4	 Convert between different units of measure. Estimate, compare and calculate different measures. 	Estimate, compare and calculate different measures, including money in pounds and pence.	 Read, write and convert time between analogue and digital 12 and 24 hr clocks. Solve problems involving converting from hours to minutes, minutes to seconds, 	 Measure and calculate the perimeter of rectilinear figure in cm and m. Find the area of rectilinear shapes by counting squares.

Voor 5	Convert leater and 1986 and	Line all favore constitutions	years to months, weeks to days.	A Management and sale late the
Year 5	 Convert between different units of metric measure. Understand and use approximate equivalences between metric and common imperial units. Use all four operations to solve problems involving measure using decimal notation, including scaling. 	Use all four operations to solve problems involving measure	Solve problems involving calculations converting between units of time.	 Measure and calculate the perimeter of composite rectilinear shapes in cm and m. Calculate and compare the area of rectangles and including using standard units, square cm, square m, and estimate the area of irregular shapes. Estimate volume and capacity.
Year 6	 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 km 		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	 Recognise that shapes with the same areas can have different perimeters and vice versa. Recognise when it is possible to use formulae for area of parallelograms and triangles. Calculate, estimate and compare volume of cubes, cuboids, using standard units including cubic m, cubic cm and extending to other units

Geometry

EYFS Range 4 (Nursery)

Spatial Awareness

- Moves their bodies and toys around objects and explores fitting into spaces
- Begins to remember their way around familiar environments
- Responds to some spatial and positional language
- Explores how things look from different viewpoints including things that are near or far away

Shape

- Chooses puzzle pieces and tries to fit them in
- Recognises that two objects have the same shape
- Makes simple constructions

Pattern

- Joins in and anticipates repeated sound and action patterns
- Is interested in what happens next using the pattern of everyday routines

Range 5

Spatial Awareness

- Responds to and uses language of position and direction
- Predicts, moves and rotates objects to fit the space or create the shape they would like

Shape

- Chooses items based on their shape which are appropriate for the child's purpose
- Responds to both informal language and common shape names
- Shows awareness of shape similarities and differences between objects
- Enjoys partitioning and combining shapes to make new shapes with 2D and 3D shapes
- Attempts to create arches and enclosures when building, using trial and improvement to select blocks

Pattern

- Creates their own spatial patterns showing some organisation or regularity
- Explores and adds to simple linear patterns of two or three repeating items, e.g. stick, leaf (AB) or stick, leaf, stone (ABC)

• Joins in with simple patterns in sounds, objects, games and stories dance and movement, predicting what comes next

Range 6

Spatial Awareness

- Uses spatial language, including following and giving directions, using relative terms and describing what they see from different viewpoints
- Investigates turning and flipping objects in order to make shapes fit and create models; predicting and visualising how they will look (spatial reasoning)
- May enjoy making simple maps of familiar and imaginative environments, with landmarks

Shape

- Uses informal language and analogies, (e.g. heart-shaped and hand-shaped leaves), as well as mathematical terms to describe shapes
- Enjoys composing and decomposing shapes, learning which shapes combine to make other shapes
- Uses own ideas to make models of increasing complexity, selecting blocks needed, solving problems and visualising what they will build

Pattern

- Spots patterns in the environment, beginning to identify the pattern "rule"
- Chooses familiar objects to create and recreate repeating patterns beyond AB patterns and begins to identify the unit of repeat

Although shape, space and measure have been removed from the ELGs, planning should ensure that 'the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measure.

	2D Shapes	3D Shapes	Angles and Lines	Position and Direction
Year 1	Recognise and name common 2D shapes.	Recognise and name common 3D shapes		Describe position, direction and movement including whole, half, quarter and three-quarter turns
Year 2	 Identify and describe the properties of 2D shapes, including number of sides and symmetry in a vertical line Identify 2D shapes on the surface of 3D shapes. 	 Recognise and name common 3D shapes. Compare and sort common 3D shapes and everyday objects. 		 Order and arrange combinations of mathematical objects in patterns and sequences. Use mathematical vocab to describe position, direction and movement.

	 Compare and sort common 2D shapes and everyday objects. 			
Year 3	Draw 2D shapes	 Make 3D shapes using modelling materials. Recognise 3D shapes in different orientations and describe them. 	 Recognise angles as a property of shape or a description of a turn. Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn Identify whether angles are greater than or less than a right angle. Identify horizontal and vertical lines and parallel lines 	
Year 4	 Compare and classify geometric shapes. Identify lines of symmetry in 2D shapes presented in different orientations. 		 Identify acute and obtuse angles and compare and order angles up to two right angles by size. Identify lines of symmetry in 2D shapes presented in different orientations. Complete a simple symmetric figure with respect to a specific line of symmetry. 	 Describe position on a 2D grid as coordinates in the first quadrant. Describe movements between positions as translations of a given unit to the left/right and up/down. Plot specified points and draw sides to complete a given polygon.
Year 5	Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.	 Identify 3D shapes, including cubes and other cuboids from 2D representations. 	 Know angles are measured in degrees. Estimate and compare acute, obtuse and reflex angles. 	Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language and

Use the properties of rectangle to deduce related facts and find missing lengths and angles		 Drawn given angles and measure them in degrees. Identify angles at a point and one whole turn and other multiples of 90 degrees. 	know that the shape has not changed
 Year 6 Draw 2D shapes using given dimensions and angles. Compare and classify geometric shapes based on their properties and sizes. Illustrate and name parts of circles including radius, diameter and circumference and known that diameter is twice the radius 	Recognise, describe and build simple 3D shapes including making nets.	 Find unknown angles in any triangles, quadrilaterals and regular polygons. Recognise angles where they meet at a point, are on a straight line or are vertically opposite and find missing angles. 	 Describe positions on the full coordinate grid (all four quadrants) Draw and translate simple shapes on the coordinate plane and reflect them in the axes.

	Statistics				
EYFS					
	Present and Interpret	Solve Problems			
Year 1					
Year 2	 Describe positions on the full coordinate grid (all four quadrants). Draw and translate simple shapes on the coordinate plane and reflect them in the axes. 	 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 			
Year 3	Interpret and present data using bar charts, pictograms and tables	Solve one-step and two-step questions using information presented in scaled bar charts and pictograms and tables			
Year 4	 Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs 	Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.			

Year 5	•	Complete, read and interpret information in tables including	•	Solve comparison, sum and difference problems using information
		timetables.		presented in a line graph
Year 6	•	Interpret and construct pie charts and line graphs and use these to	•	Calculate and interpret the mean as an average
		solve problems.		