

Maths KPI Progression

Number - Place Value (including negative numbers and sequencing)								
Skill	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
A	Counting and naming numerals (stages 1-10, teen numbers and exploring beyond 20 up to 100)	Count, read and write numbers to 100 in numerals	Recognise the place value of each digit in a two-digit number (tens, ones)	Recognise the place value of each digit in a three-digit number (hundreds, tens, ones)	Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, ones)	Read and write numbers to at least 1,000,000 and determine the value of each digit.		Order, sort and interpret any number (including decimals and negatives)
B	Ordering numbers, understanding a sequence. Comparing numbers.	Count to and across 100 beginning with 0 or one, or from any given number	Compare and order numbers from 0 up to 100 Use $<$ $>$ and $=$ signs correctly		Orders and compares numbers beyond 1,000	Order and compare numbers to at least 1,000,000.		
C		Count backwards from 100 to any given number			Counts backwards through zero to include negative numbers	Count forwards and backwards with positive and negative whole numbers, including through zero Interpret negative numbers in context	Use negative numbers in context, and calculate intervals across zero	
D			Use place value and number facts to solve problems	Solve number problems and practical problems involving these ideas.			Solve problems which require answers to be rounded to specified degrees of accuracy	
E					Rounds any number to the nearest 10, 100 or 1,000 Rounds decimals with one decimal place to the nearest whole number	Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000 Round decimals with two decimal places to the nearest whole number and to one decimal place	Round any whole number to a required degree of accuracy	Round any number to any specified degree of accuracy, including decimals and measures.
F					Find the effect of dividing a one or two-digit number by 10 and 100, identifying the	Multiply and divide whole numbers and those involving		Use place value to multiply and divide any number by powers of 10.

					value of the digits in the answer as ones, tenths and hundredths	decimals by 10, 100 and 1,000.		
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Number – Addition and Subtraction

Skill	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
A	One more, one less up to 12.	Given a number, identify one more or one less	Recognise odd and even numbers	Find 10 or 100 more or less than a given number				Explore and understand rules for adding and subtracting positive and negative integers.
B	Count on to add.	Add and subtract one-digit numbers to 20, including zero	Add and subtract numbers using concrete objects, pictorial representations, and mentally, <i>including: a) two-digit number and ones, b) two-digit number and tens, c) 2 two-digit numbers, and d) three one-digit numbers. (Originally separate statements)</i>	Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction	<i>Add and subtract</i> numbers with up to 4 digits using the formal written methods of columnar <i>addition and subtraction</i> where appropriate	<i>Add and subtract</i> whole numbers with more than 4 digits, including using formal written methods (<i>columnar addition and columnar subtraction</i>)		Use formal methods for addition and subtraction fluently including increasingly complex decimals.
	Count back to subtract.	Add and subtract two-digit numbers to 20, including zero						
	Partitioning to create number bonds (to 10)	Represent and use number bonds and related subtraction facts within 20						
C				Add and subtract numbers mentally - <i>a) three-digit number and ones, b) three-digit number and a tens and c) three-digit number and a hundreds.</i>		Add and subtract numbers mentally with increasingly large numbers	Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy	
D			Solve problems with addition and subtraction using concrete objects and pictorial representations, including those involving		Solves addition and subtraction two-step problems in context, deciding which operations to use and why		Solve addition and subtraction multi-step problems in context, deciding which operations and	

			numbers, quantities and measures				methods to use and why	
			Solve problems with addition and subtraction applying their increasing knowledge of mental and written methods					

Number – Multiplication and Division

Skill	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
A		Count in multiples of twos, fives and tens	Count in steps of two, three and five from 0 and in tens from any number, forward and backward	Count from 0 in multiples of 4, 8, 50 and 100	Counts in multiples of 6, 7, 9, 25 and 1,000			
B			Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables	Recalls and uses multiplication and division facts for the 3, 4 and 8x tables.	Recalls multiplication and division facts multiplication tables 12 x 12			Multiply and divide negative numbers
C					Use place value, known and derived facts to multiply and divide mentally, including multiplying by 0 and 1; dividing by 1; multiplying together with 3 numbers	Identify multiples and fractions, including finding all factors pairs of a number, and common factors of two numbers		Understand and apply the concept of multiples, factors and primes individual, pairs or groups of numbers, e.g. LCM
D		Solve one-step problems involving multiplication, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher		Writes and calculates mathematical statements for multiplication and division using the x tables that are known including for 2 digit numbers x 1 digit numbers, using mental	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 (expanded method) for two-digit numbers	Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication	Use formal methods for multiplication and division fluently including increasingly complex decimals.

		Solve one-step problems involving division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher		and progressing to formal written methods.	Divide two-digit and three-digit numbers by a one-digit number, using formal written layout	Divide numbers up to 4 digits by a one-digit number using a formal written method of short division and interpret remainders appropriately for the context	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	
						Use written division methods in cases where the answer has up to two decimal places		
E			Solve problems involving multiplication using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts			Solve problems involving multiplication and division including their knowledge of factors and multiples, squares and cubes	Solve problems involving the relevant sizes of two quantities where missing values can be found by using integer multiplication and division facts	Use and apply BIDMAS to the number system, ensuring the calculations are carried out in order.
			Solve problems involving division using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts			Solve problems involving multiplication and division including scaling by simple fractions and problems involving simple rates		

Number – Fractions, Decimals, and Percentages

Skills	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
A	Exploring patterns – doubling and halving.	Recognise, find and name a half as one of two equal parts of a quantity	Recognise, find, name and write fractions, $\frac{1}{4}$, $\frac{2}{4}$, and $\frac{3}{4}$ of a	Recognises and shows, using diagrams, equivalent fractions	Recognises and shows, using diagrams, families of common equivalent fractions	Compare and order fractions where denominators are all	Add and subtract fractions with different denominations and mixed numbers, using	Apply the four operations, including formal written

			length, shape, set of objects or quantity	with small denominations.		multiples of the same number	the concept of equivalent fractions	methods, to integers, decimals and simple fractions (proper and improper), and mixed numbers
		Recognise, find and name a half as one of two equal parts of an object or shape						
	Exploring the concept of a 'half'.	Recognise, find and name one quarter as one of four equal parts of a quantity	Recognise, find, name and write a $\frac{1}{3}$ of a length, shape, set of objects or quantity			Add and subtract fractions with the same denominator and denominators that are multiples of the same number		
		Recognise, find and name one quarter as one of four equal parts of an object or shape						
B				Recognises, finds and writes fractions of a discrete set of objects; unit fractions			Divide proper fractions by whole numbers e.g. $\frac{1}{3}$ divided by 2 = $\frac{1}{6}$	
				Recognises, finds and writes fractions of a discrete set of objects; non unit fractions with small denominators				
C						Multiply proper fractions and mixed number by whole numbers, supported by materials and diagrams	Multiply simple pairs of proper fractions, writing the answer in its simplest form, e.g. $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$	
D				Recognises that tenths arise from dividing an object into ten equal parts and in dividing 1 digit numbers or quantities by ten.	Recognise that hundredths arise when dividing an object by 100 and dividing tenths by 10	Read and write decimal numbers as fractions (e.g. $0.71 = \frac{71}{100}$)		Understand the interrelated nature of fractions, decimals and percentages, converting between them and ordering with increasing fluency.
				Counts up and down in tenths;	Counts up and down in hundredths			

					Recognises and write decimal equivalents of any numbers of tenths or hundredths.			
E					Recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$	Read, write, order and compare numbers with up to 3 decimal places		
F						Recognise the % symbol and understand that per cent relates to 'no of parts per 100' and write percentages as a fraction with denominator 100 and as a decimal	Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts	Understand the concept of percentages and use this to find percentages of a quantity.
								Compare the result of two percentage calculations. For example 15% of 40 and 10% of 50.
G						Solves problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those with a denominator of a multiple of 10 or 25	Solve problems involving the calculation of percentages (for example, of measures, and such as 15% of 360) for the use of percentages for comparison	
							Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples	

	Number – Algebra							
Skill	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7

								Use simple formulae	Use and interpret algebraic notation including ab ($a \times b$) $3y$ ($3 \times y$), substituting numerical values into formula to find the value of an equation.
									Combine variables within an equation or expression and simplify by collecting like terms.
									Recognise and use the relationships between operations and use inverse to change the subject of a formula.
									Use and interpret bracket notation with algebraic equations, multiplying out a single bracket.
									Plot a linear function on a graph from an equation and interpret mathematically.
									Understand linear sequences and finding a formula to solve the next and n th terms.

Measurement – Converting and Using Units

Skill	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
A	Introduce and explore concept of time: . days of the week . sand timers . watches and clock faces	Tell the time to the hour and draws the hands on a clock face to show these times (explore as a number line first)	*Not a KPI, however, Year 2 should aim to: Tell the time to quarter past and quarter to.	Tells and writes the time from an analogue clock and 12 hour and 24 hour clocks	Read, write and convert time between analogue and digital 12 and 24 hour clocks		Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation up to three decimal places	Understand and use place value when using different measures of length, mass, time and volume changing freely between different units of metric measures
	Explore clock chants, rhymes, songs and games, e.g. what's the time mister wolf?	Tell the time to half past the hour and draws the hands on a clock face to show these times	*Not a KPI, however, Year 2 should aim to: Tell the time to 5 minute intervals.					
	Understanding times of the day, e.g. breakfast at 8 o'clock – time as a line rather than a clock face.	Compare, describe and solve practical problems for time			Converts between different units of measure e.g. hour to minute			
B	Compare lengths longer and shorter, and compare measures directly. Compare lengths outside.	Compare, describe and solve practical problems for length and height		Measures, compares, adds and subtracts lengths	Converts between different units of measure e.g. kilometre to metre	Convert between different units of metric measures (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)		Understand a relationship between two quantities and use this information to solve problems involving direct proportion.
	Compare weights heavier and lighter, and compare measures directly. Compare measures outside.	Compare, describe and solve practical problems for mass and weight		Measures, compares, adds and subtracts mass				
	Compare volumes full and empty, compare measures directly. Compare measures through water play.	Compare, describe and solve practical problems for capacity and volume		Measures, compares, adds and subtracts volume and capacity	Solves simple measure involving fractions and decimals to two decimal places			
C	Coin recognition and money role play.	*Not a KPI, however, Year 1 should aim to: identify coins and understand their value	Solve simple problems in a practical context involving addition and subtraction of money of the same unit including giving change	Adds and subtracts amounts of money to give change, using both £ and p in practical contexts	Solves money problems involving fractions and decimals to two decimal places			

D						Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres		Calculate the area and perimeter of a variety of 2D and compound shapes, including triangles using a formula
						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		
E							Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm ³) and metres (m ³), and extending to other units (for example mm ³ and km ³)	

Statistics

Skill	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
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A			Ask and answer questions about totalling and comparing categorical data	Interprets data using bar charts, pictograms and tables.	Solves comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs	Complete, read and interpret information in tables, including timetables	Interpret pie charts and line graphs and use these to solve problems	Create, use and interpret a variety of different tables and graphs to observe and analyse statistical information including; stem and leaf diagrams, vertical line charts and pie charts.
B				Presents data using bar charts, pictograms and tables.			Construct pie charts and line graphs and use these to solve problems	
C							Calculate and interpret the mean as an average	Use the mode, median, mean and range fluently to compare, describe and analyse groups of data.
D								Record, describe and analyse the frequency of outcomes of simple probability experiments; understanding that the sum of all possible outcomes equals 1.

Geometry – Shape (including position and direction)

Skill	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
A	Explore and play with: 2D shapes, repetitive patterns and symmetry.	Recognise and name common 2D shapes e.g. rectangles (including squares), circles and triangles	Compare and sort common 2D shapes and everyday objects	Identify whether angles are greater than or less than a right angle.	Compare and classifies geometric shapes, including quadrilaterals and triangles, based on their properties and sizes	Distinguish between regular and irregular polygons based on reasoning about equal sides, symmetry and angles	Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals and regular polygons.	Recognise, describe and name all common 2D shapes and apply angle facts to solve a variety of problems.

	Talk about shapes, sorting them into groups based upon shape characteristics.				Identify lines of symmetry in 2 dimensional shapes presented in different orientations	Draw given angles, and measure them in degrees (o)		Use a ruler and a protractor to draw accurately
B							Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius	
C			Distinguish between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise)	Identifies right angles, recognises that 2 right angles make a half turn, 3 make a three quarter turn and 4 a complete turn;	Plot specified points and draws sides to complete a given polygon		Draw and translate simple shapes on the coordinate plane and reflect them in the axes	Work with shapes on a 4 quadrant grid to translate, reflect and rotate in any direction or plane.
			Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line					
D	Explore and play with 3D shapes.	Recognise and name common 3D shapes e.g. cuboids (including cubes), pyramids and spheres	Compare and sort common 3D shapes and everyday objects					Use the properties and vocabulary of 3D shapes and their nets to solve problems.
								Represent 3D shapes in 2D.