Mathematics Progression National Curriculum and EYFS

2014

Lancashire
County
Council

This document sets out a progression of learning for individual strands of the 2014 National Curriculum for mathematics.

Each strand has been separated into individual aspects to support teachers with planning by identifying:

- age related expectations
- precursor skills
- subsequent learning

Where there are gaps in the progression within the statutory elements of the National Curriculum, these have been addressed through the addition of supplementary objectives to enable the learning process to be more secure. These supplementary objectives have been italicised for ease of identification.

Where learning of a particular aspect appears to stop at a given year group, teachers should ensure that this is consolidated and used within other appropriate and age related contexts.

Whilst each strand has been separated into individual aspects to support the identification of progression, it is crucial that teachers support children in making and using links between these different but related parts.

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practise, before moving on.

(Mathematics programmes of study: key stages 1 and 2 National curriculum in England September 2013 p3)

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	30 - 50 Months	40 - 60+ Months	ELG	Year 1	Year 2	Year 3
Number - number and place value						
Counting	Recite numbers in order to 10 Realise not only objects, but anything can be counted, including steps, claps or jumps	Count up to three or four objects by saying one number name for each item Count actions or objects which cannot be moved Count objects to 10, and begin to count beyond 10 Count out up to six objects from a larger group Count an irregular arrangement of up to ten objects Estimate how many objects they can see and check by counting them	Count reliably with numbers from 1 to 20	Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number 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 Count up and down in tenths
Place Value	Use some number names and number language spontaneously Use some number names accurately in play Know that numbers identify how many objects are in a set Begin to represent numbers using fingers, marks on paper or pictures Sometimes match numeral and quantity correctly Show an interest in numerals in the environment Show an interest in representing numbers	Recognise some numerals of personal significance Recognise numerals 1 to 5 Select the correct numeral to represent 1 to 5, then 1 to 10 objects	*Recognise numbers from 1-20.* *Read numbers from 1-20 in numerals.*	Read and write numbers to 100 in numerals Read and write numbers from 1 to 20 in numerals and words *Begin to recognise the place value of numbers beyond 20 (tens and ones)*	Read and write numbers to at least 100 in numerals and in words Recognise the place value of each digit in a two-digit number (tens, ones)	Read and write numbers up to 1000 in numerals and in words *Read and write numbers with one decimal place* Recognise the place value of each digit in a three-digit number (hundreds, tens, ones) *Identify the value of each digit to one decimal place*

					Partition numbers in different ways (for example, 23 = 20 + 3 and 23 = 10 + 13)	*Partition numbers in different ways (for example, 146 = 100 + 40 + 6 & 146 = 130 + 16)*
				Identify and represent numbers using objects and pictorial representations including the number line	Identify, represent and estimate numbers using different representations, including the number line	Identify, represent and estimate numbers using different representations, *including the number line*
Comparing and ordering	Compare two groups of objects, saying when they have the same number	Use the language of 'more' and 'fewer' to compare two sets of objects Say the number that is one more than a given number	Place numbers 1 to 20 in order	Use the language of: equal to, more than, less than (fewer), most, least	Compare and order numbers from 0 up to 100; use <, > and = signs	Compare and order numbers up to 1000 *Compare and order numbers with one decimal place*
		Find one more or one less from a group of up to five objects, then ten objects	Say which number is one more or one less than a given number	Given a number, identify one more and one less	*Find 1 or 10 more or less than a given number*	Find 1, 10 or 100 more or less than a given number

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	30 - 50 Months	40 - 60+ Months	ELG	Year 1	Year 2	Year 3
Number - number and place value						
Rounding, approximation and estimation		Estimate how many objects they can see and check by counting them.			*Round numbers to at least 100 to the nearest 10*	*Round numbers to at least 1000 to the nearest 10 or 100*
Multiplying by powers of 10					*Understand the connection between the 10 multiplication table and place value*	*Find the effect of multiplying a one- or two-digit number by 10 and 100, identify the value of the digits in the answer*
Sequences and patterns	Show an interest in shape and space by making arrangements with objects Show interest in shape by talking about shapes or arrangements	Use familiar objects and common shapes to create and recreate patterns	Recognise, create and describe patterns	*Recognise and create repeating patterns with numbers, objects and shapes* *Identify odd and even numbers linked to counting in twos from 0 and 1*	*Describe and extend simple sequences involving counting on or back in different steps*	*Describe and extend number sequences involving counting on or back in different steps*
Roman numerals						*Read Roman numerals from I to XII (see time)*
Solving number problems	Show curiosity about numbers by offering comments or asking questions Show an interest in number problems	Record, using marks that they can interpret and explain Begin to identify own mathematical problems based on own interests and fascinations	Solve problems	*Solve problems and practical problems involving all of the above*	Use place value and number facts to solve problems	Solve number problems and practical problems involving these ideas

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	30 - 50 Months	40 - 60+ Months	ELG	Year 1	Year 2	Year 3
Number - addition and subtraction						
Understanding addition and subtraction		In practical activities and discussion, begin to use the vocabulary involved in adding and subtracting	*Understand addition as the combining of two or more groups to make a larger group and this can be done by counting all the items when the groups are combined or by counting on* *Understand subtraction as take away and this can be found by removing one amount from another and counting how many are left or counting back*	Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs	*Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting)* Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot *Understand subtraction as take away and difference (how many more, how many less/fewer)*	*Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method)* *Understand and use take away and difference for subtraction, deciding on the most efficient method for the numbers involved, irrespective of context*
Addition and subtraction facts		Separate a group of three or four objects in different ways, beginning to recognise that the total is still the same	*Know number bonds to 10*	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 *Recall and use number bonds for multiples of 5 totalling 60 (to support telling time to nearest 5 minutes)*	*Recall and use addition and subtraction facts for 100 (multiples of 5 and 10)* *Derive and use addition and subtraction facts for 100* *Derive and use addition and subtraction facts for multiples of 100 totalling 1000*
Mental methods		Find the total number of items in two groups by counting all of them	Using quantities and objects, they add and subtract two single-digit	Add and subtract one-digit and two-digit numbers to 20, including zero *(using*	*Select a mental strategy appropriate for the numbers involved in the calculation* Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:	*Select a mental strategy appropriate for the numbers involved in the calculation* Add and subtract numbers mentally, including: - a three-digit number and ones

	30 - 50 Months	40 - 60+ Months	ELG	Year 1	Year 2	Year 3
			numbers and count on or back to find the answer	*concrete objects and pictorial representations)*	- a two-digit number and ones - a two-digit number and tens - two two-digit numbers - adding three one-digit numbers	- a three-digit number and tens - a three-digit number and hundreds
Number - addition and subtraction						
Written methods		Record, using marks that they can interpret and explain		*Written methods are informal at this stage – see mental methods for expectation of calculations*	*Written methods are informal at this stage – see mental methods for expectation of calculations*	Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction
Estimating and checking calculations					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
Solving addition and subtraction problems including those with missing numbers	Show curiosity about numbers by offering comments or asking questions Show an interest in number problems	Record, using marks that they can interpret and explain Begin to identify own mathematical problems based on own interests and fascinations	Solve problems *Begin to record number stories using number sentences*	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 *including those with missing numbers*: - using concrete objects and pictorial representations, including those involving numbers, quantities and measures - applying their increasing knowledge of mental and written methods	Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction

	30 - 50 Months	40 - 60+ Months	ELG	Year 1	Year 2	Year 3
			Number - multiplication and division			
Understanding multiplication and division			*Understand that doubling is adding the same number to itself and that it is multiplying by 2*			*Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known or related fact, calculate mentally, use a jotting, written method)*
			Understand that halving is sharing into two equal portions and that this is dividing by 2		*Understand multiplication as repeated addition* *Understand division as sharing and grouping and that a division calculation can have a remainder* Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot	*Understand that division is the inverse of multiplication and vice versa* *Understand how multiplication and division statements can be represented using arrays* *Understand division as sharing and grouping and use each appropriately*
Multiplication and division facts					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
			Know doubles of numbers to 5 and corresponding halves	*Recall and use doubles of all numbers to 10 and corresponding halves*	*Derive and use doubles of simple two-digit numbers (numbers in which the ones total less than 10)* *Derive and use halves of simple two-digit even numbers (numbers in which the tens are even)*	*Derive and use doubles of all numbers to 100 and corresponding halves* *Derive and use doubles of all multiples of 50 to 500*

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	30 - 50 Months	40 - 60+ Months	ELG	Year 1	Year 2	Year 3
Number - multiplication and division						
Mental methods			Use doubling, halving and sharing		Calculate mathematical statements for multiplication *(using repeated addition)* and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs	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
Written methods		Record, using marks that they can interpret and explain		*Written methods are informal at this stage – see mental methods for expectation of calculations*	*Written methods are informal at this stage – see mental methods for expectation of calculations*	Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, progressing to formal written methods Write and calculate mathematical statements for division using the multiplication tables that they know, including for two-digit numbers divided by one-digit numbers, progressing to formal written methods
Estimating and checking calculations						*Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy*

	30 - 50 Months	40 - 60+ Months	ELG	Year 1	Year 2	Year 3
			Number - multiplication and division			
Solving multiplication and division problems including those with missing numbers			Solve problems, including doubling, halving and sharing	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 *(including those with remainders),* 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 *(and interpreting remainders)*, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects

	30 - 50 Months	40 - 60+ Months	ELG	Year 1	Year 2	Year 3
Number - fractions (including decimals and percentages)						
Understanding fractions				*Understand that a fraction can describe part of a whole* *Understand that a unit fraction represents one equal part of a whole*	*Understand and use the terms numerator and denominator* *Understand that a fraction can describe part of a set* *Understand that the larger the denominator is, the more pieces it is split into and therefore the smaller each part will be*	*Show practically or pictorially that a fraction is one whole number divided by another (for example, $\frac{3}{4}$ can be interpreted as $3 \div 4$)* *Understand that finding a fraction of an amount relates to division*
Fractions of objects, shapes and quantities				Recognise, find and name a half as one of two equal parts of an object, shape or quantity *(including measure)* Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity *(including measure)*	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 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 Recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10
Counting, comparing and ordering fractions					*Count on and back in steps of $\frac{1}{2}$ and $\frac{1}{4}$*	*Count on and back in steps of $\frac{1}{2}, \frac{1}{4}$ and $\frac{1}{3}$* Compare and order unit fractions and fractions with the same denominators *(including on a number line)*

	30 - 50 Months	40 - 60+ Months	ELG	Year 1	Year 2	Year 3
Number - fractions (including decimals and percentages)						
Equivalence					Write simple fractions for example, $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$	Recognise and show, using diagrams, equivalent fractions with small denominators
Calculating with fractions						Add and subtract fractions with the same denominator within one whole *(using diagrams)* (for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$)
Solving problems involving fractions, decimals and percentages			Solve problems involving halving and sharing			Solve problems that involve all of the above

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	30 - 50 Months	40 - 60+ Months	ELG	Year 1	Year 2	Year 3
Measurement (length/height, perimeter, area and mass/weight)						
Length / height	Begin to talk about the shapes of everyday objects, e.g. 'round' and 'tall'		Use everyday language to talk about size and distance	Measure and begin to record lengths and heights, *using non-standard and then manageable standard units (m and cm) within children's range of counting competence*	Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm) to the nearest appropriate unit using rulers	Measure, add and subtract lengths (m/cm/mm)
		Order two or three items by length or height	Use everyday language to compare quantities and objects and to solve problems	Compare and describe lengths and heights (for example, long/short, longer/shorter, tall/short, double/half)	Compare and order lengths and record the results using >, < and =	Compare lengths (m/cm/mm)
Perimeter						*Understand that perimeter is a measure of distance around the boundary of a shape* Measure the perimeter of simple 2-D shapes
Area						
Mass			Use everyday language to talk about weight	Measure and begin to record mass/weight, *using non-standard and then standard units (kg and g) within children's range of counting competence*	Choose and use appropriate standard units to estimate and measure mass (kg/g) to the nearest appropriate unit using scales	Measure, add and subtract mass (kg/g)
		Order two items by weight	Use everyday language to compare quantities and objects and to solve problems	Compare and describe mass/weight (for example, heavy/light, heavier than, lighter than)	Compare and order mass and record the results using >, < and =	Compare mass (kg/g)

	30 - 50 Months	40 - 60+ Months	ELG	Year 1	Year 2	Year 3
Measurement (capacity, volume, temperature and conversion)						
Capacity / volume			Use everyday language to talk about capacity	Measure and begin to record capacity and volume *using non-standard and then standard units (litres and ml) within children's range of counting competence*	Choose and use appropriate standard units to estimate and measure capacity and volume (litres/ml) to the nearest appropriate unit using measuring vessels	Measure, add and subtract volume/capacity (l/ml)
		Order two items by capacity	Use everyday language to compare quantities and objects and to solve problems	Compare and describe capacity and volume (for example, full/empty, more than, less than, half, half full, quarter)	Compare and order volume/capacity and record the results using >, < and =	Compare volume/capacity (l/ml)
Temperature					Choose and use appropriate standard units to estimate and measure temperature to the nearest degree (°C) using thermometers	*Continue to estimate and measure temperature to the nearest degree (°C) using thermometers*
Conversion						

	30 - 50 Months	40 - 60+ Months	ELG	Year 1	Year 2	Year 3
Measurement (time)						
Time		Use everyday language related to time	Use everyday language to talk about time	Recognise and use language relating to dates, including days of the week, weeks, months and years		
		Measure short periods of time in simple ways		Compare and describe time (for example, quicker, slower, earlier, later)	Compare and sequence intervals of time	Record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight
		Order and sequence familiar events		Sequence events in chronological order using language (for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening)		
				Measure and begin to record time (hours, minutes, seconds)	Know the number of minutes in an hour and the number of hours in a day	Know the number of seconds in a minute, and the number of days in each month, year and leap year
				Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times	Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times	Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24- hour clocks
						Estimate and read time with increasing accuracy to the nearest minute
						Compare durations of events (for example to calculate the time taken by particular events or tasks)

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	30 - 50 Months	40 - 60+ Months	ELG	Year 1	Year 2	Year 3
Measurement (money and solving problems)						
Money		Begin to use everyday language related to money	Use everyday language to talk about money Use everyday language to compare quantities and objects and to solve problems	Recognise and know the value of different denominations of coins and notes	Recognise and use symbols for pounds (£) and pence (p) Combine amounts to make a particular value Find different combinations of coins that equal the same amounts of money Add and subtract money of the same unit, including giving change	*Continue to recognise and use symbols for pounds (£) and pence (p) and understand that the decimal point separates pounds and pence* *Recognise that ten 10p coins are equivalent to £1 and that each coin is $\frac{1}{10}$ of £1* Add and subtract amounts of money to give change, using both £ and p in practical contexts
Solving problems involving money and measures			Use everyday language to talk about size, weight, capacity, distance, time, and money, and to solve problems	Solve practical problems for: - lengths and heights - mass/weight - capacity and volume - time	Solve simple problems in a practical context involving addition and subtraction of money *and measures (including time)*	*Solve problems involving money and measures and simple problems involving passage of time*

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	30 - 50 Months	40 - 60+ Months	ELG	Year 1	Year 2	Year 3
Geometry - properties of shapes						
Properties of shape	Show interest in shape by playing with shapes Show awareness of similarities of shapes in the environment Show interest in shape by sustained construction activity or by talking about shapes Show interest in shapes in the environment Use shapes appropriately for tasks	Begin to use mathematical names for 'flat' 2D shapes, and mathematical terms to describe shapes Select a particular named shape *(2D and 3D)*	Explore characteristics of everyday objects and shapes and use mathematical language to describe them	Recognise and name common 2-D shapes, including rectangles (including squares), circles and triangles	Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line Identify 2-D shapes on the surface of 3-D shapes, (for example, a circle on a cylinder and a triangle on a pyramid)	Draw 2-D shapes and describe them Identify horizontal and vertical lines and pairs of perpendicular and parallel lines
	Begin to talk about the shapes of everyday objects, e.g. 'round' and 'tall'	Begin to use mathematical names for 'solid' 3D shapes, and mathematical terms to describe shapes		Recognise and name common 3-D shapes, including cuboids (including cubes), pyramids and spheres	Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces	Make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them
Angles and rotation				Describe movement, including whole, half, quarter and three-quarter turns	Use mathematical vocabulary to describe movement, including rotation as a turn Understand the link between rotation and turns in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise)	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

	30 - 50 Months	40 - 60+ Months	ELG	Year 1	Year 2	Year 3
			Geometry - position and direction			
Patterns	Show an interest in shape and space by making arrangements with objects Show interest in shape by talking about shapes or arrangements	Use familiar objects and common shapes to create and recreate patterns	Recognise, create and describe patterns	*Recognise and create repeating patterns with objects and shapes*	Order and arrange combinations of mathematical objects in patterns and sequences	
Position and direction	Use positional language	Can describe their relative position such as '*behind*' or '*next to*'	Use everyday language to talk about position and to solve problems	Describe position and direction	Use mathematical vocabulary to describe position, movement, including movement in a straight line	
Coordinates (including reflection and translation)						*Describe positions on a square grid labelled with letters and numbers*

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	30 - 50 Months	40 - 60+ Months	ELG	Year 1	Year 2	Year 3
Statistics						
Sorting and classifying			*Sort objects and say what features they have in common*	*Sort objects, numbers and shapes to a given criterion and their own*	Compare and sort *objects, numbers and* common 2-D and 3-D shapes and everyday objects	*Use sorting diagrams to compare and sort objects, numbers and common 2-D and 3-D shapes and everyday objects*
Present and interpret data				*Present and interpret data in block diagrams using practical equipment*	Interpret and construct simple pictograms, tally charts, block diagrams and simple tables	Interpret and present data using bar charts, pictograms and tables
Solve problems using data				*Ask and answer simple questions by counting the number of objects in each category* *Ask and answer questions by comparing categorical data*	Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity Ask and answer questions about totalling and comparing categorical data	Solve one-step and two-step questions (for example, 'How many more?' and 'How many fewer?') using information presented in scaled bar charts and pictograms and tables