Mathematics Progression Maps

1. Number and place value
2. Addition and subtraction
3. Multiplication and division
4. Fractions
5. Measurement
6. Geometry
7. Statistics

Reception	Year 1	Year 2	*Year 3*
1. Number and Place-value			
Counting			
Count actions and sounds with 1:1 correspondence knowing the last number said is the amount Count to 10 and beyond Count back from 10.	Count to and across 100, forwards and backwards, beginning with zero, or starting from any number	Count to and across 100, forwards and backwards, beginning with zero, or starting from any number	*Count backwards in 10s, 100s and 1000s from different starting points* *Begin to introduce counting through zero to include negative numbers*
Notice when a tens frame is full and say "there is one finished group of ten." Recognise numbers to 10 and match with quantity. Understand that numerals can be used for different purposes (ordinarily, cardinality)	Count, read and write numbers to 100 in numerals.	Count, read and write numbers to 100 in numerals and words	
Notice 2s patterns and 5s patterns on a tens frame and in Numicon Notice when a tens frame is full and say "there is one finished group of ten."	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 or backward	*Count from 0 in multiples of 4, 8, 50 and 100*
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. Know the one more one less relationship between consecutive numbers.	Identify one more, one less than a given number (within 100)	Identify 10 more or 10 less than a given number (within 100)	*Identify 100 more or 100 less than a number*
Comparing numbers			
Order amounts 1- 10 Compare quantities up to 10 in different contexts, recognising when subitising if the groups are equal, have more than another or fewer than another and give reasoning.	Order numbers 1- 100 Use the language of more than, less/fewer than, equal to, most, least	Compare and order numbers 0 – 100. Use <, > and = signs	*Compare and order numbers up to 1000*

Identifying, representing and estimating numbers			
Subitise (recognising quantities without counting) **perceptually** (in one glance) and **conceptually** (e.g. reasoning that they see 5 because they see a 2 and a 3.) Subitise most quantities to 10 on a tens frames and notice their cardinality on a number track. Begin to understand what the digits in 2 digit numbers mean.	Identify and represent numbers using objects and pictorial representations including the number line/track	Identify, represent and estimate numbers using different representations, including the number line	*Identify, represent and estimate numbers using different representations*
Reading and writing numbers			
Link the number symbol (numeral) with its cardinal number value.	Read and write numbers from 1 to 20 in numerals and words. read and write numbers to at least 100 in numerals and in words	Read and write numbers from 1 to 20 in numerals and words. read and write numbers to at least 100 in numerals and in words	*Read and write numbers up to 1000 in numerals and in words*
Understanding place value			
Understand the 'one more than/one less than' relationship between consecutive numbers. Begin to understand what the digits in 2 digit numbers mean by describing them as e.g "14 is one finished ten and 4 of the next ten."	Recognise the value of each digit in a 2 digit number	Recognise the value of each digit in a 2 digit number	*Recognise the value of each digit in a 3 digit*
Have a deep understanding of numbers to 10, including the composition of each number and how they relate to each other. Begin to develop an understanding of base ten system by knowing that we make finished groups of ten as we count.			
Use conceptual understanding of numbers to solve problems	Use place value and number facts to solve problems	Use place value and number facts to solve problems	*Solve number problems and practical problems involving these ideas.*
2. Addition and subtraction			
Number facts			
Use conceptual understanding of numbers (number bonds) to solve problems with numbers within ten.	Use number bonds and related subtraction facts within 20	Recall and use addition and subtraction facts to 20 and derive and use related facts to 100	*Recall and use addition and subtraction facts to 20 and derive and use related facts to 100*
Mental calculation			
Subitising to develop an understanding of the link between addition and subtraction through part/whole models and use their conceptual understanding of numbers **(composition)** to solve addition and subtraction problems. E.g.	Add and subtract one digit and two digit numbers to 20, including zero	Add and subtract: - A two digit number and ones - A two digit number and tens - Two two-digit numbers - Adding three one-digit numbers	*Add and subtract:* *- A three digit number and ones* *- A three digit number and tens* *- A three digit number and hundreds*
"What do you see? How do you see it? What is the same? What is different? How many more until I get to__? What would happen if I took away__?"	Read, write and interpret mathematical statements involving +, - and = signs.	Show that addition of numbers can be done in any order whereas subtraction cannot	

Written methods			
Begin to record number stories using pictures and numbers. Begin to score games pictorially and write tallies to represent scores and data.	Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs	Use formal written methods of addition and subtraction	*Use formal written methods of columnar addition and subtraction*
Inverse operations, estimating and checking answers			
Notice how many more to fill a tens frame. What if we took it away again? Notice conservation of number when playing games or singing songs e.g notice when playing skittles that when 2 are knocked down 3 are still standing. There are still 5 in total. Use conceptual understanding of numbers to 5 (number bonds) and beyond to solve every day problems.	Recognise and use the inverse relationship between addition and subtraction. Use this to check calculation and solve missing number problems	Estimate the answer to a calculation and use inverse operations to check answers	
Problem Solving			
Solve one-step problems that involve addition and subtraction, using conceptual understanding of numbers, concrete objects and pictorial representations.	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 including those involving numbers, quantities and measures. Apply 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.*
Multiplication and division			
Multiplication and division facts			
Notice 2s patterns and 5s patterns on a tens frame and in Numicon	Count in multiples of twos, fives and tens.	Count in steps of 2, 3, 5, and 10 from zero, forwards and backwards.	*Count from 0 in multiples of 4, 8, 50 and 100*
Understand that doubling is adding 2 of the same quantities and halving is sharing into two equal portions Know that odd numbers cannot be halved equally.		Recall and use multiplication and division facts for 2, 5, and 10 multiplication table, including recognising odd and even numbers	*Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables*
Build groups of 5, 2 and 10. Find double of a number to 10 using concrete resources or as a pictorial representation on a tens frame (2s pattern)	Recall doubles and halves for numbers up to 10.	Recall doubles and halves for numbers up to 20.	
Mental calculation and written method			
Counting in twos, fives and tens. Develop and understanding of some double facts to 10 by subitising in equal groups (eg. "I can see 2 finished groups of 3. There are 6" or "10 is 2 finished groups of 5" or "I have 10 fingers. 5 and 5" Notice on a tens frame that e.g. 6 is 2 groups of 3 as well as 3 groups of 2.		Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot	

Use vocabulary: Finished groups of Equal groups of Sharing, halving, doubling Sharing fairly		Calculate mathematical statements for multiplication and division statements and write them using x, ÷ and = signs	*Write and calculate mathematical statements for multiplication and division using the tables that they know, including for two digit numbers times one digit numbers. Progressing towards formal written methods.*
Use conceptual pictorial representations of numbers to solve halving and doubling real-life problems.		Use informal methods to record division of two digit numbers by a one digit number	*Children will use informal methods to record their division of two digit numbers by a one digit number, including a remainder*
Problem solving			
Use concrete and conceptual pictorial representations of numbers to solve halving and doubling real-life problems.	Solve one step problems that involve multiplication and division, using concrete objects, pictorial representations and arrays with support from the teacher	Solve problems involving multiplication and division, using materials, arrays, repeated addition, including problems in contexts.	*Solve problems including missing number, positive integer scaling and correspondence problems.*
Fractions			
Counting in fractions			
Understand that halving is splitting objects or groups or objects into two equal parts and these parts can be regrouped to create the whole amount.		Pupils should count in fractions up to 10, starting from any number – using $\frac{1}{2}$ and 2/4 on the numberline.	*Count up and down in tenths*
Recognising fractions			
Understand that some quantities can be split equally into parts.	Recognise, find and name a half as one of two equal parts of an object, shape or quantity.	Recognise, find, name and write fractions 1/3 ,1/4 ,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, find and name a quarter as one of four equal parts of an object, shape or quantity.	Recognise that tenths arise from dividing an object into 10 equal parts.	*Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.*
Equivalency			
		Write simple fractions e.g. $\frac{1}{2}$ of 6 = 3. Recognise the equivalence of $\frac{1}{2}$ and 24	*Recognise and show, using diagrams, equivalent fractions with small denominators*
5. Measurement			
Comparing and estimating			
Begin to use the language associated with comparing measurements in everyday practical activities. Use everyday language to compare objects and quantities.	compare, describe and solve practical problems for: * lengths and heights [e.g. long/short, longer/shorter, tall/short, double/half] * mass/weight [e.g. heavy/light, heavier than, lighter than]	Compare and order length, mass, volume/capacity and record the results using < > and =	*Compare and order length, mass, volume/capacity and record the results using < > and =*

Estimate how many will fit in a container.	* capacity and volume [e.g. full/empty, more than, less than, half, half full, quarter] * time [e.g. quicker, slower, earlier, later]		
Estimate how much time something will take. Use vocabulary begin to see the sequence of time over the day, month and year through the use of calendars, visual timetables and daily conversations.	Sequence events in chronological order using language [e.g. before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]	Compare and sequence intervals of time	*Compare durations*
Measuring and calculating			
Use non-standard units of measurements and vocabulary to develop an understanding of how to describe lengths and heights. Compare and order lengths and heights. Pouring and over filling using vocabulary full, overflowing and not full yet.	Measure and begin to record: - Lengths and heights - Mass/weight - Capacity and volume - Time –hours, minutes, seconds	Choose and use appropriate standard units to estimate and measure length/height (m/cm), mass (kg, g) temperature (°C) and capacity (l, ml) using using rulers, scales, thermometers and measuring vessels	*Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)*
Begin to talk about money in role play. Begin to understand how one coin of 2p is equal to 2 1p coins using part whole models.	Recognise and know the value of different denominations of coins and notes	Recognise and use symbols for pounds (£) and pence (p) and combine amounts to make a particular value.	*Add and subtract amounts of money to give change, using both £ and p in practical contexts*
Recognise the relationship between size and the number of units.		Find different combinations of coins that equal the same amount of money Solve simple problems involving money, including giving change.	
Know that the morning is before lunch and the afternoon is after lunch. Notice when things occur on the visual time table (before, after)	Tell the time to the hour (o'clock) and half past the hour. Draw hands on clocks 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, and 12 hour and 24 clocks. Estimate and read with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./ p.m.*
Begin to recognise and use the language relating to dates, including days of the week and months of the year	Recognise and use the language relating to dates, including days of the week and months of the year	Know the number of minutes in an hour and 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*

Geometry			
Shapes and their properties			
Begin to use mathematical names and mathematical terms to describe 2D 'flat' shapes. (lines, curves, straight, angles ect)	Recognise and name common 2D shapes (square, circle, triangle rectangle, hexagon, octagon, pentagon)	Identify and describe properties of 2D shapes including the number of sides and a vertical line of symmetry	
Begin to use mathematical names and mathematical terms to describe 3D 'solid shapes (surface, curved, flat, etc)	Recognise and name common 3D shapes (cuboids, cubes, sphere, cylinder, pyramid)	Identify and describe the properties of 3D shapes, including the number of edges, vertices and faces	
Recognise some similarities between 2D and 3D shapes and notice them in the environment.		Identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]	
Comparing and classifying			
Children compare and sort resources and loose parts during tidy up time. Children begin to compare 2D and 3D shapes when noticing when objects role, noticing the shapes in buildings and begin to notice when shapes have the same number of sides and angles.		Compare and sort common 2D and 3D shapes and everyday objects	
Position, direction and movement			
Develop spatial awareness of themselves. (running, hanging, climbing ect) Noticing the results of rotating and reflecting images. Draw information from a simple map. Understand and begin to use vocabulary: in front of, behind, next to, under, over, on top of, and through.	Describe position, direction and movement, including half, quarter and three-quarter turns. 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 anti-clockwise)	Describe position, direction and movement, including half, quarter and three-quarter turns. 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 anti-clockwise)	
Pattern			
Continue, copy, create and describe repeating patterns Notice pattern in song, story, nature, fabric, paper etc. Notice 2s patterns and 5s patterns on a tens frame and in Numicon Verbally count beyond 20, recognising the pattern of the counting system.	Order and arrange a combination of mathematical objects in patterns and sequences	Order and arrange a combination of mathematical objects in patterns and sequences	
Statistics			
Vote using tallies, block diagrams and pictograms.	Present and interpret data in block graphs	Interpret and construct simple pictograms, tally charts, block diagrams and simple tables	*Interpret and present data using bar charts, pictograms and tables*
Notice when one has more than another and that the one with a larger amount wins.	Ask and answer simple questions about a block graph by counting objects in a category	Ask and answer simple questions about a block graph by counting objects	

Children begin to notice that the number of votes is represented by the number of cubes or other manipulatives and pictures Use 'build 5' method to easily know the amount in each category without counting (5 gates or 5 cubes in the same colour) Begin to use manipulatives and pictures to practically solve simple questions such as: 'How many more children want a banana than those who want an apple?"		in a category and sorting categories by quantity	