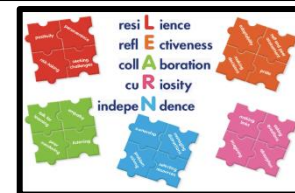


Spring Lane Primary School

Progression Document for Mathematics



Key Stage One

	Foundation Stage 2	Year 1	Year 2	TAF STATEMENTS END OF KSI WORKING AT
<u>NUMBER AND PLACE VALUE</u>	- Recognise Numerals 1-5 - Count up to 10 objects - Begin to count beyond 10 - Count out up to 6 objects from a larger group - Selects the correct numeral to represent 1-10 objects - Compares sets of objects using 'more' and 'fewer' - Total 2 groups of objects by counting them - Place the numbers 1-20 in order	- Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. - Count and read numbers to 100 in numerals. - Count and write numbers to 100 in numerals. - Count in multiples of twos, fives and tens from 0. - Identify one more and one less of a given number. - Read and write numbers from 1-20 in numerals and words	- Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward. - Compare and order numbers from 0 up to 100; use <, > and = signs. - Use place value and number facts to solve problems. - Recognise place value of each digit in a 2 digit number (tens, ones) - Read and write numbers to at least 100 in numerals and words	- Read scales* in divisions of ones, twos, fives and tens - Partition any two-digit number into different combinations of tens and ones, explaining their thinking verbally, in pictures or using apparatus
<u>CALCULATION</u>	- Use vocabulary associated with adding and subtracting - Find one more and one less of groups of objects to 10 - Add and subtract using concrete objects - Solve problems by doubling and halving with concrete apparatus	- Represent and use number bonds within 20. - Represent and use subtraction facts within 20. - Read, write and interpret mathematical statements involving addition and subtraction and equals signs - Solve one and step problems that involve addition and subtraction using concrete apparatus and pictorial representations - Solve 1 step problems involving multiplication and division using concrete apparatus	- Solve problems with addition and subtraction using concrete objects and pictorial representations, including those involving numbers, quantities and measures. - Solve problems with addition and subtraction applying his/her increasing knowledge of written methods and mental methods where regrouping may be required. - Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100. - Add and subtract numbers using concrete apparatus, pictorial representations and mentally including: -A 2 digit number and ones -A 2 digit number and tens -2 two digit numbers -Adding three 1 digit numbers - Recognise and use the inverse - Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers. - Solve problems involving multiplication and division, using concrete materials and mental methods. - Solve problems involving multiplication and division, using arrays, repeated addition and multiplication and division facts, including problems in contexts e.g. knowing that $2 \times 7 = 14$ and $2 \times 8 = 16$, explains that making pairs of socks from 15 identical socks will give 7 pairs and one sock will be left.	- Add and subtract any 2 two-digit numbers using an efficient strategy, explaining their method verbally, in pictures or using apparatus (e.g. $48 + 35$; $72 - 17$) - Recall all number bonds to and within 10 and use these to reason with and calculate bonds to and within 20, recognising other associated additive relationships (e.g. If $7 + 3 = 10$, then $17 + 3 = 20$; if $7 - 3 = 4$, then $17 - 3 = 14$; leading to if $14 + 3 = 17$, then $3 + 14 = 17$, $17 - 14 = 3$ and $17 - 3 = 14$) - Recall multiplication and division facts for 2, 5 and 10 and use them to solve simple - problems, demonstrating an understanding of commutativity as necessary
<u>FRACTIONS DECIMALS PERCENTAGES</u>		- Recognise, find and name a half as one of two equal parts of an object, shape or quantity. - Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.	Recognise, find, name and write fractions $1/3$, $1/4$, $2/4$ and $3/4$ of a length, shape, set of objects or quantity and demonstrate understanding that all parts must be equal parts of the whole.	Identify $1/4$, $1/3$, $1/2$, $2/4$, $3/4$, of a number or shape, and know that all parts must be equal parts of the whole

<u>SHAPE, SPACE AND DIRECTION</u>	- Can recognise and name basic 2-D shapes - Can describe his/her relative position (behind, next to etc) - Recognise and create patterns	- Recognise and name common 2-D shapes e.g. rectangles (including squares), circles and triangles. - Recognise and name common 3-D shapes e.g. cuboids (including cubes), pyramids and spheres. - Describe position, direction and movement including whole, half, quarter and three-quarter turns	- Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line - Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces identify 2-D shapes on the surface of 3-D shapes, [for example, circle on a cylinder and a triangle on a pyramid] - Compare and sort common 2-D and 3-D shapes and everyday objects. order and arrange combinations of mathematical objects in patterns and sequences - Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anticlockwise).	Name and describe properties of 2-D and 3-D shapes, including number of sides, vertices, edges, faces and lines of symmetry.
<u>MEASUREMENT</u>	- Can order 3 items by height/length - Can order 3 items by weight - Can order 3 objects by volume/capacity - Can use basic vocabulary related to time - Can use basic language associated with money (pound/pence/coin/note)	- Compare, describe and solve practical problems for mass/weight e.g. heavy/light, heavier than, lighter than. - Compare, describe and solve practical problems for lengths and heights e.g. long/short, longer/shorter, tall/short, double/half. - Compare, describe and solve practical problems for capacity and volume e.g. full/empty, more than, less than, half, half full, quarter. - Compare, describe and solve practical problems for time e.g. quicker, slower, earlier, later. - Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. - Recognise and use language relating to dates, including days of the week, weeks, months or years	- Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit; using rulers, scales, thermometers and measuring vessels - Compare and order lengths, mass, volume/capacity and record the results using >, < and = - 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 - Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change - Compare and sequence intervals of time - 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 know the number of minutes in an hour and the number of hours in a day	- Use different coins to make the same amount - Read the time on a clock to the nearest 15 minutes
<u>STATISTICS</u>			- Ask and answer questions about totalling and comparing categorical data. interpret and construct simple pictograms, tally charts, block diagrams and simple tables - 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	Year 4	Year 5	Year 6
<u>NUMBER AND PLACE VALUE</u>	- Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number. - Recognise the place value of each digit in a three-digit number (hundreds, tens, ones). - Solve number problems and practical problems involving these ideas. - Compare and order numbers up to 1000 - identify, represent and estimate numbers using different representations - Read and write numbers up to 1000 in numerals and in words - solve number problems and practical problems involving these ideas	- Count in multiples of 6, 7, 9, 25 and 1000 - Find 1000 more or less than a given number - Count backwards through zero to include negative numbers - Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) - Order and compare numbers beyond 1000 - Identify, represent and estimate numbers using different representations - 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 positive numbers - Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.	- Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit - Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 - Interpret negative numbers in context; count forwards and backwards with positive and negative whole numbers, including through zero - 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 - Read Roman numerals to 1000 (M) and recognise years written in Roman numerals	- 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.
<u>CALCULATION</u>	- Add and subtract numbers mentally, including a threedigit number and ones. - Add and subtract numbers mentally, including a threedigit number and tens. - Add and subtract numbers mentally, including a threedigit number and hundreds. - Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. - Write and calculate mathematical statements for multiplication and division using the multiplication tables that he/she knows, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.	- Recall multiplication and division facts for multiplication tables up to 12×12 - Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers - Recognise and use factor pairs and commutativity in mental calculations - Multiply two-digit and three-digit numbers by a one-digit number using formal written layout - Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.	- Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) - Add and subtract numbers mentally with increasingly large numbers - Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy - Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why - Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers - Know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers - Establish whether a number up to 100 is prime and recall prime numbers up to 19 - Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers - Multiply and divide numbers mentally drawing upon known facts - Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context - Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 - Recognise and use square numbers and cube numbers, and the notation for squared and cubed - Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes - Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign	- Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication - Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context - Divide numbers up to 4 digits by a two-digit number using the formal written method - of short division where appropriate, interpreting remainders according to the context - Perform mental calculations, including with mixed operations and large numbers - Identify common factors, common multiples and prime numbers - Use their knowledge of the order of operations to carry out calculations involving the - four operations - Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why - Solve problems involving addition, subtraction, multiplication and division - Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

			Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.	
<u>FRACTIONS</u> <u>DECIMALS</u> <u>PERCENTAGES</u>	- Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10. - Recognise, find and write fractions of a discrete set of objects: unit fractions 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 - Solve problems that involve all of the above.	- Recognise and show, using diagrams, families of common equivalent fractions - Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. - 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 - Add and subtract fractions with the same denominator - Recognise and write decimal equivalents of any number of tenths or hundredths - Recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ - Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths - Round decimals with one decimal place to the nearest whole number - Compare numbers with the same number of decimal places up to two decimal places - Solve simple measure and money problems involving fractions and decimals to two decimal places	- Compare and order fractions whose denominators are all multiples of the same number - Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths - Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number (for example, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1 + \frac{1}{5}$) - 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 - Read and write decimal numbers as fractions (for example, $0.71 = \frac{71}{100}$) - Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents - Round decimals with two decimal places to the nearest whole number and to one decimal place - Read, write, order and compare numbers with up to three decimal places - 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 hundred', and write percentages as a fraction with denominator 100, and as a decimal - Solve problems which require knowing percentage and decimal equivalents of $\frac{1}{4}$, $\frac{1}{2}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25.	- Use common factors to simplify fractions; use common multiples to express fractions in the same denomination - Compare and order fractions, including fractions > 1 - Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions - Multiply simple pairs of proper fractions, writing the answer in its simplest form (for example, $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$) - Divide proper fractions by whole numbers (for example, $\frac{1}{3} \div 2 = \frac{1}{6}$) - Associate a fraction with division and calculate decimal fraction equivalents (for example, 0.3751) for a simple fraction (for example, $\frac{3}{8}$) - Identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places - Multiply one-digit numbers with up to two decimal places by whole numbers - Use written division methods in cases where the answer has up to two decimal places - Solve problems which require answers to be rounded to specified degrees of accuracy - Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts
<u>SHAPE AND SPACE</u>	- Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D 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 pairs of perpendicular and parallel lines	- Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes - Identify acute and obtuse angles and compare and order angles up to two right angles by size - Identify lines of symmetry in 2-D shapes presented in different orientations - Complete a simple symmetric figure with respect to a specific line of symmetry. - Describe positions on a 2-D 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.	- Identify 3-D shapes, including cubes and other cuboids, from 2-D representations - Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles - Draw given angles, and measure them in degrees (°) - Identify: - Angles at a point and one whole turn (total 360°) - Angles at a point on a straight line and 2 1 a turn (total 180°) - Other multiples of 90° - Use the properties of rectangles to deduce related facts and find missing lengths and angles - Distinguish between regular and irregular polygons based on reasoning about equal sides and angles. - Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed	- Draw 2-D shapes using given dimensions and angles - Recognise, describe and build simple 3-D shapes, including making nets - Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons - Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius - Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles
<u>MEASUREMENT</u>	- Measure, compare, add and subtract lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) - Measure the perimeter of simple 2-D shapes - Add and subtract amounts of money to give change, using both £ and p in practical contexts	Convert between different units of measure (for example, kilometre to metre; hour to minute)	Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)	Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate

	- 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; 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 - Know the number of seconds in a minute and the number of days in each month, year and leap year - Compare durations of events (for example to calculate the time taken by particular events or tasks).	- Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres - Find the area of rectilinear shapes by counting squares - Estimate, compare and calculate different measures, including money in pounds and pence - Read, write and convert time between analogue and digital 12- and 24-hour clocks - Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.	- Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints - Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres - Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes - Estimate volume (for example, using 1 cm³ blocks to build cuboids (including cubes)) and capacity (for example, using water) - Solve problems involving converting between units of time - Use all four operations to solve problems involving measure (for example, length, mass, volume, money) using decimal notation, including scaling.	- Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places - Convert between miles and kilometres - Recognise that shapes with the same areas can have different perimeters and vice versa - Recognise when it is possible to use formulae for area and volume of shapes - Calculate the area of parallelograms and triangles - Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other units (for example, mm³ and km³).
STATISTICS	- Interpret and present data using bar charts, pictograms and tables. - 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.	- Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and line graphs. - Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs	- Solve comparison, sum and difference problems using information presented in a line graph - Complete, read and interpret information in tables, including timetables	- Interpret and construct pie charts and line graphs and use these to solve problems. - Calculate and interpret the mean as an average.
RATIO AND PROPORTION				- Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts - Solve problems involving the calculation of percentages (for example, of measures, and such as 15% of 360) 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.
ALGEBRA				- Use simple formulae - Generate and describe linear number sequences - Express missing number problems algebraically - Find pairs of numbers that satisfy an equation with two unknowns - Enumerate possibilities of combinations of two variables.