



Key Principles:

This intent document supports the implementation of mathematics at Kingsthorne, alongside the general mathematics policy, progression in calculations policy and more in-depth individual year-group and key-stage progression maps. It is intended as a reference and whole-school overview.

Intent

All pupils will:

- become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can solve problems by applying their mathematics to a variety of routine and nonroutine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Year Group	What we teach		
	Autumn	Spring	Summer
Nursery Strand of maths covered during the term	Number and Place Value Calculation Measures	Number and Place Value Calculation Measures	Number and Place Value Calculation Measures
Nursery Learning objectives taught	<p>Number</p> <ul style="list-style-type: none"> Count to 5 Sings a variety of number counting songs Shows an interest in representing numbers Knows that numbers identify how many objects are in a set Shows an interest in numerals in the environment Can count out 1 and 2 objects from a larger set <p>Calculation</p> <ul style="list-style-type: none"> Knows that a group of things changes in quantity when something is added or taken away. Sing a variety of basic calculation songs e.g. 5 current buns <p>Shape and Measure</p> <ul style="list-style-type: none"> Shows an interest in shape and space by playing with shapes or making arrangements with objects Shows interest in shapes in the environment. 	<p>Number</p> <ul style="list-style-type: none"> Recognise numerals to 5 Count to 10 securely Sometimes matches numeral and quantity correctly Recognises numerals to 5 in the environment Can count out 3 and 4 objects from a larger set <p>Calculation</p> <ul style="list-style-type: none"> Shows curiosity about numbers by offering comments or asking questions Shows an interest in number problems Begin to explore counting movements to 3 e.g. 3 claps <p>Shape and Measure</p> <ul style="list-style-type: none"> Shows awareness of similarities of shapes in the environment Beginning to talk about the shapes they are using Understand positional language 	<p>Number</p> <ul style="list-style-type: none"> Recognise and match to 5. Understand the 'oneness of one', etc. Count to 10 forwards and backwards securely Can count out 5 objects from a larger set <p>Calculation</p> <ul style="list-style-type: none"> Compares two groups of objects, saying when they have the same number, more or less. Realises not only objects, but anything can be counted, including steps, claps and jumps securely up to 5 objects Separates a group of three or four object in different ways, beginning to recognise that the total is still the same <p>Shape and Measure</p> <ul style="list-style-type: none"> Beginning to talk about the shapes of everyday objects e.g. 'round' and 'tall' Uses positional language <p>NRICH Activities to support understanding throughout the terms: (measures)</p>

	<p>NRICH Activities to support understanding throughout the terms: (number activities)</p> <p>Double trouble https://nrich.maths.org/13372</p> <p>Estimation station https://nrich.maths.org/13339</p> <p>Baskets https://nrich.maths.org/9716</p> <p>Number Talks https://nrich.maths.org/14005</p>	<p>NRICH Activities to support understanding throughout the terms: (shape and space activities)</p> <p>Can you build this? https://nrich.maths.org/14690</p> <p>Packing https://nrich.maths.org/9719</p> <p>Collecting https://nrich.maths.org/13528</p> <p>Building Towers https://nrich.maths.org/8865</p>	<p>Beat the clock https://nrich.maths.org/14655</p> <p>How long are you? https://nrich.maths.org/14657</p> <p>Calendar Model https://nrich.maths.org/13731</p> <p>Sock washing line https://nrich.maths.org/13532</p> <p>Making caterpillars https://nrich.maths.org/8861</p>
Reception Strand of maths covered during the term	Number and Place Value Calculation Measures	Number and Place Value Calculation Measures	Number and Place Value Calculation Measures
Reception Learning objectives taught	<p>Number Children count reliably with numbers from 1 to 10 forwards and backwards</p> <ul style="list-style-type: none"> Recognise some numerals of personal significance Recognises numerals 1 to 5 Counts up to three or four objects by saying one number name for each item Counts actions or objects which cannot be moved Counts objects to 10, and beginning to count beyond 10 <p>Place Value Compare groups of objects up to 10</p> <ul style="list-style-type: none"> Selects the correct numeral to represent 1 to 5, then 1 to 10 objects Counts an irregular arrangement of up to ten objects <p>• Uses the language of 'more' and 'fewer' to compare two sets of objects</p> <p>Calculation</p> <ul style="list-style-type: none"> Finds the total number of items in two groups by counting all of them Finds one more or one less from a group of up to five objects, In practical activities and discussion, beginning to use the vocabulary involved in adding and subtracting <p>Shape and Measure</p> <ul style="list-style-type: none"> Selects a particular named shape. Uses familiar objects and common shapes to create and recreate patterns and build models. Orders two or three items by length or height. Uses everyday language related to time. Understand positional language 	<p>Number Children count reliably with numbers from 1 to 15</p> <ul style="list-style-type: none"> Counts five to seven objects by saying one number name for each item Recognises numerals to 10 Counts out up to six objects from a larger group. <p>Place Value</p> <ul style="list-style-type: none"> Selects the correct numeral to represent 1 to 10 objects Estimates how many objects they can see and checks by counting them <p>Calculation Using quantities and objects, they add and subtract two single-digit numbers Solve problems in sharing</p> <ul style="list-style-type: none"> Beginning to answer simple addition problems to 10 Says the number that is one more than a given number Finds one more or one less from a group of up to ten objects In practical activities and discussion, use the vocabulary involved in adding and subtracting Records, using marks that they can interpret and explain Begins to identify own mathematical problems based on own interests and fascinations. <p>Shape and Measure</p> <ul style="list-style-type: none"> Beginning to use mathematical names for 'solid' 3D shapes and 'flat' 2D shapes, and mathematical terms to describe shapes. Measures short periods of time in simple ways. 	<p>Number Children count reliably with numbers from 1 to 20</p> <ul style="list-style-type: none"> Counts eight to ten objects by saying one number name for each item Recognise numerals to 20 Counts out up to ten objects from a larger group. <p>Place Value Order numbers up to 20 Can say which number is one more or one less than a given number up to 20</p> <p>Calculation</p> <ul style="list-style-type: none"> Solve addition problems by counting on Solve subtraction problems by counting back Solve problems in doubling and halving <p>Shape and Measure Children use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems. They recognise, create and describe patterns. They explore characteristics of everyday objects and shapes and use mathematical language to describe them.</p>

		<ul style="list-style-type: none"> Orders two items by weight or capacity. Beginning to use everyday language related to money. Orders and sequences familiar events. Use positional language to describe their relative position such as 'behind' or 'next to'. 	
Year 1 Strand of maths covered during the term	Place Value Number	Fractions Measurement Place Value Number	Geometry – properties of shapes - position and direction Statistics Place value Number
Year 1 Learning objectives taught	Autumn 1 Place Value (to 10 & 20) <ul style="list-style-type: none"> count to and across 10 & 20, forwards and backwards, beginning with 0 or 1, or from any given number count, read and write numbers to 10 & 20 in numerals count in multiples of 2s and 10s given a number, identify 1 more and 1 less identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least read and write numbers from 1 to 10 in words. Number Addition and Subtraction (to 10 and 20) <ul style="list-style-type: none"> read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs represent and use number bonds and related subtraction facts within 10 add and subtract one-digit and two-digit numbers to 10 & 20, including 0 Autumn 2 Number Multiplication and Division	Spring 1 Fractions <ul style="list-style-type: none"> recognise, find and name a half as 1 of 2 equal parts of an object, shape or quantity recognise, find and name a quarter as 1 of 4 equal parts of an object, shape or quantity. Place Value (to 50) <ul style="list-style-type: none"> count to 50 forwards and backwards, beginning with 0 or 1, or from any number count, read and write numbers to 50 in numerals given a number, identify one more or one less. Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least. count in multiples of 2s, 10s & 5s read and write numbers from 1 to 20 in words. Number Addition and Subtraction (to 20) <ul style="list-style-type: none"> represent and use number bonds and related subtraction facts within 20 add and subtract one-digit and two-digit numbers to 20, including 0 introducing inverse to check calculations and moving on to blank number lines (from the calculation policy step 2). Spring 2 Measurement Compare, describe and solve practical problems for:	Summer 1 Place Value (to 100) <ul style="list-style-type: none"> count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. count, read and write numbers to 100 in numerals. given a number, identify one more and one less. Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than, most, least. read and write numbers from 1 to 20 in words, in any order without any support or resources. Number Addition and subtraction (to 50) <ul style="list-style-type: none"> represent and use number bonds and related subtraction facts within 20 add and subtract 2-digit and 2-digit numbers to 50, including 0 use inverse independently when solving addition and subtraction calculations partition to solve 2-digit and 2-digit addition and subtraction. (step 3 and 4 of the calculation policy). Multiplication and division using multiples of 2s, 10s and 5s. <ul style="list-style-type: none"> use notation of multiplication (x) to show repeated addition. group and share knowing the difference between sharing equally and taking groups away (repeated subtraction) and show arrays for this. (step 3 of the calculation policy).

Commented [lp1]: This row indicates the titles of the strands covered in each term

Commented [lp2]: The title of the strand

Commented [lp3]: The objective taken from the curriculum map for your year group.
This needs to be all the objectives for 'Place Value' that are listed in your place value section of the curriculum map.

<ul style="list-style-type: none"> recall and use multiplication and division facts for the 2x and 10x multiplication tables, including recognising odd and even numbers recalling doubles to 10 & 20 recalling halves to 10 & 20 	<ul style="list-style-type: none"> lengths and heights [for example, long/short, longer/shorter, tall/short, double/half] mass / weight capacity and volume time 	<p style="text-align: center;">Summer 2</p> <p>Geometry</p> <ul style="list-style-type: none"> recognise and name common 2-D and 3-D shapes, including: <ul style="list-style-type: none"> 2-D shapes 3-D shapes describe position, direction and movement, including whole, half, quarter and three-quarter turns
<p>Problem-solving and investigative work</p> <p>Addition & Subtraction</p> <ul style="list-style-type: none"> solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations 	<p>Measure and begin to record the following:</p> <ul style="list-style-type: none"> lengths and heights mass/weight capacity and volume time (hours, minutes, seconds) 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, including days of the week, weeks, months and years tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. 	<p>Statistics</p> <ul style="list-style-type: none"> interpret and construct simple pictograms, tally charts, block diagrams and 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.
<p>NRICH Investigations</p> <p>Addition & Subtraction</p> <p>The Box Game https://nrich.maths.org/12745</p> <p>Two Dice https://nrich.maths.org/150/note</p> <p>Sort Them Out (1) https://nrich.maths.org/6885/note</p> <p>Pairs of Numbers https://nrich.maths.org/7233/note</p> <p>Multiplication & Division</p>	<p>Multiplication and division using multiples of 2s, 10s and 5s.</p> <p>Using their counting knowledge of counting in 2s, 10s and 5s:</p> <ul style="list-style-type: none"> complete blank number lines and show the calculation underneath. share equally using counters and are now taking groups of the divisor away to show grouping and repeated subtraction. (step 2 of the calculation policy). 	<p>Problem-solving and investigative work</p> <p>Addition & Subtraction</p> <ul style="list-style-type: none"> solve missing number problems and calculations that start with the answer such as $7 = 3 + ?$ solve complex missing number problems with equal sign between two sums such as $4 + 3 = ? + 2$
<p>Share Bear https://nrich.maths.org/2358/note</p> <p>Clapping Times https://nrich.maths.org/5482/note</p> <p>Double or Halve? https://nrich.maths.org/10654/note</p>	<p>Problem-solving and investigative work</p> <p>Addition & Subtraction</p> <ul style="list-style-type: none"> solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = ? - 9$. <p>Multiplication & Division</p> <ul style="list-style-type: none"> 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. 	<p>NRICH Investigations</p> <p>Statistics</p> <p>Button Up https://nrich.maths.org/7227/</p> <p>Sticky Data https://nrich.maths.org/7687/</p> <p>What Shape and Colour? https://nrich.maths.org/2185/note</p>
<p>Number Lines</p>	<p>NRICH Investigations</p> <p>Addition & Subtraction</p> <p>What Could It Be? https://nrich.maths.org/10479/note</p>	<p>Geometry</p> <p>Matching Triangles https://nrich.maths.org/5638/note</p> <p>Jig Shapes https://nrich.maths.org/6886/note</p>

Commented [Ip4]: These can supplement activities throughout the year, or be taught in a 'block' in the summer term.

NRICH.org is where there are a huge range of KS1 and KS2 problems, that include a range of problem-solving techniques.

Working systematically, trial and error, working backwards, visualising, reasoning and convincing tasks all need to be taught to the children as problem-solving techniques. These can be accessed and taught. NRICH has comprehensive teacher guides with worked examples and key questions.

		https://nrich.maths.org/number-lines/note	
		Strike It Out https://nrich.maths.org/6589/note	
Year 2	Number and Place Value Fractions	Measurement Number and Place Value Statistics Geometry	Number and Place Value Geometry Statistics Problem-Solving and Investigative work
	<p>Number and Place Value</p> <ul style="list-style-type: none"> count in steps of 2, 3, and 5 from 0, and in 10s from any number, forward and backward recognise the place value of each digit in a two-digit number (10s, 1s) identify, represent and estimate numbers using different representations, including the number line compare and order numbers from 0 up to 100; use <, > and = signs read and write numbers to at least 100 in numerals and in words use place value and number facts to solve problems. <p>Number - Addition and Subtraction</p> <ul style="list-style-type: none"> 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 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 objects, pictorial representations, and mentally, including: <ul style="list-style-type: none"> a two-digit number and 1s a two-digit number and 10s 2 two-digit numbers adding 3 one-digit numbers show that addition of 2 numbers can be done 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 missing number problems. 	<p>Measurement</p> <ul style="list-style-type: none"> 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 <p>Number and Place Value</p> <p><i>What objectives are you revisiting from the autumn term number and place value to consolidate at Year 2 expected standard?</i></p> <p><i>Revisiting addition and subtraction, multiplication and division – independently using these processes to solve problems and know which operation to choose. Ensure children can partition numbers and transfer these onto a number line, e.g. 34+25 start on 34, make 2 large jumps for 2tens + 5 small jumps for 5 ones. Reverse for subtraction.</i></p> <p>Statistics</p> <ul style="list-style-type: none"> interpret and construct simple pictograms, tally charts, block diagrams and tables ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity 	<p>Number and Place Value</p> <p><i>What objectives are you revisiting from the autumn and spring terms number and place value to consolidate at Year 2 expected standard and prepare for transition?</i></p> <p><i>Ensure skills are embedded; develop column addition / subtraction as per calculations policy; Problem solving using the different operations;</i></p> <p>Geometry</p> <ul style="list-style-type: none"> 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 anti-clockwise). <p>Statistics</p> <ul style="list-style-type: none"> ask and answer questions about totalling and comparing categorical data. <p>Problem-Solving and Investigative work</p> <p>NRICH investigations</p> <p>Place Value Two Digit Targets https://nrich.maths.org/6343/note</p>

<p>Number – Multiplication and Division</p> <ul style="list-style-type: none"> recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals ($=$) signs show that multiplication of 2 numbers can be done in any order (commutative) and division of 1 number by another cannot solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts. <p>Fractions</p> <ul style="list-style-type: none"> 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 write simple fractions, for example $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$. 	<p>Geometry - properties of shape</p> <ul style="list-style-type: none"> 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 compare and sort common 2-D and 3-D shapes and everyday objects. 	<p>Five steps to 50 https://nrich.maths.org/10586/note</p> <p>Find the Difference https://nrich.maths.org/6227/note</p> <p>6 Beads https://nrich.maths.org/152/note</p> <p>Addition & Subtraction</p> <p>The Tall Tower https://nrich.maths.org/2354/note</p> <p>Multiplication and Division</p> <p>Heads and Feet https://nrich.maths.org/924/note</p> <p>Geometry</p> <p>Break it up https://nrich.maths.org/2284/note</p> <p>Cubes cut into 4 pieces https://nrich.maths.org/233/note</p> <p>Shadow Play https://nrich.maths.org/2350/note</p> <p>Statistics</p> <p>Lots of lollies https://nrich.maths.org/2360/note</p> <p>Two Numbers under the microscope https://nrich.maths.org/8059/note</p> <p>Always, sometimes or never https://nrich.maths.org/12670/note</p> <p>Measurement</p> <p>Same Length Trains https://nrich.maths.org/4332/note</p>
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