Kingsthorne Primary School
Maths

Key Principles:
This intent document supports the implementation of mathematics at Kingsthorne, alongside the general mat
progression in calculations policy and more in-depth individual year-group and key-stage progression maps. It
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 1 Strand of maths covered during the term	**Place Value** **Number**	**Fractions** **Measurement** **Place Value** **Number**	**Geometry – properties of shape** **- position and direction** **Statistics** **Place value** **Number**
Year 1 Learning objectives taught	**Autumn 1** **Place Value (to 10 & 20)** •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)** •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	**Spring 1** **Fractions** • 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)** • 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)** •represent and use number bonds and related subtraction facts within 20 •add and subtract one-digit and two-digit numbers to 20, including 0	**Summer 1** **Place Value (to 100)** • 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)** •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.** • use notation of multiplication (x) to show repeated addition. • group and share knowing the difference between sharing equally and taking groups

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.

Autumn 2

Number
Multiplication and Division
•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

Problem-solving and investigative work

Addition & Subtraction
•solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations

NRICH Investigations

Addition & Subtraction

The Box Game
https://nrich.maths.org/12745
Two Dice
https://nrich.maths.org/150/note
Sort Them Out (1)
https://nrich.maths.org/6885/note
Pairs of Numbers
https://nrich.maths.org/7233/note

Multiplication & Division

Share Bear
https://nrich.maths.org/2358/note

Clapping Times
https://nrich.maths.org/5482/note

Double or Halve?
https://nrich.maths.org/10654/note

• 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:
– lengths and heights [for example, long/short, longer/shorter, tall/short, double/half]
- mass / weight
- capacity and volume
- time

Measure and begin to record the following:
- 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.

Multiplication and division using multiples of 2s, 10s and 5s.
Using their counting knowledge of counting in 2s, 10s and 5s:

• 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).

Problem-solving and investigative work

Addition & Subtraction
•solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ? - 9.

Multiplication & Division
• solve one-step problems involving multiplication and division, by

away (repeated subtraction) and show arrays for this. (step 3 of the calculation policy).

Summer 2
Geometry
• recognise and name common 2-D and 3-D shapes, including:
- 2-D shapes
- 3-D shapes

• describe position, direction and movement, including whole, half, quarter and three-quarter turns

Statistics
• 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.

Problem-solving and investigative work
Addition & Subtraction
• 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

NRICH Investigations

Statistics

Button Up
https://nrich.maths.org/7227/note

Sticky Data
https://nrich.maths.org/7687/note

What Shape and Colour?
https://nrich.maths.org/2185/note

Geometry

Matching Triangles
https://nrich.maths.org/5638/note

Jig Shapes
https://nrich.maths.org/6886/note

Commented [lp4]: 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, trail 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.

		calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher. **NRICH Investigations** **Addition & Subtraction** **What Could It Be?** https://nrich.maths.org/10479/note **Number Lines** 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**
	Number and Place Value • 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. **Number - Addition and Subtraction** • 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: • a two-digit number and 1s • a two-digit number and 10s • 2 two-digit numbers • adding 3 one-digit numbers	**Measurement** • 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 • 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 **Number and Place Value** *What objectives are you revisiting from the autumn term number and place value to consolidate at Year 2 expected standard?* *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.* **Statistics**	**Number and Place Value** *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?* *Ensure skills are embedded; develop column addition / subtraction as per calculations policy;* *Problem solving using the different operations;* **Geometry** • 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). **Statistics** • ask and answer questions about totalling and comparing categorical data. **Problem-Solving and Investigative work** **NRICH investigations** **Place Value** Two Digit Targets https://nrich.maths.org/6343/note Five steps to 50 https://nrich.maths.org/10586/note Find the Difference

	• 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. **Number – Multiplication and Division** • 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 (×), division (÷) 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. **Fractions** • recognise, find, name and write fractions 1/3, 1/4, 2/4 and 3/4 of a length, shape, set of objects or quantity • write simple fractions, for example 1/2 of 6 = 3 and recognise the equivalence of 2/4 and 1/2.	• 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 **Geometry - properties of shape** • 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.	https://nrich.maths.org/6227/note 6 Beads https://nrich.maths.org/152/note **Addition & Subtraction** The Tall Tower https://nrich.maths.org/2354/note **Multiplication and Division** Heads and Feet https://nrich.maths.org/924/note **Geometry** Break it up https://nrich.maths.org/2284/note Cubes cut into 4 pieces https://nrich.maths.org/233/note Shadow Play https://nrich.maths.org/2350/note **Statistics** Lots of lollies https://nrich.maths.org/2360/note Two Numbers under the microscope https://nrich.maths.org/8059/note Always, sometimes or never https://nrich.maths.org/12670/note **Measurement** Same Length Trains https://nrich.maths.org/4332/note