



# Brooklands Primary School Curriculum Overview

## Maths

Daily CPA structured lessons promoting mastery through use of White Rose Small Steps and supplemented by NCETM, NRich and Focus materials. Aim for children to see connections across mathematical ideas and to see mathematics as a subject which permeates into all areas of life and encourage them to be able to apply their mathematical knowledge to other subjects. Pupils should be able to demonstrate a deep, conceptual understanding of the topic and be able to build on this over time.

“Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers. By providing frequent and varied opportunities to build and apply this understanding - such as using manipulatives, including small pebbles and tens frames for organising counting - children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built. In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, ‘have a go’, talk to adults and peers about what they notice and not be afraid to make mistakes.” *(Taken from: Statutory framework for the early years foundation stage. Published : 31 March 2021 Effective: 1 September 2021)*

“By providing frequent and varied opportunities to build and apply this understanding – such as using manipulatives, including small pebbles and tens frames for organising counting – children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built. In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, ‘have a go’, talk to adults and peers about what they notice and not be afraid to make mistakes.” *(Taken from: Development Matters Non-statutory curriculum guidance for the early years foundation stage. First published September 2020 Revised July 2021)*

Stage		Focus
EYFS	Vocabulary	Progression
	Nursery	Children leaving Nursery will be able to: Taken from <i>Development Matters</i> <ul style="list-style-type: none"> <li>- Develop fast recognition of up to 3 objects, without having to count them individually ('subitising').</li> <li>- Recite numbers past 5. Say one number for each item in order: 1,2,3,4,5.</li> <li>- Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle').</li> <li>- Show 'finger numbers' up to 5. Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5.</li> <li>- Experiment with their own symbols and marks as well as numerals.</li> <li>- Solve real world mathematical problems with numbers up to 5. Compare quantities using language: 'more than', 'fewer than'</li> <li>- Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: 'sides', 'corners'; 'straight', 'flat', 'round'</li> <li>- Understand position through words alone – for example, "The bag is under the table," – with no pointing.</li> <li>- Describe a familiar route.</li> <li>- Discuss routes and locations, using words like 'in front of' and 'behind'.</li> <li>- Make comparisons between objects relating to size, length, weight and capacity.</li> <li>- Select shapes appropriately: flat surfaces for building, a triangular prism for a roof, etc.</li> <li>- Combine shapes to make new ones – an arch, a bigger triangle, etc.</li> <li>- Talk about and identify the patterns around them. For example: stripes on clothes, designs on rugs and wallpaper.</li> <li>- Use informal language like 'pointy', 'spotty', 'blobs', etc.</li> <li>- Extend and create ABAB patterns – stick, leaf, stick, leaf.</li> </ul>
	Reception	

**Number:** zero, number, one, two, three ... to twenty and beyond, teens numbers, eleven, twelve ... twenty, none, how many ...? count, count (up) to, count on (from, to), count back (from, to) count in ones, twos, fives, tens, is the same as, more, less, odd, even, few, pattern, pair.  
**Place Value:** ones, tens, digit, the same number as, as many, as more, larger, bigger, greater, fewer, smaller, less, fewest, smallest, least, most, biggest, largest, greatest, one more, ten more, one less, ten less, compare, order, size, first, second, third... twentieth, last, last but one, before, after, next, between.  
**Estimating:** Guess how many ...?, estimate, nearly, close to, about the same as just over, just under too many, too few, enough, not enough.  
**Addition and subtraction:** add, more, and, make, sum, total, altogether, double

one more, two more ... ten more, how many more to make ...?, how many more is ... than ...?, how much more is ...?, take away, how many are left/left over? , how many have gone?, one less, two less, ten less ...

how many fewer is ... than ...? , how much less is ...? , difference between.

**Multiplication and division:** sharing, doubling, halving, number patterns.

**Fractions:** parts of a whole, half, quarter.

**Measurement:** measure, size, compare, guess, estimate, enough, not enough, too much, too little, too many, too few, nearly, close to, about the same as, just over, just under.

**Length:** metre, length, height, width, depth, long, short, tall, high, low, wide, narrow, thick, thin , longer, shorter, taller, higher ... and so on, longest, shortest, tallest, highest ... and so on, far, near, close.

**Weight:** weigh, weighs, balances, heavy, light, heavier than, lighter than, heaviest, lightest, scales.

**Capacity and Volume:** full, empty, half full, holds, container.

**Time:** time, days of the week, Monday, Tuesday ..., day, week, birthday, holiday, morning, afternoon, evening, night, bedtime, dinner time, playtime, today, yesterday, tomorrow, before, after, next, last, now, soon, early, late, quick, quicker, quickest, quickly, slow, slower, slowest, slowly, old, older, oldest, new, newer, newest, takes longer, takes less time, hour, o'clock, clock, watch, hands.

**Money:** money, coin, penny, pence, pound, price, cost, buy, sell, spend, spent, pay.

**Geometry:** shape, pattern, flat, curved, straight, round, hollow, solid, sort, make, build, draw, size, bigger, larger, smaller, symmetrical, pattern, repeating pattern, match.

**2-D Shape:** corner, side, rectangle (including square), circle, triangle.

**3-D Shape:** face, edge, vertex, vertices, cube, pyramid, sphere, cone.

**Position and Direction:** position, over, under above, below, top, bottom, side, on, in, outside, inside, around, in front, behind, front, back, beside, next to, opposite, apart, between, middle, edge, corner, direction, left, right, up, down,

- Notice and correct an error in a repeating pattern.
- Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then...'

Children will leave Reception being able to: Taken from *EYFS Profile Handbook (2023)*

Number

- Have a deep understanding of number to 10, including the composition of each number.
- Subitise (recognise quantities without counting) up to 5.
- Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.

Numerical Patterns

- 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.

Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

forwards, backwards, sideways, across, next to, close, near, far, along, through, to, from, towards, away from, movement, slide, roll, turn, stretch, bend, whole turn, half turn.  
**Statistics:** count, sort, group, set, list.

Year	Units of Work	Key Knowledge and Vocabulary	Progression	Skills
Y1	Place Value	Ten more/less, digit, numeral, figure(s), compare, (in) order/a different order, size, value, between, halfway between, above, below, tens, ones	Children will leave y1 being able to: <ul style="list-style-type: none"> <li>- Count: count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. Count numbers to 100 in numerals; count in multiples of twos, fives and tens</li> <li>- Represent: identify and represent numbers using objects and pictorial representations. Read and write numbers to 100 in numerals. Read and write numbers from 1 to 20 in numerals and words</li> <li>- Use and Compare: given a number, identify one more and one less</li> </ul>	<p><b>Five main skills to enable a proficient Mathematician at Brooklands – running through all phases and year groups in all units of work:</b></p> <p><b>Conceptual Understanding</b> - the comprehension of mathematical concepts, operations, and relations.</p> <p><b>Procedural Fluency</b> - skill in carrying out procedures flexibly, accurately, efficiently, and appropriately.</p> <p><b>Strategic Competence</b> - the ability to formulate, represent, and solve mathematical problems</p> <p><b>Adaptive Reasoning</b> - the</p>
	Addition and Subtraction	Number bonds, number line, add, more, plus, make, sum, total, altogether, inverse, double, near double, equals, is the same as (including equals sign), difference between, subtract, take away, minus How many more to make ...? How many more is ... than ...? How much more is ...? How many fewer is ... than...? How much less is ...?	Children will leave y1 being able to: <ul style="list-style-type: none"> <li>- Calculate: add and subtract one-digit and two digit numbers to 20, including zero</li> <li>- Problems - solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as <math>7 = ? - 9</math></li> </ul>	
	Geometry	Corner (point, pointed), face, side, edge, make, build, draw, before, after, beside, next to, opposite, apart, between, middle, edge, centre, corner, direction, journey, left, right, up, down, forwards, backwards, sideways, across, close, far, near, along, through, to, from, towards, away from, movement, slide, roll, turn, whole turn, half turn, stretch, bend	Children will leave y1 being able to: <ul style="list-style-type: none"> <li>- 2D shapes: recognise and name common 2- D shapes [for example, rectangles (including squares), circles and triangles]</li> <li>- 3D shapes: recognise and name common 3- D shapes [for example, cuboids (including cubes), pyramids and spheres]</li> <li>- describe position, direction and movement, including whole, half, quarter and three-quarter turns</li> </ul>	
	Length and Height	Length, width, height, depth, long, longer, longest, short, shorter shortest, tall, taller, tallest, high, higher, highest, Low, wide, narrow, deep, shallow, thick, thin, far,	Children will leave y1 being able to: <ul style="list-style-type: none"> <li>- compare, describe and solve practical problems for lengths and heights</li> <li>- measure and begin to record the following lengths and heights</li> </ul>	

		near, close, metre, ruler, metre stick		<p>capacity for logical thought, reflection, explanation, and justification</p> <p><b>Productive Disposition</b> - the habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one's own efficacy.</p>
Mass and Volume		Children will leave y1 being able to:	<ul style="list-style-type: none"> <li>- compare, describe and solve practical problems for mass/weight, capacity and volume</li> <li>- measure and begin to record mass/weight, capacity and volume</li> </ul>	
Multiplication and Division	Once, twice, three, five times, multiple of times Multiply, multiply by, repeated addition, array, row, column, double, halve, share, share equally, group in pairs, threes, etc., equal groups of, divide, divided by, left over	Children will leave y1 being able to: Problems: 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		
Fractions	Whole, equal parts, four equal parts, one half, two halves, a quarter, two quarters	Children will leave y1 being able to:	<ul style="list-style-type: none"> <li>- Recognise and Write: recognise, find and name a half as one of two equal parts of an object, shape or quantity</li> <li>- recognise, find and name a quarter as one of four equal parts of an object, shape or quantity</li> </ul>	
Money	How much?, How many?, money, coin, penny, pence, pound, price, cost, buy, sell, spend, spent, pay, change, dear(er), costs more, costs less, cheaper, costs the same as, tota	Children will leave y1 being able to:	<ul style="list-style-type: none"> <li>- recognise and know the value of different denominations of coins and notes</li> </ul>	
Time	Time, days of the week, seasons, day, week, month, year, weekend, birthday, holiday, morning, afternoon, evening, night, midnight, bedtime, dinnertime, playtime, today, yesterday, tomorrow Before, after, next, last, now, soon, early, late, quick, quicker, quickest, quickly, fast, faster, fastest, slow, slower, slowest, slowly, old, older, oldest, new, newer, newest Takes longer, takes less time, hour, o'clock, half past, clock, watch, hands, how long ago?, How long will it be to ... ?, How long will it take to ... ?, How often?, always, never, often, sometimes, usually, once, twice, first, second, third, etc., estimate, close to,	Children will leave y1 being able to:	<ul style="list-style-type: none"> <li>- compare, describe and solve practical problems for: time</li> <li>- measure and begin to record the following: time (hours, minutes, seconds)</li> <li>- sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]</li> <li>- recognise and use language relating to dates, including days of the week, weeks, months and years</li> <li>- tell the time to the hour and half past the hour and draw the hands on a clock face to show these times</li> </ul>	

Year	Units of Work	Key Knowledge and Vocabulary	Progression	Skills
Y2	Place Value	Numbers to one hundred, hundreds, partition, recombine, more/less	Children will leave y2 being able to: <ul style="list-style-type: none"> <li>- Count: count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward</li> <li>- Represent: read and write numbers to at least 100 in numerals and in words • identify, represent and estimate numbers using different representations, including the number line</li> <li>- Use and Compare: recognise the place value of each digit in a two-digit number (tens, ones) • compare and order numbers from 0 up to 100; use and = signs</li> <li>- Problems: use place value and number facts to solve problems</li> </ul>	<p><b>Five main skills to enable a proficient Mathematician at Brooklands – running through all phases and year groups in all units of work:</b></p> <p><b>Conceptual Understanding</b> - the comprehension of mathematical concepts, operations, and relations.</p> <p><b>Procedural Fluency</b> - skill in carrying out procedures flexibly, accurately, efficiently, and appropriately.</p> <p><b>Strategic Competence</b> - the ability to formulate, represent, and solve mathematical problems</p> <p><b>Adaptive Reasoning</b> - the capacity for logical thought,</p>
	Addition and Subtraction		Children will leave y2 being able to: <ul style="list-style-type: none"> <li>- Calculations: add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones, a two-digit number and tens, two two-digit numbers, adding three one digit numbers</li> <li>- Problems: solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures &gt; applying their increasing knowledge of mental and written methods</li> </ul>	
	Geometry	Size, bigger, larger, smaller, symmetrical, line of symmetry, fold, match, mirror line, reflection, pattern, repeating pattern	Children will leave y2 being able to: <ul style="list-style-type: none"> <li>- 2-D shapes: 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]. Compare and sort common 2-D shapes and everyday objects</li> <li>- 3-D shapes: recognise and name common 3- D shapes [for example, cuboids (including cubes), pyramids and spheres]. Compare and sort common 3-D shapes and everyday objects</li> <li>-</li> </ul>	
	Multiplication and Division		Children will leave y2 being able to: <ul style="list-style-type: none"> <li>- Recall/ Use: recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers. Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.</li> <li>- Calculations: calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (<math>\times</math>), division (<math>\div</math>) and equals (=) signs</li> <li>- Problems: solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts</li> </ul>	
	Measurement		Children will leave y2 being able to: <ul style="list-style-type: none"> <li>- Using measures: choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (<math>^{\circ}</math>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 <math>&gt;</math>, <math>&lt;</math> and <math>=</math></li> <li>- Money: 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</li> <li>- Time: 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</li> <li>-</li> </ul>	
	Fractions	Three quarters, one third, a third, equivalence, equivalent	Children will leave y2 being able to: <ul style="list-style-type: none"> <li>- Recognise and Write: recognise, find, name and write fractions <math>\frac{1}{3}</math>, <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math> and <math>\frac{3}{4}</math> of a length, shape, set of objects or quantity</li> <li>- Compare: Recognise the equivalence of <math>\frac{2}{4}</math> and <math>\frac{1}{2}</math></li> <li>- Calculations: write simple fractions for example, <math>\frac{1}{2}</math> of <math>6 = 3</math></li> </ul>	

	Statistics	Count, tally, sort, vote, graph, block graph, pictogram, represent, group, set, list, table, label, title, most popular, most common, least popular, least common	Children will leave y2 being able to: <ul style="list-style-type: none"> <li>- Present and Interpret Data: interpret and construct simple pictograms, tally charts, block diagrams and simple tables</li> <li>- Solve Statistical Problems: 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</li> </ul>	reflection, explanation, and justification  <b>Productive Disposition</b> - the habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one's own efficacy.
	Position and Direction	Rotation, clockwise, anticlockwise, straight line, ninety degree turn, right angle	Children will leave y2 being able to: <ul style="list-style-type: none"> <li>- 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)</li> </ul>	
<b>Year</b>	<b>Units of Work</b>	<b>Key Knowledge and Vocabulary</b>	<b>Progression</b>	<b>Skills</b>
<b>Y3</b>	Place Value	Numbers to one thousand, clock, Roman numerals I to XIII	Children will leave y3 being able to: <ul style="list-style-type: none"> <li>- Count: count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number</li> <li>- Represent: identify, represent and estimate numbers using different representations. Read and write numbers up to 1000 in numerals and in words</li> <li>- Use and Compare: recognise the place value of each digit in a three-digit number (hundreds, tens, ones). Compare and order numbers up to 1000</li> <li>- Problems: solve number problems and practical problems involving these ideas</li> </ul>	<b>Five main skills to enable a proficient Mathematician at Brooklands – running through all phases and year groups in all units of work:</b>  <b>Conceptual Understanding</b> - the comprehension of mathematical concepts, operations, and relations.  <b>Procedural Fluency</b> - skill in carrying out procedures flexibly, accurately, efficiently, and appropriately.  <b>Strategic Competence</b> -
	Addition and Subtraction	Column addition and subtraction	Children will leave y3 being able to: <ul style="list-style-type: none"> <li>- Calculations: add and subtract numbers mentally, including: a three-digit number and ones, a three-digit number and tens, a three-digit number and hundreds. Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction</li> <li>- Problems: solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction</li> </ul>	
	Multiplication and Division	Product, multiples of four, eight, fifty and one hundred, scale up	Children will leave y3 being able to: <ul style="list-style-type: none"> <li>- Recall/ Use: recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables</li> <li>- Calculations: 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 and progressing to formal written methods</li> <li>- Problems: solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects</li> </ul>	
	Measurement		Children will leave y3 being able to: <ul style="list-style-type: none"> <li>- Using Measures: measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)</li> <li>- Money: add and subtract amounts of money to give change, using both £ and p in practical contexts</li> <li>- Time: 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]</li> <li>- Perimeter, Area and Volume: measure the perimeter of simple 2-D shapes</li> </ul>	
	Geometry	Greater/less than ninety degrees, orientation (same orientation, different	Children will leave y3 being able to: <ul style="list-style-type: none"> <li>- 2-D shapes: draw 2-D shapes</li> <li>- 3-D shapes: make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them</li> </ul>	

		orientation), Horizontal, perpendicular and parallel lines	<ul style="list-style-type: none"> <li>- Angles and Lines: 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</li> </ul>	the ability to formulate, represent, and solve mathematical problems
	Statistics	Numerator, denominator, unit fraction, non-unit fraction, compare and order, tenths	<p>Children will leave y3 being able to:</p> <ul style="list-style-type: none"> <li>- Present and Interpret Data: interpret and present data using bar charts, pictograms and tables</li> <li>- Solve Statistical Problems: 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</li> </ul>	
	Fractions	Numerator, denominator, unit fraction, non-unit fraction, compare and order, tenths	<p>Children will leave y3 being able to:</p> <ul style="list-style-type: none"> <li>- Recognise and Write: 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 use fractions as numbers: unit fractions and non-unit fractions with small denominators</li> <li>- Compare: recognise and show, using diagrams, equivalent fractions with small denominators. Compare and order unit fractions, and fractions with the same denominators</li> <li>- Calculations: add and subtract fractions with the same denominator within one whole [for example, <math>\frac{5}{7} + \frac{1}{7} = \frac{6}{7}</math> ]</li> <li>- Problems: solve problems that involve all of the above</li> </ul>	<p><b>Adaptive Reasoning</b> - the capacity for logical thought, reflection, explanation, and justification</p> <p><b>Productive Disposition</b> - the habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one’s own efficacy.</p>
Year	Units of Work	Key Knowledge and Vocabulary	Progression	Skills
Y4	Place Value	Tenths, hundredths, decimal (places), round (to nearest), thousand more/less than, negative integers, count through zero, Roman numerals I to C	<p>Children will leave y4 being able to:</p> <ul style="list-style-type: none"> <li>- Count: count in multiples of 6, 7, 9, 25 and 1000 • count backwards through zero to include negative numbers</li> <li>- Represent: identify, represent and estimate numbers using different representations 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</li> <li>- Use and Compare: find 1000 more or less than a given number. Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones). Order and compare numbers beyond 1000</li> <li>- Problems: 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</li> </ul>	<p><b>Five main skills to enable a proficient Mathematician at Brooklands – running through all phases and year groups in all units of work:</b></p> <p><b>Conceptual Understanding</b> - the comprehension of mathematical concepts,</p>
	Addition and Subtraction		<p>Children will leave y4 being able to:</p> <ul style="list-style-type: none"> <li>- Calculations: add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate</li> <li>- Problems: solve addition and subtraction twostep problems in contexts, deciding which operations and methods to use and why</li> </ul>	
	Measurement		<p>Children will leave y4 being able to:</p> <ul style="list-style-type: none"> <li>- Using Measures: Convert between different units of measure [for example, kilometre to metre; hour to minute]. Estimate, compare and calculate different measures</li> <li>- Money: estimate, compare and calculate different measures, including money in pounds and pence</li> <li>- Time: 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</li> </ul>	

			<ul style="list-style-type: none"> <li>- Perimeter, Area, Volume: measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres. Find the area of rectilinear shapes by counting squares</li> </ul>	operations, and relations.
	Multiplication and Division	Multiplication facts (up to 12x12), division facts, inverse, derive	<p>Children will leave y4 being able to:</p> <ul style="list-style-type: none"> <li>- Recall/ Use: recall multiplication and division facts for multiplication tables up to <math>12 \times 12</math>. 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</li> <li>- Calculations: multiply two-digit and three-digit numbers by a one-digit number using formal written layout</li> <li>- Problems: 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</li> </ul>	<p><b>Procedural Fluency</b> - skill in carrying out procedures flexibly, accurately, efficiently, and appropriately.</p>
	Fractions, Decimals and Percentages	Equivalent decimals and fractions	<p>Children will leave y4 being able to:</p> <p><b>Fractions</b></p> <ul style="list-style-type: none"> <li>- Recognise and Write: count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.</li> <li>- Compare: recognise and show, using diagrams, families of common equivalent fractions</li> <li>- Calculations: add and subtract fractions with the same denominator</li> <li>- Problems: 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</li> </ul> <p><b>Decimals</b></p> <ul style="list-style-type: none"> <li>- Recognise, Write, Compare: recognise and write decimal equivalents of any number of tenths or hundredths. Recognise and write decimal equivalents to <math>\frac{1}{4}</math>, <math>\frac{1}{2}</math>, <math>\frac{3}{4}</math>. 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</li> <li>- Problems: solve simple measure and money problems involving fractions and decimals to two decimal places</li> </ul>	<p><b>Strategic Competence</b> - the ability to formulate, represent, and solve mathematical problems</p> <p><b>Adaptive Reasoning</b> - the capacity for logical thought, reflection, explanation, and justification</p>
	Geometry	Quadrilaterals, triangles, right, acute and obtuse angle	<p>Children will leave y4 being able to:</p> <ul style="list-style-type: none"> <li>- 2-D Shapes: compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes. Identify lines of symmetry in 2-D shapes presented in different orientations</li> <li>- Angles and Lines: 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</li> <li>- Position and Direction: 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</li> </ul>	<p><b>Productive Disposition</b> - the habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one's own efficacy.</p>
	Statistics	Continuous data, line graph	<p>Children will leave y4 being able to:</p> <ul style="list-style-type: none"> <li>- Present and Interpret Data: interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs</li> <li>- Solve Statistical Problems: solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs</li> </ul>	
Year	Units of Work	Key Knowledge and Vocabulary	Progression	Skills
	Place Value	Powers of 1	<p>Children will leave y5 being able to:</p> <ul style="list-style-type: none"> <li>- Count: count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000. Count forwards and backwards with positive and negative whole numbers, including through zero</li> <li>- Represent: read, write, (order and compare) numbers to at least 1 000 000 and determine the value of each digit. Read Roman numerals to 1000 (M) and recognise years written in Roman numerals</li> <li>- Use and Compare: (read, write) order and compare numbers to at least 1 000 000 and determine the value of each digit</li> </ul>	<p><b>Five main skills to enable a proficient Mathematician at Brooklands –</b></p>



Y5			<ul style="list-style-type: none"> <li>- Problems: interpret negative numbers in context • 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</li> </ul>	<p><b>running through all phases and year groups in all units of work:</b></p> <p><b>Conceptual Understanding</b> - the comprehension of mathematical concepts, operations, and relations.</p> <p><b>Procedural Fluency</b> - skill in carrying out procedures flexibly, accurately, efficiently, and appropriately.</p> <p><b>Strategic Competence</b> - the ability to formulate, represent, and solve mathematical problems</p> <p><b>Adaptive Reasoning</b> - the capacity for logical thought, reflection, explanation, and justification</p> <p><b>Productive Disposition</b> - the habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a</p>
	Addition and Subtraction	Efficient written method	<p>Children will leave y5 being able to:</p> <ul style="list-style-type: none"> <li>- Calculations: 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</li> <li>- Problems: solve addition and subtraction multistep problems in contexts, deciding which operations and methods to use and why. Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign</li> </ul>	
	Multiplication and Division	Factor pairs, composite numbers, prime number, prime factors, square number, cubed number, formal written method	<p>Children will leave y5 being able to:</p> <ul style="list-style-type: none"> <li>- Recall/ Use: 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. Recognise and use square numbers and cube numbers, and the notation for squared (2 ) and cubed (3 )</li> <li>- Calculations: 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</li> <li>- Problems: solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes. Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates. solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign</li> </ul>	
	Measurement	Volume, imperial units, metric units	<p>Children will leave y5 being able to:</p> <ul style="list-style-type: none"> <li>- Using Measures: convert between different units of metric measure. Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints. Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling</li> <li>- Money: use all four operations to solve problems involving measure [for example, money]</li> <li>- Time: solve problems involving converting between units of time</li> <li>- Perimeter, Area, Volume: 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 (cm<sup>2</sup> ) and square metres (m<sup>2</sup> ) and estimate the area of irregular shapes. Estimate volume [for example, using blocks to build cuboids] and capacity [for example, using water]</li> </ul>	
	Fractions, Decimals and Percentages	Proper fractions, improper fractions, mixed numbers, percentage, half, quarter, fifth, two fifths, four fifths, ratio, proportion	<p>Children will leave y5 being able to:</p> <p><b>Fractions</b></p> <ul style="list-style-type: none"> <li>- Recognise and Write: 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 <math>&gt; 1</math> as a mixed number [for example, <math>\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1 \frac{1}{5}</math> ]</li> <li>- Compare: compare and order fractions whose denominators are all multiples of the same number</li> <li>- Calculations: 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</li> </ul> <p><b>Decimals</b></p> <ul style="list-style-type: none"> <li>- Recognise, Write, Compare: read and write decimal numbers as fractions [for example, <math>0.71 = \frac{71}{100}</math> ]. 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</li> </ul> <p><b>FDP</b></p> <ul style="list-style-type: none"> <li>- 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 <math>\frac{1}{2}</math> , <math>\frac{1}{4}</math> , <math>\frac{1}{5}</math> , <math>\frac{2}{5}</math> , <math>\frac{4}{5}</math> and those fractions with a denominator of a multiple of 10 or 25</li> </ul>	
Geometry	Regular and irregular polygons	<p>Children will leave y5 being able to:</p> <ul style="list-style-type: none"> <li>- 2-D Shapes: distinguish between regular and irregular polygons based on reasoning about equal sides and angles. Use the properties of rectangles to deduce related facts and find missing lengths and angles</li> </ul>		

			<ul style="list-style-type: none"> <li>- 3-D Shapes: identify 3-D shapes, including cubes and other cuboids, from 2-D representations</li> <li>- Angles and Lines: 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 1 2 a turn (total 180°), other multiples of 90°</li> <li>- Position and Direction: 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</li> </ul>	belief in diligence and one's own efficacy.
	Statistics		Children will leave y5 being able to: <ul style="list-style-type: none"> <li>- Present and Interpret Data: complete, read and interpret information in tables, including timetables</li> <li>- Solve Statistical Problems: solve comparison, sum and difference problems using information presented in a line graph</li> </ul>	
Year	Units of Work	Key Knowledge and Vocabulary	Progression	Skills
Y6	Place Value	Numbers to ten million	Children will leave y5 being able to: <ul style="list-style-type: none"> <li>- Represent: read, write, (order and compare) numbers up to 10 000 000 and determine the value of each digit</li> <li>- Use and Compare: (read, write), order and compare numbers up to 10 000 000 and determine the value of each digit</li> <li>- Problems: 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</li> </ul>	<b>Five main skills to enable a proficient Mathematician at Brooklands – running through all phases and year groups in all units of work:</b>  <b>Conceptual Understanding</b> - the comprehension of mathematical concepts, operations, and relations.  <b>Procedural Fluency</b> - skill in carrying out procedures flexibly, accurately, efficiently, and appropriately.  <b>Strategic Competence</b> - the ability to formulate, represent, and solve
	Addition, Subtraction, Multiplication and Division	Order of operations, Common factors and common multiples	Children will leave y5 being able to: <b>Addition and Subtraction</b> <ul style="list-style-type: none"> <li>- Calculations: perform mental calculations, including with mixed operations and large numbers. Use their knowledge of the order of operations to carry out calculations involving the four operations</li> <li>- Problems: solve addition and subtraction multistep problems in contexts, deciding which operations and methods to use and why</li> </ul> <b>Multiplications and Division</b> <ul style="list-style-type: none"> <li>- Recall/ Use: identify common factors, common multiples and prime numbers. Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy</li> <li>- Calculations: 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</li> <li>- Problems: solve problems involving addition, subtraction, multiplication and division. Use their knowledge of the order of operations to carry out calculations involving the four operations</li> </ul>	
	Fractions, Decimals and Percentages	Degree of accuracy, simplify	Children will leave y5 being able to: <b>Fractions</b> <ul style="list-style-type: none"> <li>- Compare: use common factors to simplify fractions; use common multiples to express fractions in the same denomination. Compare and order fractions, including fractions &gt; 1</li> <li>- Calculations: 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, <math>1/4 \times 1/2 = 1/8</math> ]. Divide proper fractions by whole numbers [for example <math>1/3 \div 2 = 1/6</math> ]</li> </ul> <b>Decimals</b> <ul style="list-style-type: none"> <li>- Recognise, Write, Compare: identify the value of each digit in numbers given to three decimal places</li> </ul> <b>FDP</b> <ul style="list-style-type: none"> <li>- associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, <math>3/8</math> ]. Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts</li> </ul>	
	Ratio, Proportion and Algebra	Linear number sequence, substitute, variables, symbol, known values	Children will leave y5 being able to: <b>Ratio and Proportion</b>	

		<ul style="list-style-type: none"> <li>- 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/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</li> </ul> <p><b>Algebra</b></p> <ul style="list-style-type: none"> <li>- 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</li> </ul>	<p>mathematical problems</p> <p><b>Adaptive Reasoning</b> - the capacity for logical thought, reflection, explanation, and justification</p> <p><b>Productive Disposition</b> - the habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one's own efficacy.</p>
Measurement		<p>Children will leave y5 being able to:</p> <ul style="list-style-type: none"> <li>- <b>Using measures:</b> solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 d.p. where appropriate. 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 3 d.p. Convert between miles and kilometres</li> <li>- <b>Time:</b> use, read, write and convert between standard units, converting measurements of time from a smaller unit of measure to a larger unit, and vice versa</li> <li>- <b>Perimeter, Area, Volume:</b> 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 (cm<sup>3</sup>) and cubic metres (m<sup>3</sup>), and extending to other units</li> </ul>	
Statistics	Mean, pie chart, construct	<p>Children will leave y5 being able to:</p> <ul style="list-style-type: none"> <li>- <b>Present and Interpret Data:</b> interpret and construct pie charts and line graphs and use these to solve problems</li> <li>- <b>Solve Statistical Problems:</b> calculate and interpret the mean as an average</li> </ul>	
Geometry	Vertically opposite (angles), circumference, radius, diameter, four quadrants (for co-ordinates)	<p>Children will leave y5 being able to:</p> <ul style="list-style-type: none"> <li>- <b>2-D Shapes:</b> draw 2-D shapes using given dimensions and angles. Compare and classify geometric shapes based on their properties and sizes. Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius</li> <li>- <b>3-D Shapes:</b> recognise, describe and build simple 3-D shapes, including making nets</li> <li>- <b>Angles and Lines:</b> find unknown angles in any triangles, quadrilaterals, and regular polygons. Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles</li> <li>- <b>Position and Direction:</b> describe positions on the full coordinate grid (all four quadrants). Draw and translate simple shapes on the coordinate plane, and reflect them in the axes</li> </ul>	