Maths Curriculum Overview

Why?

At Park Hill, we believe that Mathematics build foundational skills for everyday life and future learning, fostering essential abilities like problem-solving, logical reasoning, and spatial awareness. It helps children understand the world through numbers, patterns, and shapes, develops their financial literacy, and opens up a wide range of career opportunities later in life. Early mathematics education is also crucial for building confidence and a positive attitude towards a subject that is vital for success in other academic areas and the modern world.

Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary in most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, and a sense of enjoyment and curiosity about the subject.

How?

At Park Hill, Our Mathematics curriculum is centred around mastering fluency in mathematical strategies and skills and applying these within a variety of situations. Our vision, passion and aims for good Mathematics teaching are shared across the whole of our curriculum.

We use the White Rose scheme of learning which provides high quality and consistent teaching resources for each lesson for the academic year. This supports the children in their initial fluency in new mathematical concepts, breaking down new areas of learning using small steps. It also provides next steps in learning to challenge children who have mastered the step and require problem-solving and reasoning questions to take them further.

White Rose also promotes the use of concrete and pictorial resources which help develop the conceptual understanding that support children to approach calculations flexibly to achieve fluency. Lessons will have resources available for children to develop their understanding.

Weekly times tables assessments take place, with 2-minute tests in Key Stage 2 – these results are recorded and children's progress monitored.

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Teachers use knowledge of children's misconceptions and areas to develop to ensure that lesson starters are impactful and practice those skills yet to be mastered by a large number of children.

Children work with designated mathematics 'talk' partners in lessons to discuss their methods and strategies. This can help reveal children's understanding and misunderstandings. It can support their maths learning by boosting memory, developing maths language, promoting deeper reasoning as well as developing social skills across all subjects.

We aim for all children to achieve in mathematics through support, mathematical talk, use of resources, scaffolding of learning and, when required, mathematics fluency interventions. For children working far below their year group expectations, we organise these children in year groups which match their ability to ensure progress.

The Mastering Number programme is used in Key Stage 1 and Reception to reinforce fluency in number facts with the use of concrete resources.

So?

We want children to make good progress from their own personal starting points. By the end of Year 6, they will have developed confidence and competence with numbers and the number system, the ability to solve problems through decision-making and reasoning in a range of contexts, explore features of shape and space, and develop measuring skills in a range of contexts.

The children should understand the importance of Mathematics in everyday life and become flexible in their thinking.

Maths Curriculum Overview

	Autumn	Spring	Summer
Nursery	**Early Maths** Recite numbers in order. Sing number rhymes / songs. Subitise to 3 **Calendar and Time** Use the visual timetable Sing the days of the week song Talk about the month / season. Talk about what happened today, yesterday and tomorrow. **Numbers Within 3** Count / order up to 3 objects. Know that the last number you count represents the total number of objects. Conservation of numbers to 3 Make marks representing numbers. Recognise numerals to 3 **Measures** Compare objects by size and capacity.	**Shape and Pattern** Explore 2D / 3D shape using everyday language – sides, corners, straight, slat, round. Patterns – spot errors. Make and extend repeating patterns – ABAB e.g. stick, leaf, stick, leaf. **Numbers Within 5** Count objects to 5. Compare quantities. Match numerals to numbers of objects. Conservation to 5. Solve problems. **Problem Solving** Real life problems. Using numbers in the environment **Using Shapes** Mathematical names – circle, rectangle, triangle, cuboid. Choosing appropriate shapes to make something. Make new shapes with blocks e.g. to make an arch or a bigger triangle.	**Measures** Compare objects by length and weight. Sequence events – fist, then… **Money** Count coins Recognise coins 1p 2p 5p Recite numbers up to 10 **Position and Routes** Use everyday words to describe position – in front of, behind. Describe a simple route to others. **Numbers Beyond 5** Recognise numbers to 10. Create sets of numbers up to 10. Recite beyond ten / twenty. Begin to compare quantities – more than / fewer than.

Maths Curriculum Overview

	Autumn	Spring	Summer
Reception	**Match, sort and compare** Matching and sorting objects and pictures, identifying sets, sorting and creating sorting rules, comparing amounts **Talk about measure and patterns** Comparing size, mass and capacity, exploring, copying and continuing simple patterns **It's me 1, 2, 3** Finding, subitising and representing 1, 2 and 3, 1 more, 1 more, composition of 1, 2 and 3 **Circles and triangles** Identifying, naming and comparing circles and triangles, shapes in the environment, describing position **1, 2, 3, 4, 5** Finding, subitising and representing 4 and 5, 1 more, 1 less, composition of 4 and 5 **Shapes with 4 sides** Identifying and naming shapes with 4 sides, combining shapes with 4 sides, my day and night	**Alive in 5** 0, finding, subitising and representing 0 to 5, 1 more, 1 less, composition **Mass and capacity** Comparing mass, finding a balance, exploring capacity, comparing capacity **Growing 6, 7, 8** Finding and representing 6, 7, 8, 1 more, 1 less, composition, making pairs, odd and even, double to 8, combining 2 groups **Length, height and time** Exploring and comparing length, exploring and comparing height, talking about time, ordering and sequencing **Building 9 and 10** Finding, representing and subitising 9 and 10, comparing numbers to 10, 1 more, 1 less, bonds to 10 (2 parts), arrangements of 10, bonds to 10 (3 parts), doubles to 10 (finding and making), exploring even and odd **Explore 3D shapes** Recognising, naming and using 3D shapes, finding 2D shapes within 3D shapes, 3D shapes in the environment, copying and continuing more complex patterns, patterns in the environment	**To 20 and beyond** Building numbers beyond 10, continuing patterns beyond 10, verbal counting beyond 20, verbal counting patterns **How many now?** Adding more, how many did I add? Taking away, how many did I take away? **Manipulate, compose and decompose** Selecting shapes for a purpose, rotating and manipulating shapes, explaining shape arrangements, composing and decomposing shapes, copying 2D shape pictures, finding 2D shapes within 3D shapes **Sharing and grouping** Exploring sharing, sharing, exploring grouping, grouping, even and odd sharing, playing with building doubles **Visualise, build and map** Identifying units of repeating patterns, creating and exploring own pattern rules, replicating and building scenes and constructions, visualising from different positions, describing positions, giving instructions to build, exploring mapping, representing maps with models, creating own maps and plans from stories and familiar places **Make connections** Deepening understanding, patterns and relationships

Maths Curriculum Overview

	Autumn	Spring	Summer
Year 1	**Number** Place value (within 10) – sorting and counting, recognising numbers as words, counting on from any number, 1 more, 1 less, counting backwards from 10, fewer, more, same, less than, greater than, equal to, the number line **Number** Addition and subtraction (within 10) – parts and wholes, number sentences, fact families, addition problems, bonds within 10, using a number line **Geometry** 2D and 3D shapes, sorting, patterns	**Number** Place value (within 20) – counting, understanding ten, understanding tens and ones, 1 more and 1 less, using and estimating with a number line to 20, comparing and ordering numbers to 20 **Number** Addition and subtraction (within 20) – adding by counting on, adding and subtracting ones with number bonds, finding and making number bonds to 20, doubles, near doubles, subtracting by counting back, finding the difference, using related facts, missing number problems **Number** Place value (within 50) – counting from 20 to 50, understanding tens (20, 30, 40 and 50), making groups of tens, counting in tens, partitioning into tens and ones, using and estimating with a number line to 50, 1 more and 1 less **Measurement** Length and height – comparing lengths and heights, measuring length using objects, measuring length in centimetres **Measurement** Mass and volume – heavier and lighter, measuring and comparing mass, full and empty, comparing volume, measuring and comparing capacity	**Number** Multiplication and division – counting in 2s, 10s and 5s, recognising and adding equal groups, making arrays, making doubles, making equal groups – sharing and grouping **Number** Fractions (halves and quarters) – recognising and finding half and a quarter of objects or shapes, recognising and finding half and a quarter of a quantity **Geometry** Position and direction – describing turns, describing position – left and right, forwards and backwards, above and below, ordinal numbers **Number** Place value (within 100) – counting from 50 to 100, tens to 100, partitioning into tens and ones, the number line to 100, 1 more, 1 less, comparing numbers with the same number of tens, comparing any two numbers **Measurement** Money – unitising, recognising coins, recognising notes, counting in coins **Measurement** Time – before and after, days of the week, months of the year, hours, minutes and seconds, telling time to the hour, telling time to the half hour

Maths Curriculum Overview

	Autumn	Spring	Summer
Year 2	**Number** Place value – counting to 100 by making 10s, recognising tens and ones, using a place value chart, partitioning numbers to 100 (including in different ways), writing numbers to 100 in words, 10s and 1s on a number line, estimating numbers on a number line, comparing and ordering objects and numbers, counting in 2s, 5s and 10s, counting in 3s **Number** Addition and subtraction – bonds to 10, fact families (bonds within 20), related facts, bonds to 100 (tens), adding and subtracting 1s, adding by making 10, adding three 1-digit numbers, adding to the next 10, adding and subtracting across a 10, subtracting from a 10, 10 more, 10 less, adding and subtracting 10s, adding two 2-digit numbers (including across a 10), mixed addition and subtraction, comparing number sentences, missing number problems **Geometry** Shape – recognising 2D and 3D shapes, counting sides, counting vertices, drawing 2D shapes, lines of symmetry, using lines of symmetry to complete shapes, counting faces, counting edges, counting vertices, sorting 3D shapes, making patterns with 2D and 3D shapes	**Measurement** Money – counting pence, counting pounds (notes and coins), counting pounds and pence, choosing notes and coins, making the same amount, comparing amounts of money, calculating with money, making a pound, finding change, two-step problems **Number** Multiplication and division – recognising, making and adding equal groups, the multiplication symbol and multiplication sentences, using arrays, making equal groups (grouping and sharing), 2, 5 and 10 times table, dividing by 2, 5 and 10, doubling and halving, odd and even numbers **Measurement** Length and height – measuring in centimetres and metres, comparing and ordering lengths and height, using the four operations with length and height **Measurement** Mass, capacity and temperature – comparing mass, measuring in grams and kilograms, four operations with mass, comparing volume and capacity, measuring in millilitres and litres, four operations with volume and capacity, temperature	**Number** Fractions – parts and whole, equal and unequal parts, recognising and finding half, quarter, a third, finding the whole, unit fractions, non-unit fractions, equivalence of half and two quarters, recognising and finding three quarters, counting in fractions up to a whole **Measurement** Time – o'clock and half past, quarter past and quarter to, telling time past the hour, telling time to the hour, telling time to 5 minutes, minutes in an hour, hours in a day **Statistics** Making tally charts, tables, block diagrams, drawing and interpreting pictograms (1-1, then 2, 5 and 10)

Maths Curriculum Overview

	Autumn	Spring	Summer
Year 3	**Number** Place value – representing and partitioning numbers to 100, number line to 100, hundreds, representing and partitioning numbers to 1000 (flexible partitioning too), hundreds, tens and ones, 1, 10 or 100 more and less, the number line to 1000, estimating on a number line, comparing and ordering numbers to 1000, counting in 50s **Number** Addition and subtraction – applying number bonds within 10, adding and subtracting 1s, 10s and 100s, spotting patterns, adding 1s across a 10, adding 10s across 100, subtracting 1s across a 10, subtracting 10s across 100, making connections, adding and subtracting two numbers (no exchange), adding and subtracting two numbers across a 10 and across a 100, adding 2-digit and 3-digit numbers, subtracting 2-digit from 3-digit numbers, complements to 100, inverse operations **Number** Multiplication and division A – equal groups, using arrays, multiples of 2, 5 and 10, sharing and grouping, multiplying and dividing by 3, 4 and 8, the 3, 4 and 8 times table	**Number** Multiplication and division B – multiples of 10 and relating calculations, reasoning, multiplying 2-digit by 1-digit numbers (without, then with exchange), dividing 2-digit by 1-digit numbers (no exchange, then flexible partitioning, then with remainders), scaling, finding different ways **Measurement** Length and perimeter – measuring in metres, centimetres and millimetres, equivalent lengths (metres and centimetres, then centimetres and millimetres), comparing lengths, adding and subtracting lengths, measuring and calculating perimeter **Number** Fractions A – denominators of unit fractions, comparing and ordering unit fractions, numerators of non-unit fractions, the whole, comparing and ordering non-unit fractions, fractions and scales, fractions on a number line, equivalent fractions (number lines and bar models)	**Number** Fractions B – adding fractions, subtracting fractions, partitioning the whole, unit fractions of sets of objects, non-unit fractions of sets of objects, reasoning with fractions of an amount **Measurement** Money – pounds and pence, converting pounds and pence, adding and subtracting money, finding change **Measurement** Time – roman numerals to 12, telling time to 5 minutes, telling time to the minute, reading digital clocks, using am and pm, years, months and days, days and hours, hours and minutes (start and end times and durations), minutes and seconds, units of time, solving problems **Geometry** Shape – turns and angles, right angles, comparing angles, measuring and drawing accurately, horizontal and vertical, parallel and perpendicular, recognising and describing 2D and 3D shapes, drawing polygons, making 3D shapes **Statistics** Interpreting and drawing pictograms, interpreting and drawing bar charts, collecting and representing data, two-way tables

Maths Curriculum Overview

	Autumn	Spring	Summer
Year 4	**Number** Place value – representing and partitioning numbers to 1000, number line to 1000, thousands, representing and partitioning numbers to 10,000, partitioning in different ways, 1, 10, 100, 1000 more or less, number line to 10,000, comparing and ordering numbers up to 10,000, roman numerals, rounding to the nearest 10 / 100 / 1,000 **Number** Addition and subtraction – adding and subtracting 1s, 10s, 100s and 1000s, adding up to two 4-digit numbers (without and with exchange), subtracting two 2-digit numbers (one exchange, then more than one exchange), subtracting efficiently, estimating and checking **Measurement** Area – counting squares, making shapes, comparing area **Number** Multiplication and division A – multiples of 3, multiplying and dividing by 6 and 9, the 3, 6 and 9 times tables, multiplying and dividing by 7, times tables and division facts (x7, x11, x12), multiplying by 1 and 0, dividing a number by 1 and itself, multiplying three numbers	**Number** Multiplication and division B – factor pairs, multiplying and dividing by 10 and 100, related facts for multiplication and division, informal written methods, multiplying and dividing a 2-digit number by 1-digit number, multiplying and dividing 3-digit number by 1-digit number, correspondence problems, efficient multiplication **Measurement** Length and perimeter – kilometres and metres, equivalent lengths, perimeter on a grid, perimeter of a rectangle and rectilinear shapes, finding missing lengths, calculating perimeter, perimeter of regular polygons, perimeter of polygons **Number** Fractions – understanding the whole, counting beyond 1, partitioning mixed numbers, comparing and ordering mixed numbers, improper fractions, converting improper fractions to mixed numbers, equivalent fraction families, adding two or more fractions, adding fractions and mixed numbers, subtracting two fractions, subtracting from whole amounts, subtracting from mixed numbers **Number** Decimals A – tenths as fractions and decimals, tenths on a place value chart and number line, dividing by 10, hundredths as fractions and decimals, hundredths on a place value chart, dividing by 100	**Number** Decimals B – making a whole with tenths and hundredths, partitioning decimals, flexibly partitioning decimals, comparing and ordering decimals, rounding to the nearest whole number, halves and quarters as decimals **Measurement** Money – writing money using decimals, converting pounds and pence, comparing and estimating with money, calculating and solving problems with money **Measurement** Time – years, months, weeks and days, hours, minutes and seconds, converting between analogue and digital, converting to and from the 24 hour clock **Geometry (consolidation)** Shape – angles, triangles, quadrilaterals, polygons, lines of symmetry **Statistics (consolidation)** Charts, line graphs, comparison, sum and difference **Geometry (consolidation)** Position and direction – coordinates, drawing 2D shapes on a grid, translating on a grid

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	Autumn	Spring	Summer
Year 5	**Number** Place value – roman numerals to 1,000, numbers to 10,000, 100,000 and 1,000,000 (reading and writing), powers of 10, 10/100/1,000/10,000/100,000 more or less, partitioning numbers up to 1,000,000, number line to 1,000,000, comparing and ordering numbers to 100,000 and 1,000,000, rounding to the nearest 10 / 100 / 1,000, rounding within 100,000 and 1,000,000 **Number** Addition and subtraction – mental strategies, adding and subtracting whole numbers with more than 4 digits, rounding to check answers, inverse operations, multistep problems, comparing calculations, finding missing numbers **Number** Multiplication and division A – multiples, common multiples, factors, common factors, prime numbers, square numbers, cube numbers, multiplying and dividing by 10, 100 and 1,000, multiples of 10, 100 and 1,000 **Number** Fractions A – finding fractions equivalent to unit and non-unit fractions, recognising equivalent fractions, converting improper fractions to mixed numbers and vice versa, comparing and ordering fractions less than / greater than 1, adding and subtracting fractions with the same denominator, adding fractions within 1, adding fractions with a total greater than 1, adding to a mixed number, adding two mixed numbers, subtracting fractions, subtracting from a mixed number (then breaking the whole), subtracting two mixed numbers	**Number** Multiplication and division B – multiplying up to a 4-digit number by a 1-digit number, multiplying 2-digit by 2-digit numbers (area model), multiplying 3-digit and 4-digit numbers by a 2-digit number, solving problems with multiplication, short division, dividing 4-digit numbers by 1-digit numbers, dividing with remainders, efficient division, problem solving **Number** Fractions B – multiplying unit and non-unit fractions by an integer, multiplying mixed numbers by integers, calculating fractions of quantities, fractions of amounts, finding the whole, using fractions as operators **Number** Decimals and percentages – decimals up to 2 decimal places, equivalent fractions and decimals (tenths and hundredths), thousandths as fractions and decimals, thousandths on a place value chart, ordering and comparing decimal numbers (up to 3 decimal places), rounding to the nearest whole number, rounding to 1 decimal place, percentages as fractions and decimals, equivalent fractions, decimals and percentages **Measurement** Perimeter and area – perimeter of rectangles and rectilinear shapes, perimeter of polygons, area of rectangles, area of compound shapes, estimating area **Statistics** Drawing line graphs, reading and interpreting line graphs, reading and interpreting tables, two-way tables, reading and interpreting timetables	**Geometry** Shape – understanding and using degrees, classifying angles, estimating angles, measuring angles up to 180º, drawing lines and angles accurately, calculating angles around a point and a straight line, lengths and angles in shapes, regular and irregular polygons, 3D shapes **Geometry** Position and direction – reading and plotting coordinates, problem solving with coordinates, translation, translation with coordinates, lines of symmetry, reflection in horizontal and vertical lines **Number** Decimals – using known facts to add and subtract decimals within 1, complements to 1, adding and subtracting decimals across 1, adding and subtracting decimals with the same and different numbers of decimal places, efficient strategies for adding and subtracting decimals, decimal sequences, multiplying and dividing by 10, 100 and 1,000, multiplying and dividing decimals with missing values **Number** Negative numbers – counting through zero in 1s, counting through zero in multiples, comparing and ordering negative numbers, finding the difference **Measurement** Converting units – kilograms and kilometres, millimetres and millilitres, converting units of length, converting between metric and imperial units, converting units of time, calculating with timetables **Measurement** Volume – cubic centimetres, comparing and estimating volume, estimating capacity

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	Autumn	Spring	Summer
Year 6	**Number** Place value – numbers to 1,000,000, numbers to 10,000,000, powers of 10, number line to 10,000,000, comparing and ordering any integers, rounding any integer, negative numbers **Number** Addition, subtraction, multiplication and division – adding and subtracting integers, common factors, common multiples, rules of divisibility, primes to 100, square and cube numbers, multiplying up to a 4-digit number by a 2-digit number, solving problems with multiplication, short division, division using factors, long division with remainders, solving problems, order of operations, mental calculations and estimations, reasoning from known facts **Number** Fractions A – equivalent fractions and simplifying, equivalent fractions on a number line, comparing and ordering (denominator, then numerator), adding and subtracting fractions, adding and subtracting mixed numbers, multi-step problems **Number** Fractions B – multiplying fractions by integers, multiplying fractions by fractions, dividing fractions by integers, dividing fractions by fractions, mixed questions with fractions, fractions of an amount, finding the whole **Measurement** Converting units – metric measures, converting metric measures, calculating with metric measures, miles and kilometres, imperial measures	**Number** Ratio – using ratio language and the symbol, ratio and fractions scale drawing, using scale factors, similar shapes, ratio problems, proportion problems, recipes **Number** Algebra – 1 and 2 step function machines, forming expressions, substitution, formulae, form equations, solving 1-step and 2-step equations, finding pairs of values, solving problems with two unknowns **Number** Decimals – place value within 1, place value of integers and decimals, rounding decimals, adding and subtracting decimals, multiplying and dividing by 10, 100 and 1,000, multiplying and dividing decimals by integers, multiplying and dividing decimals in context **Number** Fractions, decimals and percentages – decimal and fraction equivalents, fractions as division, fractions to percentages, equivalent fractions, decimals and percentages, ordering fractions, decimals and percentages, percentage of an amount (one step and multi-step), making values **Measurement** Area, perimeter and volume – shapes (same area), area of a triangle (counting squares), area of a right-angled triangle, area of any triangle, area of a parallelogram, volume (counting cubes), volume of a cuboid **Statistics** Line graphs, dual bar charts, reading and interpreting pie charts, pie charts with percentages, drawing pie charts, the mean	**Geometry** Shape – measuring and classifying angles, calculating angles, vertically opposite angles, angles in a triangle (special cases and missing angles), angles in quadrilaterals, angles in polygons, circles, drawing shapes accurately, nets of 3D shapes **Geometry** Position and direction – the first quadrant, reading and plotting points in four quadrants, solving problems with coordinates, translations, reflections **Themed projects for consolidation and problem solving**