



MATHEMATICS CURRICULUM

KS2 Progression

Believing | Expressing | Living | Reasoning | Year 3 to Year 6

Purpose of this document

This overview sets out how pupils' mathematical knowledge, fluency, reasoning and problem-solving develop through Key Stage 2 at Park Road Academy. It brings together the progression in the source Maths document and shows how number, calculation, fractions, measurement, geometry, statistics, ratio, proportion, algebra and mathematical language build from Year 3 to Year 6.

Key Stage 2 curriculum position

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Pupils develop confidence and fluency with whole numbers, the four operations, fractions, decimals and percentages; reason mathematically; solve increasingly complex problems; and make connections across number, measurement, geometry, statistics, ratio, proportion and algebra.

Progression principles

BUILD FROM KS1	REVISIT & DEEPEN	DEVELOP INDEPENDENCE	YEAR 7 TRANSITION
Earlier understanding of number, place value, calculation, fractions, measures, shapes and patterns is recalled before pupils meet greater numerical and conceptual demand.	Key ideas recur through representations, mental and written methods, vocabulary, reasoning and problem-solving, with increasing size, complexity and abstraction.	Pupils select efficient methods, use manipulatives and diagrams strategically, explain thinking, check answers and apply mathematics to unfamiliar contexts.	Pupils leave fluent with core number facts, confident in reasoning, secure with fractions and algebraic thinking, and ready to solve multi-step problems independently.

Curriculum strands

Number & place value	Calculation & fluency	Fractions, decimals & percentages	Measurement	Geometry & statistics	Ratio, proportion, algebra & problem solving
Count, read, write, order, compare, round and calculate with increasingly large numbers, including negatives.	Develop mental and written methods for the four operations; use facts, factors, multiples and efficient strategies.	Recognise, compare, calculate, convert and apply fractions, decimals and percentages.	Measure, compare, estimate and calculate with length, mass, capacity, money, time, perimeter, area and volume.	Reason about properties, angles, position, transformations, data, graphs, charts and averages.	Recognise relationships, generalise, represent unknowns and solve increasingly complex multi-step problems.



Year 3 Maths Curriculum Map

Securing place value, calculation and practical mathematical language

Learning emphasis

Year 3 secures the foundations of lower KS2: place value to 1, , formal addition and subtraction, multiplication facts, fractions, decimals, measures, shape and data. Pupils explain methods and solve one- and two-step problems.

Strand	Core knowledge and skills	Reasoning, vocabulary and application
Number & place value	Count in multiples of 4, , 5 and 1 ; read, write, order and compare to 1, ; recognise place value to thousands; round to nearest 1 /1 /1, ; use Roman numerals to 1, .	Use place-value language, compare numbers and solve practical problems.
Calculation	Add and subtract up to 3 digits using formal methods; estimate and use inverse; recall 3, 4 and times tables; multiply/divide 2-digit by 1-digit; use factor pairs and commutativity.	Choose efficient methods, explain steps and check with inverse operations.
Fractions & decimals	Count in tenths; recognise unit/non-unit fractions; find fractions of sets; recognise tenths as decimals; compare decimals to 2 places.	Use diagrams and number lines; solve fraction and decimal problems.
Measurement	Measure and compare length, mass, capacity and money; add/subtract amounts; tell time to 5 minutes and use 12/24-hour clocks; calculate perimeter.	Estimate, select units and solve practical measure and money problems.
Geometry & statistics	Recognise right angles and compare with other angles; identify perpendicular/parallel lines; draw 2D shapes; interpret pictograms, bar charts and tables.	Use precise geometric vocabulary and present/interpret data.



Year 4 Maths Curriculum Map

Developing efficient methods, equivalence and mathematical reasoning

Learning emphasis

Year 4 extends number to larger values and strengthens fluency with all times tables, written methods, fractions, decimals, measures, coordinates, angles and data. Pupils reason about equivalence and explain why methods work.

Strand	Core knowledge and skills	Reasoning, vocabulary and application
Number & place value	Count in multiples of 6, , 25 and 1, ; order and compare beyond 1, ; recognise value of each digit; round to nearest $\frac{1}{10}$ / $\frac{1}{100}$; read Roman numerals to 1 .	Use negative numbers in context and solve number problems with increasingly large numbers.
Calculation	Add/subtract up to 4 digits; estimate and use inverse; recall all multiplication/division facts to 12 12; multiply 2/3-digit by 1-digit and 2-digit by 2-digit; divide with remainders.	Use efficient written and mental methods; interpret remainders in context.
Fractions & decimals	Recognise equivalent fractions; count in hundredths; add/subtract fractions with same denominator; divide by $\frac{1}{10}$; compare decimals to 2 places.	Use equivalence and representations to justify comparisons and calculations.
Measurement	Convert between units; estimate, compare and calculate measures; read time to the minute and solve duration problems; calculate perimeter and area of rectangles.	Solve money, time and measure problems and explain choice of units.
Geometry & statistics	Compare and classify angles; identify quadrilaterals and triangles; describe positions using coordinates; interpret bar charts, pictograms and tables.	Use coordinates and geometric language; present and interpret discrete and continuous data.



Year 5 Maths Curriculum Map

Extending number, fractions and relationships through reasoning

Learning emphasis

Year 5 extends number to one million and develops formal methods, factors, primes, fractions, decimals, percentages, area, volume, angles, coordinates and statistics. Pupils make connections and solve multi-step problems with increasing independence.

Strand	Core knowledge and skills	Reasoning, vocabulary and application
Number & place value	Read, write, order and compare to at least 1, , ; round to required accuracy; use negative numbers; read Roman numerals to 1, .	Use place value and number facts to solve problems and interpret scales.
Calculation	Use formal written methods for all four operations; identify factors, multiples, primes, squares and cubes; use short division; solve multi-step problems.	Select efficient methods, use estimation, check with inverse and explain reasoning.
Fractions, decimals & percentages	Identify equivalent fractions; convert improper/mixed numbers; add/subtract fractions with related denominators; multiply fractions by integers; read, write and compare decimals to 3 places; recognise percentages.	Solve fraction, decimal and percentage problems, including measures and money.
Measurement & geometry	Convert between units; calculate perimeter and area including compound shapes; estimate volume; identify 3D shapes; measure and calculate angles; use coordinates and transformations.	Use scale, properties and formulae to solve increasingly complex problems.
Statistics, ratio & proportion	Read and interpret tables, line graphs and timetables; understand percentages; begin scaling and proportion.	Interpret data and apply mathematical relationships to real-life contexts.



Year 6 Maths Curriculum Map

Independent reasoning, algebraic thinking and transition readiness

Learning emphasis

Year 6 brings together the full primary curriculum. Pupils work confidently with large numbers, the four operations, fractions, decimals, percentages, ratio, proportion, algebra, geometry and statistics, applying mathematics to unfamiliar multi-step problems.

Strand	Core knowledge and skills	Reasoning, vocabulary and application
Number & calculation	Read, write, order and compare to at least 1, , ; use negative numbers; round to powers of 1 ; use long multiplication and division; identify common factors, primes and square/cube numbers.	Use order of operations, estimation and inverse operations; solve multi-step problems and justify efficient choices.
Fractions, decimals & percentages	Use thousandths; simplify and compare fractions; add/subtract/multiply/divide fractions; multiply/divide decimals by powers of 1 ; calculate decimal/fraction/percentage equivalents and percentages of quantities.	Solve unequal sharing, scaling and comparison problems using fractions, decimals and percentages.
Ratio & proportion	Solve problems involving ratio, scale factors, unequal sharing and grouping; recognise proportion in contexts.	Represent relationships using diagrams, tables and equations; explain scaling and comparison.
Measurement & geometry	Use formulae for area of parallelograms/triangles and volume of cuboids; convert measures; calculate angles; classify shapes; use coordinates in four quadrants; translate, reflect and describe transformations.	Reason from properties, scale and formulae; solve geometric problems accurately.
Statistics & algebra	Interpret and construct pie charts and line graphs; calculate and interpret the mean; use simple formulae, missing-number problems and algebraic notation.	Generalise patterns, express unknowns and solve problems systematically.



KS2 Maths Progression at a Glance

How the mathematical journey develops

The end point

By the end of KS2, pupils can calculate fluently, reason precisely, use representations flexibly, solve multi-step problems, explain and check their thinking, and apply mathematics independently to unfamiliar and real-life contexts.

Dimension	Year 3	Year 4	Year 5	Year 6 / end point
Number & place value	Secure numbers to 1, ; place value to thousands; positive/negative contexts.	Numbers beyond 1, ; rounding and Roman numerals.	Numbers to one million; factors, primes and powers.	Numbers to ten million; full place-value reasoning and order of operations.
Calculation	Formal addition/subtraction; multiplication facts; multiply/divide 2-digit numbers.	All tables to 12 12; formal multiplication and division.	Efficient formal methods; factors, primes and multi-step calculation.	Long multiplication/division, algebraic thinking and independent strategy.
Fractions/decimals/	Unit/non-unit fractions; tenths and simple decimals.	Equivalence; hundredths; decimals to 2 places.	Mixed/improper fractions; decimals to 3 places; percentages.	Full operations with fractions; decimal/equivalence and percentage problems.
Measure/geometry	Practical measures, time, perimeter, angles and 2D shapes.	Unit conversion, area, coordinates and angles.	Area, volume, transformations and scale.	Formulae, four-quadrant coordinates, transformations and geometric reasoning.
Statistics/relationships	Tables, pictograms and bar charts.	Data interpretation and coordinates.	Line graphs, percentages and proportion.	Pie charts, mean, ratio, proportion and algebra.
Reasoning/problem solving	Explain methods and solve one/two-step problems.	Justify equivalence and interpret remainders.	Connect representations and solve multi-step problems.	Generalise, prove/check and solve unfamiliar problems independently.



Mathematical Fluency, Reasoning and Representation

The habits that enable exceptional progress

A connected approach

Pupils are expected to move between concrete materials, pictorial representations, diagrams, mental methods, written methods, symbols and explanations. Fluency supports reasoning; reasoning supports problem-solving; problem-solving gives mathematics purpose.

Element	Progression expectation	Possible evidence
Fluency	Recall number facts and times tables; calculate accurately and efficiently; choose appropriate mental or written methods.	Quick recall; calculation practice; method comparison; self-checking.
Reasoning	Use mathematical vocabulary, representations and evidence to explain, compare, generalise and justify.	Always, sometimes, never; explain errors; prove or disprove; compare methods.
Problem solving	Understand the problem, represent it, select a strategy, persevere, check and communicate the answer.	Multi-step tasks; unfamiliar contexts; practical problems; reflection.
Representation	Use manipulatives, number lines, arrays, bar models, tables, graphs, coordinates, equations and formulae.	Concrete pictorial abstract progression; multiple representations; modelled thinking.

Transition to Year

Pupils are ready for secondary mathematics when they can calculate fluently, use fractions/decimals/percentages confidently, reason with ratio and proportion, apply algebraic thinking, interpret data, use geometric properties and solve multi-step problems independently while explaining and checking their methods.



Assessment and Year Readiness

Evidence, inclusion and next steps

Assessment principle

Assessment is ongoing and responsive. Teachers identify what pupils know, how they represent it, the efficiency of their methods, the quality of their reasoning and their ability to apply learning in unfamiliar contexts. Misconceptions are addressed through precise questioning, representation and feedback.

Area	Year readiness	Possible evidence
Fluency and accuracy	Secure number facts, times tables, calculation methods, fractions, decimals, percentages and measures.	Low-stakes checks; calculations; retrieval; independent practice.
Reasoning and communication	Use precise vocabulary, representations and evidence to explain, compare, generalise and justify.	Oral reasoning; written explanations; error analysis; proof tasks.
Problem solving and independence	Select strategies, persevere, check solutions and apply mathematics to unfamiliar and real-life contexts.	Multi-step problems; investigations; practical application; reflection.
Depth and challenge	Make connections, identify patterns, reason about efficiency, generalise and solve more than one way.	Greater-depth tasks; open problems; algebraic generalisation; pupil explanation.

Transition to Year

Pupils are ready to move into secondary mathematics when they can work confidently with the full primary number curriculum, reason and communicate clearly, apply ratio, proportion and algebraic thinking, interpret statistics, solve unfamiliar problems and independently select, check and refine efficient methods.