Curriculum Overview: Mathematics

Mathematics

At St Peter and St Paul's, we promote a positive, can-do approach to learning, through which the pupils are able to feel confident exploring and developing their skills in Mathematics. We actively seek to dispel myths such as 'some people just can't do maths', and aim to instil within every child an understanding of themselves as mathematicians. We follow a mastery approach, building a strong foundation of understanding and a clear grasp of the number system, which follows each child throughout their mathematics education and underpins all the learning they do during their time in primary school and beyond.

We use the mastery approach to teaching mathematics, which centres around the NCETM's 'Five Big Ideas':

Coherence

Teaching is designed to enable a coherent learning progression through the curriculum, providing access for all pupils to develop a deep and connected understanding of mathematics that they can apply in a range of contexts.

Representation and Structure

Teachers carefully select representations of mathematics to expose mathematical structure. The intention is to support pupils in 'seeing' the mathematics, rather than using the representation as a tool to 'do' the mathematics. These representations become mental images that students can use to think about mathematics, supporting them to achieve a deep understanding of mathematical structures and connections.

Mathematical Thinking

Mathematical thinking is central to how pupils learn mathematics and includes looking for patterns and relationships, making connections, conjecturing, reasoning, and generalising. Pupils should actively engage in mathematical thinking in all lessons, communicating their ideas using precise mathematical language.

Fluency

Efficient, accurate recall of key number facts and procedures is essential for fluency, freeing pupils' minds to think deeply about concepts and problems, but fluency demands more than this. It requires pupils to have the flexibility to move between different contexts and representations of mathematics, to recognise relationships and make connections, and to choose appropriate methods and strategies to solve problems.

Variation

The purpose of variation is to draw closer attention to a key feature of a mathematical concept or structure through varying some elements while keeping others constant.
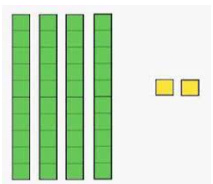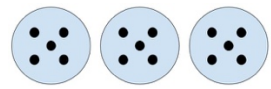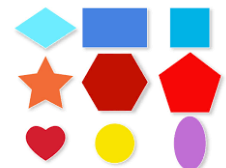
- Conceptual variation involves varying how a concept is represented to draw attention to critical features. Often more than one representation is required to look at the concept from different perspectives and gain comprehensive knowledge.
- Procedural variation considers how the student will 'proceed' through a learning sequence. Purposeful changes are made in order that pupils' attention is drawn to key features of the mathematics, scaffolding students' thinking to enable them to reason logically and make connections.

Teachers draw from a wide range of teaching resources, including the NCETM Master Resources, White Rose and NRich. Pupils are also given bespoke resources, targeted at their areas for development, to ensure that their individual needs are being met.
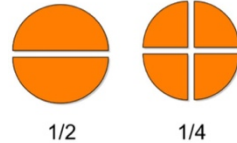
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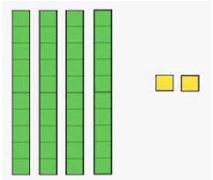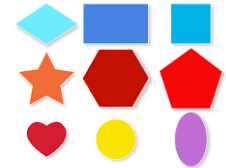
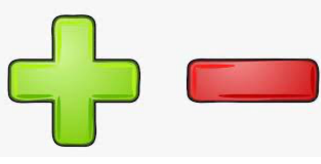|	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS						
	Getting to know you Patterns, pairs, compare objects, odd one out Positional language **Vocabulary:** Pattern, pair, matching, opposite, odd one out	**1…2…3** Comparison and composition Circles and Triangles **Numbers to 5** Comparison and composition. One more and less. Shapes with four sides. Night and Day **Vocabulary:** circle, triangle, sides, shapes, night, day	**Numbers to 5** Introduce 0. Comparison and composition. Compare mass and capacity. **6,7,8** Introduce. Pairs. Combining two groups. Length and Height. **Vocabulary:** heavy, light, heavier, lighter, pair, combine, long, short	**9 and 10** Comparison, composition and combination. Bonds to 10. 3D shapes and patterns. **Vocabulary:** less, more, add on, take away, 2D, 3D, corners, sides, edges	**Continue to consolidate:** Subitising, counting, composition to 10, sorting and ordering. **To 20 and beyond.** 10 and bit structure of teen numbers. Patterns and spatial reasoning. **First, then, now.** Adding and subtraction stories. **Vocabulary:** count on, count back, order	**Doubling, Sharing and Grouping** Even and odd. Spatial reasoning. **Patterns and Relationships.** Spatial Reasoning **Vocabulary:** even, odd, space, position, pattern, close, far, near
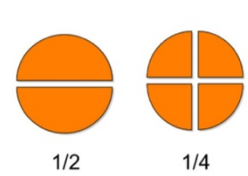
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	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	**Number** **Part – whole** Composition of number up to 10 Comparisons **Vocabulary:** number, zero, one to twenty and beyond, none, count (on, up, to, from, down), before, after, more, less, many, few, fewer, least, fewest, smaller, greater, equal to, the same as, odd, even, pair, units, tens, ones, digit, numeral, figures, compare, size, value, between, halfway between, above, below **Resources:** NCETM Mastery Materials https://www.ncetm.org.uk/teaching-for-mastery/mastery-materials/primary-mastery-professional-development/number-addition-and-subtraction/ White Rose Workbooks	**Number** **Additive structures** Addition and subtraction strategies (within 10) **Vocabulary:** Number bonds, number lines, add, more, plus, make, sum, total, altogether	**Number** **Addition and Subtraction** Two-digit number composition 20-100 then 11-19 Multiples of 10 up to 100 **Vocabulary:** Number bonds, number lines, add, more, plus, make, sum, total, altogether, inverse, double, halve, equals, the same, difference between, subtract, take away, minus	**Number** **Multiplication and Division** Unitising and coins. Grouping and counting in groups (2,5,10,20) **Fractions** Halves and quarters **Vocabulary:** count in twos, fives, tens, how many times? Lots of, groups of, multiples of, repeat addition, array, row, column, commutative, double, halve, share, equal, group in pairs/threes, divide, divided by, left over, half, quarter	**Shape** Recognise, name and sort 2-D and 3-D shapes **Vocabulary:** group, sort, cube, cuboid, pyramid, sphere, cone, cylinder, circle, triangle, square, hexagon, pentagon, flat, curved, straight, face, side, edge, corner **Measure** Height, Length, Weight **Vocabulary:** Estimate, measure, heavy, light, long, short, centimetres, metres	**Measure** **Time** **Vocabulary:** minutes, hours, seconds, clock, timer **Geometry** Position and Direction **Vocabulary:** Position, direction, over, under, next to, on inside, above, below, top, bottom, side, on, in outside, inside, out, around, front, back, behind, apart, middle, edge, centre, corner, direction, left, right, up down, forwards, backwards, across, close, far, near, along, through

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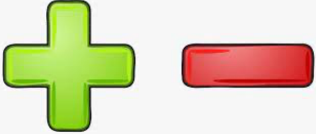|	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 2	**Number** Composition of number to 100 Bridging 10 Subtraction as difference **Vocabulary (in addition to previous year's vocabulary):** hundreds, partition, recombine, combine	**Addition and Subtraction** Two digit and single digit numbers. Two digit and multiples of 10. **Vocabulary (in addition to previous year's vocabulary):** hundreds, partition, recombine, combine **Multiplication and Division** Equal groups Commutativity Groups of 2 **Vocabulary (in addition to previous year's vocabulary):** lots of, sets of, grouping, sharing	**Multiplication and Division** Commutativity Doubling and halving Times tables **Vocabulary (in addition to previous year's vocabulary):** lots of, sets of, grouping, sharing **Fractions** Equal parts Halves Quarters (unit fractions) **Vocabulary (in addition to previous year's vocabulary):** one quarter, three quarters, one third, equivalent, whole	**Shape** Properties of shape **Vocabulary (in addition to previous year's vocabulary):** size, symmetrical, symmetry, fold, match, mirror line, reflection, pattern, repeat **Addition and Subtraction** Two digit and Two digit numbers **Vocabulary (in addition to previous year's vocabulary):** hundreds, partition, recombine, combine	**Measure** Length, height, volume, weight **Vocabulary (in addition to previous year's vocabulary):** temperature, degrees, grams, kilograms **Measure** Time **Vocabulary (in addition to previous year's vocabulary):** quarter past/to	**Position and Direction** Rotation Degrees of turn **Vocabulary (in addition to previous year's vocabulary):** rotate, rotation, degrees, right angle, ninety degree, one hundred and eighty degrees, clockwise, anticlockwise **Statistics** Simple bar graphs Tally Charts Sorting **Vocabulary (in addition to previous year's vocabulary):** count, tally, sort, graph, block, set, list, table, bar chart, pictogram

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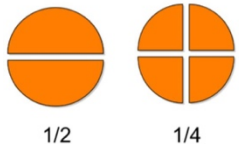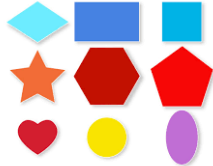
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 3	**Number** Composition of 100 Bridging 100 Three digit numbers **Vocabulary (in addition to previous year's vocabulary):** Add on, count on, count back, bridging, number bonds, hundreds, thousands, estimate, exchange, approximately,	**Number** Addition and Subtraction Securing mental calculations to 999 Multiplication and Division 2, 4 and 8 times table and the relationship **Vocabulary (in addition to previous year's vocabulary):** counting on, counting back, find the difference, less than, more than, minus, thousands, sets of, groups of, counting in…	**Multiplication and Division** 2,4 and 8 times table relationship 3 x table **Vocabulary (in addition to previous year's vocabulary):** multiple, multiplication, commutative principle, doubling, halving, equivalent **Column Addition** **Measure** Length and Perimeter Angles **Vocabulary (in addition to previous year's vocabulary):** length, width, height, perimeter, total sides, acute, obtuse, right angle	**Multiplication and Division** 3,6,9x relationships. **Vocabulary (in addition to previous year's vocabulary):** counting on, counting back, find the difference, less than, more than, minus, thousands, sets of, groups of, counting in…, commutative principle, multiple **Column Subtraction** **Shape** Properties of 2D and 3D shapes **Vocabulary (in addition to previous year's vocabulary):** 2D, 3D, length, width, side, vertex, vertices, edge, face	**Fractions** Unit fractions Non-unit fractions Adding and subtracting fractions within 1 **Vocabulary (in addition to previous year's vocabulary):** equal parts, whole, unit fraction, non-unit fraction, integer, numerator, denominator, represent, share, group, mixed number, whole number, divide, set, multiple, tenth, interval **Measure** Time **Vocabulary (in addition to previous year's vocabulary):** month, year, midnight, midday, am, pm, duration, estimate, consecutive, hour, minute, second, past to, end, start, digital, analogue, elapsed	**Measure** Time **Vocabulary (in addition to previous year's vocabulary):** month, year, midnight, midday, am, pm, duration, estimate, consecutive, hour, minute, second, past to, end, start, digital, analogue, elapsed **Measure** Length, Mass and capacity **Vocabulary (in addition to previous year's vocabulary):** mass, weigh, measure, capacity, scale, gram, kilogram, interval, convert, centimetre, meter, millimetre **Statistics** Interpreting and representing data on graphs and charts

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Notes:

- In Year 3, children will begin to move onto using column methods for addition and subtraction, once a clear understanding of using partitioning, concrete and pictorial methods and bridging 10/100 has been achieved
- In the summer term, children will be learning about time, including how to tell the time on an analogue and digital clock
- Children will develop their times table knowledge, and will be able to recall multiplication and division facts for the 2, 3, 4, 5, 8, 10 and 11 times tables.
- Evidence of mathematical understanding and application will be seen in evidence across a range of curriculum subjects

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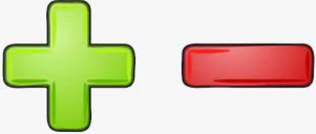|	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 4	**Number** Partitioning Rounding Negative numbers Digit value Ordering and sequencing **Vocabulary (in addition to previous year's vocabulary):** negative number, round to, interval, ascending, descending, decimal, decimal point, integer **Addition and Subtraction** Composition and calculation Four digit numbers.	**Multiplication and Division** Distributive Law 11 and 12 times tables Multiplying and dividing whole numbers by 10/100 Division with remainders **Vocabulary (in addition to previous year's vocabulary):** distributive law, scaling, place value, place holder, remainder, left over, spare, extra	**Addition and Subtraction** Composition and calculation: tenths, hundredths, thousandths. Addition and subtraction with money, drawing on understanding of decimal values **Vocabulary (in addition to previous year's vocabulary):** less that < more than>, decimal, whole, tenth, hundredth, thousandth, fraction, coins, notes, pounds, pence, change, cheaper, more expensive, estimate, over estimate, under estimate	**Multiplication and Division** Partitioning leading to short multiplication and division **Vocabulary (in addition to previous year's vocabulary):** multiplication and division facts, inverse, commutative, array **Measure** Area and perimeter, building on and developing written arithmetic skills in addition and multiplication **Vocabulary (in addition to previous year's vocabulary):** Length, width, rectilinear, area,	**Fractions** Improper and mixed numbers. Multiplying whole by fractions. Scaling Equivalent fractions **Vocabulary (in addition to previous year's vocabulary):** mixed number, improper fraction simplify, hundredth	**Shape** Angles Symmetry **Vocabulary (in addition to previous year's vocabulary):** interior angle, exterior angle, regular, irregular, isosceles, scalene, equilateral, reflective symmetry **Measure** Length, Perimeter, area **Vocabulary (in addition to previous year's vocabulary):** Length, width, rectilinear, area, **Position and Direction** Lines of symmetry Rotation Reflection **Consolidation of all written methods learned throughout year.**
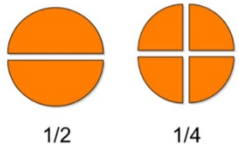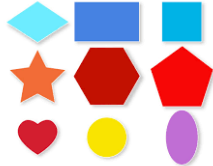
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Notes:
- In Year 4, children will consolidate their understanding of using the column method for addition and subtraction, and will able to use short methods for multiplication and division
- Roman numerals will be taught in conjunction with the Romans topic
- Statistics and tables will be taught and applied in Science, but may be supplemented in Maths lessons
- Children will be fluent in their multiplication tables and will be able to recall all multiplication facts up to 12x12, with division facts

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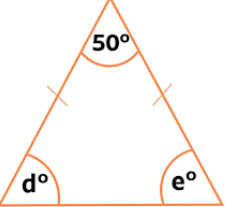
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Number/Addition and Subtraction Composition and calculation up to 1,000,000 Rounding Negative numbers Equivalency and compensation **Vocabulary (in addition to previous year's vocabulary):** million, sequence, equivalence, equivalent, decimal, one decimal place, two decimal places	**Multiplication and Division** Equivalency to calculate Multiplying and dividing decimals by whole numbers Multiplication 3 factors + squaring/cubing Prime, square, composite numbers **Vocabulary (in addition to previous year's vocabulary):** prime, composite, prime factor, factor tree, multiple, lowest common factor, common multiple, common factor, square, cube, power of	**Addition and Subtraction** Composition and calculation: tenths, hundredths, thousandths. Addition and subtraction with money, drawing on understanding of decimal values	**Fractions** Equivalent fractions Fractions and simplifying Adding and subtracting fractions **Vocabulary (in addition to previous year's vocabulary):** common denominator **Percentages** Percentages of amounts (percentages that are factors of 100) Percentages of amounts **Vocabulary (in addition to previous year's vocabulary):** percentage, percent, out of 100	**Multiplication and Division/Measure** Area and Perimeter Converting units **Vocabulary (in addition to previous year's vocabulary):** Conversion, top plan, plan view, side view **Shape / Geometry** Angles Protractor measuring around a point **Vocabulary (in addition to previous year's vocabulary):** degree, interior angle, missing angle, square meter, square centimetre	**Shape / Geometry** Properties of shape **Vocabulary (in addition to previous year's vocabulary):** regular, irregular **Measure** Volume, mass **Vocabulary (in addition to previous year's vocabulary):** volume, mass, capacity, potential, unit cube, kilo, milli, inch, foot, yard, imperial unit, pound (lb) ounce (oz) stone, gallon, pint **Shape/Geometry** Position and Direction

Year 5
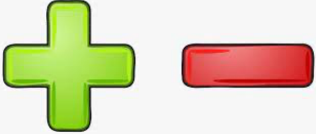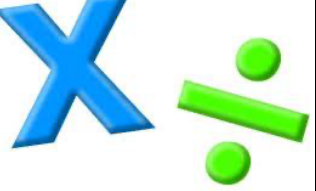
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	Notes:
	Notes: - In Year 5, children will consolidate their understanding of the four operations, and apply them, using formal written methods, to context-based problems (including two-step word problems) - Children will build on what they have learnt about fractions, and develop an understanding of fraction arithmetic and problem solving using fractions, decimals and percentages – they will be confident in solving addition and subtraction problems involving like and unlike fractions - Statistics will be taught across the Science units

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	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 6	**Number** Digit value Ordering and sequences, including with decimals Rounding, including with decimals Negative Numbers **Addition and Subtraction** Composition and calculation to 10 million.	**Multiplication and Division** Strategies for larger numbers and long multiplication. **Fractions** Multiplying and dividing fractions **Vocabulary (in addition to previous year's vocabulary):** Common factor, highest common factor, whole number, integer **Percentages**	**Four Operations in context** **Vocabulary (in addition to previous year's vocabulary):** Order of operations, BIDMAS **Fractions in context** **Algebra** Formulas and equations Simplifying formula Missing value Nth Term – rules and sequences **Vocabulary (in addition to previous year's vocabulary):** rule, expression, substitute, formula, equation **Ratio and Proportion**	**Multiplication and Division** Mean average Ratio and proportion Scale factors **Vocabulary (in addition to previous year's vocabulary):** mean, average, scaling, ratio, proportion **Measure** Area and Perimeter (including triangles, parallelograms, circles) Volume **Vocabulary (in addition to previous year's vocabulary):** Vertically opposite angles, radius, concentric, diameter, circumference, net	**Problems with two unknowns** **Properties of Shape** Angles in triangles/ straight lines/ quadrilaterals. Draw shapes accurately. **Statistics** Line graphs Pie Charts Analysing data Noticing trends Extrapolating and interpolating **Vocabulary (in addition to previous year's vocabulary):** pie chart, line graph, trend, extrapolate, interpolate, x and y axis/axes	**Problem Solving and Investigations**

Curriculum Overview: Mathematics

Notes:

- In Year 6, children will consolidate their understanding of all formal written methods for arithmetic, including those relating to fractions, decimals and percentages
- They will build upon a strong foundation of core number knowledge and apply this understanding when solving more complex reasoning problems, including those that require multiple steps, and those that draw upon facets of multiple areas of mathematics
- They will be able to explain their reasoning fluently, using mathematical vocabulary, pictorial representations and formulae.