

# St Paul's Cof E Primary School Maths Long Term Plan Year 6 2022-23



|                    |                     | Daily fluency practice - repetition, retrieval and consolidation of known skills  |   |  |   |   |
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|                    |                     | Number: Place Value including decimals  | Four operations of Number: Addition, Subtraction, Multiplication and Division   | Maths Storybook week<br>measurement  | Number: Fractions   | Geometry: Position and Direction  |
| Year 6 Autumn Term | Sequence of lessons | <ul style="list-style-type: none"> <li>Numbers to ten million.</li> <li>Compare an order any number.</li> <li>Recap and consolidate Decimal place value</li> <li>Three decimal places.</li> <li>Multiply by 10, 100 and 1,000.</li> <li>Divide by 10, 100 and 1,000.</li> <li>Multiply decimals by integers.</li> <li>Round any numbers to 1 or 2 dp.</li> <li>Calculate with Negative numbers.</li> <li>Read scales/number lines with labelled intervals divided into 2, 4, 5 and 10 equal parts.</li> </ul>                                 | <ul style="list-style-type: none"> <li>Add and subtract whole numbers and decimals</li> <li>Multiply up to 4-digit by 1-digit number.</li> <li>Long multiplication including decimals</li> <li>Solve problems with multiplication</li> <li>Short division.– fraction and decimal remainders.</li> <li>Divide decimals by integers</li> <li>Solve problems with division</li> <li>Rules of divisibility</li> <li>Division using factors.</li> <li>Long division with remainders</li> <li>Common factors and common multiples.</li> <li>Primes, squares and cubes.</li> <li>Order of operations: BIDMAS</li> <li>Mental calculations and estimation.</li> <li>Reasoning from known facts.</li> <li>Solve multi-step problems</li> </ul> | <p><b>'Titanic' Circles/Pythagoras/Percentages</b></p> <p>To know the different parts of a circle</p> <p>To investigate the circumference and area of a circle</p> | <ul style="list-style-type: none"> <li>Recognise equivalent fractions and when fractions can be simplified -use common factors to simplify fractions.</li> <li>Fractions on a number line.</li> <li>Compare &amp; order (denominator).</li> <li>Compare &amp; order (numerator).</li> <li>Add &amp; subtract fractions</li> <li>Mixed number addition and subtraction.</li> <li>Multiply fractions by integers.</li> <li>Multiply fractions by fractions.</li> <li>Divide fractions by integers</li> <li>Four rules and problem solving with fractions.</li> <li>Fraction of an amount.</li> <li>Multi-step fraction problems</li> </ul>  | <ul style="list-style-type: none"> <li>Coordinates in the first quadrant.</li> <li>Coordinate in four quadrants.</li> <li>Translations.</li> <li>Reflections.</li> </ul>  |
|                    | National Curriculum | <ul style="list-style-type: none"> <li>Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit.</li> <li>Round any whole number to a required degree of accuracy.</li> <li>Use negative numbers in context, and calculate intervals across zero.</li> <li>Solve number and practical problems that involve all of the above.</li> <li>Identify the value of each digit in numbers given to 3 decimal places and multiply numbers by 10, 100 and 1,000 giving answers up to 3 decimal places.</li> </ul> | <ul style="list-style-type: none"> <li>Solve addition and subtraction multi step problems in contexts, deciding which operations and methods to use and why.</li> <li>Multiply multi-digit number up to 4 digits by a 2-digit number using the formal written method of long multiplication.</li> <li>Multiply one-digit numbers with up to 2 decimal places by whole numbers.</li> <li>Use written division methods in cases where the answer has up to 2 decimal places.</li> <li>Solve problems which require answers to be rounded to specified degrees of accuracy.</li> <li>Divide numbers up to 4 digits by a 2-digit whole number using the formal written</li> </ul>   |  | <ul style="list-style-type: none"> <li>Use common factors to simplify fractions; use common multiples to express fractions in the same denomination.</li> <li>Compare and order fractions, including fractions &gt;1.</li> <li>Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.</li> <li>Multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. <math>\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}</math>).</li> <li>Divide proper fractions by whole numbers (e.g. <math>\frac{1}{3} \div 2 = \frac{1}{6}</math>).</li> <li>Associate a fraction with division to calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. <math>\frac{3}{8}</math>).</li> <li>Identify the value of each digit to three</li> </ul> | <ul style="list-style-type: none"> <li>Describe positions on the full coordinate grid (all four quadrants).</li> <li>Draw and translate simple shapes on the coordinate plane, and reflect them in the axes.</li> </ul> |

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|                    |                     |   | <p>method of long division, and interpret remainders as whole number remainders, fractions, or by rounding as appropriate for the context.</p> <ul style="list-style-type: none"> <li>Divide numbers up to 4 digits by a 2-digit number using the formal written method of short division, interpreting remainders according to the context.</li> <li>Perform mental calculations, including with mixed operations and large numbers.</li> <li>Identify common factors, common multiples and prime numbers.</li> <li>Use their knowledge of the order of operations to carry out calculations involving the four operations.</li> <li>Solve problems involving addition, subtraction, multiplication and division.</li> <li>Use estimation to check answers to calculations and determine in the context of a problem, an appropriate degree of accuracy</li> </ul> |   | <p>decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places.</p> <ul style="list-style-type: none"> <li>Multiply one digit numbers with up to two decimal places by whole numbers.</li> <li>Use written division methods in cases where the answer has up to two decimal places.</li> <li>Solve problems which require answers to be rounded to specified degrees of accuracy.</li> <li>Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.</li> </ul> |  |
| Year 6 Spring Term |                     | <b>Daily fluency practice - repetition, retrieval and consolidation of known skills</b>   |   |   |  |  |
|                    |                     | <b>Number: Fractions/Decimals/ Percentages</b>  | <b>Number: Ratio</b>  | <b>Number: Algebra</b>  | <b>Measurement: Converting Units</b>   | <b>Measurement: Perimeter, Area and Volume</b>   |
|                    | Sequence of lessons | <ul style="list-style-type: none"> <li>Decimals as fractions.</li> <li>Fractions to decimals</li> <li>Fractions to percentages.</li> <li>Equivalent FDP.</li> <li>Order FDP</li> <li>Percentage of an amount</li> <li>Percentages – missing values.</li> <li>Percentage increase and decrease.</li> </ul> | <ul style="list-style-type: none"> <li>Use ratio language.</li> <li>Ratio and fractions – proportion</li> <li>Bar model and unitary method.</li> <li>Introducing the ratio symbol.</li> <li>Calculating ratio.</li> <li>Using scale factors.</li> <li>Calculating scale factors.</li> <li>Ratio and proportion problems.</li> </ul>   | <ul style="list-style-type: none"> <li>Finding formula</li> <li>Using letters and symbols to represent unknowns</li> <li>Use an algebraic rule.</li> <li>Substitution.</li> <li>Word problems.</li> <li>Solve simple one step equations.</li> <li>Solve two step equations.</li> <li>Find pairs of values.</li> </ul> | <ul style="list-style-type: none"> <li>Metric measures.</li> <li>Convert between metric units of measure, including using common decimals and fractions.</li> <li>Calculate with metric measures.</li> <li>Miles and kilometres.</li> <li>Imperial measures.</li> <li>read scales/number lines marked in units of 1 with 2, 4, 5 and 10 equal parts.</li> </ul>  | <ul style="list-style-type: none"> <li>Compare areas and calculate the area of rectangles (including squares) using standard units</li> <li>Shapes – same area.</li> <li>Area and perimeter.</li> <li>Area of a triangle, parallelogram and composite shapes</li> <li>Volume – counting Cubes and formulae.</li> <li>Volume of a cuboid and composite</li> </ul> |

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| Year 6 Summer Term | National Curriculum   | <ul style="list-style-type: none"> <li>Solve problems involving the calculation of percentages [for example, of measures and such as 15% of 360] and the use of percentages for comparison.</li> <li>Recall and use equivalences between simple fractions, decimals and percentages including in different contexts.</li> </ul> | <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.</li> <li>Solve problems involving similar shapes where the scale factor is known or can be found.</li> <li>Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.</li> </ul> | <ul style="list-style-type: none"> <li>Use simple formulae.</li> <li>Generate and describe linear number sequences.</li> <li>Express missing number problems algebraically.</li> <li>Find pairs of numbers that satisfy an equation with two unknowns.</li> <li>Enumerate possibilities of combinations of two variables</li> </ul> | <ul style="list-style-type: none"> <li>Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate.</li> <li>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.</li> <li>Convert between miles and kilometres.</li> </ul> | <ul style="list-style-type: none"> <li>Recognise that shapes with the same areas can have different perimeters and vice versa.</li> <li>Recognise when it is possible to use formulae for area and volume of shapes.</li> <li>Calculate the area of parallelograms and triangles.</li> <li>Calculate, estimate and compare volume of cubes and cuboids using standard units, including cm<sup>3</sup>, m<sup>3</sup> and extending to other units (mm<sup>3</sup>, km<sup>3</sup>).</li> </ul> |
|                    |   | <b>Daily fluency practice - repetition, retrieval and consolidation of known skills</b>   |  |   |   |  |
|                    | Sequence of lessons   | <b>Geometry: Properties of Shapes</b>   | <b>Consolidation/SATs practice</b>   | <b>Statistics (&amp; CC throughout Yr 6)</b>  | <b>Consolidation, Investigations and preparations for KS3</b>   |  |
|                    | <ul style="list-style-type: none"> <li>Recap measuring with a protractor.</li> <li>Calculate missing angles.</li> <li>Vertically opposite angles.</li> <li>Angles in a triangle – special cases.</li> <li>Angles in special quadrilaterals.</li> <li>Angles in regular polygons.</li> <li>Draw shapes accurately.</li> <li>Nets of 3D shapes.</li> <li>Draw, compose, and decompose shapes according to given properties, including dimensions, angles, and area, and solve related problems</li> </ul> | <ul style="list-style-type: none"> <li>Arithmetic – Fluency; 4 rules in fractions</li> <li>Problem Solving/Reasoning with</li> <li>Number</li> <li>FDPR</li> <li>Measures</li> <li>Geometry</li> <li>Statistics</li> </ul> <p style="text-align: center;">All</p>   | <ul style="list-style-type: none"> <li>Read and interpret line graphs.</li> <li>Draw line graphs.</li> <li>Use line graphs to solve problems.</li> <li>Circles.</li> <li>Read and interpret pie charts.</li> <li>Pie charts with percentages.</li> <li>Draw pie charts.</li> <li>The mean.</li> </ul>  | All   |   |  |

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|  | National Curriculum | <ul style="list-style-type: none"> <li>• Draw 2-D shapes using given dimensions and angles.</li> <li>• Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals and regular polygons.</li> <li>• Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.</li> </ul> | All | <ul style="list-style-type: none"> <li>• Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius.</li> <li>• Interpret and construct pie charts and line graphs and use these to solve problems.</li> <li>• Calculate the mean as an average.</li> </ul> | All |
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**For progression in written calculations, refer to St Paul's Written Calculation Policy**