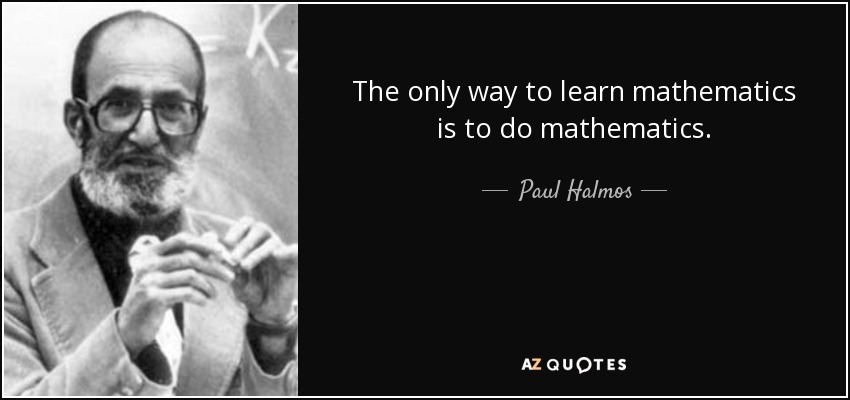


St Mary’s R.C. Primary



**Mathematics Progression Map and End Points**

**St. Mary’s RC Primary**

**Mathematics Curriculum Progression and End Points**

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|  | **End of EYFS** | **End of KS 1** | **End of Lower KS 2** | **End of Upper KS 2** |
| **Place Value** | * counts in steps of 1 from 0 to 20 forwards and backwards and then beyond * counting in 1’s forwards and backwards from any number up to 20 and then beyond recognising the pattern of the counting system. * Link the number symbol (numeral) with its cardinal number value. * Explore the composition of numbers to 10. * Automatically recall number bonds for numbers 0–5 and some to 10. * 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. | * count in steps of 2, 3, and 5 from 0, and in tens   from any number, forward and backward   * recognise the place value of each digit in a   two-digit number (tens, ones) identify, represent  and estimate numbers using different  representations, including the number line   * compare and order numbers from 0 up to 100; use and = signs * read and write numbers to at least 100 in   numerals and in words   * use place value and number facts to solve   problems | * count in multiples of 6, 7, 9, 25 and 1000 * find 1000 more or less than a given number * count backwards through zero to include negative numbers * recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) * order and compare numbers beyond 1000 * identify, represent and estimate numbers using different representations * 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 * read Roman numerals to 100 (I to C) and understand how, over time, the numeral system changed to include the concept of zero and place value. | * read, write, order and compare numbers up to 10 000 000 and determine the value of each digit * round any whole number to a required degree of accuracy * use negative numbers in context, and calculate intervals across zero * solve number problems and practical problems that involve all of the above. |
| **Addition &**  **Subtraction** | * compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity. | * solve problems with addition and subtraction: * using concrete objects and pictorial   representations, including those involving numbers, quantities and measures   * applying their increasing knowledge of mental and   written methods   * recall and use addition and subtraction facts to 20   fluently, and derive and use related facts up to 100   * 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 * show that addition of two numbers can be done in * any order (commutative) and subtraction of one * number from another cannot * recognise and use the inverse relationship between   addition and subtraction and use this to check calculations and solve missing number problems. | * add and subtract numbers with up to 4 digits using the efficient written methods of columnar addition and subtraction where appropriate * estimate and use inverse operations to check answers to a calculation * solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why | * multiply multi-digit numbers up to 4 digits by a two-digit whole number using the efficient 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 whole number using the formal written method of short division, and interpreting remainders according to the context * perform mental calculations, including with mixed operations and large numbers * identify common factors, common multiples and prime numbers * use their knowledge of the order of operations to carry out calculations involving the four operations * solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why * solve problems involving addition, subtraction, multiplication and division * use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy. |
| **Multiplication & Division** | * explore and represent patterns   within numbers up to 10,  including evens and odds,  double facts and how  quantities can be distributed   * equally | * recall and use multiplication and division facts for   the 2, 5 and 10 multiplication tables, including  recognising odd and even numbers   * calculate mathematical statements for multiplication and   division within the multiplication tables and write  them using the multiplication (×), division (÷) and  equals (=) signs   * show that multiplication of two numbers can be * done in any order (commutative) and division of   one number by another cannot   * solve problems involving multiplication and division, using   materials, arrays, repeated addition, mental  methods, and multiplication and division facts,  including problems in contexts. | * recall multiplication and division facts for multiplication tables up to 12 × 12 * 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 * multiply and divide two-digit and three-digit numbers by a one-digit number using formal written layout * 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 |
| **Fractions**  **(including decimals**  **and percentages)** | * in practical activities explore   halves of whole amounts | * recognise, find, name and write fractions 1/3, ¼,   2/4 and ¾ of a length, shape, set of objects or  quantity   * write simple fractions for example, ½ of 6 = 3 and recognise   the equivalence of 2/4 and ½ . | * recognise and show, using diagrams, families of common equivalent fractions * count up and down in hundredths; recognise that hundredths arise when dividing an object by a hundred and dividing tenths by ten * 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 * add and subtract fractions with the same denominator * recognise and write decimal equivalents of any number of tenths or hundredths * recognise and write decimal equivalents to ¼; ½; ¾ * find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as units, tenths and hundredths * 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 * solve simple measure and money problems involving fractions and decimals to two decimal places. | * use common factors to simplify fractions; use common multiples to express fractions in the same denomination * compare and order fractions, including fractions >1 * associate a fraction with division to calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. 3/8) * 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 (e.g. 1/4 × 1/2 = 1/8) * divide proper fractions by whole numbers (e.g. 1/3 ÷ 2 = 1/6). * identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places * multiply one-digit numbers with up to two decimal places by whole numbers * use written division methods in cases where the answer has up to two decimal places * solve problems which require answers to be rounded to specified degrees of accuracy. * recall and use equivalences between simple fractions, decimals and percentages, including in different contexts and to compare proportions |
| **Measurement** | * compare length, weight   and capacity. | * choose and use appropriate standard units to   estimate and measure length/height in any  direction (m/cm); mass (kg/g); temperature (°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 >, < and =   * 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   * 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. | * convert between different units of measure (e.g. kilometre to metre; hour to minute) * measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres * find the area of rectilinear shapes by counting squares * estimate, compare and calculate different measures, including money in pounds and pence * 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. | * solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places 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 three decimal places * convert between miles and kilometres * recognise that shapes with the same areas can have different perimeters and vice versa * calculate the area of parallelograms and triangles * recognise when it is necessary to use the formulae for area and volume of shapes * calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm3) and cubic metres (m3) and extending to other units, such as mm3 and km3. |
| **Geometry**  **(Properties of Shapes)** | * Select, rotate and manipulate shapes in order to develop spatial reasoning skills. * Selects a particular named shape. * Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can. | * identify and describe the properties of 2-D shapes,   including the number of sides and line symmetry in a vertical  line   * identify and describe the properties of 3-D shapes,   including the number of edges, vertices and faces   * 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 and 3-D shapes and everyday   objects | * compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes * 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. | * Draw 2D shapes using given dimensions and angles * recognise, describe and build simple 3-D shapes, including making nets * compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons * illustrate and name parts of circles, including radius, diameter and circumference * recognise angles where they meet at a point, are on a straight line, and are vertically opposite and find missing angles |
| **Geometry**  **(Position & Direction)** | * continue, copy and creates   repeating patterns.   * uses everyday language to   talk about position and distance. | * 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). | * 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. | * 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. |
| **Statistics** |  | * interpret and construct simple pictograms, tally   charts, block diagrams and simple tables   * 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. | * interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs * solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs. | * interpret and construct pie charts and line graphs and use these to solve problems * calculate and interpret the mean as an average |
| **Ratio &**  **Proportion** |  |  | * 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 , , , , and those fractions with a denominator of a multiple of 10 or 25. | * 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 of percentages e.g. of measures and such as 15% of 360 and the use of percentages for comparison * solve problems involving similar shapes where the scale factor if known or can be found * solve problems involving unequal sharing and grouping using knowledge and multiples |
| **Algebra** | * explore and represent patterns   within numbers up to 10 | * solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = – 9. * recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. | * solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. | * express missing number problems algebraically * use simple formulae expressed in words * generate and describe linear number sequences * find pairs of numbers that satisfy number sentences involving two unknowns. * Enumerate all possibilities of combinations of two variables |