**St Mary's C of E (VA) Primary School**

# Mathematics Scheme of Work – YEAR 5

| Mathematics Strand | NC Requirement | Resources/Time | Success Criteria (Outcome) |
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| **NUMBER**<br>**Number and place value** | **By the end of Year 5:**<br>• read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit<br>• count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000<br>• interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers through zero<br>• round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000<br>• solve number problems and practical problems that involve all of the above<br>• read Roman numerals to 1000 (M) and recognise years written in Roman numerals. | • Number cards – 1 000 000<br>• Place value cards (THTO)<br>• Base 10 | • Children fluently order and compare to 1 000 000.<br>• Count forward and back in powers of ten.<br>• To confidently count backwards into negative numbers.<br>• To understand Roman numerals to 1000.<br>• To round numbers confidently to 1 000 000. |
| **Addition and subtraction** | • add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)<br>• add and subtract numbers mentally with increasingly large numbers<br>• use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy<br>• solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. | • Number cards,<br>• Hundred squares.<br>• Numicon<br>• Place value cards (THTO)<br>• Base 10 | • Add and subtract numbers with more than 4 digit numbers using the column method.<br>• Estimate then solve multi-step problems choosing correct operation.<br>• Check calculations using rounding. |
| **Multiplication and division** | • identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.<br>• solve problems involving multiplication and division where larger | • Number cards,<br>• Hundred squares.<br>• Multiplication Squares | • To recognise and use multiples and factor pairs for mental calculations.<br>• Decompose larger |

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| | numbers are used by decomposing them into their factors<br>• know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers<br>• establish whether a number up to 100 is prime and recall prime numbers up to 19<br>• multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers multiply and divide numbers mentally drawing upon known facts<br>• divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context<br>• multiply and divide whole numbers and those involving decimals by 10, 100 and 1000<br>• recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)<br>• solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign<br>• solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates. | • Numicon<br>• Base 10 | calculations into their factors to help solve problems.<br>• Understand and identify prime numbers to 100.<br>• Multiply & divide up to 4 digit numbers by 1 & 2 digit numbers using various written methods.<br>• Understand and use the equals sign accurately.<br>• Multiple and divide by numbers to 1000 including decimals.<br>• Recognise and use square and cube numbers.<br>• Children use various mental and written methods to solve mixed calculations including simple fractions and rates. |
| **Fractions** (including decimals and percentages) | • compare and order fractions whose denominators are all multiples of the same number<br>• identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths<br>• recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number (e.g. 2/5 + 4/5 = 6/5 = 11/5)<br>• add and subtract fractions with the same denominator and multiples | • Fraction fans/boards<br>• Base 10 | • To confidently identify, count and compare fractions whose denominators are all multiples of the same number.<br>• Continue to secure understanding of equivalent fractions visually.<br>• Recognise and convert |

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| | of the same number<br>• multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams<br>• read and write decimal numbers as fractions (e.g. 0.71 = 71/100)<br>• recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents<br>• round decimals with two decimal places to the nearest whole number and to one decimal place<br>• read, write, order and compare numbers with up to three decimal places<br>• solve problems involving number up to three decimal places<br>• 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 hundred, and as a decimal fraction<br>• solve problems which require knowing percentage and decimal equivalents of 1/2, 1/4, 1/5, 2/5, 4/5 and those with a denominator of a multiple of 10 or 25. | | mixed and improper fractions.<br>• To add and subtract fractions with the same denominator and multiples of same number.<br>• To multiply proper fractions and mixed numbers by whole numbers using visuals.<br>• Extend and relate thousandths to previous fractions and decimals.<br>• To recognise and record percentages and decimal equivalents to various fractions.<br>• Understand the per cent symbol and covert to fraction and decimal fraction using 100.<br>• To round 2 decimal place numbers to one decimal place and the nearest whole number.<br>• To understand decimal numbers to 3 decimal places. |
| **MEASUREMENT** | • convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)<br>• understand and use equivalences between metric units and common imperial units such as inches, pounds and pints<br>• measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres<br>• calculate and compare the area of squares and rectangles including | • Metre rulers<br>• Rulers<br>• Tape measures<br>• Scales<br>• Balance scales – metric and imperial<br>• Measuring jugs/tubes<br>• Numicon<br>• 1p, 2p, 5p, 10p, 20p, 50p, £1, £2 coins | • To convert between units of metric measurement.<br>• Identify equivalences between metric and imperial units.<br>• To measure and calculate perimeter in cm and m.<br>• To measure and calculate area using various standard units.<br>• To convert time between |

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| | using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes<br>• estimate volume (e.g. using 1 cm3 blocks to build cubes and cuboids) and capacity (e.g. using water)<br>• solve problems involving converting between units of time<br>• use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling. | • £5, £10 and £20 notes<br>• Clocks (analogue & digital)<br>• Calendars/timetables | analogue and digital time.<br>• To use all operations to solve measure based problems including decimal notation. |
| **GEOMETRY**<br>**Properties of shapes** | • identify 3-D shapes, including cubes and other cuboids, from 2-D representations<br>• know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles<br>• draw given angles, and measure them in degrees (o)<br>• Identify:<br>*- angles at a point and one whole turn (total 360o)*<br>*- angles at a point on a straight line and ½ a turn (total 180o)*<br>*- other multiples of 90o*<br>*- use the properties of rectangles to deduce related facts and find missing lengths and angles*<br>*- distinguish between regular and irregular polygons based on reasoning about equal sides and angles.* | • 2D/3D shapes<br>• 3D nets<br>• Protractors<br>• Compasses | • To compare and classify properties of geometric shapes including angles using related facts<br>• Identify regular and irregular polygons.<br>• To identify and compare angles within shapes and turns.<br>• To draw and measure angles accurately.<br>• |
| **Position and direction** | • identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed. | • 2D shapes | • Use reflection or translation to identify, describe and represent shape positions. |
| **STATISTICS** | • solve comparison, sum and difference problems using information presented in a line graph<br>• complete, read and interpret information in tables, including timetables. | • Laptops/iPads<br>• Rulers<br>• Colouring pencils<br>• Timetables | • To collect and interpret data in different ways.<br>• To solve comparison, sum and difference problems using collected data. |