

## Year 5 Mathematics Curriculum Map For St. Antony's Catholic Primary School 2018 - 2019

### **Mastery Principles (Reasoning, Fluency and Problem Solving) to be taught across all areas, every term.**

- Teachers reinforce an expectation that all pupils are capable of achieving high standards in mathematics.
- The large majority of pupils progress through the curriculum content at the same pace. Differentiation is achieved by emphasising deep knowledge and through individual support and intervention
- Teaching is supported by resources to foster deep conceptual and procedural knowledge.
- Practice and consolidation play a central role.
- Teachers use precise questioning in class to test conceptual and procedural knowledge and assess pupils regularly to identify those requiring additional support to catch up.

### **Expectations**

- Count forwards and backward with positive and negatives through zero.
- Count forwards and backwards in steps of powers of 10 for any given number up to 1000000.
- Compare and order numbers up to 1000000.
- Compare and order numbers with 3 decimal places.
- Read Roman numerals to 1000.
- Use and apply multiplication facts up to 12 x 12
- Identify all multiples and factors including all factor pairs.
- Use known tables to derive other number facts.
- Use the vocabulary of prime, prime factors and composite numbers
- Recall prime numbers up to 20.
- Recognise and use square numbers and cube numbers.
- Recognise place value of any number up to 1000000.
- Round any number up to 1000000 to the nearest 10, 100, 1000, 10000 or 100000.
- Round decimals with 2dp to nearest whole number and 1dp.
- Add and subtract numbers with more than 4-digits using formal written method.
- Use rounding to check answers.
- Multiply 4-digits by 1-digit/2-digit.
- Divide up to 4-digits by 1-digit and 2-digit
- Multiply and divide whole numbers and decimals by 10, 100 and 1000.
- Recognise and use thousandths.
- +/- fractions
- Recognise mixed numbers and improper fractions and convert from one to another.
- Multiply proper fractions and mixed numbers by whole numbers.
- Identify and write equivalent fractions.
- Distinguish between regular and irregular polygons
- Solve time problems using timetables and converting between units of time.

<b><u>Rapid recall</u></b> Children should be able to recall rapidly:	<b><u>Mental strategies</u></b> Children should be able to use the following strategies, as appropriate, for mental calculations	<b><u>Mental calculations</u></b>
<ul style="list-style-type: none"> <li>• Multiplication facts to 10 x 10</li> <li>• Division facts corresponding to tables up to 10 x 10</li> </ul>	<ul style="list-style-type: none"> <li>• Count up through the next multiple of 10, 100, or 100</li> <li>• reorder numbers in a calculation</li> <li>• partition into hundreds, tens and units, adding the most significant digit first</li> <li>• use known number facts and place value to add or subtract pairs of three-digit multiples of 10 and two-</li> </ul>	<ul style="list-style-type: none"> <li>• Add or subtract any pair of three-digit multiples of 10, e.g. 570+250, 620+380</li> <li>• Find what must be added to a decimal fraction with units and tenths to made the next higher whole number e.g. 4.3+?=5</li> <li>• Add or subtract any pair of decimal fractions</li> </ul>

	<ul style="list-style-type: none"> <li>digit numbers with one decimal place</li> <li>add or subtract the nearest multiple of 10 or 100 then adjust</li> <li>identify near doubles</li> <li>add several numbers</li> <li>develop further the relationship between addition and subtraction</li> <li>use factors</li> <li>partition to carry out multiplication</li> <li>use doubling and halving</li> <li>use closely related facts to carry out multiplication and division</li> <li>use the relationship between multiplication and division</li> <li>use knowledge of number facts and place value to multiply or divide.</li> </ul>	<p>each with units and tenths, or each with tenths or hundredths e.g. <math>5.7+2.5</math>, <math>0.63-0.48</math></p> <ul style="list-style-type: none"> <li>Subtract a four-digit number just less than a multiple of 1000 from a four-digit number just more than a multiple of 1000, e.g. <math>5001-1997</math></li> <li>Multiply any two- or three-digit number by 10 or 100, e.g. <math>79 \times 100</math>, <math>363 \times 100</math></li> <li>Divide a multiple of 100 by 10 or 100 e.g. <math>4000 \div 10</math>, <math>3600 \div 100</math></li> <li>Multiply any two-digit multiple of 10 by a single-digit e.g. <math>60 \times 7</math>, <math>90 \times 6</math></li> <li>Double any whole number from 1 to 100, multiples of 10 to 1000 and find corresponding halves</li> <li>Find 50%, 25%, 10% of small whole numbers or quantities e.g. 25% of £8.</li> </ul>
<b>Autumn (weeks 1-13)</b>	<b>Spring (weeks 14-26)</b>	<b>Summer (weeks 27-39)</b>
<p><b>AUTUMN 1 - HOMEWORK – PUPILS LEARN THEIR TIMES TABLES (2 – 12) , NUMBER BONDS ( 100, 1000, 10,00) , SOLVE PROBLEMS WITH INVERSE</b></p> <p><b>Place Value 2 weeks</b>  <b>WRITE NUMBERS IN FIGURES AND WORDS INCLUDING DECIMAL NUMBERS.</b></p> <ul style="list-style-type: none"> <li>M/HTH/TH/H/T/O</li> <li>decimal numbers</li> <li>t/h/th</li> <li>negative values (use thermometer and number line)</li> <li>rounding /estimating up and down by 10, 100 and 1000</li> </ul> <p><b>Written Methods 1 weeks</b></p> <ul style="list-style-type: none"> <li>addition using grid/partitioning/column method</li> <li>subtraction using grid/partitioning/ decomposition/column method INCLUDE DECIMALS.</li> <li>INVERSE OPERATIONS</li> </ul> <p><b>DIVISIBILITY RULE TESTS 2 weeks (pupils must learn the facts to secure division (long, short and chunking)</b></p> <ul style="list-style-type: none"> <li>division using chunking/short/long  <math>TO \div O</math> / <math>HTO</math> AND <math>TH/H/T/O \div O</math> / <math>THHTO \div TO</math></li> </ul> <p>Include relationship of numbers to simplify before solving e.g. <math>200 \div 50</math> , <math>700 \div 25</math> , <math>1,488 \div 24</math></p>	<p><b><u>SPRING 1 - Homework – pupils must know their all their times tables and secure understanding of number bonds, factors and multiples</u></b></p> <p><b>Ratio and Proportion 2 weeks</b>  (secur relationship of numbers, <math>x</math> and <math>\div</math> )</p> <ul style="list-style-type: none"> <li>-calculate proportion</li> <li>-calculate fractions of amounts</li> <li>-calculate ratio (include Fractions, decimals and percentage)</li> </ul> <p><b>Statistics (data handling) 2 weeks</b>  Reading and Interpreting data from  <b>Charts and graphs Carroll Diagrams</b>  <b>Venn diagrams</b>  <b>Pictograms</b>  <b>Pie charts etc.</b>  <b>Calculate Mean/ averages , median mode and range</b></p> <p><b>Geometry 2 weeks</b></p> <ul style="list-style-type: none"> <li>converting and using measures</li> <li>volume and capacity</li> <li>identify properties of 2D and 3D shapes</li> <li>symmetry</li> <li>reflection</li> <li>rotation</li> </ul> <p>nets – rotation and position on grid</p>	<p><b><u>SUMMER 1</u></b> Transition Maths -Homework must have children securing times tables facts and using and applying facts linked to Telling the time -Clock</p> <p><b><u>REVIEW AND SECURE STRATEGIES FRACTIONS, DECIMALS AND PERCENTAGES 2 Weeks</u></b>  (Pupils must memorise /know the conversions e.g. <math>\frac{1}{2} = 0.5 = 50\%</math>  And use , apply and secure FDP</p> <p><b>Factors and multiples – make links to times tables and divisibility rules (Pupils MUST know/memorise all of them) 1 week</b></p> <p><b>Rounding and estimating 1 week</b></p> <p><b>TIME / CLOCK 2 WEEKS</b></p> <ul style="list-style-type: none"> <li>analogue and digital time</li> <li>schedules and timetables</li> </ul> <p>Clock - analogue, digital and calendar (Pupils must know: how many days in a week, weeks in a year, years in century, weeks in a month, days in each month, months in a year)</p>

<p><b>multiplication and division</b> by 10, 100 and 1000 1 week</p> <ul style="list-style-type: none"> <li>multiplication by single and double digits using grid/partitioning/vertical column method (ThTHO x O and x TO)</li> </ul> <p><b>AUTUMN 2 - HOMEWORK – PUPILS LEARN THEIR TIMES TABLES (2 – 12) , NUMBER BONDS ( 100, 1000, 10,00) , SOLVE PROBLEMS INVOLVING ROUNDING, ESTIMATING , X AND ÷ BY 10, 100 AND 1,000</b></p> <p><b>Factors and multiples 2 weeks</b> - include common factors and lowest common multiples include number grids, venn diagrams etc.</p> <p><b>Fractions, Decimals and Percentages 2 weeks</b></p> <ul style="list-style-type: none"> <li>conversion</li> <li>use and apply</li> </ul> <p>adding and subtracting fractions</p> <p><b>Money 2 weeks</b></p> <ul style="list-style-type: none"> <li>addition and subtraction of decimals and money</li> <li>Estimation//rounding / division and multiplication</li> </ul> <p><b>Number Systems (2 days or for Homework)</b></p> <ul style="list-style-type: none"> <li>Roman numerals</li> </ul>	<p align="center">-</p> <p><b><u>SPRING 2 – Homework – pupils must be secure with their knowledge of all the times table facts, securing rotation and symmetry and ratio linked to FDP</u></b></p> <p><b>Probability 1 week</b></p> <ul style="list-style-type: none"> <li>language of probability</li> <li>recording probability as fractions, decimals and percentages</li> </ul> <p><b>ANGLES and GEOMETRY 3 weeks</b></p> <ul style="list-style-type: none"> <li>triangles,</li> <li>lines of symmetry</li> <li>area and perimeter of regular and irregular and compound shapes</li> <li>identify, classify, define, construct and measure angles</li> <li>calculate the value of missing angles</li> <li>rotation and position/turns</li> </ul> <p><b>TIME / CLOCK 2 WEEKS</b></p> <ul style="list-style-type: none"> <li>analogue and digital time</li> <li>schedules and timetables</li> </ul> <p>Clock - analogue, digital and calendar (Pupils must know: how many days in a week, weeks in a year, years in century, weeks in a month, days in each month, months in a year)</p> <p><b>CO-ORDINATES 1 week</b></p> <ul style="list-style-type: none"> <li>coordinates using 1-4 quadrants</li> </ul> <p>.</p>	<p><b><u>SUMMER 2 - Homework must be linked to securing FDP, Clock and Rounding up and down.</u></b></p> <p><b>Number Sequences 2 weeks</b></p> <ul style="list-style-type: none"> <li>positive and negative numbers (temperature )</li> <li>prime number, square numbers and cube numbers</li> <li>Inverse operation</li> <li>Compare numbers using &lt; &gt; =</li> </ul> <p><b>Place Value 1 week</b></p> <ul style="list-style-type: none"> <li>M/HTH/TH/H/T/U</li> <li>decimal numbers</li> <li>t/h/th</li> <li>negative values</li> <li>rounding up and down by 10, 100, 1000, 10000 and decimals (two decimal places)</li> </ul> <p><b>ALGEBRA – INTRODUCTION 1 week</b> <b>Introduction to simple algebra</b></p> <ul style="list-style-type: none"> <li>nth term</li> <li>linear equations</li> </ul> <p><b>ANGLES - DRAWING AND MEASURING 1 week</b></p> <p><b>DIAMETER , RADIUS AND VOLUME 1 week</b></p> <p>Roman numerals (3 days only – make links to homework and puzzles)</p>
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**All Objectives must be stated as “I CAN” Statements which are measurable and linked to the Mathematics Skills, Approaches and Strategies being taught:**

Examples of Objectives: I can **read** and **write** whole numbers to 1,000,000  
I can **find the perimeter** of quadrilaterals  
I can **plot co-ordinates** in a four quadrant grid

I can **Identify, read and write decimal** numbers to three decimal places  
I can **derive prime factors/factors/multiples** of given numbers  
I can **calculate the area of 2D shapes** using standard formulae

I can **solve complex addition problems** using the column method    I can **use a protractor** to correctly measure angles  
I can use the **grid method/partitioning/the empty number line** to solve addition/subtraction/multiplication problems  
I can **use short/long division method** to solve                            I can **use the chunking method** to solve division problems  
I can **use BODMAS** to solve problems                                        I can **order negative and positive** numbers  
I can **classify /define the properties** of polygons/simple/complex/2D/3D shapes

**Suggested Maths Skills and Operations for formulating objectives when planning:**

**Read, Write, Identify, Define, Sort, Classify, Order, Find, Derive, Work out, Calculate, Explain, Justify, Add, Multiply, Divide, Use and Apply, Choose and Use, Plot, Draw, Measure, Estimate, Double, Halve, Investigate, Reduce, Increase, Convert, Sequence, Tally, Use relevant maths vocabulary accurately**

**Solve (simple, complex, one/two/multiple step)Word Problems, Extract Data, Represent Data using a :line graph, block graph, histogram, bar/pie/tally chart, pictogram/pictograph, scatter graph,**