



| <b>PLACE VALUE</b>   |   |  |  |  |   |
|--|---|--|--|--|---|
| <b>Counting</b>  |   |  |  |  |   |
| Year 1   | Year 2  | Year 3   | Year 4   | Year 5   | Year 6  |
| count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number     |   |  | count backwards through zero to include negative numbers   | interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero | use negative numbers in context, and calculate intervals across zero                          |
| count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens         | count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward              | count from 0 in multiples of 4, 8, 50 and 100;                           | count in multiples of 6, 7, 9, 25 and 1 000  | count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000  |   |
| given a number, identify one more and one less   |   | find 10 or 100 more or less than a given number                          | find 1 000 more or less than a given number  |  |   |
| <b>Comparing Numbers</b>   |   |  |  |  |   |
| use the language of: equal to, more than, less than (fewer), most, least                             | compare and order numbers from 0 up to 100; use <, > and = signs                                    | compare and order numbers up to 1 000                                    | order and compare numbers beyond 1 000 compare numbers with the same number of decimal places up to two decimal places | read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit                                   | read, write, order and compare numbers up to 10 000 000 and determine the value of each digit |
| <b>IDENTIFYING, REPRESENTING AND ESTIMATING NUMBERS</b>  |   |  |  |  |   |
| identify and represent numbers using objects and pictorial representations including the number line | identify, represent and estimate numbers using different representations, including the number line | identify, represent and estimate numbers using different representations | identify, represent and estimate numbers using different representations   |  |   |

**St. Stephen's Catholic Primary School and Nursery Knowledge Progression for Maths 2020-2021**

| <b>READING AND WRITING NUMBERS (including Roman Numerals)</b>             |  |  |   |   |   |
|---|--|--|---|---|---|
| Year 1  | Year 2   | Year 3   | Year 4  | Year 5  | Year 6  |
| read and write numbers from 1 to 20 in numerals and words. read and write | read and write numbers to at least 100 in numerals and in words            | numbers up to 1 000 in numerals and in words   | read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value. | read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit<br><br>read Roman numerals to 1 000 (M) and recognise years written in Roman numerals. | read, write, order and compare numbers up to 10 000 000 and determine the value of each digit |
| <b>UNDERSTANDING PLACE VALUE</b>  |  |  |   |   |   |
|   | recognise the place value of each digit in a two-digit number (tens, ones) | recognise the place value of each digit in a three-digit number (hundreds, tens, ones) | recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)                                    | read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit  | read, write, order and compare numbers up to 10 000 000 and determine the value of each digit |
| <b>ROUNDING</b>   |  |  |   |   |   |
|   |  |  | round any number to the nearest 10, 100 or 1 000  | round any number up to 1 000 000 to the nearest 10, 100, 1 000, 10 000 and 100 000  | round any whole number to a required degree of accuracy                                       |
| <b>PROBLEM SOLVING</b>  |  |  |   |   |   |
|   | use place value and number facts to solve problems                         | solve number problems and practical problems involving these ideas.                    | solve number and practical problems that involve all of the above and with increasingly large positive numbers                          | solve number problems and practical problems that involve all of the above  | solve number and practical problems that involve all of the above                             |

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| <b>ADDITION AND SUBTRACTION</b>  |   |  |        |   |  |
|--|---|--|--------|---|--|
| <b>NUMBER BONDS</b>  |   |  |        |   |  |
| Year 1   | Year 2  | Year 3   | Year 4 | Year 5  | Year 6   |
| represent and use number bonds and related subtraction facts within 20   | recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100  |  |        |   |  |
| <b>MENTAL CALCULATIONS</b>   |   |  |        |   |  |
| add and subtract one-digit and two-digit numbers to 20, including zero   | add and subtract numbers using concrete objects, pictorial representations, and mentally, including:<br>* a two-digit number and ones<br>* a two-digit number and tens<br>* two two-digit numbers<br>* adding three one-digit numbers | add and subtract numbers mentally, including:<br>* a three-digit number and ones<br>* a three-digit number and tens<br>* a three-digit number and hundreds |        | add and subtract numbers mentally with increasingly large numbers | perform mental calculations, including with mixed operations and large numbers                         |
| read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs | show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot  |  |        |   | use their knowledge of the order of operations to carry out calculations involving the four operations |
| <b>WRITTEN CALCULATIONS</b>  |   |  |        |   |  |

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|--|--|---|--|--|--|
| read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs   |  | add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction           | add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate | add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) |  |
| <b>INVERSE OPERATIONS, ESTIMATING AND CHECKING ANSWERS</b>   |  |   |  |  |  |
| Year 1   | Year 2   | Year 3  | Year 4   | Year 5   | Year 6   |
|  | recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.  | estimate the answer to a calculation and use inverse operations to check answers  | estimate and use inverse operations to check answers to a calculation  | use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy                       | use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.      |
| <b>PROBLEM SOLVING</b>   |  |   |  |  |  |
| solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$ | solve problems with addition and subtraction:<br>* using concrete objects and pictorial representations, including those involving numbers, quantities and measures<br>* applying their increasing knowledge of mental and written methods | solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction | solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why                   | solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why               | solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why |

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|--|--|--|--|--|---|
|  |  |  |  |  | Solve problems involving addition, subtraction, multiplication and division |
|--|--|--|--|--|---|

| <b>MULTIPLICATION AND DIVISION</b>         |  |   |  |   |  |
|--|--|---|--|---|--|
| <b>MULTIPLICATION AND DIVISION FACTS</b>   |  |   |  |   |  |
| Year 1                                     | Year 2   | Year 3  | Year 4   | Year 5  | Year 6   |
| count in multiples of twos, fives and tens | count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward   | count from 0 in multiples of 4, 8, 50 and 100   | count in multiples of 6, 7, 9, 25 and 1 000  | count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 |  |
|  | recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers | recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables   | recall multiplication and division facts for multiplication tables up to $12 \times 12$  |   |  |
| <b>MENTAL CALCULATIONS</b>                 |  |   |  |   |  |
|  |  | write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods | 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 | multiply and divide numbers mentally drawing upon known facts                             | perform mental calculations, including with mixed operations and large numbers |

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|  |   |  |   |  |  |
|--|---|--|---|--|--|
|  | show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot |  | recognise and use factor pairs and commutativity in mental calculations | multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 |  |
|--|---|--|---|--|--|

| <b>WRITTEN CALCULATIONS</b> |   |   |  |  |  |
|-----------------------------|---|---|--|--|--|
| Year 1                      | Year 2  | Year 3  | Year 4   | Year 5   | Year 6   |
|                             | calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ( $\times$ ), division ( $\div$ ) and equals (=) signs | write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods | multiply two-digit and three-digit numbers by a one-digit number using formal written layout | 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 multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication   |
|                             |   |   |  | 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 | divide numbers up to 4-digits by a two-digit whole number using the formal written method of short division where appropriate for the context 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 |

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|  |  |  |  |  |   |
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|  |  |  |  |  | remainders, fractions, or by rounding, as appropriate for the context |
|--|--|--|--|--|---|

| <b>PROPERTIES OF NUMBERS: MULTIPLES, FACTORS, PRIMES, SQUARE AND CUBE NUMBERS</b> |        |                             |   |  |  |
|---|--------|-----------------------------|---|--|--|
| Year 1  | Year 2 | Year 3                      | Year 4  | Year 5   | Year 6   |
|   |        |                             | recognise and use factor pairs and commutativity in mental calculations | identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.<br><br>know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers<br><br>establish whether a number up to 100 is prime and recall prime numbers up to 19 | identify common factors, common multiples and prime numbers  |
|   |        |                             |   | recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3) such as mm <sup>3</sup> and km <sup>3</sup>  | calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm <sup>3</sup> ) and cubic metres (m <sup>3</sup> ), and extending to other units |
| <b>ORDER OF OPERATIONS</b>  |        |                             |   |  |  |
|   |        |                             |   |  | use their knowledge of the order of operations to carry out calculations involving the four operations   |
| <b>INVERSE OPERATIONS, ESTIMATING AND CHECKING ANSWERS</b>                        |        |                             |   |  |  |
|   |        | calculation and use inverse | estimate and use inverse  |  | use estimation to check  |

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|--|--|-----------------------------|--|--|--|
|  |  | operations to check answers | operations to check answers to a calculation |  | answers to calculations and determine, in the context of a problem, levels of accuracy |
|--|--|-----------------------------|--|--|--|

| PROBLEM SOLVING   |   |   |  |  |   |
|---|---|---|--|--|---|
| Year 1  | Year 2  | Year 3  | Year 4   | Year 5   | Year 6  |
| solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher | solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts | solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects | 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 | solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes                               | solve problems involving addition, subtraction, multiplication and division             |
|   |   |   |  | solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign |   |
|   |   |   |  | solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates                                | solve problems involving similar shapes where the scale factor is known or can be found |



| <p style="text-align: center;"><b>FRACTIONS, DECIMALS AND PERCENTAGES</b></p>                        |   |   |  |  |        |
|--|---|---|--|--|--------|
| <p style="text-align: center;"><b>COUNTING IN FRACTIONAL STEPS</b></p>                               |   |   |  |  |        |
| Year 1   | Year 2  | Year 3  | Year 4   | Year 5   | Year 6 |
|  | <p>Pupils should count in fractions up to 10, starting from any number and using the <math>\frac{1}{2}</math> and <math>\frac{2}{4}</math> equivalence on the number line (Non Statutory Guidance)</p>    | <p>count up and down in tenths</p>  | <p>count up and down in hundredths</p>   |  |        |
| <p style="text-align: center;"><b>RECOGNISING FRACTIONS</b></p>                                      |   |   |  |  |        |
| <p>recognise, find and name a half as one of two equal parts of an object, shape or quantity</p>     | <p>recognise, find, name and write fractions <math>\frac{1}{3}</math>, <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math> and <math>\frac{3}{4}</math> of a length, shape, set of objects or quantity</p> | <p>recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators</p>  | <p>recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten</p> | <p>recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents</p> |        |
| <p>recognise, find and name a quarter as one of four equal parts of an object, shape or quantity</p> |   | <p>recognise that tenths arise from dividing an object into 10 equal parts and in dividing one - digit numbers or quantities by 10.</p> |  |  |        |

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|                            |  |   |  |   |   |
|----------------------------|--|---|--|---|---|
|                            |  | recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators |  |   |   |
| <b>COMPARING FRACTIONS</b> |  |   |  |   |   |
|                            |  | compare and order unit fractions, and fractions with the same denominators                            |  | compare and order fractions whose denominators are all multiples of the same number | compare and order fractions, including fractions $>1$ |

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| <b>COMPARING DECIMALS</b> |   |  |  |   |   |
|---------------------------|---|--|--|---|---|
| Year 1                    | Year 2  | Year 3   | Year 4   | Year 5  | Year 6  |
|                           |   |  | compare numbers with the same number of decimal places up to two decimal places          | read, write, order and compare numbers with up to three decimal places  | identify the value of each digit in numbers given to three decimal places   |
| <b>ROUNDING</b>           |   |  |  |   |   |
|                           |   |  | round decimals with one decimal place to the nearest whole number                        | round decimals with two decimal places to the nearest whole number and to one decimal place   | solve problems which require answers to be rounded to specified degrees of accuracy   |
| <b>EQUIVALENCE</b>        |   |  |  |   |   |
|                           | write simple fractions e.g. $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$ . | recognise and show, using diagrams, equivalent fractions with small denominators | recognise and show, using diagrams, families of common equivalent fractions              | identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths  | use common factors to simplify fractions; use common multiples to express fractions in the same denomination                              |
|                           |   |  | recognise and write decimal equivalents of any number of tenths or hundredths            | read and write decimal numbers as fractions (e.g. $0.71 = \frac{71}{100}$ )<br><br>recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents          | associate a fraction with division and calculate decimal fraction equivalents (e.g. $0.375$ ) for a simple fraction (e.g. $\frac{3}{8}$ ) |
|                           |   |  | recognise and write decimal equivalents to $\frac{1}{4}$ ; $\frac{1}{2}$ ; $\frac{3}{4}$ | 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 as a decimal fraction | recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.                          |

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| <b>ADDITION AND SUBTRACTION OF FRACTIONS</b>    |        |   |  |   |   |
|---|--------|---|--|---|---|
| Year 1  | Year 2 | Year 3  | Year 4   | Year 5  | Year 6  |
|   |        | add and subtract fractions with the same denominator within one whole (e.g. $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$ ) | add and subtract fractions with the same denominator | add and subtract fractions with the same denominator and multiples of the same number<br><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. $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$ ) | add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions   |
| <b>MULTIPLICATION AND DIVISION OF FRACTIONS</b> |        |   |  |   |   |
|   |        |   |  | multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams   | multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$ )<br><br>multiply one-digit numbers with up to two decimal places by whole numbers<br><br>divide proper fractions by whole numbers (e.g. $\frac{1}{3} \div 2 = \frac{1}{6}$ ) |

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| MULTIPLICATION AND DIVISION OF DECIMALS |        |        |   |        |  |
|---|--------|--------|---|--------|--|
| Year 1                                  | Year 2 | Year 3 | Year 4  | Year 5 | Year 6   |
|   |        |        | <p>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 ones, tenths and hundredths</p> |        | <p>multiply one-digit numbers with up to two decimal places by whole numbers</p> <p>multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places</p> <p>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</p> <p>associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. <math>\frac{3}{8}</math>)</p> <p>use written division methods in cases where the answer has up to two decimal places</p> |

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| <b>PROBLEM SOLVING</b> |        |  |   |  |        |
|------------------------|--------|--|---|--|--------|
| Year 1                 | Year 2 | Year 3                                       | Year 4  | Year 5   | Year 6 |
|                        |        | solve problems that involve all of the above | 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 | solve problems involving numbers up to three decimal places  |        |
|                        |        |  | solve simple measure and money problems involving fractions and decimals to two decimal places.   | solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$ , $\frac{1}{4}$ , $\frac{1}{5}$ , $\frac{2}{5}$ , $\frac{4}{5}$ and those with a denominator of a multiple of 10 or 25. |        |

| <b>RATIO AND PROPORTION</b>  |        |        |        |        |        |
|--|--------|--------|--------|--------|--------|
| <b>Statements only appear in Year 6 but should be connected to previous learning, particularly fractions and multiplication and division</b> |        |        |        |        |        |
| Year 1   | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|  |        |        |        |        |        |

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|--|--|--|--|--|---|
|  |  |  |  |  | <p>solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts</p> <p>solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison</p> <p>solve problems involving similar shapes where the scale factor is known or can be found</p> <p>solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.</p> |
|--|--|--|--|--|---|

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| ALGEBRA   |   |  |  |  |  |
|---|---|--|--|--|--|
| EQUATIONS   |   |  |  |  |  |
| Year 1  | Year 2  | Year 3   | Year 4   | Year 5   | Year 6   |
| <p>solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and <b>missing number problems</b> such as <math>7 = - 9</math></p> | <p>recognise and use the inverse relationship between addition and subtraction and use this to check calculations and <b>missing number problems</b>.</p> | <p>solve problems, including <b>missing number problems</b>, using number facts, place value, and more complex addition and subtraction.</p> <p>solving multiplication and division, including integer scaling</p> |  | <p>use the properties of rectangles to deduce related facts and find <b>missing lengths and angles</b></p> | <p>express missing number problems algebraically</p>   |
|   | <p>recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100</p>   |  |  |  | <p>find pairs of numbers that satisfy number sentences involving two unknowns</p>                                    |
| <p>represent and use number bonds and related subtraction facts within 20</p>   |   |  |  |  | <p>enumerate all possibilities of combinations of two variables</p>  |
| FORMULAE  |   |  |  |  |  |
|   |   |  | <p>Perimeter can be expressed algebraically as <math>2(a + b)</math> where <math>a</math> and <math>b</math> are the dimensions in the same unit</p> |  | <p>use simple formulae</p> <p>recognise when it is possible to use <b>formulae</b> for area and volume of shapes</p> |
| SEQUENCES   |   |  |  |  |  |
| <p>sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening</p>                             | <p>compare and sequence intervals of time</p> <p>order and arrange combinations of mathematical objects in patterns</p>                                   |  |  |  | <p>generate and describe linear number sequences</p>   |



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| <b>MEASUREMENT</b>  |   |   |   |  |  |
|---|---|---|---|--|--|
| <b>COMPARING AND ESTIMATING</b>   |   |   |   |  |  |
| Year 1  | Year 2  | Year 3  | Year 4  | Year 5   | Year 6   |
| compare, describe and solve practical problems for:<br>* lengths and heights [e.g. long/short, longer/shorter, tall/short, double/half]<br>* mass/weight [e.g. heavy/light, heavier than, lighter than]<br>* capacity and volume [e.g. full/empty, more than, less than, half, half full, quarter]<br>* time [e.g. quicker, slower, earlier, later] | compare and order lengths, mass, volume/capacity and record the results using >, < and =  | estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight | estimate, compare and calculate different measures, including money in pounds and pence | calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm <sup>2</sup> ) and square metres (m <sup>2</sup> ) and estimate the area of irregular shapes | calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm <sup>3</sup> ) and cubic metres (m <sup>3</sup> ), and extending to other units such as mm <sup>3</sup> and km <sup>3</sup> . |
| sequence events in chronological order using language [e.g. before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]  | compare and sequence intervals of time  | compare durations of events, for example to calculate the time taken by particular events or tasks  |   |  |  |
| <b>MEASURING AND CALCULATING</b>  |   |   |   |  |  |
| measure and begin to record the following:<br>* lengths and heights<br>* mass/weight<br>* capacity and volume<br>* time (hours, minutes, seconds)   | 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 | measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)  | estimate, compare and calculate different measures, including money in pounds and pence | use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling.   | solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate   |

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|  | the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels  |  |   |  |   |
|  |   | measure the perimeter of simple 2-D shapes   | measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres | measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres  | recognise that shapes with the same areas can have different perimeters and vice versa  |
| recognise and know the value of different denominations of coins and notes | recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value  | add and subtract amounts of money to give change, using both £ and p in practical contexts |   |  |   |
|  | find different combinations of coins that equal the same amounts of money<br><br>solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change |  | find the area of rectilinear shapes by counting squares   | calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm <sup>2</sup> ) and square metres (m <sup>2</sup> ) and estimate the area of irregular shapes<br><i>recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)</i> | calculate the area of parallelograms and triangles<br><br>calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm <sup>3</sup> ) and cubic metres (m <sup>3</sup> ), and extending to other units [e.g. mm <sup>3</sup> and km <sup>3</sup> ].<br><br>recognise when it is possible to use formulae for area and volume of shapes |

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| <b>TELLING THE TIME</b>  |   |   |   |  |   |
|--|---|---|---|--|---|
| Year 1   | Year 2  | Year 3  | Year 4  | Year 5   | Year 6  |
| tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. | 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. | tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks  | read, write and convert time between analogue and digital 12 and 24-hour clocks                               |  |   |
| recognise and use language relating to dates, including days of the week, weeks, months and years        | know the number of minutes in an hour and the number of hours in a day.   | estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight | solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days | solve problems involving converting between units of time  |   |
| <b>CONVERTING</b>  |   |   |   |  |   |
|  | know the number of minutes in an hour and the number of hours in a day.   | know the number of seconds in a minute and the number of days in each month, year and leap year   | convert between different units of measure (e.g. kilometre to metre; hour to minute)                          | convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) | 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 three decimal places |

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|  |  |  |   |   |  |
|--|--|--|---|---|--|
|  |  |  | read, write and convert time between analogue and digital 12 and 24-hour clocks                               | solve problems involving converting between units of time   | solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate |
|  |  |  | solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days | understand and use equivalences between metric units and common imperial units such as inches, pounds and pints | convert between miles and kilometres   |

## GEOMETRY: PROPERTIES OF SHAPE

### IDENTIFYING SHAPES AND THEIR PROPERTIES

| Year 1  | Year 2   | Year 3 | Year 4   | Year 5   | Year 6   |
|---|--|--------|--|--|--|
| recognise and name common 2-D and 3-D shapes, including:<br>* 2-D shapes [e.g. rectangles (including squares), circles and triangles]<br>* 3-D shapes [e.g. cuboids (including cubes), pyramids and spheres]. | identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line |        | identify lines of symmetry in 2-D shapes presented in different orientations | identify 3-D shapes, including cubes and other cuboids, from 2-D representations | recognise, describe and build simple 3-D shapes, including making nets                               |
|   | identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces                  |        |  |  | illustrate and name parts of circles, including radius, diameter and circumference and know that the |

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|  |   |  |  |  |                              |
|--|---|--|--|--|------------------------------|
|  | identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid] |  |  |  | diameter is twice the radius |
|--|---|--|--|--|------------------------------|

**DRAWING AND CONSTRUCTING**

|  |  |   |  |  |   |
|--|--|---|--|--|---|
|  |  | draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them | complete a simple symmetric figure with respect to a specific line of symmetry | draw given angles, and measure them in degrees (°) | draw 2-D shapes using given dimensions and angles |
|--|--|---|--|--|---|

**COMPARING AND CLASSIFYING**

| Year 1 | Year 2  | Year 3 | Year 4   | Year 5   | Year 6   |
|--------|---|--------|--|--|--|
|        | 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 | use the properties of rectangles to deduce related facts and find missing lengths and angles       | compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons |
|        |   |        |  | distinguish between regular and irregular polygons based on reasoning about equal sides and angles |  |

**ANGLES**

|  |  |  |                                      |   |  |
|--|--|--|--------------------------------------|---|--|
|  |  | recognise angles as a property of shape or a description of a turn |                                      | know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles |  |
|  |  | identify right angles, recognise that two                          | identify acute and obtuse angles and | identify:<br>* angles at a point and  | recognise angles where they meet at a point, |

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|  |  |  |   |   |   |
|--|--|--|---|---|---|
|  |  | right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle | compare and order angles up to two right angles by size | one whole turn (total 360°)<br>* angles at a point on a straight line and ½ a turn (total 180°)<br>* other multiples of 90° | are on a straight line, or are vertically opposite, and find missing angles |
|  |  | identify horizontal and vertical lines and pairs of perpendicular and parallel lines   |   |   |   |

## GEOMETRY: POSITION AND DIRECTION

### POSITION, DIRECTION AND MOVEMENT

| Year 1  | Year 2   | Year 3 | Year 4   | Year 5  | Year 6  |
|---|--|--------|--|---|---|
| Describe position, direction and movement, including half, quarter and three-quarter turns. | 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 anti-clockwise) |        | describe positions on a 2-D grid as coordinates in the first quadrant                              | 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 | describe positions on the full coordinate grid (all four quadrants)                     |
|   |  |        | describe movements between positions as translations of a given unit to the left/right and up/down |   | draw and translate simple shapes on the coordinate plane, and reflect them in the axes. |

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|                |  |  |  |  |  |
|----------------|--|--|--|--|--|
|                |  |  | plot specified points and draw sides to complete a given polygon |  |  |
| <b>PATTERN</b> |  |  |  |  |  |
|                | order and arrange combinations of mathematical objects in patterns and sequences |  |  |  |  |

| <b>STATISTICS</b>                                     |   |  |  |  |  |
|---|---|--|--|--|--|
| <b>INTERPRETING, CONSTRUCTING AND PRESENTING DATA</b> |   |  |  |  |  |
| Year 1  | Year 2  | Year 3   | Year 4   | Year 5   | Year 6   |
|   | interpret and construct simple pictograms, tally charts, block diagrams and simple tables                                 | interpret and present data using bar charts, pictograms and tables | interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs | complete, read and interpret information in tables, including timetables | interpret and construct pie charts and line graphs and use these to solve problems |
|   | 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   |  |  |  |  |
| <b>SOLVING PROBLEMS</b>                               |   |  |  |  |  |

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|  |  |   |   |   |  |
|--|--|---|---|---|--|
|  |  | solve one-step and two-step questions [e.g. 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables. | solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs. | solve comparison, sum and difference problems using information presented in a line graph | calculate and interpret the mean as an average |
|--|--|---|---|---|--|

**EYFS PROGRESSION**

| <b>Number and Place Value</b>   |   |  |  | <b>Addition and Subtraction</b>  |  | <b>Multiplication and Division</b> |   |
|---|---|--|--|--|--|------------------------------------|---|
| <b>Counting</b>   | <b>Comparing Numbers</b>  | <b>Identifying, representing and estimating numbers</b>        | <b>Reading and writing numbers</b>           | <b>Number bonds</b>  | <b>Mental Calculations</b>   | <b>Problem Solving</b>             | <b>Multiplication and division facts</b>                  |
| count from 0-20<br><br>count an irregular arrangement of up to 10 objects | compare quantities of identical objects<br><br>compare quantities of non-identical objects<br><br>compare groups up to 10<br><br>use the language of more than and fewer than | select the correct numeral to represent 1-5, then 1-10 objects | write the correct numeral for a given number | Bonds to 5<br><br>Number bonds 10 (tens frame)<br><br>Number bonds to 10 (part-part whole model) | Find one more and one less<br><br>Combine two groups to find the whole<br><br>Adding by counting on<br><br>Subtract by counting back | Sorting into groups                | Doubling<br><br>Halving and sharing<br><br>Odds and evens |

|                    |                                      |   |
|--------------------|--------------------------------------|---|
| <b>Measurement</b> | <b>Geometry: Properties of shape</b> | <b>Geometry: Position and direction</b> |
|--------------------|--------------------------------------|---|



**St. Stephen's Catholic Primary School and Nursery Knowledge Progression for Maths 2020-2021**

| <b>Measuring and calculating</b>  | <b>Telling the time</b>   | <b>Identifying shapes and their properties</b>   | <b>Drawing and constructing</b>                           | <b>Comparing and classifying</b>  | <b>Position, direction and movement</b> | <b>Pattern</b>  |
|---|---|--|---|---|---|---|
| Daily routine<br><br>Recognise length, height and distance<br><br>Understand the difference between weight and capacity | Daily routine<br><br>Order and sequence events<br><br>measure short periods of time | recognise 2-D and 3-D shapes; using mathematical terms<br><br>selects a particular named shape | Make simple patterns<br><br>Explore more complex patterns | order two or three items by length and height<br><br>order two items by weigh or capacity | describe the position of an object      | Use common shapes to create patterns and build models |