

## North Clifton Primary School – Maths progression document

|                                      | Year 1   | Year 2   | Year 3  | Year 4  | Year 5  | Year 6  |
|--------------------------------------|--|--|---|---|---|---|
| <b>Problem solving and reasoning</b> | <ul style="list-style-type: none"> <li>• Understand &amp; use in practical contexts: operation, sign, number sentence.</li> <li>• Choose &amp; use appropriate number operations &amp; ways of calculating to solve problems in a wide variety of context, including other subjects and use of money &amp; measures.</li> <li>• Solve one step 'story' problems.               <ul style="list-style-type: none"> <li>• Decide whether a calculation can be done mentally or needs the use of apparatus, such as counters, coins etc.</li> </ul> </li> <li>• Make up number 'stories' to reflect statements.</li> <li>• Explain orally how a problem was solved.</li> <li>• Solve simple puzzles &amp; problems using mathematical content they know.</li> <li>• Give examples to match statements.</li> </ul> | <ul style="list-style-type: none"> <li>• Understand, use &amp; read: operation, sign, symbol, number sentence.               <ul style="list-style-type: none"> <li>• Choose &amp; use appropriate number operations &amp; ways of calculating to solve problems in a wide variety of context, including other subjects and use of money &amp; measures.</li> </ul> </li> <li>• Make up number stories for all four operations.</li> <li>• Decide whether a calculation can be done mentally or needs the use of apparatus.</li> <li>• Identify missing numbers and operations in calculations.</li> <li>• Solve simple one- and two-step word problems.</li> <li>• Explain orally and/or record how a problem was solved.</li> <li>• Solve puzzles &amp; problems using mathematical content they know.</li> <li>• Investigate general statements by finding examples that match it.</li> </ul> | <ul style="list-style-type: none"> <li>• Understand, use &amp; read: operation, sign, symbol, number sentence, equation, calculation.               <ul style="list-style-type: none"> <li>• Choose &amp; use appropriate number operations &amp; ways of calculating to solve problems in a wide variety of context, including other subjects and use of money &amp; measures.</li> </ul> </li> <li>• Decide whether a calculation needs to be done mentally, with apparatus or with jottings or written method; explain their methods orally and in writing.</li> <li>• Solve one- and two-step word problems.</li> <li>• Identify missing numbers and operations in calculations.</li> <li>• Look at different calculations for the same operation and say which is hardest/easiest and why.</li> <li>• Solve puzzles and problems using mathematical content they know.</li> <li>• Investigate a general statement by finding examples that match it or disprove it.</li> </ul> | <ul style="list-style-type: none"> <li>• Choose &amp; use the appropriate operation(s) to solve 2-step word problems, including use of time, money, measures, fractions and application in other subjects.               <ul style="list-style-type: none"> <li>• Decide which calculations can be done mentally or with pencil &amp; paper.</li> </ul> </li> <li>• Explain &amp; record how a problem was solved, including explaining orally their mental calculation strategies.</li> <li>• Make &amp; justify decisions.</li> <li>• Look at a set of + or - calculations and say which is the easiest/hardest and why.</li> <li>• Explain how calculations have been solved, using numbers, signs and symbols.</li> <li>• Solve mathematical puzzles in a range of contexts.</li> <li>• Identify missing operations, and numbers in calculations.</li> <li>• Start to express a relationship in words.</li> <li>• Find examples that match a general statement and begin to suggest general statements of their own.</li> </ul> | <ul style="list-style-type: none"> <li>• Choose &amp; use the appropriate operation(s) to solve multi-step word problems, including use of time, money, measures, fractions and application in other subjects.               <ul style="list-style-type: none"> <li>• Decide which calculations can be done mentally, with pencil &amp; paper or with written methods.</li> </ul> </li> <li>• Explain &amp; record how a problem was solved, including explaining orally their mental calculation strategies.</li> <li>• Make &amp; justify decisions.</li> <li>• Look at a set of multiplications - say which is the easiest/hardest and why.</li> <li>• Explain how calculations have been solved, using numbers, signs and symbols.</li> <li>• Solve mathematical puzzles in a range of contexts.</li> <li>• Identify missing operations, and numbers in calculations.</li> <li>• Express a relationship in words.</li> <li>• Find examples that match a general statement; suggest &amp; test general statements of their own.</li> </ul> | <ul style="list-style-type: none"> <li>• Choose &amp; use the appropriate operation(s) to solve multi-step word problems, including use of time, money, measures, fractions and application in other subjects.               <ul style="list-style-type: none"> <li>• Decide which calculations can be done mentally, with pencil &amp; paper or with written methods.</li> </ul> </li> <li>• Explain &amp; record how a problem was solved, including explaining orally their mental calculation strategies.</li> <li>• Make &amp; justify decisions.</li> <li>• Look at a set of divisions and say which is the easiest/hardest and why.</li> <li>• Explain how calculations have been solved, using numbers, signs and symbols.</li> <li>• Solve mathematical puzzles in a range of contexts.</li> <li>• Identify missing operations, and numbers in calculations.</li> <li>• Express a relationship in words &amp; start to use simple formulae.</li> <li>• Find examples that match a general statement; identify, suggest &amp; test their own general statements.</li> </ul> |

## North Clifton Primary School – Maths progression document

|                                   | Year 1   | Year 2   | Year 3   | Year 4   | Year 5   | Year 6  |
|-----------------------------------|--|--|--|--|--|---|
| <b>Develop algebraic thinking</b> | <ul style="list-style-type: none"> <li>Describe simple patterns and relationships involving numbers or shapes</li> <li>Recognise, create &amp; continue a repeating pattern; Understand equals as a balance &amp; use equal sign to show equivalence between two number statements; understand why it doesn't just mean "this is the answer"</li> <li>Sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]</li> <li>Recognise a symbol such as * to represent a missing number.</li> <li>Solve missing number problem</li> </ul> | <ul style="list-style-type: none"> <li>Recognise a symbol such * as to represent a missing number</li> <li>Find an unknown number in a number sentence, using the symbols +, −, ×, ÷ and</li> <li>Understand the = as equality and use to show equivalence between two statements or number sentences.</li> <li>Solve problems and puzzles, working in an organised way and explaining their methods in pictures, words or orally.</li> <li>Solve puzzles where there is more than one answer</li> <li>Describe patterns, recognise simple generalisations and predict what will come next.</li> </ul> | <ul style="list-style-type: none"> <li>Understand and use the equal sign as the balance of an equation</li> <li>Recognise symbols/letters can represent numbers</li> <li>Solve missing number &amp; shape problems</li> <li>Solve puzzles where there is more than one answer (key strategy: another, another another...)</li> <li>Solve problems that lead to generalisations and notice patterns.</li> </ul> | <ul style="list-style-type: none"> <li>State inequalities using the symbols &lt; and &gt; (e.g. <math>3 &gt; -5</math>, <math>-1 &lt; +1</math>)</li> <li>Represent puzzles or problems using numbers sentences, using +, −, ×, ÷ and =, as well as symbols or empty boxes to represent unknowns.</li> <li>Solve missing number problems. Solve problems where there is more than one answer. (Key strategy: another, another another...)</li> <li>Notice patterns and make generalisations</li> </ul> | <ul style="list-style-type: none"> <li>Pupils use and explain the = sign to indicate, equivalence, including missing number problems (for example, <math>13 + 24 = 12 + 25</math>; <math>33 = 5 \times \square</math>)</li> <li>Use the relations of perimeter or area to find unknown lengths.</li> <li>Use simple algebra to express missing measurements (e.g. <math>4s = 24</math> for a square with a perimeter of 24cm and missing sides)</li> <li>Solve equations with missing numbers</li> <li>Understand what letters represent in algebraic expressions</li> <li>Make and investigate a general statement about familiar numbers by finding examples that satisfy it.</li> <li>Explain a generalised relationship (formula) in words.</li> </ul> | <ul style="list-style-type: none"> <li>Express missing number problems algebraically</li> <li>Represent a real-life situation using algebra <ul style="list-style-type: none"> <li>Rearrange and simplify expressions</li> </ul> </li> <li>Manipulate an equation to find a solution</li> <li>Use simple formula expressed in words</li> <li>Generate &amp; describe linear number sequences; generate the nth term</li> <li>Find pairs of numbers that satisfy number sentences involving two unknowns</li> <li>Enumerate all possibilities of combinations of two variables.</li> </ul> |

## North Clifton Primary School – Maths progression document

|                               | Year 1   | Year 2  | Year 3  | Year 4  | Year 5   | Year 6   |
|-------------------------------|--|---|---|---|--|--|
| <b>Number and place value</b> | <ul style="list-style-type: none"> <li>Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number</li> <li>Count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens</li> <li>Given a number, identify one more and one less</li> <li>Identify and represent numbers using objects and pictorial representations including the number line, &amp; use language of: equal to, more than, less than (fewer), most, least</li> <li>Read and write numbers from 1 to 20 in numerals and words</li> <li>Recognise the place value of each digit in a two digit number</li> <li>Partition a two digit number into a multiple of tens and ones</li> <li>Find ten more or ten less than any given two-digit number</li> <li>Give a reasonable estimate of a number of objects and then count them.</li> </ul> | <ul style="list-style-type: none"> <li>Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward</li> <li>Recognise the place value of each digit in a two-digit number</li> <li>Compare and order numbers from 0 up to 100; use &lt;, &gt; and = signs</li> <li>Identify, represent and estimate numbers using different representations, including the number line</li> <li>Read and write numbers to at least 100 in numerals and in words</li> <li>Use place value and number facts to solve problems.</li> </ul> | <ul style="list-style-type: none"> <li>Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number</li> <li>Recognise the place value of each digit in a three-digit number</li> <li>Compare and order numbers up to 1000</li> <li>Identify, represent and estimate numbers using different representations</li> <li>Read and write numbers up to 1000 in numerals and in words</li> <li>Solve number and practical problems involving these ideas.</li> </ul> | <ul style="list-style-type: none"> <li>Count in multiples of 6, 7, 9, 25 and 1000</li> <li>Find 1000 more or less than</li> <li>Count backwards through zero to include negative numbers</li> <li>Recognise the place value of each digit in a four-digit number</li> <li>Order and compare numbers beyond 1000</li> <li>Identify, represent and estimate numbers using different representations</li> <li>Round any number to the nearest 10, 100 or 1000</li> <li>Solve number and practical problems that involve all of the above</li> <li>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.</li> </ul> | <ul style="list-style-type: none"> <li>Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000</li> <li>Interpret negative numbers in context, count forwards &amp; backwards with positive and negative whole numbers, including through zero</li> <li>Read, write, order and compare numbers up to 1 000 000 and determine the value of each digit</li> <li>Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000</li> <li>Solve number and practical problems that involve all of the above</li> <li>Read Roman numerals to 1000 (M) and recognise years written in Roman numerals</li> </ul> | <ul style="list-style-type: none"> <li>Use negative numbers in context, and calculate intervals across zero</li> <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>Solve number and practical problems that involve all of the above.</li> </ul> |

## North Clifton Primary School – Maths progression document

|   | Year 1   | Year 2   | Year 3   | Year 4   | Year 5  | Year 6  |
|---|--|--|--|--|---|---|
| <b>Proportion (inc. Fractions, Decimals, Percentages &amp; Ratio)</b> | <ul style="list-style-type: none"> <li>Count up and down in halves and quarters</li> <li>Recognise, find and name a half as one of two equal parts of an object, shape or quantity</li> <li>Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity</li> <li>Pupils connect halves and quarters to the equal sharing and grouping of sets of objects and to measures.</li> <li>Recognise and combine halves and quarters as parts of a whole.</li> </ul> | <ul style="list-style-type: none"> <li>Count up and down in halves, quarters &amp; thirds.</li> <li>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</li> <li>Write simple fractions for example, <math>\frac{1}{2}</math> of 6 = 3 and recognise the equivalence of <math>\frac{2}{4}</math> and <math>\frac{1}{2}</math>.</li> </ul> | <ul style="list-style-type: none"> <li>Count up and down in tenths;</li> <li>Recognise that tenths arise from dividing an object into 10 equal parts &amp; in dividing 1- digit numbers or quantities by 10</li> <li>Compare and order unit fractions, and fractions with the same denominators</li> <li>Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators</li> <li>Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators</li> <li>Recognise and show, using diagrams, equivalent fractions with small denominators</li> <li>Add and subtract fractions with the same denominator within one whole [for example, <math>\frac{5}{7} + \frac{1}{7} = \frac{6}{7}</math>]</li> <li>Solve problems involving all of the above</li> </ul> | <ul style="list-style-type: none"> <li>Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten</li> <li>Recognise and show, using diagrams, families of common equivalent fractions</li> <li>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</li> <li>Add and subtract fractions with the same denominator</li> <li>Recognise and write decimal equivalents of any number of tenths or hundredths</li> <li>Recognise and write decimal equivalents to <math>\frac{1}{4}</math>, <math>\frac{1}{2}</math> and <math>\frac{3}{4}</math></li> <li>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</li> <li>Round decimals with one decimal place to the nearest whole number</li> <li>Compare numbers with the same number of decimal places up to two decimal places</li> <li>Solve simple measure &amp; money problems involving fractions &amp; decimals to 2 decimal places.</li> </ul> | <ul style="list-style-type: none"> <li>Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements <math>&gt; 1</math> as a mixed number</li> <li>Compare and order fractions whose denominators are all multiples of the same number</li> <li>Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths</li> <li>Add and subtract fractions with the same denominator and denominators that are multiples of the same number</li> <li>Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams</li> <li>Read and write decimal numbers as fractions</li> <li>Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents</li> <li>Round decimals with two decimal places to the nearest whole number and to one decimal place</li> <li>Read, write, order and compare numbers with up to three decimal places</li> <li>Recognise the per cent symbol (%) and understand that per cent</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 <math>&gt; 1</math></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</li> <li>Divide proper fractions by whole numbers</li> <li>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>)</li> <li>Multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places</li> <li>Multiply one-digit number 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 involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison</li> <li>Solve problems which</li> </ul> |

## North Clifton Primary School – Maths progression document

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|  |  |  |  |  | <p>relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal</p> <ul style="list-style-type: none"> <li>• Solve problems involving number up to three decimal places</li> <li>• Solve problems which require knowing percentage &amp; decimal equivalents <math>\frac{1}{2}</math> <math>\frac{1}{4}</math> <math>\frac{1}{5}</math> <math>\frac{2}{5}</math> <math>\frac{4}{5}</math> &amp; those with a denominator of 10 or 25.</li> </ul> | <p>require answers to be rounded to specified degrees of accuracy</p> <ul style="list-style-type: none"> <li>• Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.</li> <li>• Solve problems involving the relative sizes of two quantities where missing value 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 using unequal sharing and grouping using knowledge of fractions &amp; multiples.</li> </ul> |
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## North Clifton Primary School – Maths progression document

|   | Year 1   | Year 2   | Year 3   | Year 4  | Year 5  | Year 6   |
|---|--|--|--|---|---|--|
| <b>Calculation<br/>(Addition and subtraction)</b> | <ul style="list-style-type: none"> <li>•Read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs</li> <li>•Represent and use number bonds and related subtraction facts within 20</li> <li>•Add and subtract one-digit and two-digit numbers to 20, including zero</li> <li>•Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as <math>7 = \square - 9</math>.</li> <li>•Add and subtract numbers using concrete objects, pictorial representations and mentally including: a two digit number and ones; a two-digit number and teens; two two-digit numbers; adding three one-digit numbers</li> </ul> | <ul style="list-style-type: none"> <li>•Solve problems with addition and subtraction, using concrete objects &amp; pictorial representations, including those involving numbers, quantities &amp; measures</li> <li>•Use place value and number facts to solve problems recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100</li> <li>•Add &amp; subtract numbers using concrete objects, pictorial representations &amp; mentally, inc. - a two-digit number &amp; ones; - a two-digit number &amp; tens; - two two-digit numbers; - adding three one-digit numbers.</li> <li>•Show that addition can be done in any order (commutative) &amp; subtraction cannot</li> <li>•Recognise the inverse relationship between addition &amp; subtraction and use this to check calculations and solve missing number problems</li> <li>•Extend understanding of + and --.</li> </ul> | <ul style="list-style-type: none"> <li>•Add &amp; subtract numbers mentally, including: - a three-digit number &amp; ones; - a three-digit number &amp; tens; - a three-digit number &amp; hundreds; - add &amp; subtract numbers with up to three digits.</li> <li>•Estimate &amp; check the answer to a calculation and use inverse operations to check answers</li> <li>•Solve problems including missing number problems, sing number facts, place value &amp; more complex addition &amp; subtraction.</li> </ul> | <ul style="list-style-type: none"> <li>•Add and subtract with up to 4- digits using mental, informal &amp; written methods as appropriate</li> <li>•Estimate &amp; use inverse operations to check answers to a calculation</li> <li>•Solve addition &amp; subtraction two-step problems in contexts, deciding which operations to use and why</li> </ul> | <ul style="list-style-type: none"> <li>•Add and subtract whole numbers with more than 4- digits, including using formal column methods if ready.</li> <li>•Add and subtract numbers mentally with increasingly large numbers</li> <li>•Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy</li> <li>•Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</li> </ul> | <ul style="list-style-type: none"> <li>•Perform mental calculations, including with mixed operations &amp; large numbers</li> <li>•Use their knowledge of the order of operations to carry out calculations involving the four operations.</li> <li>•Solve addition &amp; subtraction multi-step problems in contexts, deciding which operations &amp; methods to use and why</li> <li>•Solve problems involving addition, subtraction, multiplication &amp; division</li> <li>•Use estimation to check answers to calculations &amp; determine, in the context of a problem, levels of accuracy.</li> </ul> |

## North Clifton Primary School – Maths progression document

|  | Year 1  | Year 2  | Year 3  | Year 4  | Year 5   | Year 6  |
|--|---|---|---|---|--|---|
| <b>Calculation<br/>(Multiplication and division)</b> | <ul style="list-style-type: none"> <li>•Make connections between multiplication &amp; number patterns, counting in 2s, 5s and 10s and arrays.</li> <li>•Understand division as both grouping &amp; sharing, modelling with concrete objects</li> <li>•Solve one-step problems involving multiplication &amp; division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher</li> <li>•Grouping and sharing small quantities</li> <li>•Count in multiples of twos, fives and tens.</li> <li>•Doubling and halving</li> <li>•Working with arrays helps pupils to become aware of the commutative property of multiplication, that <math>2 \times 5</math> is equivalent to <math>5 \times 2</math>.</li> <li>•Recognise that multiplication and division are linked.</li> </ul> | <ul style="list-style-type: none"> <li>•Recall and use multiplication &amp; division facts for the 2, 5, 10 times tables</li> <li>•Recognise odd &amp; even numbers</li> <li>•Calculate mathematical statements for multiplication &amp; division within the multiplication tables &amp; write them using the symbols <math>\times</math>, <math>\div</math> &amp; <math>=</math></li> <li>•Show that multiplication can be done in any order (commutative) and division cannot</li> <li>•Solve problems involving multiplication &amp; division, using materials, arrays, repeated addition, mental methods &amp; recall of multiplication &amp; division facts, including problems in context.</li> </ul> | <ul style="list-style-type: none"> <li>•Recall &amp; use multiplication &amp; division facts for the 3, 4 &amp; 8 times tables</li> <li>•Write &amp; calculate mathematical statements for multiplication &amp; division using the multiplication facts they know</li> <li>•Multiply 2-digit numbers by 1-digit numbers, using mental &amp; informal methods &amp; progressing to formal methods in line with calculations policy</li> <li>•Solve problems involving multiplying &amp; dividing including using the distributive law to multiply 2-digit numbers by 1-digit, integer scaling problems and harder correspondence problems in such as n objects are connected to m objects</li> </ul> | <ul style="list-style-type: none"> <li>•Recall multiplication &amp; division facts up to <math>10 \times 10</math> and use these to derive quickly to at least <math>12 \times 12</math>.</li> <li>•Use place value, known &amp; derived facts to multiply &amp; divide mentally including: <math>\times</math> by 0 &amp; 1 <math>\div</math> by 1 - multiplying 3 numbers</li> <li>•Recognise &amp; use factor pairs and commutatively in mental calculations</li> <li>•Multiply 2-digit and 3-digit numbers by a one digit number, progressing to formal methods in line with calculations policy</li> <li>•Solve problems involving multiplying &amp; adding using the distributive law to multiply 2- digit numbers by 1-digit, integer scaling problems and harder correspondence problems in such as n objects are connected to m objects</li> </ul> | <ul style="list-style-type: none"> <li>•Identify multiples &amp; factors, including finding all factor pairs of a number &amp; common factors of two numbers</li> <li>•Solve problems involving multiplication &amp; division where larger numbers are used by decomposing them into their factors</li> <li>•Know &amp; use the vocabulary of prime numbers, prime factors &amp; composite (non-prime) numbers</li> <li>•Establish whether a number up to 100 is prime and recall prime numbers up to 19</li> <li>•Multiply numbers up to 4-digits by a 1- or 2- digit number, using written methods</li> <li>•Multiply &amp; divide numbers mentally drawing upon known facts</li> <li>•Multiply &amp; divide whole numbers by 10, 100 &amp; 1000</li> <li>•Divide numbers up to 4-digits by a 1-digit numbers using written methods (see calculations policy)</li> <li>•Recognise &amp; use square &amp; cubed number and the notation <math>^2</math> and <math>^3</math>.</li> <li>•Solve problems involving all four operations &amp; combinations of these, including understanding the meaning of the equals sign.</li> <li>•Solve problems involving multiplication &amp; division,</li> </ul> | <ul style="list-style-type: none"> <li>•Perform mental calculations, including with mixed operations &amp; large numbers</li> <li>•Multiply numbers up to 4- digits by a two-digit number using written methods</li> <li>•Divide whole numbers up to 4-digits by a 2-digit number, using written methods.</li> <li>•Interpret remainders as whole number remainders, fractions or by rounding as appropriate for the context</li> <li>•Identify common factors, common multiples &amp; 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 &amp; division</li> <li>•Use estimation to check answers to calculations &amp; determine, in the context of a problem, levels of accuracy</li> </ul> |

## North Clifton Primary School – Maths progression document

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|                    |  |   |  |   | including scaling y simple fractions & problems involving simple rates.   |  |
|                    | <b>Year 1</b>  | <b>Year 2</b>   | <b>Year 3</b>  | <b>Year 4</b>   | <b>Year 5</b>   | <b>Year 6</b>  |
| <b>Measurement</b> | <ul style="list-style-type: none"> <li>• Compare, describe and solve practical problems for: <ul style="list-style-type: none"> <li>- length/height (long/short, longer/shorter, tall/short, double, half)</li> <li>- weight/mass (heavy/light, heavier than, lighter than) -</li> <li>- capacity/volume (full/empty, more than, less than, quarter)</li> <li>- time (quicker, slower, earlier, later)</li> </ul> </li> <li>• Measure and begin to record length/height, weight/mass, capacity/volume &amp; time (hours, minutes, seconds)</li> <li>• Measure &amp; record temperature</li> <li>• Make a reasonable estimation before measuring</li> <li>• Recognise and know the value of different denominations of coins and notes.</li> <li>• Find totals and change for amounts up to 20p</li> <li>• Sequence events in chronological order using language such as: before, after, next, first, today, tomorrow, morning, afternoon, evening.</li> <li>• Recognise and use language relating to dates,</li> </ul> | <ul style="list-style-type: none"> <li>• Choose and use appropriate standard units to estimate and measure length/height (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels</li> <li>• Compare &amp; order lengths, mass, volume/capacity and record the results using &gt;, &lt; and =</li> <li>• Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value</li> <li>• Find different combinations of coins that equal the same amounts of money</li> <li>• Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change</li> <li>• Compare and sequence intervals of time</li> <li>• 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</li> <li>• Know the number of minutes in an hour and the number of hours in a day.</li> </ul> | <ul style="list-style-type: none"> <li>• Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml); temperature (°C);</li> <li>• Measure the perimeter of simple 2-D shapes</li> <li>• Add and subtract amounts of money to give change, using both £ and p in practical contexts</li> <li>• Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks</li> <li>• Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight</li> <li>• Know the number of seconds in a minute and the number of days in each month, year and leap year</li> <li>• Compare durations of events, for example to calculate the time taken by particular events or tasks.</li> </ul> | <ul style="list-style-type: none"> <li>• Convert between different units of measure (e.g. hours to minutes, km to m)</li> <li>• Estimate, compare and calculate different measures, including money in pounds and pence</li> <li>• Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres</li> <li>• Find the area of rectilinear shapes by counting squares</li> <li>• Relate area to arrays and multiplication</li> <li>• Read, write and convert time between analogue and digital 12- and 24-hour clocks</li> <li>• Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days</li> </ul> | <ul style="list-style-type: none"> <li>• Convert between different units of metric measure</li> <li>• Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints</li> <li>• Estimate volume (e.g. using 1cm<sup>3</sup> blocks to build cubes &amp; cuboids) and capacity (e.g. using water)</li> <li>• Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres</li> <li>• Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm<sup>2</sup>) and square metres (m<sup>2</sup>) and estimate the area of irregular shapes</li> <li>• Relate area to arrays and multiplication</li> <li>• Solve problems involving converting between units of time</li> <li>• Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling &amp; conversion between units.</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 three decimal places</li> <li>• Convert between miles and kilometres</li> <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 cubic centimetres (cm<sup>3</sup>) and cubic metres (m<sup>3</sup>), and extending to other units.</li> </ul> |



## North Clifton Primary School – Maths progression document

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|  | including days of the week, weeks, months and years<br>•Tell the time to the hour and half past the hour and draw the hands on a clock .  |  |  |  |   |  |
|  | <b>Year 1</b>   | <b>Year 2</b>  | <b>Year 3</b>  | <b>Year 4</b>  | <b>Year 5</b>   | <b>Year 6</b>  |
| <b>Geometry (Properties of shape)</b>    | <ul style="list-style-type: none"> <li>•Recognise and name common 2-D shapes, including: squares, rectangles, circles, triangles.</li> <li>•Recognise and name common 3-D shapes, including: cubes, cuboids, pyramids &amp; spheres.</li> <li>•Sort shapes &amp; talk about simple properties (e.g. edges, faces and vertices)</li> <li>• Recognise shapes in different orientations and sizes.</li> <li>• Know that rectangles, triangles, cuboids and pyramids are not always similar to each other</li> <li>• Use everyday language to describe features of familiar 3D and 2D shapes, referring to properties such as number of faces and number of corners.</li> </ul> | <ul style="list-style-type: none"> <li>•Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line.</li> <li>•Compare and sort common 2- D and 3-D shapes and everyday objects.</li> <li>•Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces</li> <li>•Identify 2-D shapes on the surface of 3-D shapes.</li> <li>• Compare and sort common 2- D and 3-D shapes and everyday objects</li> </ul> | <ul style="list-style-type: none"> <li>•Draw 2-D shapes •Make 3-D shapes using modelling materials</li> <li>•Recognise 3-D shapes in different orientations and describe them</li> <li>•Recognise angles as a property of shape or a description of a turn</li> <li>•Identify right angles</li> <li>•Identify whether angles are greater or less than right angle</li> <li>•Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.</li> </ul> | <ul style="list-style-type: none"> <li>•Compare and classify geometric shapes, including quadrilaterals and triangles, based on properties and sizes</li> <li>•Identify lines of symmetry in 2-D shapes presented in different orientations</li> <li>•Complete a simple symmetric figure with respect to a specific line of symmetry.</li> <li>•Identify acute and obtuse angles and compare and order angles up to two right angles by size.</li> </ul> | <ul style="list-style-type: none"> <li>•Use the properties of rectangles to deduce related facts and find missing lengths and angles</li> <li>•Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.</li> <li>•Identify 3-D shapes, including cubes and other cuboids, from 2-D representations</li> <li>•Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles</li> <li>•Draw given angles, and measure them in degrees (°)</li> <li>•Identify: angles at a point and one whole turn (total 360°); at a point on a straight line and ½ a turn (total 180°); other multiples of 90°.</li> </ul> | <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>•Draw 2-D shapes using given dimensions and angles</li> <li>•Compare and classify geometric shapes based on their properties and sizes</li> <li>•Recognise, describe and build simple 3-D shapes, including making nets</li> <li>•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> |
| <b>Geometry (Position and direction)</b> | <ul style="list-style-type: none"> <li>•Describe position, direction and movement, including whole, half, quarter and three-quarter turns.</li> <li>•Use ordinal numbers, (first, second, third etc.)</li> <li>• Understand that objects can turn around a point or about a line.</li> </ul>  | <ul style="list-style-type: none"> <li>•Order and arrange combinations of mathematical objects in patterns and sequences.</li> <li>•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</li> </ul>   | <ul style="list-style-type: none"> <li>•Relate right angles to turns: two right angles make a half turn, three make three quarters of a turn and four a complete turn</li> <li>•Use mathematical vocabulary to describe movement about a grid, including straight line movements &amp; rotations.</li> </ul>   | <ul style="list-style-type: none"> <li>•Describe positions on a 2-D grid as coordinates in the first quadrant</li> <li>•Describe movements between positions as translations of a given unit to the left/right and up/down</li> <li>•Plot specified points and draw sides to complete a given polygon</li> </ul>   | <ul style="list-style-type: none"> <li>•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</li> <li>•Describe positions on a 2-D grid as coordinates in at least the first quadrant.</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>   |

## North Clifton Primary School – Maths progression document

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|-------------------|---|---|---|--|---|---|
|                   |   | angles for quarter, half and $\frac{3}{4}$ turns (clockwise & anticlockwise).   |   |  |   |   |
|                   | <b>Year 1</b>   | <b>Year 2</b>   | <b>Year 3</b>   | <b>Year 4</b>  | <b>Year 5</b>   | <b>Year 6</b>   |
| <b>Statistics</b> | <ul style="list-style-type: none"> <li>•Collect data in simple lists, tally charts &amp; tables</li> <li>•Construct simple pictograms or block diagrams (with 1:1 representation)</li> <li>•Ask and answer simple questions about data they have collected</li> </ul> | <ul style="list-style-type: none"> <li>•Interpret and construct simple pictograms, tally charts, block diagrams and simple tables</li> <li>•Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity</li> <li>•Ask and answer questions about totalling and comparing categorical data.</li> </ul> | <ul style="list-style-type: none"> <li>•Interpret and present data using bar charts, pictograms and tables</li> <li>•Solve one-step and two-step questions - for example, 'How many more?' and 'How many fewer?' using information presented in scaled bar charts and pictograms and tables.</li> </ul> | <ul style="list-style-type: none"> <li>•Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graph</li> <li>•Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.</li> </ul> | <ul style="list-style-type: none"> <li>•Complete, read and interpret information in tables, including timetables.</li> <li>•Solve comparison, sum and difference problems using information presented in a line graph.</li> </ul> | <ul style="list-style-type: none"> <li>•Interpret and construct pie charts and line graphs and use these to solve problems.</li> <li>• Calculate and interpret the mean as an average.</li> </ul> |