


**St Louis Catholic Academy, Newmarket**  
**Part of Our Lady of Walsingham Catholic Multi**  
**Academy Trust**

*Christ at the Centre: Children at the Heart*



**St Louis Calculation Policy 2021**

Approved by the Committee/Governing Body	29-9-2021
Signature of Chair of Governors	Kathleen Das and Charles Dore
Signature of CEO OLOW	
Review date	

**MISSION STATEMENT**

Our school strives to be a living Christian Community which values and nurtures each individual through a sound education and encourages responsible attitudes towards our changing world.

*'Loving to learn, learning to love'*

## **St Louis Catholic Academy Mathematics Calculation Policy**

The purpose of the policy is to:

Show how we meet the requirements of the National Curriculum 2014 for Mathematics and help children to develop their mathematics skills in age related progressive steps.

Explain how we teach mathematics calculations in school.

Show the visual models we use across the school.

Explain to parents and carers how we teach addition, subtraction, multiplication, division and problem solving;

Show visually how bar models can help children to problem-solve.

Set out the age-related expectations for teaching mathematics, whilst recognising that children learn at different speeds outside these groupings.

Ensure that teachers have a consistent framework to follow, that supports the development of mathematics skills in small steps.

Ensure the teaching and learning for Mastery is followed in all classes.

## **Mathematics Mastery**

Teaching for Mastery is:

Belief that all pupils can achieve.

Keeping the class working together so all can access and master mathematics.

Development of deep mathematical understanding.

Development of both factual/procedural and conceptual fluency.

Spending longer on key topics, providing time to go deeper and embed learning.

## **How to Use the Policy**

National Curriculum year group expectations for place value, addition, subtraction, multiplication and division (from EYFS to Year 6), including the correct mathematical vocabulary relevant to each year group.

Annex A:

Mathematical skills broken down for each year group (following the White Rose Maths Scheme of Learning, that we use at St Louis).

Annex B:

An overview of the different models and images that support the teaching and learning of different concepts, providing explanations of benefits and showing links between different operations, and concrete, pictorial and abstract representations.

## Place Value, Addition and Subtraction (EYFS)

3-4 Years	Children in Reception	Early Learning Goal
Recite numbers past 5.	Count beyond 10.	Have a deep understanding of number to 10, including the composition of each number.
Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5.	Understand the 'one more/one less than' relationship between consecutive numbers.	Automatically recall number bonds to 5 and some number bonds to 10, including double facts.
Solve real world mathematical problems with numbers up to 5.	Explore the composition of numbers to 10.	Verbally count beyond 20, recognising the pattern of the counting system.
Compare quantities using language: 'more than', 'fewer than'.	Automatically recall number bonds for numbers 0-5 and some to 10.	Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.
Say one number for each item in order: 1,2,3,4,5.	Compare numbers.	Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.
	Link the number symbol (numeral) with its cardinal number value.	
<b>Key Vocabulary: how many...? Is the same as, more, less, greater, odd, even, greater than, less than, order, estimate, add, take away, altogether, how many are left?</b>		

## Place Value (Year 1 to Year 6)

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. NC KO	Count in steps of 2, 3, and 5 from 0, and in 10s from any number, forward and backward. <a href="#">video</a> NC KO	Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number. NC KO	Count in multiples of 6, 7, 9, 25 and 1,000.	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.
Count, read and write numbers to 100 in numerals; count in multiples of 2s, 5s and 10s. NC KO	Recognise the place value of each digit in a two-digit number (10s, 1s). NC KO	Recognise the place value of each digit in a 3-digit number (100s, 10s, 1s).	Find 1,000 more or less than a given number.	Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000.	Round any whole number to a required degree of accuracy.
Given a number, identify 1 more and 1 less. NC KO	Identify, represent and estimate numbers using different representations, including the number line.	Compare and order numbers up to 1,000. NC KO	Count backwards through 0 to include negative numbers. NC KO	Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through 0. NC KO	Use negative numbers in context, and calculate intervals across 0. NC KO
Identify and represent numbers using objects and pictorial representations. Including the number line, and 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. NC KO	Identify, represent and estimate numbers using different representations.	Recognise the place value of each digit in a four-digit number (1,000s, 100s, 10s, and 1s). NC KO	Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000.	Solve number and practical problems that involve all of the above.
Read and write numbers from 1 to 20 in numerals and words.	Read and write numbers to at least 100 in numerals and in words.	Read and write numbers up to 1,000 in numerals and in words.	Order and compare numbers beyond 1,000.	Solve number problems and practical problems that involve all of the above.	
	Use place value and number facts to solve problems.	Solve number problems and practical problems involving these ideas.	Identify, represent and estimate numbers using different representations.	Read Roman numerals to 1,000 (M) and recognise years written in Roman numerals.	
			Round any number to the nearest 10, 100 or 1,000. NC KO		

## Place Value (Year 1 to Year 6)

			Solve number and practical problems that involve all of the above and with increasingly large positive numbers.		
			Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of 0 and place value.		
<b>Key Vocabulary:</b> Number Zero, one, two, three to twenty, and beyond None Count (on/up/to/ from/ down) Before, after More, less, many, few, fewer, least, fewest, smallest, greater, lesser Equal to, the same as Odd, even, Pair Units, ones, tens Ten more/less Digit Numeral Figure(s) Compare (In) order/a different order Size Value Between, halfway between Above, below	<b>Key Vocabulary:</b> Numbers to one hundred Hundreds Partition, recombine Hundred more/less	<b>Key Vocabulary:</b> Numbers to one thousand	<b>Key Vocabulary:</b> Tenths, hundredths Decimal (places) Round (to nearest) Thousand more/less than Negative integers Count through zero Roman numerals (I to C)	<b>Key Vocabulary:</b> Powers of 10	<b>Key Vocabulary:</b> Numbers to ten million

## Addition and Subtraction (Year 1 to Year 6)

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs.</p> <p>NC KO</p>	<p>Solve problems with addition and subtraction:</p> <ul style="list-style-type: none"> <li>- using concrete objects and pictorial representations, including those involving numbers, quantities and measures.</li> <li>- applying their increasing knowledge of mental and written methods.</li> </ul>	<p>Add and subtract numbers mentally, including:</p> <ul style="list-style-type: none"> <li>- a three-digit number and 1s.</li> <li>- a three-digit number and 10s.</li> <li>- a three-digit number and 100s.</li> </ul> <p>NC KO</p>	<p>Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate.</p> <p>WRM Skill</p>	<p>Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction).</p> <p>WRM Skill</p>	<p>Perform mental calculations, including with mixed operations and large numbers.</p>
<p>Represent and use number bonds and related subtraction facts within 20.</p> <p>NC KO</p>	<p>Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100.</p> <p>NC KO</p>	<p>Add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction.</p> <p>NC KO WRM</p>	<p>Estimate and use inverse operations to check answers to a calculation.</p>	<p>Add and subtract numbers mentally with increasingly large numbers.</p>	<p>Use their knowledge of the order of operations to carry out calculations involving the 4 operations.</p> <p>NC KO</p>
<p>Add and subtract one-digit and two-digit numbers to 20, including 0.</p> <p>NC KO WRM Skill</p>	<p>Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:</p> <ul style="list-style-type: none"> <li>- a two-digit number and 1s.</li> <li>- a two-digit number and 10s.</li> <li>- 2 two-digit numbers.</li> <li>- adding 3 one-digit numbers.</li> </ul> <p>NC KO WRM Skill</p>	<p>Estimate the answer to a calculation and use inverse operations to check answers.</p> <p>NC KO</p>	<p>Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.</p>	<p>Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.</p> <p>NC KO</p>	<p>Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</p>
<p>Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as <math>7 = ? - 9</math>.</p>	<p>Show that addition of 2 numbers can be done in any order (commutative) and subtraction of 1 number from another cannot.</p>	<p>Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.</p>		<p>Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</p>	<p>Solve problems involving addition, subtraction, multiplication and division.</p>

## Addition and Subtraction (Year 1 to Year 6)

	Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. NC KO				Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.
<b>Key vocabulary:</b> Number bonds, number line Add, more, plus, make, sum, total, altogether Inverse Double, near double Half, halve Equals, is the same as (including equals sign) Difference between How many more to make..?, how many more is...than..?, how much more is..? Subtract, take away, minus How many fewer is...than..?, how much less is..?	<b>Key vocabulary:</b>	<b>Key Vocabulary:</b> Column addition and subtraction	<b>Key Vocabulary:</b>	<b>Key Vocabulary:</b> Efficient written method	<b>Key Vocabulary:</b> Order of operations

[video \(link\)](#)

[NC KO \(National Curriculum Key Objective – Summarised Form\)](#)

[WRM Skill \(link to White Rose Maths\)](#)

## Multiplication and Division (Year 1 to Year 6)

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>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.</p> <p><a href="#">video</a> <a href="#">video</a></p> <p>WRM Skill</p>	<p>Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.</p> <p><a href="#">video</a></p> <p>NC KO</p>	<p>Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.</p> <p>NC KO</p>	<p>Recall multiplication and division facts for multiplication tables up to <math>12 \times 12</math>.</p> <p>NC KO</p>	<p>Identify multiples and factors, including finding all factor pairs of a number, and common factors of 2 numbers.</p> <p>NC KO</p>	<p>Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication.</p> <p><a href="#">video</a></p> <p>WRM Skill</p>
	<p>Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (<math>\times</math>), division (<math>\div</math>) and equals (<math>=</math>) signs.</p> <p><a href="#">video</a></p> <p>NC KO</p>	<p>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.</p> <p>WRM Skill</p>	<p>Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers.</p> <p>NC KO</p>	<p>Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.</p> <p>NC KO</p>	<p>Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context.</p> <p><a href="#">video</a> <a href="#">video</a> <a href="#">video</a></p> <p>NC KO</p> <p>WRM Skill</p>
	<p>Show that multiplication of 2 numbers can be done in any order (commutative) and division of 1 number by another cannot.</p> <p><a href="#">video</a></p>	<p>Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which <math>n</math> objects are connected to <math>m</math> objects.</p>	<p>Recognise and use factor pairs and commutativity in mental calculations.</p> <p>NC KO</p>	<p>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.</p> <p><a href="#">video</a> <a href="#">video</a></p> <p>NC KO</p> <p>WRM Skill</p>	<p>Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context.</p> <p>WRM Skill</p>



## Multiplication and Division (Year 1 to Year 6)

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	<p>Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.</p> <p><a href="#">video</a></p>		<p>Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.</p> <p><a href="#">video</a>  <a href="#">video</a>  <a href="#">video</a>  <a href="#">video</a>  <a href="#">video</a></p> <p>NC KO                      WRM Skill</p>	<p>Establish whether a number up to 100 is prime and recall prime numbers up to 19.</p> <p>NC KO</p>	<p>Perform mental calculations, including with mixed operations and large numbers.</p>
			<p>Solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by 1 digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.</p> <p><a href="#">video</a>  <a href="#">video</a></p>	<p>Multiply and divide numbers mentally, drawing upon known facts.</p>	<p>Identify common factors, common multiples and prime numbers.</p>
				<p>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.</p> <p><a href="#">video</a>  <a href="#">video</a></p> <p>NC KO                      WRM Skill</p>	<p>Use their knowledge of the order of operations to carry out calculations involving the 4 operations.</p> <p>NC KO</p>
				<p>Multiply and divide whole numbers and those</p>	<p>Solve addition and subtraction multi-step</p>

## Multiplication and Division (Year 1 to Year 6)

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
				involving decimals by 10, 100 and 1,000. NC KO	problems in contexts, deciding which operations and methods to use and why.
				Recognise and use square numbers and cube numbers, and the notation for squared ( $^2$ ) and cubed ( $^3$ ). NC KO	Solve problems involving addition, subtraction, multiplication and division.
				Solve problems involving multiplication and division, including using their knowledge of factors and multiples, squares and cubes.	Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.
				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.	
<b>Key vocabulary:</b> Odd, even Count in twos, threes, fives Count in tens (forwards from/backwards from) How many times? Lots of, groups of Once, twice, three times, five times Multiple of, times, multiply, multiply by	<b>Key vocabulary:</b>	<b>Key Vocabulary:</b> Product Multiples of four, eight, fifty and one hundred Scale up	<b>Key Vocabulary:</b> Multiplication facts (up to 12x12) Division facts Inverse Derive	<b>Key Vocabulary:</b> Factor pairs Composite numbers, prime number, prime factors, square number, cubed number Formal written method	<b>Key Vocabulary:</b> Order of operations, Common factors, common multiples

## Multiplication and Division (Year 1 to Year 6)

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Repeated addition Array, row, column Double, halve Share, share equally Group in pairs, threes, etc. Equal groups of Divide, divided by, left, left over					

[video \(link\)](#)

[NC KO \(National Curriculum Key Objective – Summarised Form\)](#)

[WRM Skill \(link to White Rose Maths\)](#)