



St John
and St Nicolas
Schools Federation

For the good of all
through curiosity,
creativity and love

Policy Title:	Maths Calculation
Policy Reference:	FC012
Description:	Maths Calculation
Status:	Approved by Senior Leadership Team
Category:	Curriculum
Review frequency:	Every two years
Contact:	exchead@stjohnandstnicolasschools.org.uk
Version:	V1.0
Other relevant policies:	Maths
Date for Review:	January 2025

Change Record				
Version Number	Date Approved	Governing Board Minute Reference	Description of Amendments	Review Date
1.0	24.01.23	SCC Minutes 24.01.23	Prepared by SLT and reviewed by Standards & Curriculum Committee	Jan 2025
1.1				



MATHS CALCULATION POLICY

This calculation policy has been created to meet the expectations of the National Curriculum but most importantly the learning needs of our children.

At each stage of learning, pupils should acquire and demonstrate sufficient grasp of the mathematics relevant to their year group, so that their learning is sustainable over time and can be built upon in subsequent years. This requires development of depth through looking at concepts in detail using a variety of representations and contexts and committing key facts, such as number bonds and times tables, to memory.

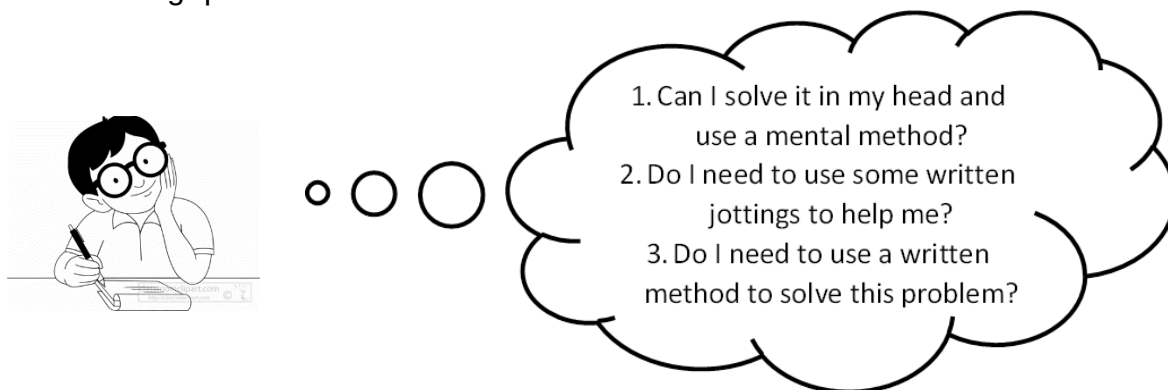
Our maths teaching focuses on skills and mastery and is not about moving children on to the next method as soon as they can do the one before. Those children, who are able to exceed the expected standards for their age, will be challenged to accurately and confidently apply their knowledge of these methods to increasingly complex problems that require a greater depth of understanding.

Mastery of the curriculum requires that all pupils:

- use mathematical concepts, facts and procedures appropriately, flexibly and fluently
- recall key number facts with speed and accuracy and use them to calculate and work out unknown facts
- have sufficient depth of knowledge and understanding to reason and explain mathematical concepts and procedures and use them to solve a variety of problems
- use mathematical vocabulary effectively to explain their thinking

Choosing the most efficient method

There are several ways of carrying out calculations and as children become more mature and confident they need to start asking the following questions:



Much of young children's work with early calculation will be oral, arising out of practical activities. Talking about what they have done is an essential precursor to written recording. Children will need to have plenty of experience of using their own individual ways of recording addition and subtraction activities before they begin to record more formally.

Examples of early written methods might include:

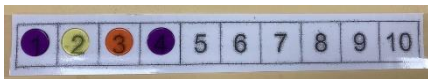
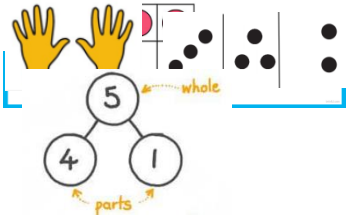
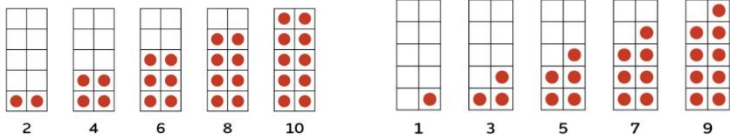
- make a record in pictures, words or symbols of activities that they have already carried out, and to construct number sentences;
- explain to someone else what they have done;
- interpret information that requires practical, oral or mental calculation;
- begin to read records made by their teacher;
- help work out steps in a calculation they will later do entirely mentally.

Children should be encouraged to talk and write about their work in their own way. When their understanding is sound, conventional labels and symbols can easily be introduced; trying to do it the other way round – to start with the symbol and then try to explain it – is much harder.

Over time children need to begin selecting the most efficient method to solve a problem. However, it is also important to remember that a method is only the most efficient approach if the children can use it fluently and reliably to accurately solve problems.

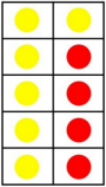
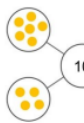
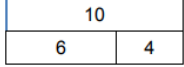
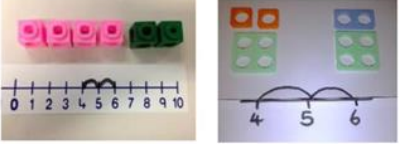
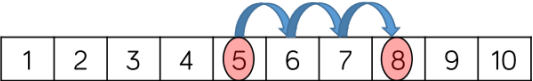
St John and St Nicolas Schools Federation Calculation Policy Addition

Key language: Add, addition, plus, and, sum, total, altogether, more than, increase, 'is equal to' 'is the same as', parts and wholes

	Early years foundation stage statutory framework	Mental Strategies	Concrete	Pictorial	Abstract
EYFS	Have a deep understanding of number to 10, including the composition of each number Subitise (recognise quantities without counting) up to 5 Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts Verbally count beyond 20, recognising the pattern of the counting system Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally	Knowledge of number through practical activities and games Count 1-1 (pointing to each object as they count) and that anything can be counted, for example building blocks, claps, steps and jumps. Adding together groups of objects One more, one less, equal Odds and evens Doubles	What do you see? How do you see it e.g. 3 and 3 is 6  Counting Actions Adding together groups of objects  Finding groups of objects that are equal  Clear counters on a number track 	Subitising  One more, one less Part Whole Model Odds and evens  Doubles Doubling - Use concrete and pictorial representations to calculate doubles to 10:  'double 2 is 4' $2 + 2 = 4$ or $4 = 2 + 2$  'double 3 is 6' $3 + 3 = 6$ or $6 = 3 + 3$	Adults support some children in recording their addition sums in the written form

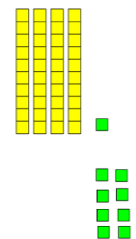
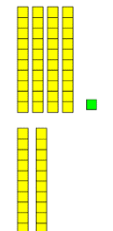
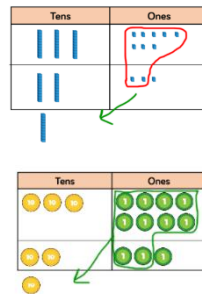
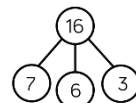
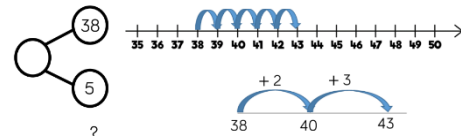
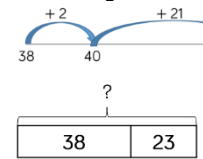
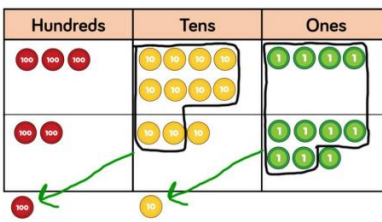
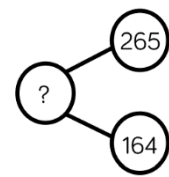
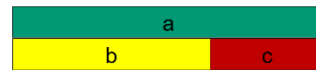
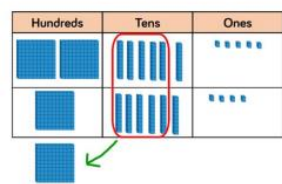
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	National Curriculum	Mental Strategies	Concrete	Pictorial	Abstract
Y1	Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs Represent and use number bonds and related subtraction facts within 20 Add and subtract one-digit and two-digit numbers to 20, including zero Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$	Count on in ones or twos Show how the commutative law can be used to re-order numbers when adding- put the larger number first and count on Adding by making 10 and then adding the part that is left Realise the effect of adding zero. Doubles and halves Near doubles	Cubes and counters  $7 = 4 + 3$ $7 = 3 + 4$ Numicon  Bead string  Rekenrek  Tens frame – adding by making 10 $6 + 5 =$ $6 + 4 + 1 = 11$ 	Addition facts with related subtraction facts  $6 + 4 = 10$ $4 + 6 = 10$ $10 - 4 = 6$ $10 - 6 = 4$ Tens Frame  $6 + 4 = 10$ $4 + 6 = 10$ $10 - 4 = 6$ $10 - 6 = 4$ Part Whole Model  $6 + 4 = 10$ $4 + 6 = 10$ $10 - 4 = 6$ $10 - 6 = 4$ Bar Model Counting on using number lines by using cubes or Numicon (1 or 2 more, not large numbers)  $5 + 3 = 8$  Counting on using a number line starting from the larger number	Develop an understanding of equality $3 + 4 = 7$ $7 = 3 + 4$ $4 + 3 = 7$ $7 = 4 + 3$ Missing number problems $4 + ? = 10$ $10 = ? + 4$

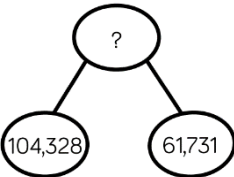
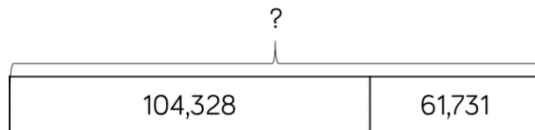
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	National Curriculum	Mental Strategies	Concrete	Pictorial	Abstract
Y2	Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: - a two-digit number and ones - a two-digit number and tens - two two-digit numbers - adding three one-digit numbers Show that addition of two numbers can be done in any order (commutative) Recognise the inverse relationship between addition and subtraction and use this to check calculations and missing number problems.	Use a hundred square and say 1 more and 10 more than any two-digit number Count on in multiples of 10 from any 2-digit number using hundred squares / base 10 / number lines Bridge through 10 $57 + 5 = 57 + 3 + 2$ Use addition facts to derive related facts $6 + 4 = 10$ $60 + 40 = 100$ Doubles and halves	two-digit number and ones $41 + 8$  two-digit number and tens $41 + 20$  Two two-digit numbers Dienes or place value counters $38 + 23 = 61$ 	Adding three one-digit numbers Use number bonds to 10  One and two digit numbers $38 + 5 = 43$  Two two-digit numbers $38 + 21 = 61$ 	Partitioning $34 + 23 = 57$ $30 + 20 = 50$ $4 + 3 = 7$ Column addition $\begin{array}{r} 38 \\ + 23 \\ \hline 61 \\ 1 \end{array}$ Use inverse relationship between addition and subtraction to solve missing number problems
Y3	Add and subtract numbers mentally, including: - a three-digit number and ones - a three-digit number and tens - a three-digit number and hundreds Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction Estimate the answer to a calculation and use inverse operations to check answers	addition and subtraction facts for all numbers to 20, e.g. $9 + 8$, $17 - 9$, drawing on knowledge of inverse operations sums and differences of multiples of 10, e.g. $50 + 80$, $120 - 90$ pairs of two-digit numbers with a total of 100, e.g. $32 + 68$, or $32 + \square = 100$	Concrete $384 + 237 = 621$ 	Pictorial Part whole and bar models Use inverse relationship between addition and subtraction $265 + 164 = 429$  generalisation  $\begin{array}{l} a + b = c \\ a - c = b \\ b + c = a \\ c + b = a \end{array} \quad \begin{array}{l} c = a - b \\ b = a - c \\ a = b + c \\ a = c + b \end{array}$	Abstract Column addition Numbers with four digits by the end of year 4 $\begin{array}{r} 374 \\ + 248 \\ \hline 622 \\ 1 \end{array}$ $\begin{array}{r} 5271 \\ + 2357 \\ \hline 7628 \\ 1 \end{array}$ Use inverse relationship between addition and subtraction to solve missing number problems
Y4	Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate estimate and use inverse operations to check answers to a calculation	addition doubles for multiples of 10 to 100, e.g. $90 + 90$ Use addition facts to derive related facts $6 + 4 = 10$ $60 + 40 = 100$	Concrete  $\begin{array}{r} 265 \\ + 164 \\ \hline 429 \\ 1 \end{array}$		

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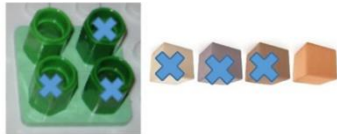
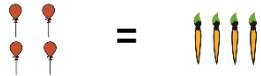
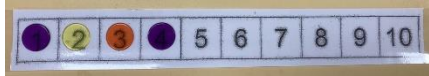
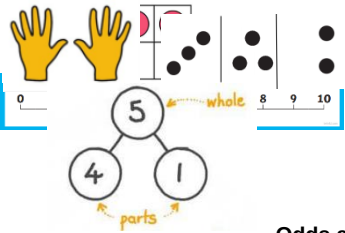
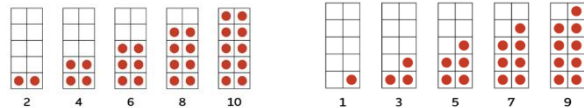
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	National Curriculum	Mental Strategies	Concrete	Pictorial	Abstract																																																																	
Y5	Add and subtract numbers mentally with increasingly large numbers	What must be added to any four-digit number to make the next multiple of 1000, e.g. $4087 + \blacklozenge = 5000$ What must be added to a decimal with units and tenths to make the next whole number, e.g. $7.2 + \blacklozenge = 8$ What must be added to a decimal with ones, tenths and hundredths to make the next whole number, e.g. $7.26 + \blacklozenge = 8$	Place value counters can be used to support addition of 4 and 5-digit numbers <table><tr><th>TTh</th><th>Th</th><th>H</th><th>T</th><th>O</th></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr></table>	TTh	Th	H	T	O		 	 		 					 			 	     	       						Add numbers with more than four digits $104,328 + 61,731 = 166,059$  	Column Addition <table><tr><td>1</td><td>2</td><td>3</td><td>0</td><td>4</td></tr><tr><td></td><td>1</td><td>2</td><td>6</td><td>8</td></tr><tr><td>1</td><td>3</td><td>5</td><td>7</td><td>2</td></tr></table> 1 Addition of decimals Ensure the decimal points line up. Use the language of place value to ensure understanding. $\begin{array}{r} 3.65 \\ + 2.41 \\ \hline 6.06 \\ 1 \end{array}$ Missing number problems (vary the position of the equals sign) $2451 = \square + 276$ <table><tr><td>5</td><td>3</td><td>2</td><td></td><td>9</td></tr><tr><td colspan="5">+</td></tr><tr><td>7</td><td>4</td><td>2</td><td></td><td></td></tr><tr><td colspan="5">-----</td></tr><tr><td></td><td>0</td><td>6</td><td>7</td><td>6</td></tr></table>	1	2	3	0	4		1	2	6	8	1	3	5	7	2	5	3	2		9	+					7	4	2			-----						0	6	7	6
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Y6	Perform mental calculations, including with mixed operations and large numbers Use their knowledge of the order of operations to carry out calculations involving the four operations	Addition and subtraction facts for multiples of 10 to 1000 and decimal numbers with one decimal place, e.g. $650 + \square = 930$, $\square - 1.4 = 2.5$ Count on or back in minutes and hours, bridging through 60 (analogue and digital times)	Place value counters can be used to support addition of decimals $3.65 + 2.41 = 6.06$ <table><tr><th>Ones</th><th>Tenths</th><th>Hundredths</th></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></table>	Ones	Tenths	Hundredths	  	  	  	 	  	 		 																																																								
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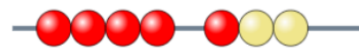
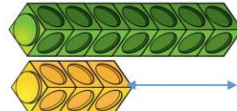
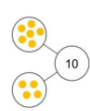
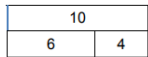
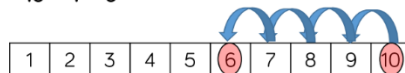
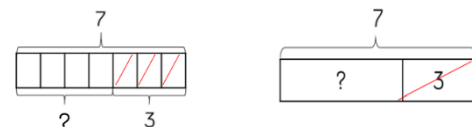
St John and St Nicolas Schools Federation Calculation Policy Subtraction

Key language: Subtract, take away, minus, difference, distance between, less than, fewer than, decrease, reduce, exchange

	Early years foundation stage statutory framework	Mental Strategies	Concrete	Pictorial	Abstract
EYES	Have a deep understanding of number to 10, including the composition of each number Subitise (recognise quantities without counting) up to 5 Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts Verbally count beyond 20, recognising the pattern of the counting system Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally	Knowledge of number through practical activities and games Count 1-1 (pointing to each object as they count) and that anything can be counted, for example building blocks, claps, steps and jumps. Counting backwards One more, one less, equal Taking away from a group of objects Odds and evens Doubles	Children act out subtractions to physically subtract a number of objects from a group $4 - 3 = 1$  Equal Finding groups of objects that are equal  Clear counters on a number track 	Subitising  Odds and evens  Doubling - Use concrete and pictorial representations to calculate doubles to 10:  'double 2 is 4' $2 + 2 = 4$ or $4 = 2 + 2$ 'double 3 is 6' $3 + 3 = 6$ or $6 = 3 + 3$ What is missing on a 5 frame? (counters, objects, photos) 	Adults support children in recording their subtraction sums in the written form

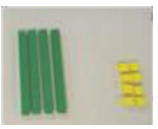
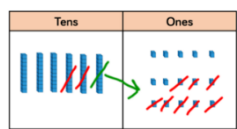
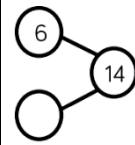
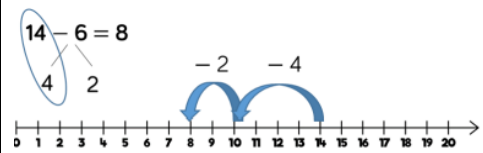
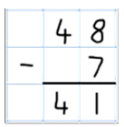
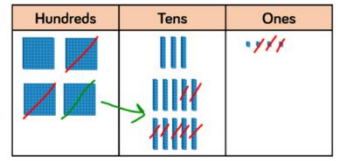
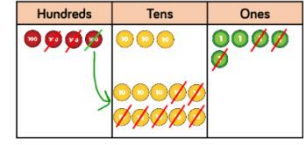
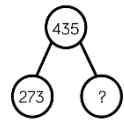
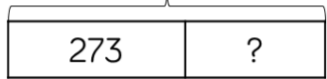
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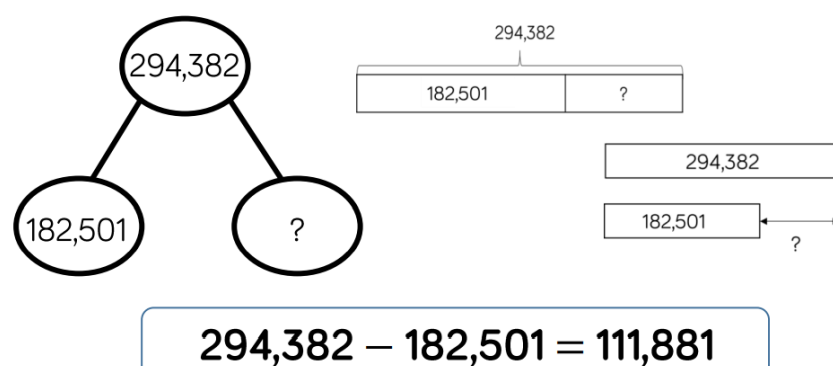
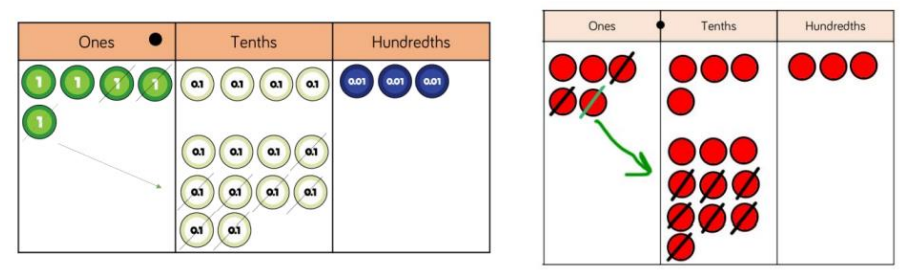
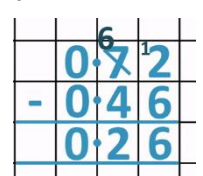
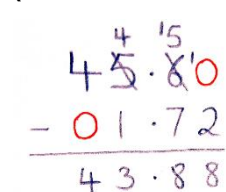
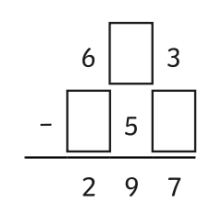
St John and St Nicolas Schools Federation Calculation Policy Subtraction

Key language: Subtract, take away, minus, difference, distance between, less than, fewer than, decrease, reduce, exchange

	National Curriculum	Mental strategies	Concrete	Pictorial	Abstract
Y2	Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: - a two-digit number and ones - a two-digit number and tens - two two-digit numbers - adding three one-digit numbers Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot Recognise the inverse relationship between addition and subtraction and use this to check calculations and missing number problems.	Use a hundred square and say 1 less and 10 less than any two-digit number Count back in multiples of 10 from any 2-digit number using hundred squares / base 10 / number lines Bridge through 10 $14 - 5 = 14 - 4 - 1$ Use subtraction facts to derive related facts $10 - 6 = 40$ $100 - 60 = 40$	Making 10 (using numicon or ten frames) $14 - 5$  Children could also do this by subtracting a 5 from the 10.  Base 10 (first without an exchange) $48 - 7$   $\begin{array}{r} 5 1 \\ 65 \\ - 28 \\ \hline 37 \end{array}$	Bar model $14 - 6 = 8$  Part-whole model  Number tracks and number lines 	Column method (first without an exchange) $48 - 7 =$  $\begin{array}{r} 5 1 \\ 65 \\ - 28 \\ \hline 37 \end{array}$ Use inverse relationship between addition and subtraction to solve missing number problems
Y3	Add and subtract numbers mentally, including: - a three-digit number and ones - a three-digit number and tens - a three-digit number and hundreds Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction Estimate the answer to a calculation and use inverse operations to check answers Solve problems, including missing number problems,	addition and subtraction facts for all numbers to 20, e.g. $9 + 8$, $17 - 9$, drawing on knowledge of inverse operations sums and differences of multiples of 10, e.g. $50 + 80$, $120 - 90$	$435 - 273 = 262$ Base 10  Place value counters 	Part whole and bar models Use inverse relationship between addition and subtraction $435 - 273 = 262$   generalisation  $a - b = c$ $a - c = b$ $b + c = a$ $c + b = a$ $c = a - b$ $b = a - c$ $a = b + c$ $a = c + b$	Formal method regrouping across zero $\begin{array}{r} 504 \\ - 359 \\ \hline \end{array}$ $\begin{array}{r} 4 1 4 \\ - 3 5 9 \\ \hline 1 4 5 \end{array}$ Formal method with three or four digits $\begin{array}{r} 8 12 1 \\ 9 3 2 \\ - 4 5 7 \\ \hline 4 7 5 \end{array}$ $\begin{array}{r} 3 1 \\ 4357 \\ - 2735 \\ \hline 1622 \end{array}$ Use inverse relationship between addition and subtraction to solve missing number problems
Y4	Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate Estimate and use inverse operations to check answers to a calculation Solve addition and subtraction two-step problems in contexts	Bridging through 10 and 100			

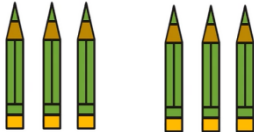
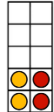
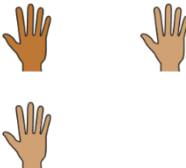
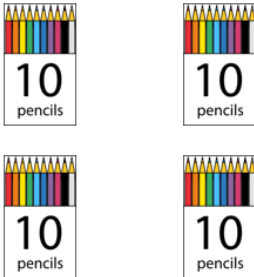
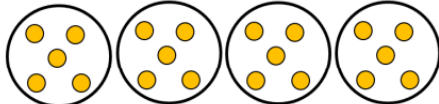
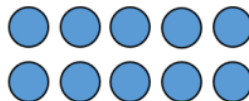
St John and St Nicolas Schools Federation Calculation Policy Subtraction

Key language: Subtract, take away, minus, difference, distance between, less than, fewer than, decrease, reduce, exchange

	National Curriculum	Mental strategies	Concrete / Pictorial	Abstract
Y5	Perform mental calculations, including with mixed operations and large numbers Use their knowledge of the order of operations to carry out calculations involving the four operations 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, including with units of measure	Subtract by counting up from the smaller number to the larger number What must be added to any four-digit number to make the next multiple of 1000, e.g. $4087 + \diamond = 5000$ What must be added to a decimal with units and tenths to make the next whole number, e.g. $7.2 + \diamond = 8$ What must be added to a decimal with ones, tenths and hundredths to make the next whole number, e.g. $7.26 + \diamond = 8$	Part whole and bar models  Place value counters for subtraction with decimals  $5.43 - 2.7 = 2.73$	Formal method regrouping across several zeros $\begin{array}{r} 7,002 \\ - 1,357 \\ \hline \end{array} \Rightarrow \begin{array}{r} 6^1 0^0 2 \\ - 1^1 3^1 5^1 7 \\ \hline \end{array} \Rightarrow \begin{array}{r} 6^1 9^0 1^0 2 \\ - 1^1 3^1 5^1 7 \\ \hline 5^1 6^1 4^1 5 \end{array}$ decimals (same number of decimal places)  decimals (different number of decimal places)  Missing number problems (vary the position of the equals sign) $6789 = \square - 4562$ 
Y6		Addition and subtraction facts for multiples of 10 to 1000 and decimal numbers with one decimal place, e.g. $650 + \square = 930$, $\square - 1.4 = 2.5$ Count on or back in minutes and hours, bridging through 60 (analogue and digital times)		

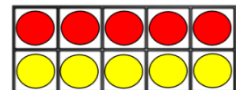
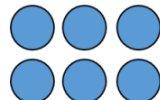
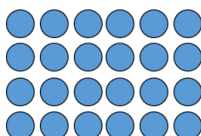
St John and St Nicolas Schools Federation Calculation Policy Multiplication

Key language: Double, times, multiplied by, the product of, groups of, lots of, is equal to, is the same as

	Early years foundation stage statutory framework	Mental Strategies	Concrete	Pictorial	Abstract
EYFS	Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally	Doubling Looking at numbers within numbers e.g. When talking about 6 'I can see 3 and 3' 'I can see 2 groups of 3'	Children act out 'doubling' by physically add two equal groups together to find out the 'doubles' answer. Double 3 is 6 	Children represent practical resources in a picture or colour in on a tens frame.  Double 2 is 4	
	National Curriculum		Concrete	Pictorial	Abstract
Y1	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 <i>(Non-Statutory)</i> <i>Doubling numbers and quantities; and finding simple fractions of objects, numbers and quantities.</i> <i>They make connections between arrays, number patterns, and counting in twos, fives and tens</i>	Doubling Counting in twos, fives and tens Looking at numbers within numbers e.g. When talking about 9 'I can see 3 and 3 and 3' 'I can see 3 groups of 3'	How many shoes? Count in groups of 2  How many fingers? Count in groups of 5  How many pencils? Count in groups of 10 	Pictorial representations Counting in groups of 5  Arrays Counting in groups of 2 	In year 1 children use concrete and pictorial representations to solve problems. They are not expected to record multiplication formally.

St John and St Nicolas Schools Federation Calculation Policy Multiplication

Key language: Double, times, multiplied by, the product of, groups of, lots of, is equal to, is the same as

	National Curriculum	Mental Strategies	Concrete	Pictorial	Abstract																										
Y2	Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.	Doubling Counting in 2s 5s and 10s Connect the 10x multiplication table to place value	Objects, counters, tens frames or Numicon to show multiplication facts 6 x 2 = 12  3 x 2 = 6  2 x 5 = 10 	Arrays to show commutative rule 3 x 2 = 2 x 3  Use number line to show repeated addition 4 x 5 = 20 	Write multiplication facts for the 2, 5 and 10 multiplication tables using the x sign 6 x 2 = 12 Children to be able to use an array to write a range of calculations e.g. 2 x 5 = 10 5 x 2 = 10 2 + 2 + 2 + 2 + 2 = 10 5 + 5 = 10																										
	National Curriculum	Mental Strategies	Concrete	Pictorial	Abstract																										
Y3	Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables 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 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. e.g. scaling problems ‘four times as high’ correspondence problems ‘three children each have 4 sweets’	Through doubling, they connect the 2, 4 and 8 multiplication tables Pupils develop efficient mental methods, for example, using commutativity and associativity e.g. 2 x 5 x 4 = 10 x 4 = 40 2 x 20 = 40 and multiplication and division facts (for example, using 3 x 2 = 6, 6 ÷ 3 = 2 and 2 = 6 ÷ 3) to derive related facts (for example, 30 x 2 = 60, 60 ÷ 3 = 20 and 20 = 60 ÷ 3).	Repeated grouping/repeated addition 3 x 4 or 3 lots of 4 	Bar modelling 3 x 4  Arrays to show commutative rule 6 x 4 = 4 x 6 	Mathematical statements for multiplication facts 3 x 4 = 12 2 x 5 x 4 = 40 Grid method 37 x 5 = <table border="1" data-bbox="1744 1090 2157 1129"><tr><td>×</td><td>30</td><td>7</td></tr><tr><td>5</td><td>150</td><td>35</td></tr></table> 37 x 5 = 150 + 35 37 x 5 = 185 Formal written method for short multiplication two digits by one digit without carrying and then with carrying <table border="1" data-bbox="1744 1347 1935 1522"><tr><td></td><td>H</td><td>T</td><td>O</td></tr><tr><td></td><td></td><td>3</td><td>4</td></tr><tr><td>×</td><td></td><td></td><td>5</td></tr><tr><td></td><td>1</td><td>7</td><td>0</td></tr><tr><td></td><td>1</td><td>2</td><td></td></tr></table>	×	30	7	5	150	35		H	T	O			3	4	×			5		1	7	0		1	2	
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St John and St Nicolas Schools Federation Calculation Policy Multiplication

Key language: Double, times, multiplied by, the product of, groups of, lots of, is equal to, is the same as

	National Curriculum	Mental Strategies	Concrete Pictorial	Abstract
Y4	Recall multiplication and division facts for multiplication tables up to 12×12 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 Recognise and use factor pairs and commutativity in mental calculations Multiply two-digit and three-digit numbers by a one-digit number using formal written layout 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.	Pupils continue to practise recalling and using multiplication tables and related division facts to aid fluency. Pupils practise mental methods and extend this to three-digit numbers to derive facts, (for example, $600 \div 3 = 200$ can be derived from $2 \times 3 = 6$).	Hundreds Tens Ones	

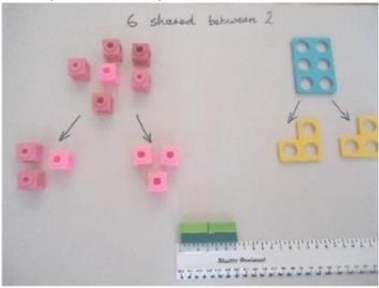
St John and St Nicolas Schools Federation Calculation Policy Multiplication

Key language: Double, times, multiplied by, the product of, groups of, lots of, is equal to, is the same as

Y6	Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication	Squares to 12 x 12	Abstract (Some children may still benefit from use of concrete resources as above)				
	Perform mental calculations, including with mixed operations and large numbers	Squares of corresponding multiples of 10					
	Identify common factors, common multiples and prime numbers	Prime numbers less than 100					
	Use their knowledge of the order of operations to carry out calculations involving the four operations						
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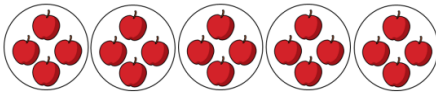
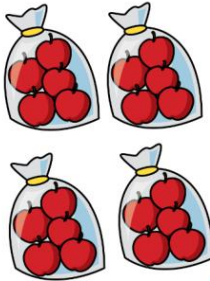
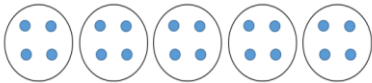
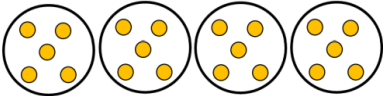
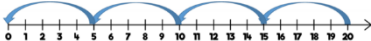
St John and St Nicolas Schools Federation Calculation Policy Division

Key language: Share, group, divide, divided by, half, is equal to, is the same as

	Early years foundation stage statutory framework	Mental Strategies	Concrete	Pictorial	Abstract
EYES	Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally		Children are introduced to the concept of halving and sharing through practical games and activities. They act out 'halving and sharing' through activities such as sharing food for their Teddy Bear's Picnic, sharing resources equally to play a game. 		
	National Curriculum	Mental Strategies	Concrete	Pictorial	Abstract
Y1	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	Finding simple fractions of objects, numbers and quantities.	6 shared between 2 (other concrete objects can also be used e.g. children and hoops, teddy bears, cakes and plates) 	Children record their work through drawings	

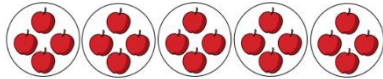
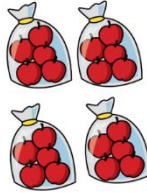
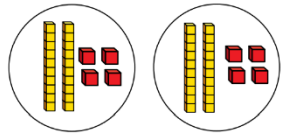
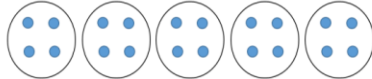
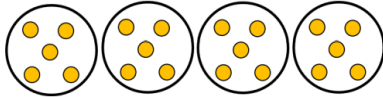
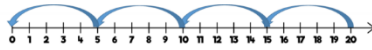
St John and St Nicolas Schools Federation Calculation Policy Division

Key language: Share, group, divide, divided by, half, is equal to, is the same as

	National Curriculum	Mental Strategies	Concrete	Pictorial	Abstract
Y2	Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ($\times$), division ($\div$) and equals ($=$) signs Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.	Find half of even numbers to 40 Halve any multiple of 10 up to 100 Know that halving is the inverse of doubling	Division as sharing There are 20 apples altogether. They are shared equally between 5 bags. How many apples are in each bag?  Division as grouping There are 20 apples altogether. They are put in bags of 5. How many bags are there? 	Division as sharing  $20 \div 5 = 4$ Division as grouping  $20 \div 5 = 4$ Grouping links to repeated subtraction on a number line 	$20 \div 5 = 4$

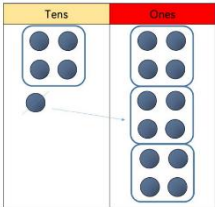
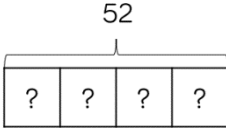
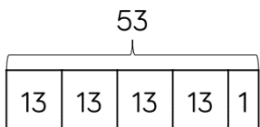
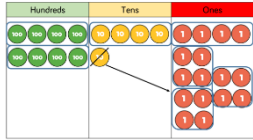
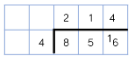
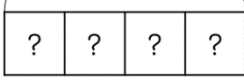
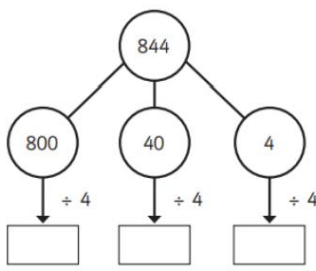
St John and St Nicolas Schools Federation Calculation Policy Division

Key language: Share, group, divide, divided by, half, is equal to, is the same as

	National Curriculum	Mental Strategies	Concrete	Pictorial	Abstract						
Y3	Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know Solve problems, including missing number problems, involving multiplication and division	Through doubling, they connect the 2, 4 and 8 multiplication tables Pupils develop efficient mental methods, for example, using commutativity and associativity (for example, $4 \times 12 \times 5 = 4 \times 5 \times 12 = 20 \times 12 = 240$) and multiplication and division facts (for example, using $3 \times 2 = 6$, $6 \div 3 = 2$ and $2 = 6 \div 3$) to derive related facts (for example, $30 \times 2 = 60$, $60 \div 3 = 20$ and $20 = 60 \div 3$).	Division as sharing There are 20 apples altogether. They are shared equally between 5 bags. How many apples are in each bag?  Division as grouping There are 20 apples altogether. They are put in bags of 5. How many bags are there?  Base 10 and place value counters 48 ÷ 2 = 24 <table><thead><tr><th>Tens</th><th>Ones</th></tr></thead><tbody><tr><td>10 10</td><td>1 1 1 1</td></tr><tr><td>10 10</td><td>1 1 1 1</td></tr></tbody></table>	Tens	Ones	10 10	1 1 1 1	10 10	1 1 1 1	Division as sharing  $20 \div 5 = 4$ Division as grouping  $20 \div 5 = 4$ Grouping links to repeated subtraction on a number line 	Division facts for 2, 5 10 and 3, 4 and 8 times tables Show division used in problem solving e.g. $48 \div 2 = 24$
Tens	Ones										
10 10	1 1 1 1										
10 10	1 1 1 1										

St John and St Nicolas Schools Federation Calculation Policy Division

Key language: Share, group, divide, divided by, half, is equal to, is the same as

	National Curriculum	Mental Strategies	Concrete	Pictorial	Abstract
Y4	Recall multiplication and division facts for multiplication tables up to 12×12 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 Recognise and use factor pairs and commutativity in mental calculations 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.	Pupils continue to practise recalling and using multiplication tables and related division facts to aid fluency. Pupils practise mental methods and extend this to three-digit numbers to derive facts, (for example, $600 \div 3 = 200$ can be derived from $2 \times 3 = 6$).	Place value counters to show exchanges  	$52 \div 4 = 13$  $53 \div 4 = 13 \text{ r}1$ 	Formal written method for short division with exact answers and remainders two and three digits by one digit  $\begin{array}{r} 13 \\ 4 \overline{) 52} \\ \underline{4} \\ 12 \\ \underline{12} \\ 0 \end{array}$
Y5	Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers Establish whether a number up to 100 is prime and recall prime numbers up to 19 Multiply and divide numbers mentally drawing upon known facts 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 Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 Recognise and use square numbers and cube numbers, and the notation for squared and cubed 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 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.	Pupils continue to practise recalling and using multiplication tables and related division facts to aid fluency. Pupils practise mental methods and extend this to three and 4 - digit numbers to derive facts, (for example, $6000 \div 3 = 2000$ can be derived from $2 \times 3 = 6$). Division facts corresponding to tables up to 10×10 and the related unit fractions e.g. one ninth of 63 = 7 and one seventh of 63 = 9	Place value counters to show exchanges  	Bar models and part – whole models 844  	Formal written method for short division with exact answers and remainders three and four digits by one digit   $\begin{array}{r} 211 \\ 4 \overline{) 844} \\ \underline{8} \\ 4 \\ \underline{4} \\ 0 \end{array}$ Short division of decimals $\begin{array}{r} 6.24 \\ 7 \overline{) 43.68} \\ \underline{42} \\ 16 \\ \underline{14} \\ 28 \\ \underline{28} \\ 0 \end{array}$

St John and St Nicolas Schools Federation Calculation Policy Division

Key language: Share, group, divide, divided by, half, is equal to, is the same as

Y6	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 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 Perform mental calculations, including with mixed operations and large numbers Identify common factors, common multiples and prime numbers Use their knowledge of the order of operations to carry out calculations involving the four operations	Pupils continue to practise recalling and using multiplication tables and related division facts to aid fluency. Continue to extend mental methods working with multiples of 10, 100 or 1000 e.g. $600 \div 3 = 200$ $600 \div 30 = 20$ $6000 \div 3 = 2000$ $6000 \div 30 = 200$ $6000 \div 300 = 20$ Use knowledge of the equivalence between fractions and percentages and the relationship between fractions and division	Short division of numbers up to four digits Remainders as whole numbers, fractions or decimals $\begin{array}{r} 1144 \text{ r}2 \\ 4 \overline{) 451718} \end{array}$ $\begin{array}{r} 1144 \cdot 5 \\ 4 \overline{) 451718 \cdot 20} \end{array}$ $1144 \frac{1}{2}$ Long division Interpret remainders appropriately $\begin{array}{l} 1 \times 15 = 15 \\ 2 \times 15 = 30 \\ 3 \times 15 = 45 \\ 4 \times 15 = 60 \\ 5 \times 15 = 75 \\ 6 \times 15 = 90 \\ 7 \times 15 = 105 \\ 8 \times 15 = 120 \end{array}$ $\begin{array}{r} 28 \cdot 8 \\ 15 \overline{) 432 \cdot 0} \\ \underline{30} \\ 132 \\ \underline{120} \\ 120 \\ \underline{120} \\ 0 \end{array}$
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