



Saint Michael Catholic Primary School

Calculation Policy 2025-2026

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. ... pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects.

National Curriculum 2014

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A mathematical concept can be thought of as a network of connections between symbols, language, concrete experiences and pictures

Derek Haylock and Anne Cockburn 2008

The national curriculum for mathematics aims to ensure that all pupils: become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.

reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language

can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Aim of Policy

This calculation policy has been written in line with the programmes of study taken from the revised National Curriculum for Mathematics (2014). It provides guidance on appropriate calculation methods and progression. The content is set out in yearly blocks under the following headings: addition, subtraction, multiplication and division.

The Mathematics curriculum is divided into 6 areas: Number, Geometry, Statistics, Algebra, Ratio, Measurement. Not every area is studied in every year group. Calculations are found under the number section; although are applied throughout all areas of mathematics.

Children will use mental methods as their first port of call when appropriate, but for calculations that they cannot do in their heads, they will need to use an efficient written method accurately and with confidence.

Aims of the Policy:

- To ensure **consistency** and **progression** in our approach to calculation.
- To ensure that children develop an efficient, reliable, **formal** written method of calculation for all operations.
- To ensure that children can use these methods **accurately** with confidence and understanding.
- To provide **assistance** to parents and carers supporting their children at home.
- To ensure that we are working in **collaboration** with other local primary schools and feeder secondary schools in the local area.
- To enhance subject knowledge of the **pedagogical approaches** to teaching mathematics

Vocabulary

In line with the new curriculum, place value headers are no longer called HTU (Hundreds, Tens, Units). We now use HTO (Hundreds, Tens, Ones using 'O' instead of 'U'). This is to avoid confusion with the word units later being used to describe a unit of measurement e.g. 'The units are cm.'

Instead of the term 'carrying/borrowing/re-grouping' the word 'exchanging' is used. Please see the examples below:

Addition:

$$\begin{array}{r} 5189 \\ + 3128 \\ \hline 8317 \\ \hline 11 \end{array}$$

'Nine ones plus eight ones is seventeen ones. As seventeen is more than ten, we exchange it into one ten and seven ones. We write that extra ten under the tens column. Eight tens plus two tens plus one ten is eleven tens altogether. We cannot write eleven tens so we exchange it into one hundred and one ten. We write this hundred underneath the hundreds column.'

This is very similar for multiplication.

Subtraction:

$$\begin{array}{r} \\ 1 \cancel{3} \cancel{4} \cancel{2} \cancel{3} \\ - 12678 \\ \hline 745 \end{array}$$

'We can't take eight ones away from three ones so we have to exchange one of the tens into ten ones. Therefore altogether we now have thirteen ones and can take eight ones away. This leaves only one ten in the tens column. We can't take seven tens from only one ten so we have to exchange a hundred into ten tens. This now gives us eleven tens altogether. We can now take seven tens from eleven tens and this leaves us with four tens. We can't take six hundred from three hundred so we exchange one thousand for ten hundreds. Now we have thirteen hundreds. Thirteen hundreds take away six hundred equals seven hundred. Two thousand take away two thousand is zero. Ten thousand take away ten thousand is zero.'

Please note that there is no second answer line in subtraction.

Magnitude of Calculations

Please note: Th = Thousands, H = Hundreds, T = Tens, O = Ones.

Year 1 – O + O, O + TO (numbers up to 20) including adding zero, O – O, TO – O (numbers up to 20) including subtracting zero, O x O, O ÷ O.

Year 2 - TO + O, TO + multiples of 10, TO + TO, O + O + O, TO - O, TO – tens, TO – TO, TO x O, O ÷ O.

Year 3 – add numbers with up to three-digits, HTO + multiples of 10, HTO + multiples of 100, subtract numbers up to three-digits, HTO – O, HTO – multiples of 10, HTO – multiples of 100, HTO – HTO, TO x O, TO ÷ O.

Year 4 - add and subtract numbers with up to four-digits, ThHTO + ThHTO, ThHTO - ThHTO, add and subtract decimals with up to two decimal places in the context of money, multiply three numbers together, TO x O, HTO x O, TO x O, multiply by zero and one, TO ÷ O, HTO ÷ O.

Year 5 – add and subtract numbers with more than four-digits, add and subtract decimals with up to three decimal places, ThHTO x O, ThHTO x TO, HTO x TO, multiply whole numbers and decimals with up to three-decimal places by 10, 100 and 1000, divide numbers with up to four-digits by O (including remainders as fractions and decimals and rounding according to the context).

Year 6 - add and subtract numbers with more than four-digits, add and subtract decimals with up to three decimal places, multiply numbers with up to four-digits by TO, multiply numbers with up to two-decimal places by a whole number, divide numbers up to four-digits by TO (interpreting remainder according to the context), divide decimals up to two-decimal places by O or TO.

Structuring Learning

Children must have concrete experiences that enable them to create visual images. They should be encouraged to articulate their learning and to become pattern spotters. This will enable them to become able mathematicians.

Language

Symbols

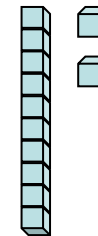
Pictures

Concrete Experiences

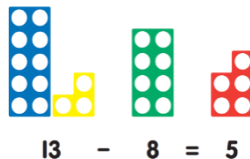
Haylock and Cockburn (2008)



Concrete



Pictorial



13 - 8

Abstract

12 + 19

Pattern Spotting

Communicating Mathematically

Addition

Pupils develop the concept of addition and subtraction and are enabled to use these operations flexibly.
Addition and subtraction should be taught together.

End of Year Expectations

Nursery

Reception

Possible Concrete and Visual Representations

Children begin to combine groups of objects or pictures using concrete apparatus.

Solve simple problems using fingers.

Construct number sentences verbally or using cards to go with practical activities.

Children are encouraged to read number sentences aloud in different ways e.g. "Three add two equals 5" "5 is equal to three and two."

Count on to find the answer.

Have an understanding of what "more" means and be able to say what is one more than a given number.

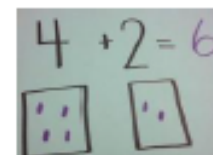
Number tracks can be introduced to count up on and to find one more.

Children make a record in pictures, words or symbols of addition activities.

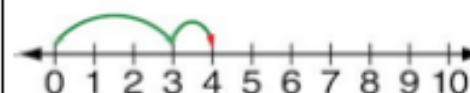
When appropriate, numicon shapes are introduced to identify 1 more/less, combine pieces to add and find number bonds.

Number lines can be used alongside number tracks and practical apparatus to solve addition calculations and word problems.

Children's Recording



$$3 + 1 = 4$$



Fluency

Addition

Pupils develop the concept of addition and subtraction and are enabled to use these operations flexibly.
Addition and subtraction should be taught together.

End of Year Expectations

Possible Concrete and Visual Representations

Children's Recording

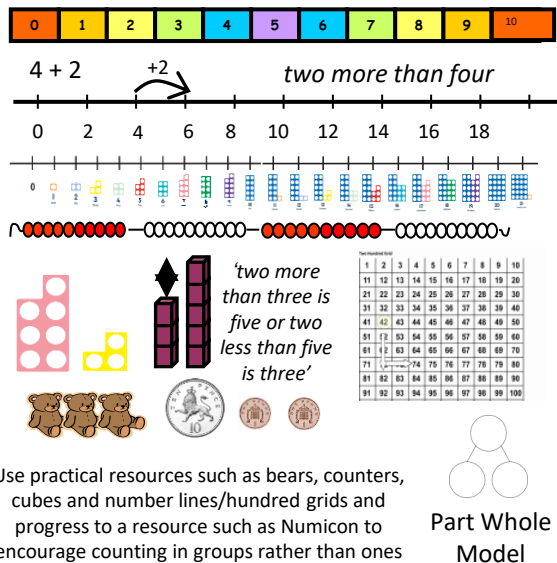
Fluency

Year 1

Children must experience combining two, **and then more than two**, groups of objects using counting on and the language of addition e.g. add, plus

Children must experience increasing numbers e.g. what is two more than seven ?

Compare quantities to say how many less and/or how many more

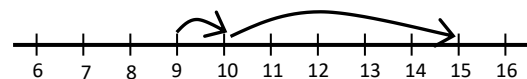


If using Numicon, children could use printed Numicon icons and stick these in - progressing to recording number sentences alongside

$$1 + 2 = 3$$

Children may record pictorially progressing to recording number sentences alongside

$$9 + 6$$



Example

9 and 6

9 + 6

Count forwards, to and across 100, beginning with 0 or 1 or from any given number

Switch count between tens and ones e.g. 10, 20, 30, 31, 32, 33 ...

Represent and use number bonds up to 20 (establish addition and subtraction as related operations)

Find one more than a number

Find ten more than a number

Count in multiples of 2s, 5s and 10s starting on multiples to highlight pattern recognition

Year 2

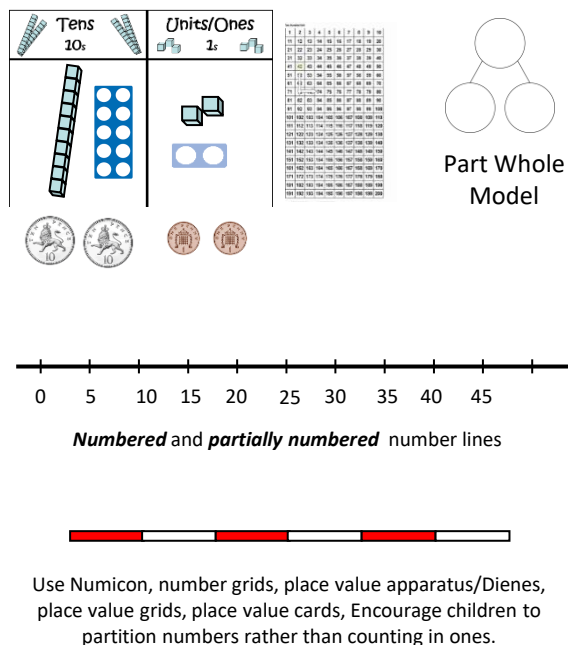
Children should be able to partition numbers in different ways e.g. as 2+2+2+1 or 5+3 or 23 as 20 + 3 or 10+13

Children should use concrete objects, pictorial representations and add numbers in different contexts e.g. money, measures

ENSURE CHILDREN HAVE THE OPPORTUNITY TO ADD **MORE** THAN TWO NUMBERS

Children should understand the language of sum

Ensure children understand that addition is commutative (can be done in any order)



Children apply, develop and secure their understanding of place value

Use jottings and record number sentences

Tens 10s	Ones 1s	
		41
		28
40	1	
+ 20	+ 8	
= 60	= 9	60 + 9 = 69

Show increasing fluency in deriving pairs of numbers up to 10 and then up to 20

Use knowledge to derive and use number facts up to 100

Add numbers mentally including TO+ O, TO + tens, TO + TO, O + O + O

End of Year Expectations

Year 3

Add numbers with up to three-digits

(leading to formal written column method)

ENSURE CHILDREN HAVE THE OPPORTUNITY TO ADD **MORE THAN TWO NUMBERS** WITH DIFFERING NUMBERS OF DIGITS

Children should partition numbers, up to 1000, in different ways

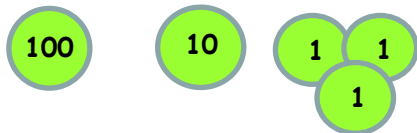
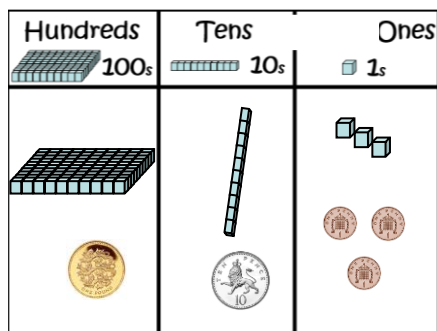
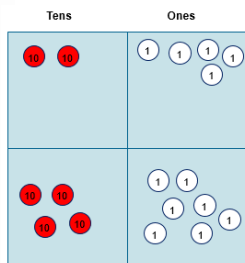
e.g. $100 + 40 + 6$ or $100 + 30 + 16$

Solve problems in different contexts including missing number problems

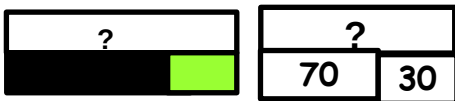
Possible Concrete and Visual Representations

Two Hundred Grid

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200



Partially numbered **and** blank number lines



Bar Model

Teacher Modelling/Children's Recording

Children apply, develop and secure their understanding of place value and begin to record in columns

Manipulatives SHOULD be used alongside algorithms

Column addition (no exchanging) with up to three-digits

COLUMN METHOD ADDITION

$$\begin{array}{r} \text{HTO} \\ 141 \\ + 128 \\ \hline 269 \end{array}$$

Compact (column) recording

$$\begin{array}{r} \text{HTO} \\ 143 \\ + 128 \\ \hline 271 \\ 1 \end{array}$$

$$\begin{array}{r} \text{HTO} \\ 789 \\ + 642 \\ \hline 1431 \\ 11 \end{array}$$

Column addition (with exchanging)

$$\begin{array}{r} \text{£ } 7.89 \\ + \text{£ } 6.42 \\ \hline \text{£ } 14.31 \\ 11 \end{array}$$

Add decimals in the context of money

Fluency

Count in ones, tens and hundreds maintaining fluency through varied and frequent practice

Count from 0 in multiples of 3, 4, 8, 50 and 100

Find 10 or 100 more than a number

Mentally add HTO + ones, HTO + tens, HTO + hundreds

Perform mental calculations with two-digit numbers, the answer could exceed 100

Count in 6s, 7s, 9s, 25s and 100s

Find 1000 more than a number

Perform mental calculations with increasingly large numbers to aid fluency

Year 4

Add numbers with up to four-digits (formal written column method) including numbers with up to two decimal places in the context of money

ENSURE CHILDREN HAVE THE OPPORTUNITY TO ADD **MORE THAN TWO NUMBERS** INCLUDING DECIMALS, WITH DIFFERING NUMBERS OF DIGITS

Solve two-step problems in different contexts including missing number problems

Addition

Pupils develop the concept of addition and subtraction and are enabled to use these operations flexibly.
Addition and subtraction should be taught together.

End of Year Expectations

Year 5

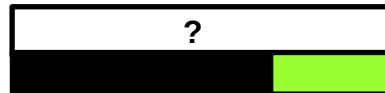
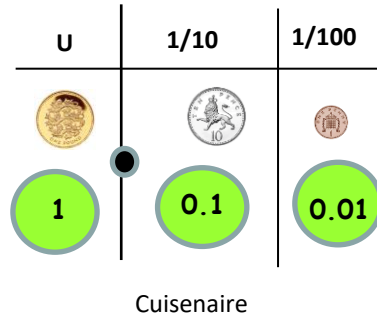
Add numbers with more than four-digits and decimals up to three places
(formal written column method)

N.B. ENSURE CHILDREN HAVE THE OPPORTUNITY TO ADD **MORE THAN TWO** NUMBERS INCLUDING DECIMALS, WITH DIFFERING NUMBERS OF DIGITS

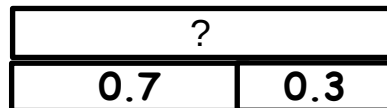
Solve multi-step problems selecting and justifying methods

Perform mental calculations with increasingly large numbers

Possible Concrete and Visual Representations



Bar Model



Teacher Modelling/Children's Recording

Manipulatives could be used alongside algorithms

$$\begin{array}{r} 2141 \\ + 1128 \\ \hline 3269 \end{array}$$

Column addition (no exchanging)

$$\begin{array}{r} 21.41 \\ + 1.12 \\ \hline 22.88 \end{array}$$

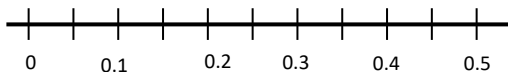
Year 6

Add numbers with more than four-digits and decimals up to three places
(formal written column method)

N.B. ENSURE CHILDREN HAVE THE OPPORTUNITY TO ADD **MORE THAN TWO** NUMBERS, INCLUDING DECIMALS, WITH DIFFERING NUMBERS OF DIGITS

Solve more complex calculations mentally

Solve multi-step problems in contexts, deciding which operations and methods to use and why



$$\begin{array}{r} 5189 \\ + 3128 \\ \hline 8317 \\ 11 \end{array}$$

Column addition (with exchanging)

$$\begin{array}{r} 51.89 \\ + 3.128 \\ \hline 55.018 \\ 11 \end{array}$$

Addition with decimals up to three decimal places including in different contexts e.g. money and measures

Fluency

Count forwards in powers of ten up to 100000

Count forwards in positive and negative whole numbers through zero

Practise mental calculations with increasingly large numbers

Practise fluency of written methods

Count in tens and hundreds increasing fluency of order and place value

Perform increasingly complex mental calculations and those with increasingly large numbers to aid fluency

Subtraction

Pupils develop the concept of addition and subtraction and are enabled to use these operations flexibly.
Addition and subtraction should be taught together.

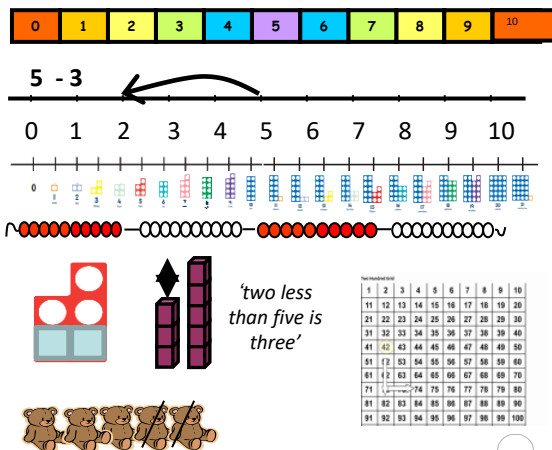
End of Year Expectations

Year 1

Understand subtraction as taking away
What is ... less than ...?)

Compare quantities to say how many less and/or how many more

Possible Concrete and Visual Representations



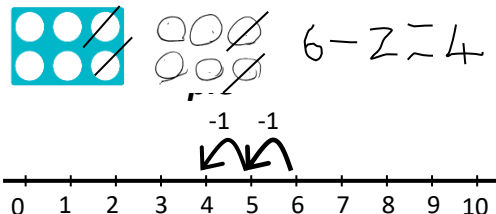
Use practical resources such as bears, counters, cubes and number lines/hundred grids and progress to a resource such as Numicon to encourage counting back in groups rather than ones



Part Whole Model

Children's Recording

Children may begin recording pictorially progressing to recording number sentences alongside



Children could use printed Numicon icons and stick these in, again progressing to recording number sentences alongside

Fluency

Count backwards (including crossing 100) any given number

Switch count between ones and tens e.g. 33, 32, 31, 30, 20, 10

Represent and use subtraction facts linked to number bonds up to 20 (establish addition and subtraction as related operations)

Find one less than a number

Find ten less than a number

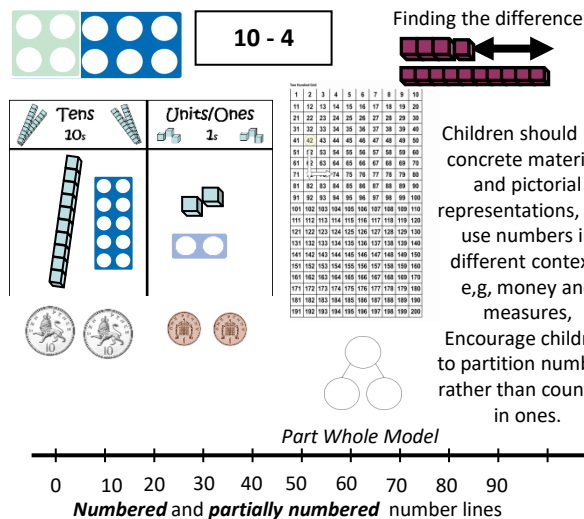
Count back in multiples of 2s, 5s and 10s starting on multiples to highlight pattern

Year 2

Understand subtraction as taking away and finding the difference

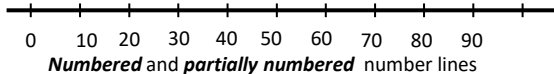
Ensure children understand that subtraction is not commutative (can not be done in any order)

Children should be able to partition numbers in different ways

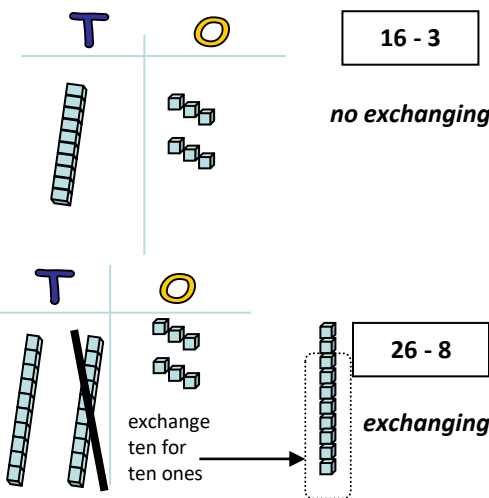


Children should use concrete materials and pictorial representations, and use numbers in different contexts e.g. money and measures, Encourage children to partition numbers rather than counting in ones.

Part Whole Model



Children apply, develop and secure their understanding of place value and begin to record using jottings and number sentences



Practise addition and subtraction facts to 20

Show increasing fluency in deriving subtraction facts for numbers up to 10 and then up to 20

Use known facts to 20 to derive new facts e.g. $3 + 7 = 10$
 $30 + 70$

Use knowledge to derive and use subtraction number facts up to 100

Subtraction

Pupils develop the concept of addition and subtraction and are enabled to use these operations flexibly.
Addition and subtraction should be taught together.

End of Year Expectations	Possible Concrete and Visual Representations	Teacher Modelling/ Children’s Recording	Fluency
Year 3 Subtract numbers with up to three-digits (formal written column method) Children apply, develop and secure their understanding of place value and begin to record in columns	12345678910 11121314151617181920 21222324252627282930 31323334353637383940 41424344454647484950 51525354555657585960 61626364656667686970 71727374757677787980 81828384858687888990 919293949596979899100 101102103104105106107108109110 111112113114115116117118119120 121122123124125126127128129130 131132133134135136137138139140 141142143144145146147148149150 151152153154155156157158159160 161162163164165166167168169170 171172173174175176177178179180 181182183184185186187188189190 191192193194195196197198199200 Bar Model 100 ? 30	Children SHOULD use manipulatives alongside algorithms to transition between practical and abstract COLUMN METHOD SUBTRACTION HTO 148 - 121 27 Column subtraction (with exchanging)	Count back in ones, tens and hundreds maintaining fluency through varied and frequent practice Switch count between hundreds, tens and ones e.g 500, 400, 300, 290, 280, 270, 269, 268, 267 Mentally subtract HTO + ones, HTO + tens, HTO + hundreds Perform mental calculations with two-digit numbers Find ten and a hundred less than a number with up to three-digits
Year 4 Subtract numbers with up to four-digits (formal written column method) Understand subtraction as the inverse of addition Solve two-step problems deciding upon the appropriate operations and methods and justifying choices made	100 10 1 1 1	HTO 6 £7.11 3 - £3.67 £3.56 Add decimals in the context of money	Count back in 6, 7, 9, 25 and 1000 Count back through zero to include negative numbers Find 1000 less than a number Continue to practise mental calculations with increasingly large numbers to aid fluency
Ensure children can solve calculations where zero is a place holder			

Subtraction

Pupils develop the concept of addition and subtraction and are enabled to use these operations flexibly.
Addition and subtraction should be taught together.

End of Year Expectations

Year 5

Subtract larger numbers
(formal written column method)

N.B. ENSURE CHILDREN HAVE THE
OPPORTUNITY TO SUBTRACT
DECIMALS WITH DIFFERING NUMBERS
OF DIGITS

Solve multi-step problems selecting
and justifying methods

Subtract numbers mentally with
increasingly large numbers

Year 6

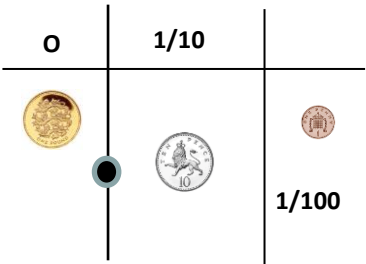
Subtract multi-digit numbers including
numbers with up to three decimal places
(formal written column method)

ENSURE CHILDREN HAVE THE
OPPORTUNITY TO SUBTRACT DECIMALS,
WITH DIFFERING NUMBERS OF DIGITS

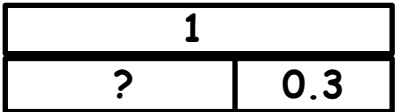
Solve multi-step problems in contexts,
deciding which operations and
methods to use and why

Solve more complex calculations
mentally

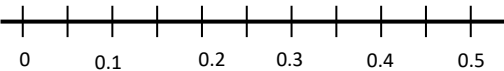
Possible Concrete and Visual Representations



Cuisenaire



Bar Model



Teacher Modelling/ Children's Recording

Children might use manipulatives alongside algorithms

Column subtraction (no exchanging)

$$\begin{array}{r} 13548 \\ - 12128 \\ \hline 1420 \end{array}$$

Column subtraction
(with exchanging)

$$\begin{array}{r} \overset{2}{1} \overset{13}{3} \overset{11}{4} \overset{1}{2} 3 \\ - 12678 \\ \hline 745 \end{array}$$

*Ensure children can solve calculations
where zero is a place holder*

$$\begin{array}{r} 1.48 \\ - 1.21 \\ \hline 0.27 \end{array}$$

Column subtraction
(no exchanging)

$$\begin{array}{r} \overset{6}{7} \overset{11}{.} \overset{1}{2} 3 \\ - 3.67 \\ \hline 3.56 \end{array}$$

*Subtraction with decimals up to three
decimal places including in different
contexts e.g. money and measures*

Fluency

Count backwards in powers of
ten up to one million

Count backwards in positive and
negative whole numbers
through zero

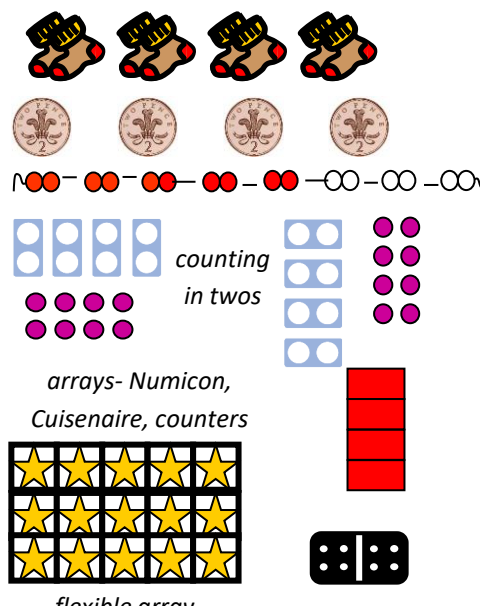
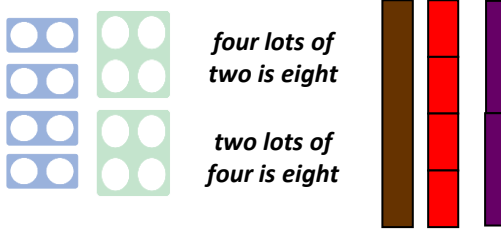
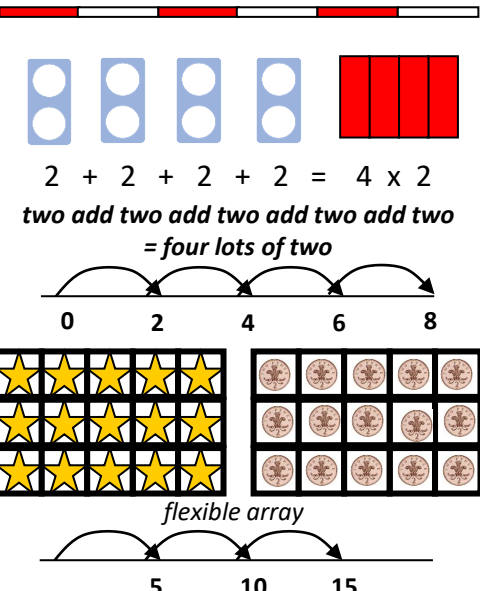
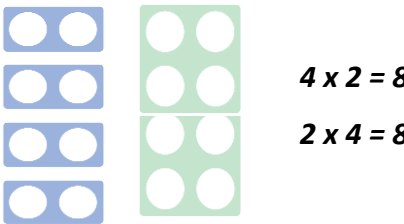
Practise mental calculations with
increasingly large numbers

Undertake mental calculations
with increasingly large
numbers and more complex
calculations

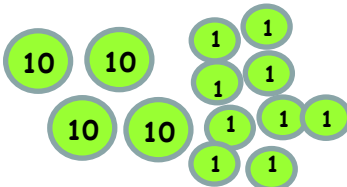
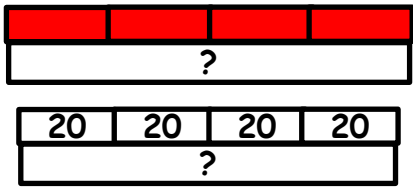
Multiplication

Pupils develop the concept of multiplication and division and are enabled to use these operations flexibly.

Multiplication and division should be taught together.

End of Year Expectations	Possible concrete and visual representation	Children's Recording	Fluency
Year 1 Solve single step practical problems involving multiplication Use concrete objects, pictorial representations to explore grouping Make connections between arrays, number patterns and counting in twos, fives and tens Double numbers and quantities	 <i>counting in twos</i> <i>arrays- Numicon, Cuisenaire, counters</i> <i>flexible array</i>	Practical only e.g. link to small world Using concrete objects, pictorial representations and arrays with the support of an adult – take photographs/draw pictures – if using Numicon small icons could be stuck in  <i>four lots of two is eight</i> <i>two lots of four is eight</i> 	Count in twos, fives and tens from different multiples e.g. 6, 8, 10, 12 etc Emphasise number patterns Double number and quantities
Year 2 Understand multiplication as repeated addition Calculate mathematical statements for multiplication within the tables and write them using symbols Understand and solve problems involving arrays Ensure children understand that multiplication is commutative (can be done in any order) Understand that multiplication and division are inverse operations	 $2 + 2 + 2 + 2 = 4 \times 2$ <i>two add two add two add two add two = four lots of two</i> <i>flexible array</i>	Record practical work as number sentences  $4 \times 2 = 8$ $2 \times 4 = 8$   	Count in twos, threes, fives from zero and tens from any number e.g. 6, 8, 10, 12 etc Emphasise number patterns Introduction to multiplication tables. Practise to become fluent in multiplication facts for 2, 5 and 10 Solve multiplication problems mentally

Multiplication – multiplication and division should be taught together– refer to structures of multiplication

End of Year Expectations	Possible concrete and visual representation	Teacher Modelling/Children's Recording	Fluency
Year 3 Develop reliable written methods Understand and solve scaling problems Solve problems involving multiplication including correspondence	 <i>flexible array</i>  <i>arrays</i>	<i>Progressing to developing fluency in short multiplication</i> $\begin{array}{r} 13 \\ \times 4 \\ \hline \end{array}$ $\begin{array}{r} 52 \\ \times 1 \\ \hline \end{array}$	Count from 0 in multiples of 4, 8, 50 and 100 Use multiples of 2, 3, 4, 5, 8, 10, 50 and 100 Practise mental recall of multiplication tables – 3, 4 and 8x times tables Connect the 2, 4 and 8 times tables using doubling Develop efficient mental methods using commutativity and multiplication facts to derive related facts e.g. $4 \times 4 \times 12 = 12 \times 4 \times 5 = 12 \times 20$
Year 4 Multiplying three numbers Solve two-step problems Multiplying by 0 and by 1 Develop fluency in short multiplication using formal written layout Solve problems involving multiplication including using the distributive law, integer scaling problems and harder correspondence problems	<i>place value counters</i>   <i>bar models</i>	<i>Start with digits that are below five so children can practise method without encountering difficulty with multiplication tables</i> $\begin{array}{r} 133 \\ \times 42 \\ \hline \end{array}$	Count in multiples of 6, 7, 9, 25 and 1000 Recall and use multiplication facts up to 12×12 with increasing fluency Derive multiplication facts with up to three-digits Recognise and use factor pairs and commutativity in mental calculations Use the distributive law Combine knowledge of number facts and rules of arithmetic to solve mental and written calculations e.g. $2 \times 6 \times 5 = 10 \times 6$

Multiplication - multiplication and division should be taught together– refer to structures of multiplication

End of Year Expectations

Year 5

Multiply decimals with up to three decimal places

Identify multiples and factors including finding all factor pairs of a number, and common factors of two numbers

Solve problems involving all four operations where larger numbers are used by decomposing them into their factors

Multiply whole numbers and those involving decimals by 10, 100 & 1000

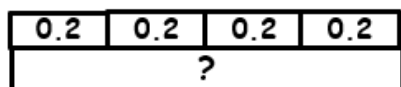
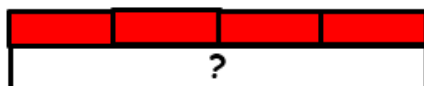
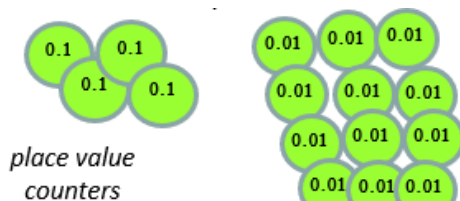
Understand and use multiplication and division as inverses including in problems involving missing numbers and balancing equations

Solve problems involving multiplication and division including scaling by simple fractions

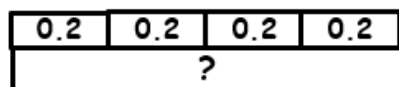
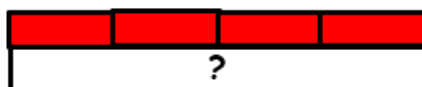
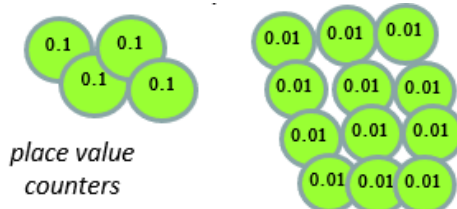
Know and use the vocabulary of prime numbers, prime factors and composite (non-prime)

Recognise and square and cube numbers and associated notation

Possible concrete and visual representation



bar models



bar models

Teacher Modelling/Children's Recording

Children might use manipulatives alongside algorithms

Short Multiplication

$$\begin{array}{r} 1324 \\ \times 6 \\ \hline 7944 \\ \hline 112 \end{array}$$

$$\begin{array}{r} 3.24 \\ \times 6 \\ \hline 19.44 \\ \hline 12 \end{array}$$

Long Multiplication

$$\begin{array}{r} 1324 \\ \times 26 \\ \hline 7944 \\ 26480 \\ \hline 34424 \\ \hline 111 \end{array}$$

$$\begin{array}{r} 3.24 \\ \times 26 \\ \hline 19.44 \\ 64.80 \\ \hline 84.24 \\ \hline 11 \end{array}$$

Fluency

Count forwards in steps of powers of 10 from any given number up to 1 000 000

Practise and extend use of formal written method of short multiplication

Apply all multiplication tables frequently. Commit them to memory and use them confidently to make larger calculations

Multiply numbers mentally drawing upon known facts

Year 6

Multiply numbers up to 4-digit x TU

Multiply numbers with up to two decimal places x whole number

Multiply multi-digit numbers up to four-digits by a two-digit whole number

Multiply single-digit numbers with up to two-decimal places by whole numbers

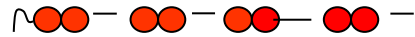
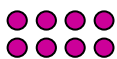
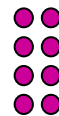
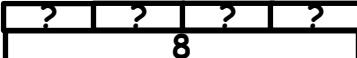
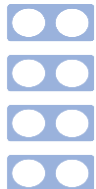
Solve problems involving all four operations

Undertake mental calculations with increasingly large numbers

Continue to use all multiplication tables to calculate mathematical statements in order to maintain fluency

Division

Pupils develop the concept of multiplication and division and are enabled to use these operations flexibly.
Multiplication and division should be taught together.

End of Year Expectations	Possible concrete and visual representation	Teacher Modelling/Children's Recording	Fluency
Year 1 Solve single step practical problems involving division Use concrete objects, pictorial representations Understand division as grouping and sharing Use the language of 'sharing equally between'	counting in groups of twos      four lots of two   Numicon and counter arrays	Practical only e.g. link to small world Using concrete objects, pictorial representations and arrays with the support of an adult – take photographs/draw pictures – if using Numicon small icons could be stuck in   Eight can be divided into four equal groups of two or two equal groups of four	Count in twos, fives and tens from different multiples e.g. 6, 8, 10, 12 etc Emphasise patterns Find simple fractions eg half and quarter, of objects, numbers and quantities
Year 2 Solve single step practical problems involving division Use concrete objects, pictorial representations Understand division as grouping Find halves and then quarters Work with a range of materials and contexts in which multiplication and division relate to grouping and sharing discrete quantities and to arrays	 flexible array  bar models 	Record as number sentences using ÷ and = $8 \div 4$ Eight divided into four equal groups = two in each group $8 \div 4 = 2$ 	Count back in twos, threes, fives from zero and tens from any number e.g. 12, 10, 8, 6 etc Emphasise patterns Connect ten times table to place value and five times table to divisions on a clock face Introduction to multiplication tables. Practise to become fluent in division facts for 2, 5 and 10 Solve division problems involving grouping and sharing

Division - multiplication and division should be taught together– refer to structures of division

End of Year Expectations

Year 3

- Develop a reliable written method for division
- Solve problems involving missing numbers
- Solve problems including those that involve scaling
- Recognise, find and name $\frac{1}{2}$ and $\frac{1}{4}$ of an object, shape or quantity
- Understand the link between unit fractions and division
- Connect $1/10$ to division by 10
- Count in tenths

Possible concrete and visual representation

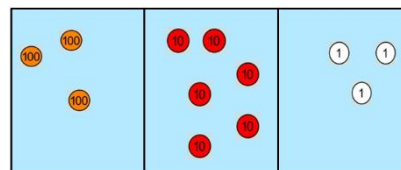


arrays

Teacher Modelling/Children's Recording

Children should use manipulatives alongside algorithms

Repeated subtraction - chunking
Ensure children see/understand the link between grouping on a number line and vertical recording for chunking



Fluency

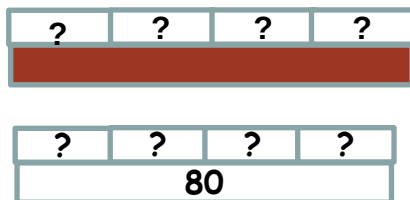
Recall and use related division facts for the 3, 4 and 8x tables (Continue to practise other tables)

Write and calculate mathematical statements for division using what is known

Use division facts to derive related division facts e.g. using $6 \div 3 = 2$ to work out $60 \div 3 = 20$

Year 4

- Divide one- or two-digit numbers by 10 or 100, identifying value of digits as tenths or hundredths
- Solve two-step problems in different contexts, choosing the appropriate operation, working with increasingly harder numbers including correspondence questions e.g. three cakes shared equally between 10 children



bar models

Short division
no remainders

$$\begin{array}{r} \div \quad 1 \ 2 \ 1 \\ 3 \overline{) 3 \ 6 \ 3} \end{array}$$

Short division
with remainders

$$\begin{array}{r} \div \quad 1 \ 4 \ 0 \\ 4 \overline{) 5 \ 6 \ 0} \end{array}$$

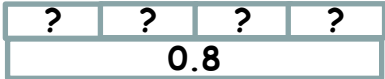
Continue to practise recalling division facts for multiplication tables up to 12×12

Practise mental methods and extend this to three-digit numbers for example $200 \times 3 = 600$ into $600 \div 3 = 200$

Use place value, known and derived facts to divide mentally, including dividing by 1

Recognise and use factor pairs and commutativity in mental calculations

Division - multiplication and division should be taught together– refer to structures of division

End of Year Expectations	Possible concrete and visual representation	Teacher Modelling/Children's Recording	Fluency
Year 5 Identify factors , including finding all factor pairs of a number, and common factors of two numbers Practise and extend the formal written method of short division: numbers up to four-digits by a one-digit number Interpret non-integer answers to division by expressing results in different ways according to the context, including with remainders, as fractions, as decimals or by rounding as appropriate for the context Use multiplication and division as inverses Solve problems involving division including scaling down Divide whole numbers and those involving decimals by 10, 100 & 1000		<i>Children might use manipulatives alongside algorithms</i> without remainder short division $560 \div 4$ $\begin{array}{r} 140 \\ 4 \overline{) 560} \end{array}$ remainder as a decimal $564 \div 5$ $\begin{array}{r} 112.8 \\ 5 \overline{) 564.0} \end{array}$ remainder as a fraction $564 \div 5$ $\begin{array}{r} 112 \frac{2}{5} \\ 5 \overline{) 564} \end{array}$ long division $560 \div 24$ $\begin{array}{r} 23 \text{ r } 8 \\ 24 \overline{) 560} \\ \underline{-48} \\ 80 \\ \underline{-72} \\ 8 \end{array}$ remainder as a whole number $560 \div 24$ $\begin{array}{r} 23 \frac{8}{24} \text{ (1/3)} \\ 24 \overline{) 560} \\ \underline{-48} \\ 80 \\ \underline{-72} \\ 8 \end{array}$ remainder as a fraction in its lowest form remainder as a decimal $560.0 \div 24$ $\begin{array}{r} 23.3 \\ 24 \overline{) 560.0} \\ \underline{-48} \\ 80 \\ \underline{-72} \\ 80 \\ \underline{-72} \\ 8 \end{array}$	Count backwards in steps of powers of 10 for any given number up to 1 000 000 Count backwards with positive/negative whole numbers through zero Practise mental calculation with increasingly large numbers Apply all multiplication tables and related division facts frequently, commit them to memory and use them to confidently to make larger calculations
Year 6 Divide numbers up to 4-digits by a 2-digit whole number using formal written methods of long division, interpret remainders as whole numbers, fractions or by rounding, as appropriate for the context Divide numbers with up to 2 decimal places by 1-digit and 2-digit whole numbers, initially in practical contexts involving money and measures Understand the relationship between unit fractions and division Recognise division calculations as the inverse of multiplication Solve problems involving division	  0.8 bar models	remainder as a decimal $560.0 \div 24$ $\begin{array}{r} 23.3 \\ 24 \overline{) 560.0} \\ \underline{-48} \\ 80 \\ \underline{-72} \\ 80 \\ \underline{-72} \\ 8 \end{array}$	Practise division for larger numbers, using the formal written methods of short and long division Continue to use all multiplication tables and division facts to maintain fluency Perform mental calculations, including with mixed operations and larger numbers

Supporting at Home

- On our school website, www.st-michaels.surrey.sch.uk, there is a variety of information to help you:
 - Under curriculum / school curriculum you can find a link to the curriculum maps for each year group and also the full national curriculum.
 - Under parents / supporting your child's education you can find the links for the parent curriculum presentations from 2016.
 - Under parents / supporting your child's education you can also find helpful videos of the teachers modelling the correct methods for calculations..

YEAR 1: Count, both forwards and backwards, from any number, including past 100, read and write numbers up to 100 as digits, count in 2s, 5s and 10s, find 'one more' or 'one less' than a number, use mathematical language such as 'more', 'less', 'most', 'least' and 'equal', use the +, -- and = symbols to write and understand simple number calculations, add and subtract one- and two-digit numbers, up to 20, recognise and name common 2D and 3D shapes, recognise coins and notes, tell the time to the hour and half-hour, understanding that maths is used in every day life.

YEAR 2: Parents can always take a lead role in modelling practical maths in the home and day to day life. Encouraging your child to: handle and name money when the purchasing small items at the newsagent; measuring themselves and others using appropriate language; grouping objects, such as socks into pairs (links to odd and even numbers); having a calendar and a clock visible to refer to; explore the use of positional language; discussion of temperatures, the time and timings of everyday activities; practical calculation activities at home.

YEAR 3 / 4: Practice mental calculations for addition and subtraction; times tables and the division facts. For example, calculating prices in the shop, calculating change, display multiplication posters, practice chanting times tables. Allow your child to have resources to support them e.g. pasta. Encourage children to tell the time using an analogue clock/watch in everyday life. Problem solving- any opportunity to ask maths based questions e.g. if you start playing minecraft at 7 o'clock and you need to get ready for bed at half 7, how long do you have to play? Open up a dialogue about maths using your surroundings.

YEAR 5 / 6: Using and applying maths is an essential skill. Promoting maths outside the classroom is key in developing this. The following activities can help: practise easy recall of multiplication tables which will impact on all areas of the maths curriculum; encourage confidence with decimals using money e.g. when shopping; using measurements in home life e.g. when cooking and shopping: 100ml, 1l, 500g or using a tape measure around the home. Increase confidence with mental maths by asking children to complete word problem calculations as a quick 5 minute activity e.g. If I won £1,000,000 and spent half how much would be left? Encourage children to tell the time using digital and analogue clocks and to estimate the time of certain activities. E.g. "How long did it take us to make dinner?" and interpreting bus or train timetables. Exploring maths games websites with your children, please ask if you need guidance. Recognising 2D and 3D shapes within the home e.g. the shape of the room, the shape of the fridge.