Calculation Policy			
Committee	Curriculum and Standards	Date of Issue	March 2026
Status		Review Date	March 2029
		Issue Number	3

THE MORTIMER FEDERATION OF ST JOHN'S AND ST MARY'S

CALCULATION POLICY

Intent:

At the Mortimer Federation of St. John's and St. Mary's we believe that children should be introduced to the processes of calculation through practical, oral and mental activities.

Choosing the appropriate strategy, recording in mathematics and in calculation in particular is an important tool both for furthering the understanding of ideas and for communicating those ideas to others. A useful written method is one that helps children carry out a calculation and can be understood by others.

Written methods are complementary to mental methods and should not be seen as separate from them. The aim is that children use mental methods when appropriate, but for calculations that they cannot do in their heads they use an efficient written, pictorial or practical method accurately and with confidence. It is important children acquire secure mental methods of calculation and one efficient written method of calculation for addition, subtraction, multiplication and division which they know they can rely on when mental methods are not appropriate.

End points:

By the end of Year 2, children should be able to apply their practical, pictorial and written methods to mental strategies. They should also be able to pick the most efficient method to solve the particular problem.

By the end of Year 6, children should be able to choose an efficient method; mental, written, calculator, that is appropriate to a given task and be able to justify their reasons for doing so.

In summary, we aim for all pupils at our school to have:

- A secure understanding of mental maths facts to apply to written mathematics.
- A secure knowledge of number facts and a good understanding of the four operations.
- An efficient, reliable, compact written method of calculation for each operation that can be applied with confidence when undertaking calculations that cannot be carried out mentally.

This policy contains the key pencil and paper procedures that will be taught within our school alongside practical resources. It has been written to ensure consistency and progression throughout the school and reflects a whole school agreement

Chair of Curriculum and Standards Committee Date

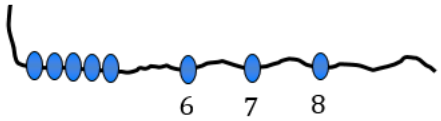
Share Your Light

John 10:10 "Life in all its fullness"

Addition

Foundation

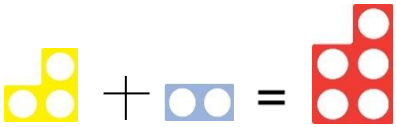
Children begin to relate addition to combining two groups of objects.



E.g.

Using quantities to add two single digits together.

Three add two =



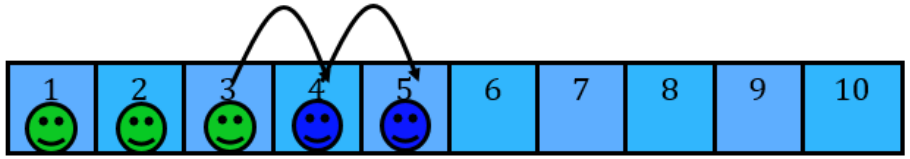
3 and 2 make 5.

3 add 2 is 5.

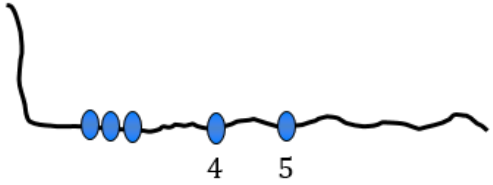
The sum of 3 and 2 is 5

Using a number track to count on to find the answer.

What is three add two?



Count on two more from three.

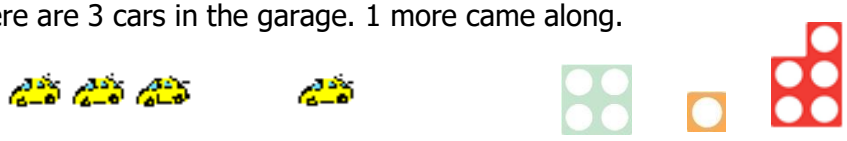


One more; +1

Y1

Through practical activities in meaningful contexts and informal written methods.

- Recall number bonds to 20 and within 20.
- Pictures and Marks – 1 more / 2 more.
  There are 3 cars in the garage. 1 more came along.



3 + 1 = 4 4 + 1 = 5

Terry has 3 apples and Tony has 2 apples. How many altogether?

- Number lines to 20.

- Derive related facts to 20.
  □ = 5 + 4
  5 + 4 = □
  □ + 4 = 9
  □ + □ = 9

- Money and addition up to 20p.

- Read, write and interpret mathematical statement involving addition (+) and equals (=).

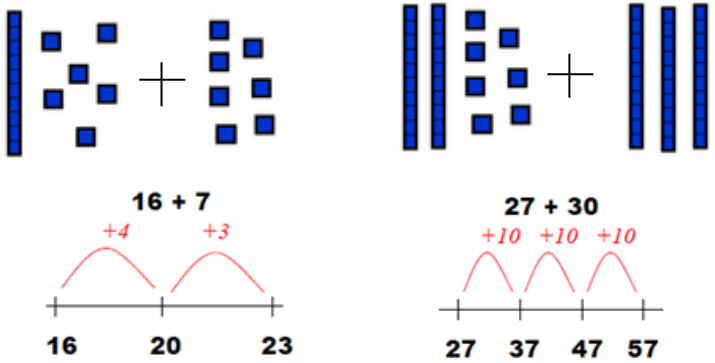
Video clips:
Using a range of equipment and strategies to reinforce addition statements
National Curriculum requirements:
Add 1 digit and 2 digit numbers to 20, including 0.

Y2

Through practical activities in meaningful contexts and informal written methods.

- Fluent recall of bonds to 20 and within 20.
- Derive and use related facts up to 100.
- Addition of money up to £1.

- Add numbers using concrete objects, pictorial representations and mentally.



- Show that addition of two numbers can be done in any order (commutative).
- Recognise and use the inverse relationship between addition and subtraction.

National Curriculum requirements:
(using concrete objects, pictorial representations and mentally)
Add 2 digit numbers and ones. Add 2 digit number and tens.
Add two 2 digit numbers. Add three 1 digit numbers.

Y3

- Continue with partitioned columnar method.
- Introduce expanded columnar addition.

H	T	O
	2	3 6
+		7 3
		9
	1	0 0
	2	0 0
	3	0 9

Progressing to the compact columnar method.

T O	H T O	T O	H T O	T O	H T O
2 3	3 1 5	9 4	5 6 1	4 7	2 3 7
+ 4 2	+ 6 2 4	+ 7 3	+ 7 1 8	+ 2 5	+ 5 1 6
6 5	9 3 9	1 6 7	1 2 7 9	7 2	7 5 3
				1	1

- Add money using both £ and pence in practical contexts.

Video clip:
Demonstration of expanded 3 digit columnar addition

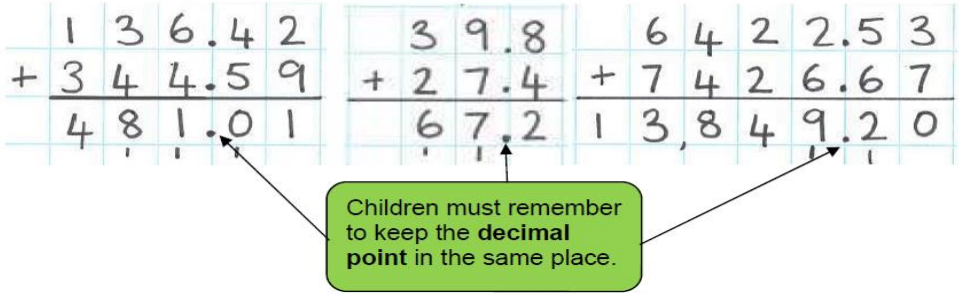
National Curriculum requirements:
Add numbers with up to 3 digits, using the formal written method of columnar addition.

Y4

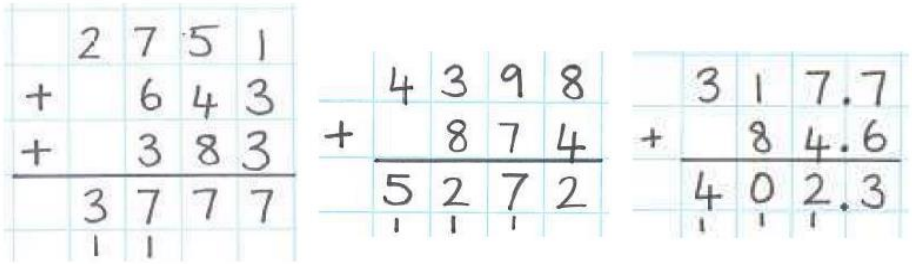
- Continue with columnar addition.

H T O	H T O	Th H T O
3 7 1	3 7 6	2 3 8 8
+ 4 8 5	+ 4 8 5	+ 1 1 2 4
8 5 6	8 6 1	3 5 1 2
1	1 1	1 1

Children should also be able to add numbers with up to **2 decimal places** (at this stage, both numbers should have the **same number of decimal places**):



They should also be able to use the same method to add up more than two numbers with different numbers of digits:



- Estimate and use inverse operations to check answers to a calculation.
- Add money using both £ and pence in practical contexts.

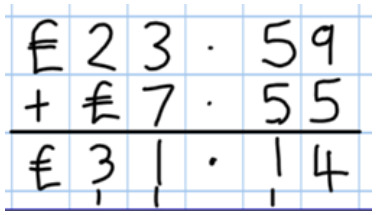
National Curriculum requirements:
Add numbers with up to 4 digits, using the formal written method of columnar addition.
Vocabulary: add, more, plus, increase, total, altogether, double, near double, boundary, equal to.

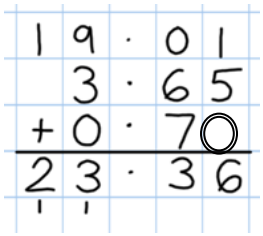
Y5

- Continue to use columnar addition, adding numbers with more than 4 digits.

$$\begin{array}{r} 3\,2\,8\,7\,9 \\ +\quad 3\,5\,9\,8\,7 \\ \hline 6\,8\,8\,6\,6 \end{array}$$

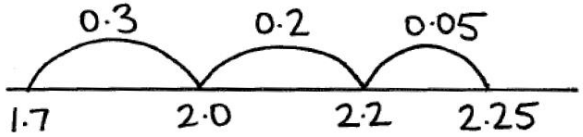
- Addition of money and decimals.





Number lines may be used to reinforce counting and adding if required. E.g.

0·01	0·02	0·03	0·04	0·05	0·06	0·07	0·08	0·09	0·1
0·11	0·12	0·13	0·14	0·15	0·16	0·17	0·18	0·19	0·2
0·21	0·22	0·23	0·24	0·25	0·26	0·27	0·28	0·29	0·3
0·31	0·32	0·33	0·34	0·35	0·36	0·37	0·38	0·39	0·4
0·41	0·42	0·43	0·44	0·45	0·46	0·47	0·48	0·49	0·5

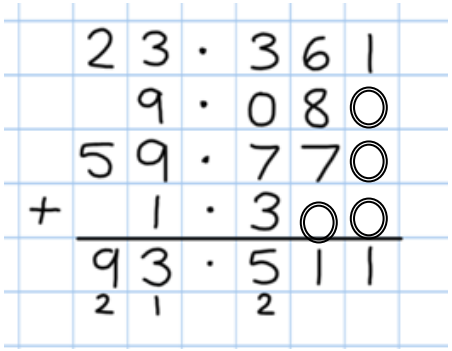


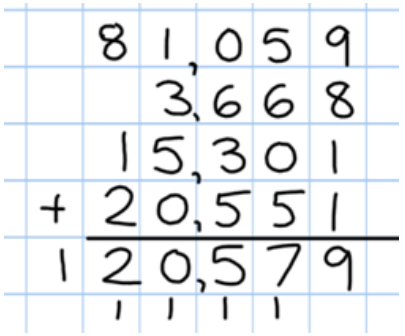
1.7 + 0.55 = 2.25

National Curriculum requirements:
Add whole numbers with more than 4 digits, using the formal written method of columnar addition.

Y6

- Add several numbers of increasing complexity using columnar addition.





National Curriculum requirements:
Add whole numbers with more than 4 digits, using the formal written method of columnar addition.

Subtraction

Foundation

Children begin to understand subtraction as 'taking away'.

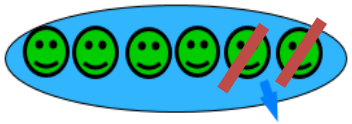
Say which is one or two less than a given number.

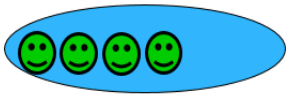
E.g.

3 - 1 =

Using objects to take a single digit away.

What is 6 take away 2?



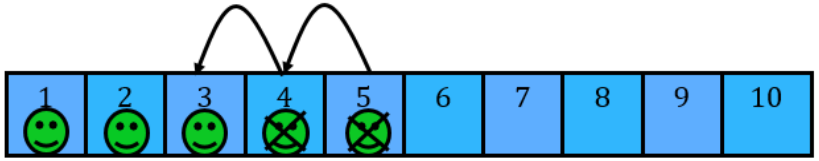


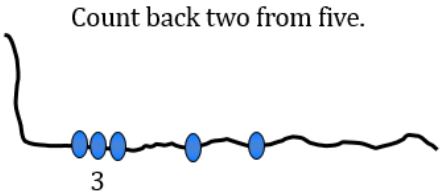
6 take away 2 equals 4.

Use of language: less, smaller, different and same.

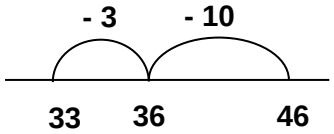
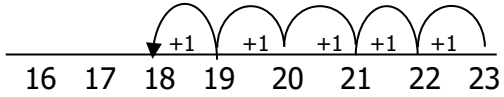
Using a number track to count back to find the answer.

What is five take away two?





One less; -1

Y1	Y2
Through practical and meaningful contexts and informal written methods. • We made 6 cakes. We ate 2 of them. How many cakes are left?  6 - 2 = 4 • Find the difference within 20. • Represent and use number bonds within 20. • Record using subtraction (–) and equals signs (=) • Derive related facts up to 20. 5 - 2 = ☐ ☐ = 5 - 2 5 - ☐ = 3 3 = ☐ - 2 ☐ - 2 = 3 3 = 5 - ☐ ☐ - ☐ = 3 3 = ☐ - ☐  • Counting back on a 100 square. **National Curriculum requirements:** Subtract 1 digit and 2 digit numbers up to 20, including 0. Represent and use number bonds and related subtraction facts.	Through practical and meaningful contexts. • Fluent recall of bonds to 20 and within 20. • Derive and use related facts up to 100 e.g. 10 – 7 = 3 so 100 – 70 = 30. • Counting back by partitioning second number. Subtract the ones first to be in line with columnar subtraction. E.g. 46 - 13 46 - 10 - 3  • Find the difference by counting up (only when the difference is small). 23 – 5 = 18  • Recognise and use the inverse relationship between addition and subtraction • Show that subtraction is not commutative (done in any order) • Subtraction of money, including change. **National Curriculum requirements:** *(using concrete objects, pictorial representations and mentally)* Subtract 2 digit numbers and ones. Subtract 2 digit number and tens. Subtract two 2 digit numbers. Subtract three 1 digit numbers.

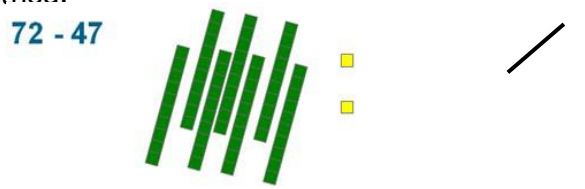
Y3

- Continue with vertical number line subtraction progressing to the expanded columnar subtraction method.

89–35 = 54

80 + 9
- 30 + 5
50 + 4 = **54**

- Introduce exchanging through the expanded columnar subtraction method.



60 70 + 12
- 40 + 7
20 + 5 = **25**

- Progressing on to compact columnar subtraction.

T O	H T O	T O
4 7 - 2 3 2 4	8 6 4 - 6 2 1 2 4 3	~~4~~ ~~5~~ 11 - 3 6 1 5

- Emphasise value of digit, e.g. 4 tens subtract 2 tens = 2 tens. Use the correct language for subtraction i.e. exchange rather than borrow.
- Subtract amounts of money to give change.

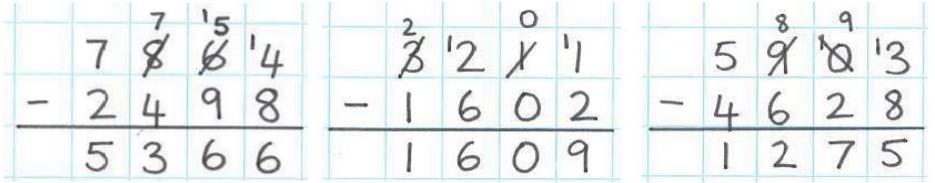
Video clips:
Subtraction - teaching children to consider the most appropriate methods before calculating

Introducing partitioned column subtraction method, from practical to written

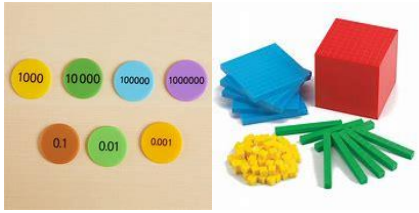
National Curriculum requirements:
Subtract numbers with up to 3 digits using the formal written method of columnar subtraction.

Y4

- Continue with partitioned columnar subtraction progressing to compact columnar subtraction up to 4 digits.



They should revert to the expanded columnar method and/or use place value counters/dienes if they experience difficulties.



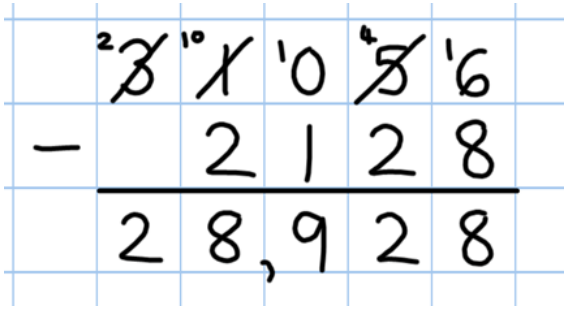
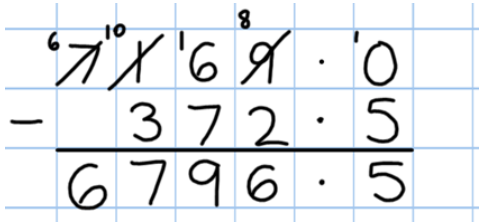
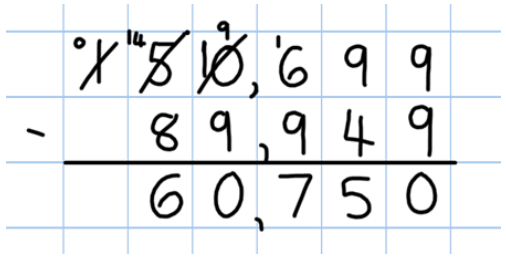
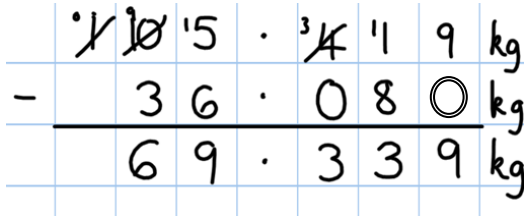
- Estimate and use inverse operations to check answers to a calculation.
- Subtract amounts of money using columnar method.

Video clips:
Subtraction - teaching children to consider the most appropriate methods before calculating

Introducing partitioned column subtraction method, from practical to written

Moving to the compact column method of subtraction

National Curriculum requirements:
Subtract numbers up to 4 digits using the formal written method of columnar subtraction.
Vocabulary: subtract, minus, take away, how many more to make?, how much more?, boundary, inverse, how many fewer, equals sign.

Y5	Y6
• Continue with compact columnar subtraction, including subtraction of decimals.   • Use rounding to check answers to calculations and to determine, in the context of a problem, levels of accuracy. **Video clip:** **Moving to the compact column method of subtraction** **National Curriculum requirements:** Subtract numbers with more than 4 digits.	• Continue with compact columnar subtraction, including subtraction of decimals.   • Use estimation to check answers to calculations and to determine, in the context of a problem, levels of accuracy. **National Curriculum requirements:** Subtract numbers with more than 4 digits.

Multiplication

Foundation

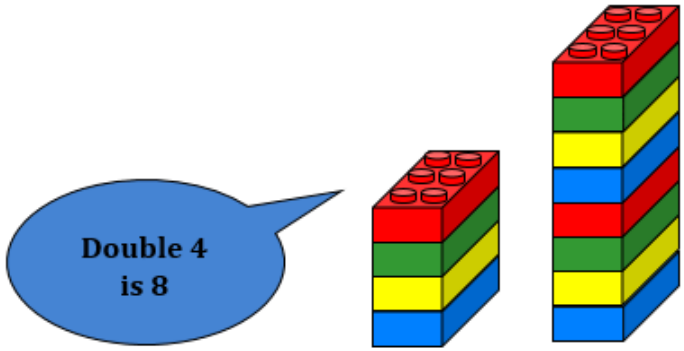
Children will begin to understand multiplication as repeated addition.

They will use practical equipment to count in repeated groups of the same size.

E.g. 5 pairs of socks = 10 socks.

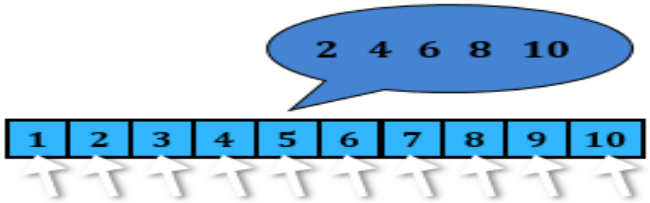
Using practical resources, children will have opportunities to double numbers

up to 20.



Count on and back in twos to 20, fives to 50 and tens to 100, in preparation for Year 1.

E.g. A number track may be used to support this counting.



Children will also have opportunities to –

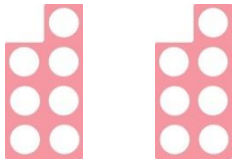
- ✓ Draw pictures to show equal sets: e.g. how may wheels on 3 bikes?
- ✓ Sort objects into groups and count.
- ✓ Solve practical problems that combine groups of twos, fives and tens.

There are 5 sweets in one bag, how many sweets are there in 3 bags?

Y1

Through practical activities and meaningful contexts using concrete objects, pictorial representations and arrays with the support of the teacher.

- Doubles.



7 + 7 = 14

- Make connections between arrays, number patterns and counting in 2's, 5's to 50 and 10's to 100.

3 x 2 = 6

- There are 2 sweets in one bag. How many sweets are there in 5 bags?

- Counting multiples of coins: 2p, 5p, 10p.

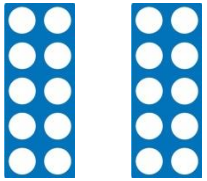
2p + 2p + 2p

National Curriculum requirements:
Solve one step problems involving multiplication, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.

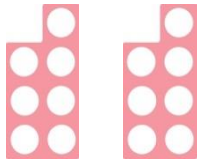
Y2

Through practical activities and meaningful contexts using concrete objects, pictorial representations and arrays.

- Double numbers (by partitioning and recombining) 17 + 17.



10 + 10



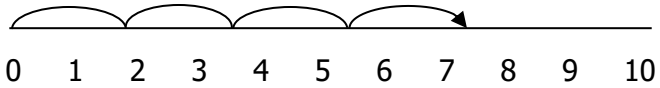
7 + 7

- Understand multiplication as repeated addition/groups/lots.
- Read arrays.

2x4 (2, 4 times)

Repeated addition on a number line.

2 + 2 + 2 + 2 (4 groups of 2, 2 four times, 2 x 4)



4 + 4 (2 groups of 4, 4 two times, 4x2)

- Know the multiplication tables for 2, 5 and 10.
- Calculate mathematical statements within the multiplication tables using the multiplication (x) and equals (=) signs.
- Show that the multiplication of two numbers can be done in any order (commutative).

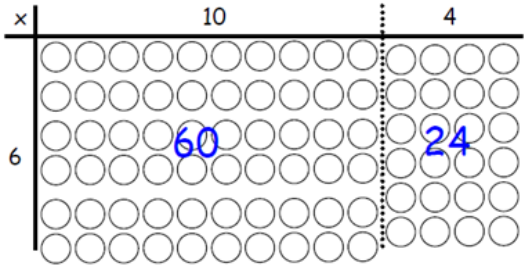
Video clips: **Teaching for understanding of multiplication facts**
Practical multiplication and the commutative law

National Curriculum requirements:
Solve problems involving multiplication using materials, arrays, mental methods and multiplication facts.

Y3

- Recall and use multiplication tables for 3, 4 and 8.
- Continue to use arrays and number lines/Cuisenaire rods for 3, 4 and 8 multiplication tables.
- Write and calculate mathematical statements for multiplication. Statements to include the multiplication tables that they know and 2 digit numbers x 1 digit numbers. Pupils use mental methods and progress to formal written methods.
- Introduce grid model.

X	10	4
6	60 + 24	= 84



- Progressing to expanded method of multiplication.

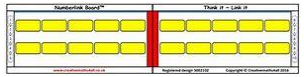
```
  T O
  1 4
x   5
  2 0  (5x4)
+ 5 0  (5x10)
  7 0
```

Video clips: [Teaching the grid method as an interim step]
(Partitioning and counters to introduce grid).

National Curriculum requirements: Multiply 2 digits by 1 digit, using mental and progressing to formal written methods.

Y4

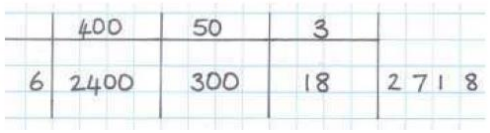
- Recall and use multiplication tables up to 12x12 (Including multiplying by 0 and 1).

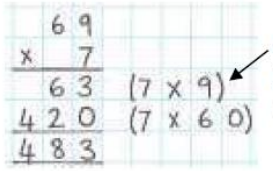


Maths games including ICT, chanting and number link boards may be used to support this.

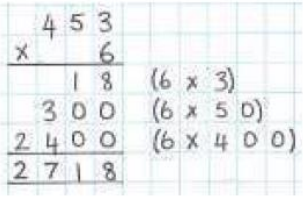
- Continue using grid method and expanded method as appropriate, progressing to short multiplication.

453 x 6 = 2718





Children may find it helpful to record the calculations they are doing in order to keep track.



- Short Multiplication.

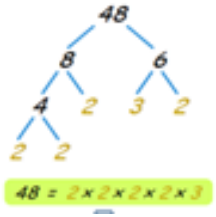
No carrying	Extra digit	Carrying	Zeros	Ext.
T O 3 2 x 3 9 6	**H T O** 5 1 x 2 1 0 2	**H T O** 3 8 x 7 2 6 6 5	**H T O** 2 0 2 x 4 8 0 8	**H T O** □ 5 □ x 4 6 1 2 2 1

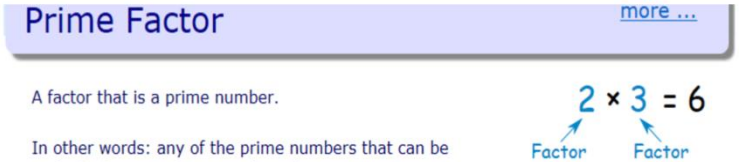
National Curriculum requirements:
Multiply 2 digits by 1 digit using formal written layout.
Multiply 3 digits by 1 digit using formal written layout.

Y5

- Recall and use multiplication tables up to 12x12 (Including multiplying by 0 and 1) as well as identifying factors and multiples. Games, diagrams, ICT and number link boards used to reinforce this.

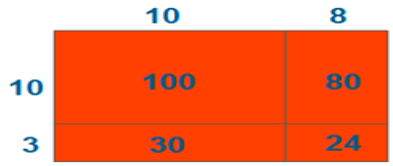
Factor Trees

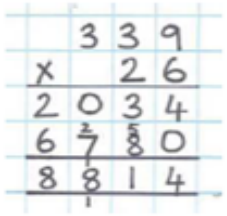




- Continue to practise short multiplication.

- Use Grid Method to introduce long multiplication before progressing to TO x TO then onto HTO x TO.





Video clips:

Moving from grid method to a compact method

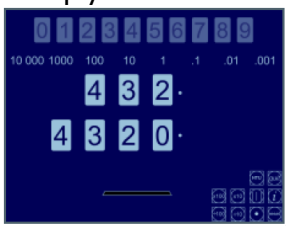
Demonstration of long multiplication

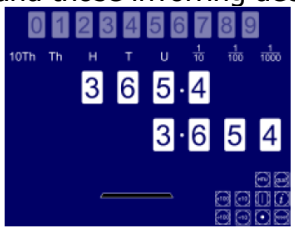
National Curriculum requirements:

Multiply numbers up to 4 digits by a 1 digit number using the formal written method of short multiplication.

Multiply numbers up to 4 digits by a 2 digit number using the formal written method of long multiplication.

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

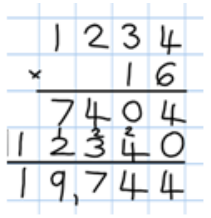


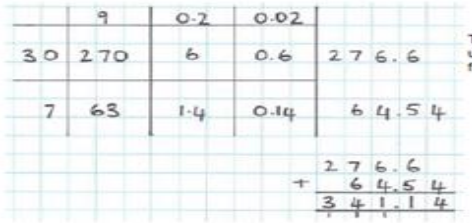


ITP's and place value charts used to support teaching of the movement of the digits.

Y6

- Recall and use multiplication tables up to 12x12 (Including multiplying by 0 and 1). Games, diagrams, ICT and number link boards used to reinforce this.
- Continue to practise short multiplication.
- Continue to practise long multiplication.
- Multiply decimals using the grid method and progressing on to short multiplication.

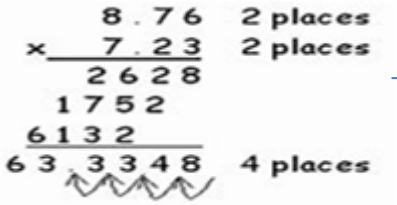


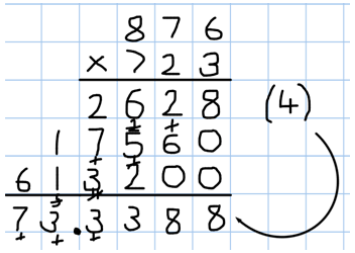


The **grid method** can be used to build confidence first if necessary.

When teaching the multiplication of decimals (2 decimal numbers multiplied together) children may be taught to take the decimal point out of their calculation to ensure the place holders are correct.

E.g.





Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

Video clips:

Moving from grid method to a compact method

Reinforcing rapid times table recall

Demonstration of long multiplication

National Curriculum requirements:

Multiply up to 4 digits by 2 digits using the formal written method of long multiplication.

Multiply numbers by 10,100, 1000 giving answers up to 3 decimal places.

Division

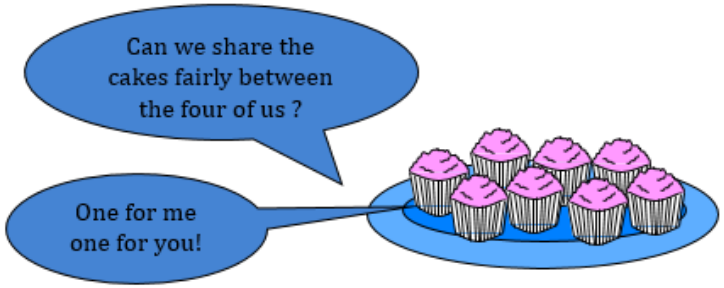
Foundation

Children will begin to understand division as sharing objects equally

(repeated subtraction).

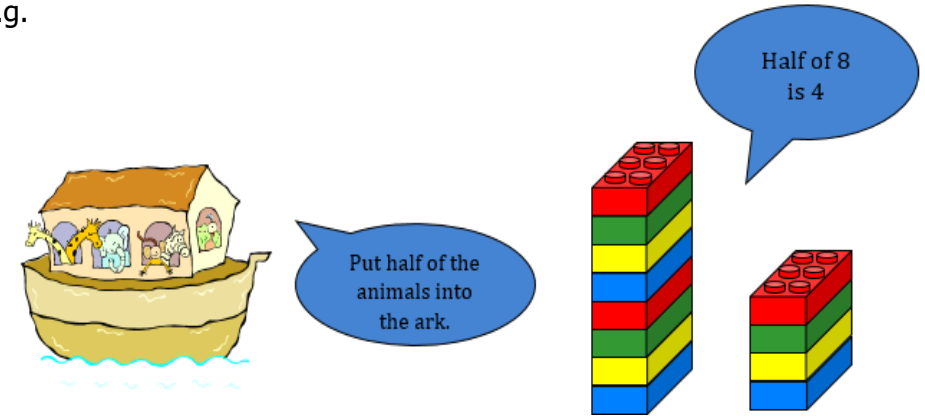
Practical resources will be used to support this teaching.

E.g.



Children will also begin to understand the concept of halving.

E.g.



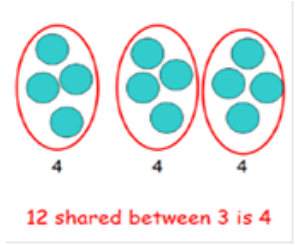
Children will also have opportunities to –

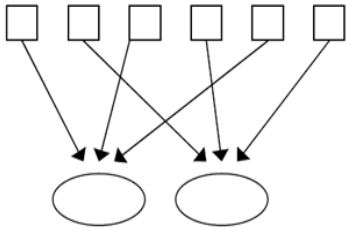
- ✓ Draw pictures to show sharing and grouping: I have 8 wheels, how many bikes can I make?
- ✓ Solve practical problems sharing groups into twos, fives and tens.
- ✓ 8 shared between 2 people
  ** **
  ** **
  = 4 each
- ✓ Begin to recognise odd and even numbers.

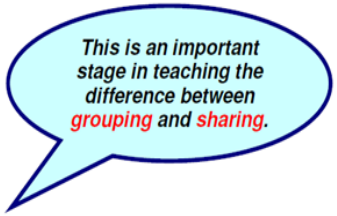
Y1

Through practical activities in meaningful contexts.

- Division as sharing.
  Emphasise the importance of sharing equally.
  Share a bag of 15 sweets between 5 children – one for you, one for you, one for you, one for you, one for me.







- Introduce halving even numbers up to 10.

Half of 4

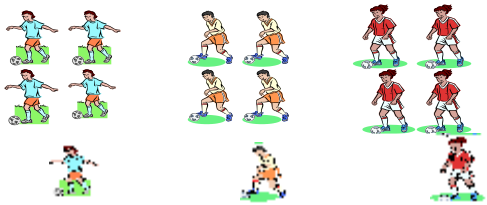
National Curriculum requirements:
Solve one step problems involving division, by calculating the answer by using concrete objects, pictorial representations and arrays with the support of the teacher.

Y2

Through practical activities in meaningful contexts.

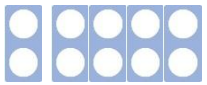
- Recall and use division facts for 2, 5 and 10 times tables.
- Continue to use division as sharing.
- Division as grouping.

- 15 children get into teams of 5 to play a game. How many teams are there?

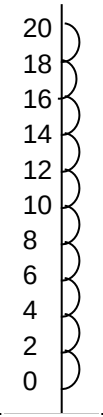


How many groups of 5 in 15?

How many 5's have been counted?

-  How many 2's in 10?

- Understand '÷ 2' as 'half of'.
- Understand that division is not commutative.
- Recognise relationship between x and ÷
- Record using division (÷) and equals (=) signs.
- Use number lines to answer questions such as 20 ÷ 2 =



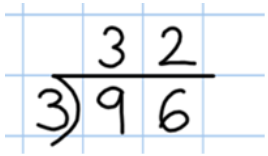
National Curriculum requirements:
Solve problems involving division using materials, mental methods and division facts.

Y3

- Recall and use division facts for 3, 4, and 8 times tables.
- Continue with repeated subtraction on a vertical number line.
- Write and calculate mathematical statements for division using the tables they know.
- Introduce grouping method before short division, encourage children to estimate answers before attempting calculation. Create fact box to encourage efficient grouping e.g. not always groups of 10 - 1x, 2x, 5x, 10x, 20x, 50x, 100x.

```
  13
5) 65
 - 50   (5 x 10)
  15
 - 15   (5 x 3)
   0
```

- Introduce short division, with exact answers.



- Progressing to short division involving carrying, with exact answers.

National Curriculum requirements:
Division questions based on multiplication tables they know.

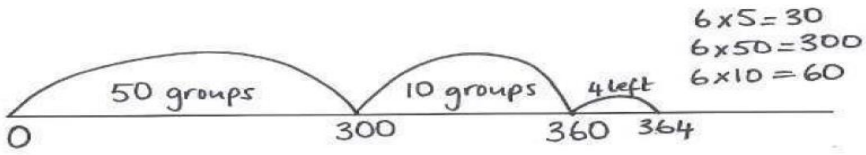
Divide 2 digits by 1 digit, progressing to formal written methods.

The National Curriculum statutory requirements for Year 3 and the use of written methods are not clear therefore our guidance for Year 3 has been based on the skills required to access Year 4 statutory requirements.

Y4

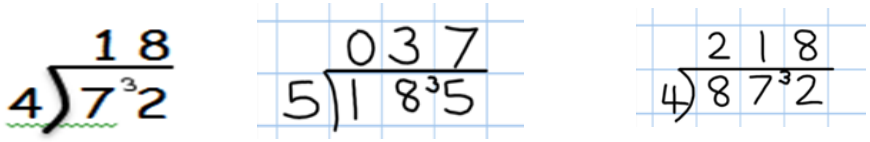
- Recall and use all division facts for all tables up to 12 (Including dividing by 1).
- Until children have a secure understanding of division as sharing and grouping children should continue to explore the concept of division using a number line including the use of remainders.
  E.g.

364 ÷ 6 = ?



364 ÷ 6 = 60 r4

- Continue with short division method (bus stop method).



- Progressing to short division with remainders.

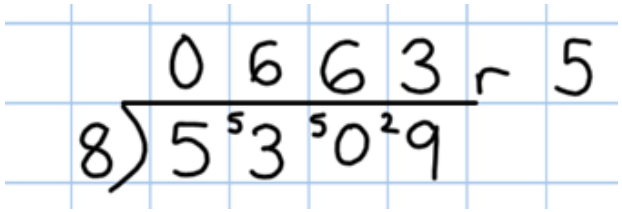
2 0 4 4) 8 1 ^{1}6	1 4 1 r1 3) 4 ^{1}2 4

National Curriculum requirements:
Divide 2 digits by 1 digit and 3 digits by 1 digit becoming fluent with formal written method of short division with exact answers and progressing to remainders.
The National Curriculum statutory requirements for Year 4 and the use of written methods are not clear therefore our guidance for Year 4 has been based on the skills required to access Year 5 statutory requirements.

Vocabulary: (See Y3/Y4) divide, divided by, divisible by, divided into, share between, groups of, factor, factor pair, multiple, times as (big, long, wide . . . etc.), equals, remainder, quotient, divisor, inverse and factor.

Y5

- Consolidate the use of the formal written method of short division.



National Curriculum requirements:
Divide 2 digits by 1 digit.
Divide 3 digits by 1 digit.
Divide 4 digits by 1 digit.

Children interpret the remainders appropriately for the context.
e.g. as fractions, decimals or by rounding
98÷4 = 98/4 = 24r2 = 24 ½ = 24.5 rounded to 25

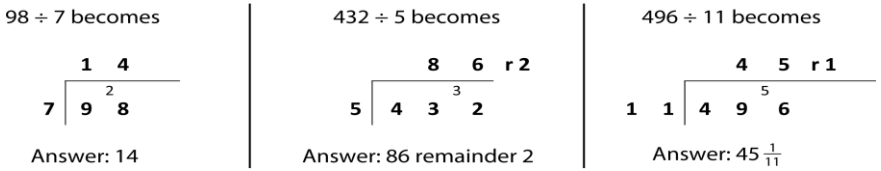
Some remainders can be represented as a decimal instead:

Divide whole numbers and those involving decimals by 10, 100, 1000.

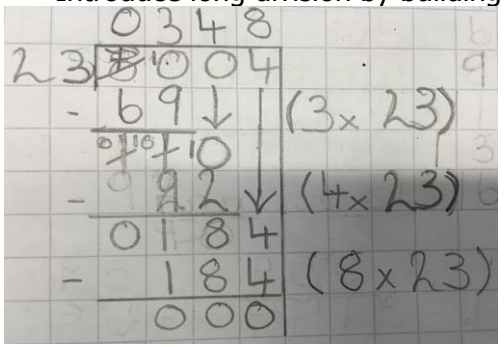
Vocabulary: See Year 4; cube numbers, prime numbers, square numbers, common factors, composite numbers, common factors, short division, inverse and power of.

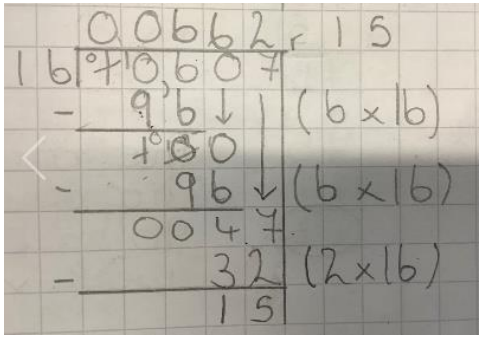
Y6

- Consolidate short division.
- Children should be able to interpret remainders as whole number remainders, fractions or by rounding, as appropriate for the context.

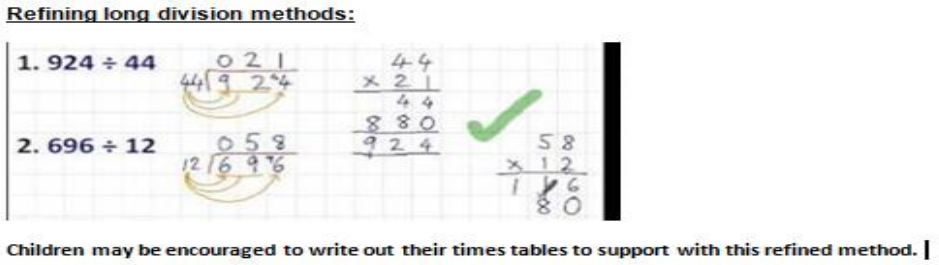


- Introduce long division by building upon skills of short division.





N.B: The above examples are taken from the National Curriculum for Mathematics appendix.



National Curriculum requirements:
Divide numbers up to 4 digits by a 2 digit number using the formal written method of short division where appropriate.
Divide up to 4 digits by a 2 digits whole number using the formal written method of long division.