Written Calculation Policy

Crewkerne & Ilminster Schools Partnership

Work, Play & Learn Together

Swanmead Community School

Misterton Church of England First School

Crewkerne and Ilminster Schools Partnership Written Calculation Policy

Introduction

In the revised National Curriculum (2014) there is a high emphasis on 'Number' and an increased expectation with regards to the teaching of written calculations; the national expectation is that the majority of pupils **master** the formal written methods for +, -, x and ÷ by the end of Year 6.

However, the National Curriculum also recognises the teaching of calculation is progressive and builds year on year. In order for pupils to be successful, they will need to be secure with the previous year's teaching expectations.

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.

National Curriculum in England: mathematics programmes of study

As a consequence of this, maths subject leaders from schools in the Crewkerne and Ilminster Schools Partnership (CISP) have agreed that a common calculation policy was needed across the partnership. The purpose of the policy is to ensure clear progression and smooth transition from year to year and phase to phase in the teaching of written calculations. It is also recognised that written calculations need to be constantly revisited beyond Year 6 and pupils will be expected to have efficient methods of written calculations for to use at Key Stage 3 and beyond.

For the purposes of this document the four number operations have been treated separately. However, it is recognised that they are closely related and pupils should be clearly made aware of these links. There is also the expectation that problem solving and reasoning will be taught alongside the four calculations, so that children understand how to apply the written calculation to solve mathematical problems.

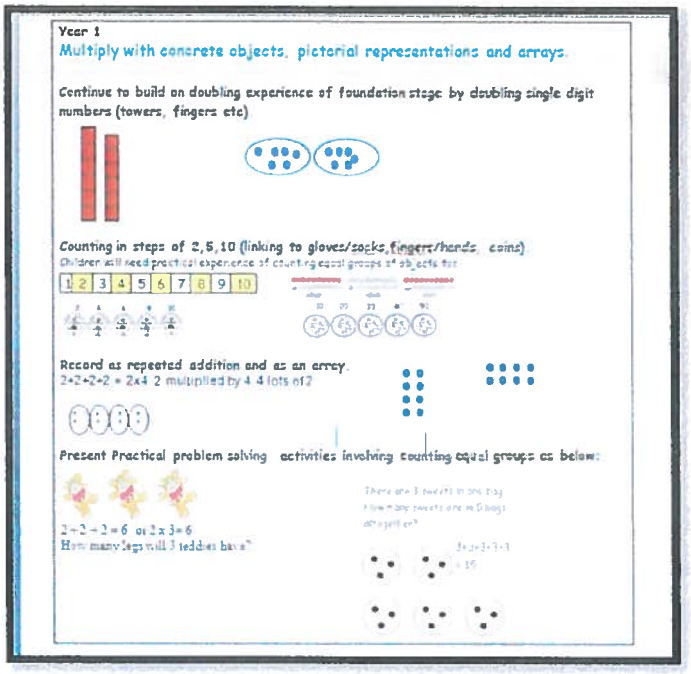
The following principles also underpin the policy:

- It is important that children develop number sense so they work fluently and without fear
- In order to develop good number sense, approximating and estimating are key skills that must be taught in every year group. Teaching pupils to check the answer to calculations, for example by using the inverse operation is also essential
- Concrete and pictorial understanding is crucial before formal written methods are taught. If the formal written methods are taught too soon and pupils are simply taught algorithms, without understanding the underlining principles of place value, evidence shows that pupils are less likely to master the formal calculations as the chances of errors remembering the algorithms is increased.

How to use the document

There are four sections to this policy covering each of the four number operations. Each section begins with an introductory page in which the key mental skills necessary for successful teaching of written calculations are described. This recognises the importance of mental mathematics and how this is integral to successful learning of written calculation.

Here is an example of a typical page:


Year 1

Multiply with concrete objects, pictorial representations and arrays.

Continue to build on doubling experience of foundation stage by doubling single digit numbers (towers, fingers etc)

Counting in steps of 2, 5, 10 (linking to gloves/socks, fingers/hands, coins)

Children will need practical experience of counting equal groups of objects for

1 2 3 4 5 6 7 8 9 10

Record as repeated addition and as an array.

2+2+2+2 = 2x4 2 multiplied by 4 4 lots of 2

Present Practical problem solving activities involving counting equal groups as below:

2+2+2=6 or 2 x 3=6

How many legs will 3 teddies have?

Blue writing – this is the age-related expectation for that year group. It is the expectation that the majority of pupils will be secure in these skills and methods by the end of the academic year.

Bold black writing – this is an element of teaching that will enable children to achieve the objective. All of these should be addressed within the academic year.

Diagrams and visual aids recognise the importance of concrete, pictorial and abstract understanding.

At a later stage, hyperlinks will be added to connect to video clips, showing pupils from the partnership demonstrating the written methods. This will hopefully bring the methods to life and will also give an insight into the language used when teaching the four calculations.

It is anticipated that this calculation policy will be shared with all staff in the partnership, as well as parents, so that the teaching of written calculations can be supported both in maths lessons, in other curriculum areas and at home. If you have any questions or feedback with regards the policy, please see your maths subject leader.

Crewkerne & Ilminster Schools Partnership

Work, Play & Learn Together

ADDITION

In order to support written calculations, the following mental strategies are essential.

To add successfully, children need to be able to:

- recall all addition pairs to 9 + 9;
- add mentally a series of single-digit numbers, such as 5 + 8 + 4;
- partitioning of single-digit numbers in order to bridge multiples of 10, knowing for example that 7 can be split into 5 and 2 when working out 35 + 7
- add multiples of 10 (such as 60 + 70) or of 100 (such as 600 + 700) or of 1000 (such as 6000 +7000) using the related addition fact, 6 + 7, and their knowledge of place value;
- partition two, three and four digit numbers into multiples of 1000, 100, 10 and 1.

Note: It is important that children's mental methods of calculation are practised and secured alongside their learning and use of an efficient written method for addition.

Key Vocabulary related to Addition:

Foundation

Add, more, plus, altogether, total, makes.

Key Stage One

greater, addition, plus, more

Lower Key Stage Two

Sum, and

Upper Key Stage Two

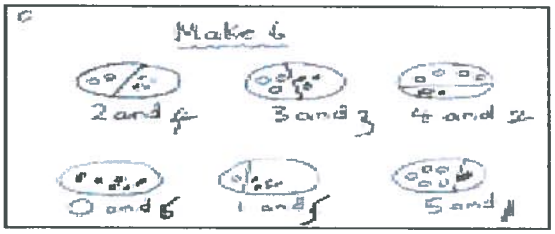
Positive, increase

Addition

Foundation Stage

Add two single digit numbers together

Children are encouraged to develop a mental picture of the number system in their heads to use for calculation.
They develop ways of recording calculations using pictures, etc.



Bead strings or bead bars can be used to illustrate addition

8+2=10

Children use and make their own number lines and practical resources to support calculation and teachers demonstrate the use of the number line, using appropriate mathematical vocabulary.
Children are encouraged to use methods in the inside and outside environment.
They work with numbers to 20 and develop ways of recording calculations using pictures and objects.
They will add two single digit numbers using objects and by counting on, on a number line.

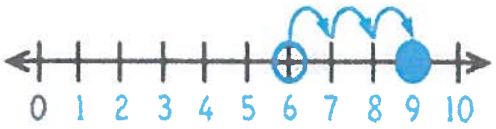
Year 1

Add with numbers up to 20

Count on, first in ones, then using number facts

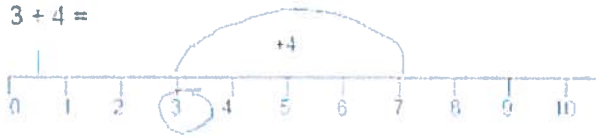
4+2 = 6

6+3=9

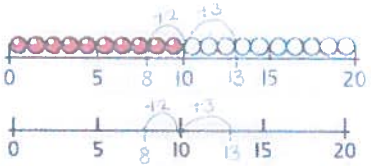


Put the larger number first
3 + 6, find 6 and count on 3

Number tracks, moving to numbered lines, using beadstring (if necessary) to support transition to landmarked number lines:



Bridge ten
8 + 5 = 13



Read and write the addition (+) and equals (=) signs within number sentences.

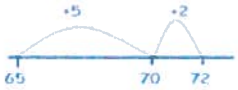
Year 2

Adding with 2 digit numbers

Using Landmarked number lines moving to empty number lines:

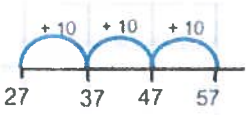
Add two digit numbers and units including bridging ten

65+7 = 72



Add two digit numbers and tens

27+30 = 57



Adding pairs of two digit numbers

34+22 = 56

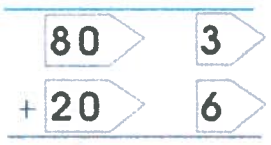
Partition and recombine (use place value apparatus or place value cards as appropriate to support)

34 + 27

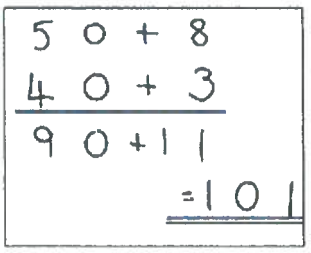
= 30 + 20 = 50 4 + 7 = 11

= 50 + 11 = 61

Progress to showing this vertically in preparation for vertical methods in Year 3. This process will probably occur later in Year 2 and once children are confident at adding tens and units on a number line.



Begin with examples that involve no crossing of boundaries and progress to crossing the tens boundary.



Year 3

Add numbers with up to three digits

Add two-digit numbers (including using number lines as in Year 2)
e.g. 68 + 53

Revisit method of partition and recombine, to support transition into expanded written.

34 + 27

= 30 + 20 = 50 4 + 7 = 11

= 50 + 11 = 61

Use the expanded column addition method:

360 + 157

300 60 0

+ 100 50 7

400 110 7

= 517

Add the **units** first, in preparation for the compact method.

Move to the compact **column addition** method, with 'carrying':

328 + 443 =

328

+ 443

771

1

300 20 8

+ 400 40 3

700 60 11

'Carry' numbers **underneath** the bottom line.

Children who are very secure and confident with 3-digit expanded column addition should be moved onto the **compact column addition** method, being introduced to 'carrying' for the first time. Compare with the expanded method to develop an understanding of the process.

The language used matches that used in the expanded layout e.g. 60 add 50 is 110 so 100 and one ten. This may also be understood as 6 tens add 5 tens is 11 tens

Year 4

Add numbers with up to four digits

Use compact method to add pairs of four digit numbers. Model with expanded method if place value is weak.

3467 + 2349

3000 400 60 7

+ 2000 300 40 9

5000 700 100 16

= 5816

3467

+ 2349

5816

1 1

'Carry' numbers **underneath** the bottom line.

The language used matches that used in the expanded layout e.g. 60 add 50 is 110 so 100 and one ten. This may also be understood as 6 tens add 5 tens is 11 tens

Year 5

Add with at least 4 digit numbers and up to two decimal places

Use compact method to add numbers with 4 or more digits and numbers with 2 decimal places.

6743

+5679

12422

1 1 1

£75.45

+£26.79

£102.14

1 1 1

'Carry' numbers **underneath** the bottom line.

Year 6

Adding with increasingly large and more complex numbers and decimals

Use formal written method of columnar addition to add large numbers and numbers with up to 3 decimal places.

e.g. 34.5 + 4.58 =

3 4 . 5

+ 4 . 5 8

3 9 . 0 8

1

Examples should include addition of numbers with a different number of decimal places.

SUBTRACTION

In order to support written calculations, the following mental strategies are essential.

To subtract successfully, children need to be able to:

- recall all addition and subtraction facts to 20;
- partition of single-digit numbers in order to bridge multiples of 10, knowing for example that 7 can be split into 5 and 2 when working out 35 - 7
- subtract multiples of 10 (such as 160 – 70) using the related subtraction fact, 16 – 7, and their knowledge of place value;
- derive complements to multiples of 10, 100 and 1000 (36 + □ = 40, 74 + □ = 100)
- partition two-digit, three-digit and four-digit numbers into multiples of one thousand, one hundred, ten and one in different ways (e.g. partition 74 into 70 + 4 or 60 + 14).
-

Note: It is important that children's mental methods of calculation are practised and secured alongside their learning and use of an efficient written method for subtraction.

Key Vocabulary Related to Subtraction

Foundation Stage

Minus, subtract, less than, take away, left.

Key Stage One

Smaller, least, count back, difference between, count on.

Lower Key Stage Two

Subtraction, take away

Upper Key Stage Two

Negative, decrease.

Subtraction

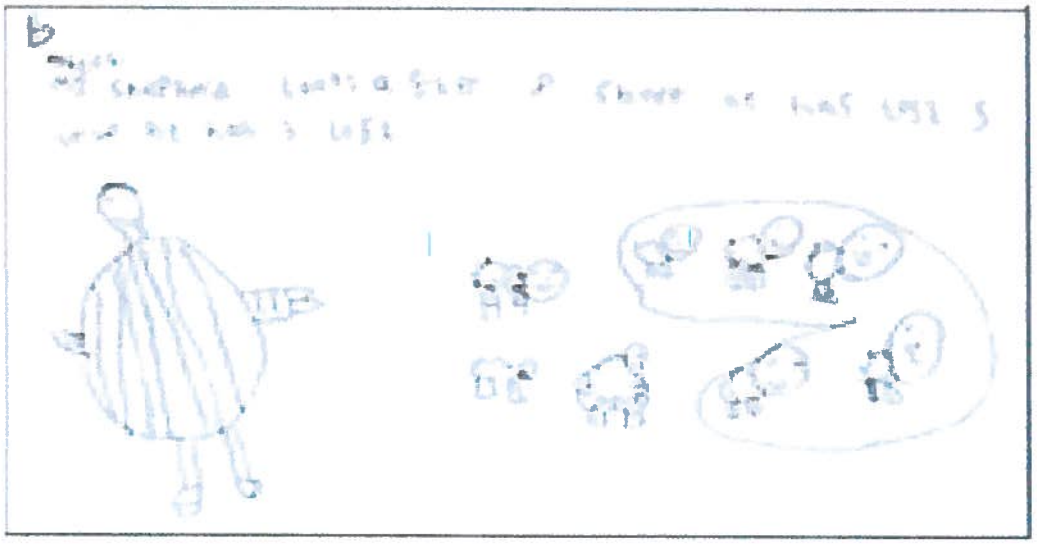
Foundation Stage

Subtract two single-digit numbers

Counting forwards and backwards
Counting sets of objects removing objects from the set
More/less bigger/smaller

1 less than 10 is 9
10 subtract 1 equals 9
10 – 1 = 9

Children are encouraged to develop a mental picture of the number system in their heads to use for calculation.
They develop ways of recording calculations using pictures etc.



Bead strings or bead bars can be used to illustrate subtraction by counting back a single digit, subtract a single digit

6-2=4

They use numberlines and practical resources to support calculation. Teachers *demonstrate* the use of the numberline. They develop ways of recording calculations using pictures and objects.

Year 1

Subtract from numbers up to 20

Consolidate understanding of subtraction practically, showing subtraction on bead strings, using cubes etc. and in familiar contexts.

Subtract by taking away

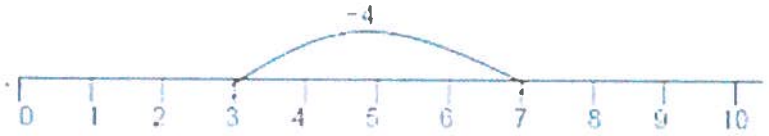
Number tracks, moving to numbered lines. Count back, first in ones, then using number facts.

One less than 6

Read, write and interpret number sentences with - and = signs.

2 digits take 1 digit
Also bridge ten

7 – 4 =3



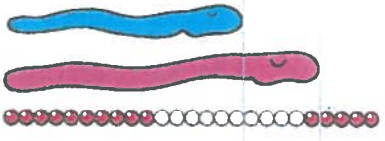
Find the difference

Introduced practically using language such as 'Find the distance between' and 'How many more?'

e.g. 'Seven is 3 more than 4'

Children should start recalling subtraction facts up to **and within** 10 and 20, and should be able to subtract zero.

Compare quantities, find a difference



16 beads 21 beads

Year 2

Subtract with two digit numbers

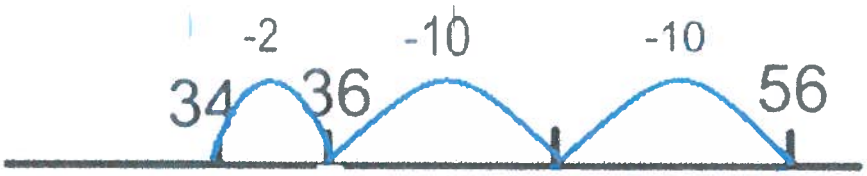
Subtract a number by counting back
(aiming to develop mental subtraction skills)

- Two digit numbers subtract units e.g. 47-6
- Two digit numbers subtract tens e.g. 78 - 30
- Subtracting pairs of two digit numbers

54p in the purse. Take 10p out, another 10p and so on

54p
44p, 34p...

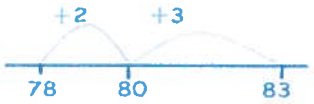
56-22 = 34



(landmarked number lines moving to empty number lines)

Find a difference by counting on
22-17 = 5

83-78 = 5



This important method is taught so that children realise when numbers are close together, it is more efficient to count on.

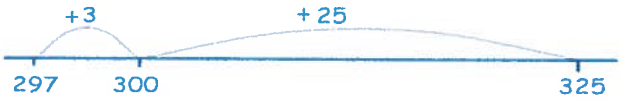
Year 3

Subtracting with two and three digit numbers

Continue to reinforce counting **on** as a strategy for **close-together numbers** (e.g. 121—118), and also for numbers that are 'nearly' multiples of 10, 100, 1000 or £s, which make it easier to count on (e.g. 102-89, 131—79, or calculating change from £1 etc.).

Count up with numberline to find the difference

325 - 297 = 28



Introduce expanded subtraction method

STEP 1: introduce this method with examples where **no exchanging** is required.

89 - 35 = 54

80 9
- 30 5
50 4

STEP 2: introduce 'exchanging' through practical subtraction.

72 - 47

60 12
70 2
- 40 7
20 5 = 25

Make the larger number with Base 10, then subtract 47 from it. Before subtracting '7' from the 72 blocks, they will need to exchange a stick of 10 for ten units.

STEP 3: **use partitioned column method for any 2 & 3 digit numbers.**

Move from expanded...	To compact method
200 2030 13 -100 10 5 = 100 + 10 + 8 118	2 23 13 - 1 1 5 = 1 1 8 118

Year 4

Subtracting with up to four digit numbers

Continue practising counting on to find the difference where numbers are close together or a number line would be most appropriate.

741 - 378 = 363

Model expanded method for those pupils who still need it.	Teach compact method
2000 200 ~~300~~ 130 9 -1000 100 50 4 = 1000 +100 + 80 5	2 ~~2~~ ~~3~~ 13 9 - 1 1 5 4 = 1 1 8 5

Year 5

Subtract with at least four digit numbers and up to two decimal places

e.g. 25.63 – 13.38 =

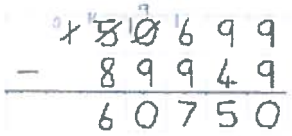
5 1
25.63
-13.38
12.25

~~3~~ ~~1~~ 10 ~~5~~ 16
- 2 1 2 8
2 8 9 2 8

Create lots of opportunities for subtracting and finding differences with money and measures.

Year 6

Subtracting with increasingly large and more complex numbers and decimals



Create lots of opportunities for subtracting and finding differences with money and measures.

Including **decimals with a different number of places:**

e.g. 25.6 – 13.38 =

5 1
25.60
-13.38
12.22

Empty decimal places can be filled with **zero** to show the place value in each column.

MULTIPLICATION

In order to support written calculation the following mental strategies are essential.

To multiply successfully, children need to be able to:

- count on in steps, e.g. work out 10 × 3 by counting on in 10s
- understand commutativity, e.g. work out 5 × 7 by recalling seven 5s if they don't yet know their seven times table
- recall all multiplication facts to 12 × 12 by the end of Year 4
- partition number into multiples of one thousand, hundred, ten and one;
- work out products such as: 70 × 5, 70 × 50, 700 × 5, 700 × 50 or 7000 x 5 using the related fact 7 × 5 and their knowledge of place value;
- Multiply numbers by 10, 100 and 1000 and understand the effect.

Note: It is important that children's mental methods of calculation are practised and secured alongside their learning and use of an efficient written method for multiplication.

Key vocabulary related to multiplication:

Foundation

Lots of, groups, times, altogether

Key Stage One

Double, count on, repeat, multiply.

Lower Key Stage Two

multiplication, product, multiple.

Upper Key Stage Two

Square, product, factor.

Foundation Stage

Solve problems including doubling.

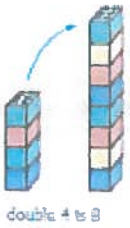
Count repeated groups of the same size (socks, gloves)

Children will count in 2s and 10s and begin to count in 5s.

Practical problem solving activities involving equal sets or groups e.g. dog biscuits

Double objects and numbers

Double 5



double 4 is 8

Year 1

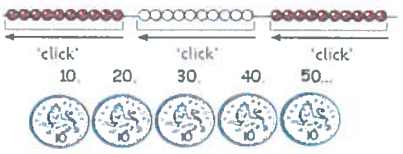
Multiply with concrete objects, pictorial representations and arrays.

Continue to build on doubling experience of foundation stage by doubling single digit numbers (towers, fingers etc).

Counting in steps of 2,5,10 (linking to gloves/socks,fingers/hands, coins).

Children will need practical experience of counting equal groups of objects too.

1	2	3	4	5	6	7	8	9	10



Record as repeated addition and as an array.

2+2+2+2 = 2x4 2 multiplied by 4, 4 lots of 2

Present Practical problem solving activities involving counting equal groups as below:

2 + 2 + 2 = 6 or 2 x 3= 6

How many legs will 3 teddies have?

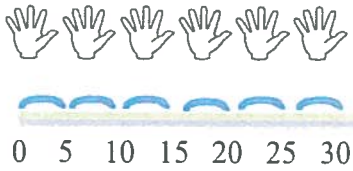
There are 3 sweets in one bag.
How many sweets are in 5 bags altogether?

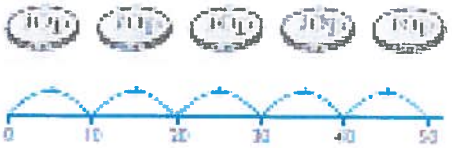
Year 2

Multiply using arrays and repeated addition (using at least 2s, 5s and 10s)

Counting in steps

Building on Year 1 steps and also count in 3s and 4s.





Recall and use multiplication facts for the 2, 5 and 10

Children will need to learn their times tables to x12

e.g.12 x 2 =24

Counting and understanding the operation is needed as well as memorising facts.

Find five 3s, six 5s, five 10s

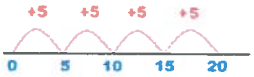
Doubling teen numbers building from towers to partitioning, progressing to two-digit numbers when secure.

23 x 2

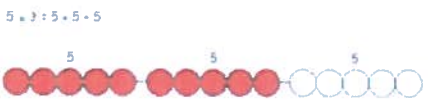
40 + 6 =46

Use repeated addition on a number line:

Making equal jumps from zero on a number line to work out multiplication facts and write statement using x and = sign e.g. 5 x 4 = 20



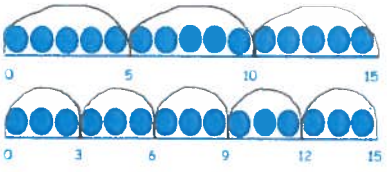
Also show using practical apparatus such as a bead bar.



Use arrays:

Use arrays to support understanding of commutative law of multiplication.

3x5=5x3



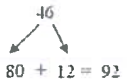
Year 3

Multiply 2-digits by a single digit number

Recall and use 3, 4 and 8 multiplication facts.

Double two digit numbers:

Double 46



Investigating x10/100 understanding the effect to build on at a later point.

Thousands	Hundreds	Tens	Ones
		3	1
	3	1	0

Introduce the grid method for multiplying 2-digit by single-digits as a stepping stone to the formal written method:

Step 1 Introduce the grid method with children physically making an array to represent the calculation (e.g. make 8 lots of 23 with 10s and 1s place value counters), then translate this to grid method format.

	8
3	XXX XXX XXX XXX XXX XXX XXX XXX
20	XXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXX

x	8
3	24
20	160

184

Step 2

Move on quickly to showing the children the **expanded written method**, using the grid method alongside as necessary.

Leading to

$$\begin{array}{r} 23 \\ \times\ 8 \\ \hline 24 \quad (3 \times 8) \\ 160 \quad (20 \times 8) \\ \hline 184 \end{array}$$

Step 3

Use the formal written method.

$$\begin{array}{r} 23 \\ \times\ 8 \\ \hline 184 \\ {\scriptstyle 2} \end{array}$$

Year 4

Multiply 2 and 3-digits by a single digit, using all multiplication tables up to **12 x 12**

Recall all multiplication facts to 12 x 12.

Consolidate knowledge of x10/100 to support written methods.

Include multiples of ten and one hundred by a single digit, using their multiplication table knowledge. 7x 8 = 56 70 x 8 = 560 700 x 8 = 5600

Multiply two and three digit by a single digit using short multiplication method (use grid method as a support):

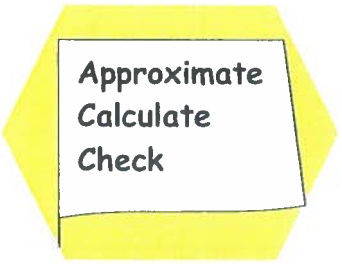
x	7
2	14
40	280
300	2100
	2394

342 x 7 becomes

	3	4	2
x			7
2	3	9	4
	2	1	

Answer: 2394

Approximate before they calculate, and make this a regular part of their calculating, going back to the approximation to check the reasonableness of their answer. e.g. "**346 x 9** is approximately 350 x 10 = **3500.**" Record an approximation to check the final answer against.



Year 5

Multiply numbers up to 4 digits by a 1 or 2 digit number.

Multiply decimals by 10,100 and 1000.

Thousands	Hundreds	Tens	Ones	tenths
			1	3
1	3	0	0	0

Decimal point DOES NOT move!

Short multiplication

$$\begin{array}{r} 2\ 7\ 4\ 1 \\ \times \qquad\quad 6 \\ \hline 1\ 6\ 4\ 4\ 6 \\ \hline \quad 4\ \ 2 \end{array}$$

Answer: 16 446

Long multiplication

(TU x TU and HTU x TU):
e.g. 312 x 23 =

$$\begin{array}{rrrl} & 3 & 1 & 2 \\ & \times & 2 & 3 \\ \hline & 9 & 3 & 6 \quad \text{(312 x 3)} \\ 6 & 2 & 4 & 0 \quad \text{(312 x 20)} \\ \hline 7 & 1 & 7 & 6 \\ \hline 1 & & & \end{array}$$

Year 6

Multiply multi digit numbers up to 4 digits by 2 digit numbers using long multiplication.

341
x52
682
17050
17732

Multiply numbers with up to 2 decimal places by whole numbers.

34.5
X 7
241.5
3 3

DIVISION

In order to support written calculations, the following mental strategies are essential.

To divide successfully, children need to be able to:

- count on in steps, e.g. work out 18 ÷ 3 by counting on in 3s
- understand and use multiplication and division as inverse operations;
- partition two-digit and three-digit numbers in different ways, e.g. partition 42 into 30 and 12 when dividing by 3 (dividing 30 by 3 and 12 by 3);
- recall multiplication and division facts to 12 × 12;
- divide numbers by 10, 100 and 1000 and understand the effect;
- understand that division can leave a remainder;
- understand that division by grouping and sharing (halving/quartering) give the same answer and choose which is most efficient for a given calculation
- use multiplication facts and place value to estimate how many times one number divides into another - for example, how many sixes there are in 147, or how many 23s there are in 472;

Note: It is important that children's mental methods of calculation are practised and secured alongside their learning and use of an efficient written method for division.

Key Vocabulary Related to Division

Foundation

Share, dividing, groups

Key Stage One

Halve, quarter, equal groups, sharing, remainders, divide.

Lower Key Stage Two

Fraction, how many.

Upper Key Stage Two

Quotient.

Division

Foundation stage

Solve problems including halving and sharing

Children will understand equal groups and share items out in play and problem-solving.

Include practical experience of sharing during classroom routines/activities e.g. juice time

Halve objects and numbers by sharing

Year 1

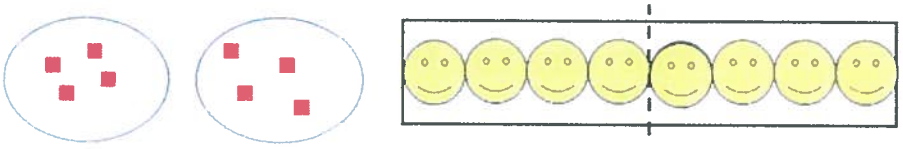
Group and share small quantities.

Count in multiples of 2s, 5s and 10s.

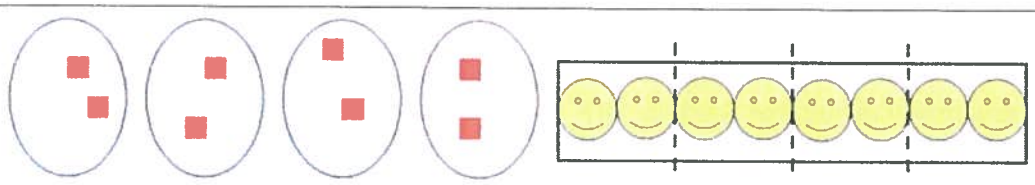
Using objects, diagrams and pictorial representations to solve problems involving both grouping and sharing.

Sharing

Find half of numbers, by sharing cubes (or other objects) between two people



Begin to find a quarter by halving and halving again



Grouping

How many groups of 2 can be made with 6 stars? = **3**

Children need to be taught the difference between 'grouping' objects (How many groups of 2 can you make?) and 'sharing' (Share these sweets between 2 people).

Division problems in a familiar context:

There are 2 pupils and there are 18 pieces of fruit to share between us. If we share them equally, how many will we each get?

Can they work it out and give a division statement... ?

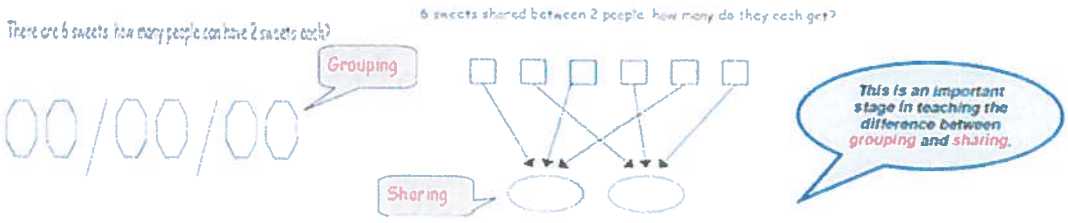
"18 shared between 2 people gives you 9 each."

Year 2

Group and share, using the ÷ and = sign

Use multiplication facts and arrays to derive division facts.

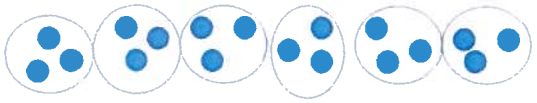
Know and understand sharing and grouping:

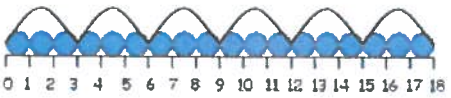


Children should be taught to recognise whether problems require sharing or grouping. However from Year 2 onwards pupils will be predominately taught division through grouping.

Understand division as grouping

18 ÷ 3, how many groups of 3 are in 18?





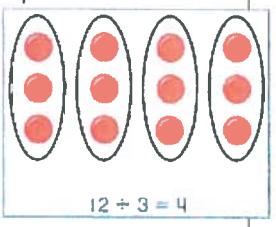
Grouping on a number line. Marked and progressing to their own number lines

Introduce remainders

Realise that division can sometimes leave some 'left over' and this is called a remainder
16÷3

Arrays:

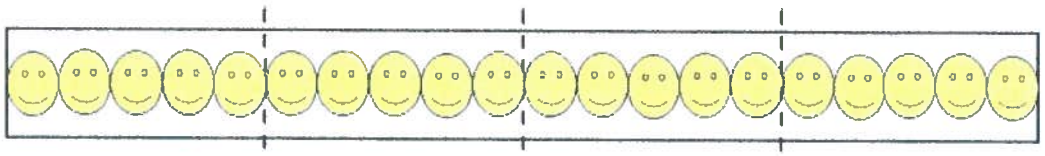
This represents **12 ÷ 3, posed as** 'How many groups of 3 are in 12?' Pupils should also show that the same array
can represent **12 ÷ 4 = 3** if grouped horizontally.



Halving and quartering

Halving, sharing by 2, Quartering, sharing by 4 (half and half again)

e.g. Find half and a quarter of 20.



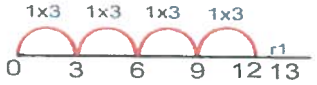
Year 3

Divide 2-digit numbers by a single digit

Step 1: Grouping on a number line

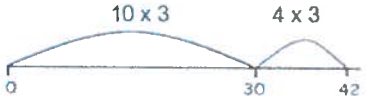
Children continue to work out unknown division calculations including ones that will end with remainders grouping on a number line from zero. Continue showing this practically and with arrays, as well as being translated to a number line. Children should work towards calculating some basic division facts with remainders mentally for the 2s, 3s, 4s, 5s, 8s and 10s, ready for 'carrying' remainders across within the short division method.

13 ÷ 3 = 4 r1



Moving on to understanding that as 12 ÷ 3 = 4 then 13 ÷ 3 = 4r1

42 ÷ 3 = 14



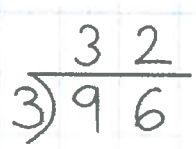
Step 2:Short division

Limit numbers to NO remainders in the answer OR carried (each digit must be a multiple of the divisor).

Once children are secure with division as grouping and demonstrate this using number lines, arrays etc., **short division** for larger 2-digit numbers should be introduced, initially with carefully selected examples requiring no calculating of remainders at all. Start by introducing the layout of short division by comparing it to an array.

Remind children of correct place value, that 96 is equal to 90 and 6, but in short division, pose:

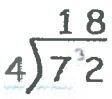
- *How many 3's in 9? = 3, and record it above the **9 tens**.*
- *How many 3's in 6? = 2, and record it above the **6 units**.*

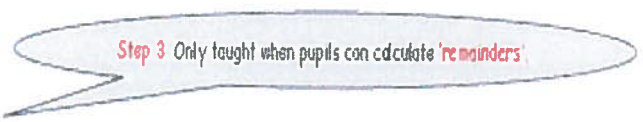


Step 3: Short division

Limit numbers to NO remainders in the final answer, but with remainders occurring within the calculation to be carried to the next digit.

Once children demonstrate a full understanding of remainders, and also the short division method taught, they can be taught how to use the method when remainders occur within the calculation (e.g. 96÷4), and be taught to 'carry' the remainder onto the next digit.





Year 4

Divide up to 3-digit numbers by a single digit

Continue to develop short division:

Step 1: Pupils must be secure with the process of short division for dividing 2-digit numbers by a single digit (see steps in Y3), but must understand how to calculate remainders, using this to 'carry' remainders within the calculation process (see example).

$$4\overline{)7^{3}2}\quad 18$$

Short division should only be taught once children have secured the skill of calculating 'remainders'

Step 2: Pupils move onto dividing numbers with up to **3-digits** by a single digit, begin with calculations that **result in a final answer with no remainder.**

$$4\overline{)8\,7^{3}2}\quad 218$$

Step 3: Progress to remainders in the final answer e.g. 85 ÷ 3 and 287 ÷ 4

$$6\overline{)3\,5^{5}7}\quad 59\ r3$$

When the answer for the **first column** is zero (1 ÷ 5, as in example), children could initially write a zero above to acknowledge its place, and must always 'carry' the number (1) over to the next digit as a remainder. Continue to reinforce place value.

$$5\overline{)1\,{}^{1}8^{3}5}\quad 037$$

Year 5

Divide up to 4 digit numbers by a single digit

Continue to use short division and interpret remainders as appropriate to the context including decimals

e.g. 4813 ÷ 3 =

```
    1 6 0 4  r1
3 ) 4 ·8 1 ·3
```

e.g. 4812 ÷ 3 =

```
    1 6 0 . 4
3 ) 4 ·8 1 ·2
```

Year 6

Divide numbers up to 4 digits by 2 digits

Introduce long division for dividing by 2 digits.

```
   2 7
36|9 7 2
- 7 2 0   20 ×
  2 5 2
- 1 8 0    5 ×
    7 2
-   7 2    2 ×
      0
```

Must be aligned in place value for subtracting

Useful Key

1x = 36

2x = 72

5x = 180

10x = 360

Crewkerne & Ilminster Schools Partnership

Work, Play & Learn Together

Numeracy lead contacts across the CISP Partnership

St Bartholomew's	Helen Fry David Woodley
Three Saints Federation	Sheena Coate
Greenfylde	Lisa Turner
Haselbury Plucknett	Stephanie Chown
Merriott	Miranda Lock Selina Gunn
Ashlands	Rebecca Martin-Scott
Misterton	Andy North
Hinton St George	Lisa Turner
Maiden Beech	Helen Morris
Swanmead	Becky Perratt
Wadham School	Caren Forsey Sarah Hutter