

Calculation Policy
September 2026

CALCULATION POLICY STATEMENT

Mathematics equips pupils with a uniquely powerful set of tools to understand and adapt to change the world. These tools include logical reasoning, problem-solving skills and the ability to think in abstract ways.

The ability to calculate is a fundamental skill not only for school but for the pupils to use throughout their adults lives. It is, therefore, essential that all pupils leave Key Stage Two being able to use the most efficient mental and written calculations strategies possible. This policy outlines the development of these skills through the use of concrete and pictorial representations into the abstract representations needed to calculate with larger numbers.

At the heart of the policy, is the importance that the pupils have a deep understanding of number and calculations rather than the ability to follow a process.

AIMS

This calculation policy should be used with the following aims in mind. By the end of Key Stage Two, all pupils should:

- have a secure knowledge of number facts and a good understanding of the four operations;
- be able to use this knowledge and understanding to carry out calculations mentally and to apply general strategies when using one-digit and two-digit numbers and particular strategies to special cases involving bigger numbers;
- make use of diagrams and informal notes to help record steps and part answers when using mental methods that generate more information than can be kept in their heads;
- have an efficient, reliable, compact written method of calculation for each operation that children can apply with confidence when undertaking calculations that they cannot carry out mentally;
- use a calculator effectively, using their mental skills to monitor the process, check the steps involved and decide if the numbers displayed make sense.

MENTAL STRATEGIES

It is important that pupils develop a secure understanding of how to solve problems involving all four operations mentally. The use of a mental strategy should always take precedent over that of a written method and pupils should be taught how to choose the correct strategy in their everyday lives. To achieve this there are a set of guidelines setting out the expectation at each year group

Addition Stage One

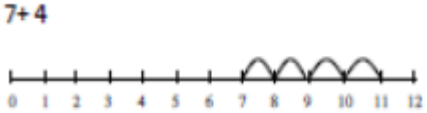
- Read, write and interpret mathematical statements involving addition, subtraction and equals sign
- Represent and use number bonds and related subtraction facts to 20
- Add and subtract one digit and two digit numbers to 20, including zero
- Solve one step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7= __ - 9

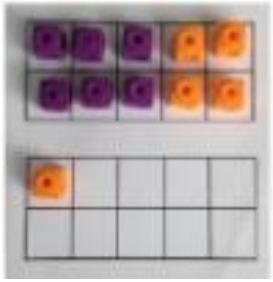
Concrete

- Manipulate a range of real objects including counters, base 10, Cuisinaire.




- Rearrange partition and recombine groups of real objects.
- Notice and compare size of groups.
- Use of a number track / numberline to develop understanding of counting on.



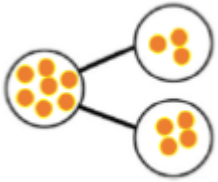



Towards Written Calculation

- Adults model representations of pupils' ideas on paper.
- Children's own jottings based on real objects



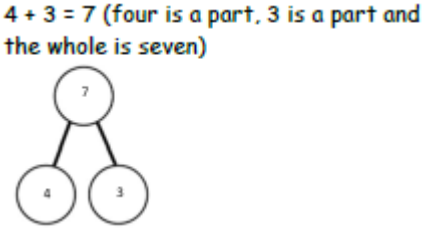




Expected Written Method

- Adults model conventional number representations
- Variety of maths symbols displayed in the environment.
- Children need a clear understanding of equality before using the '=' sign. (Same as) So the sign does not just mean 'the answer'
  2=1+1
  2+3=4+1
- Children need a secure knowledge of pairs of numbers to numbers to 20.
- Missing number problems need to be placed in all possible places.





Addition Stage Two

-Solve problems with addition and subtraction

- Using concrete objects and pictorial representations, including those involving numbers, quantities and measures
- Applying their increasing knowledge of written and mental methods

-Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts to 100

-Add and subtract numbers using concrete objects, pictorial representations and mentally including:

- A 2 digit number and ones
- A 2 digit number and tens
- 2 2 digit numbers
- Adding 3 1 digit numbers

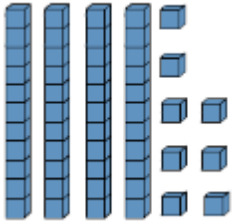
-Show that addition of 2 numbers can be done in any order and subtraction from one number to another cannot

-Recognise and use the inverse operation between addition and subtraction and use this to check calculations and solve missing number problems

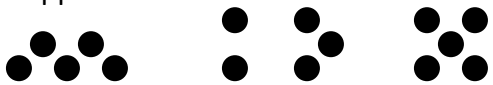
Concrete

- Manipulate apparatus that represent real objects e.g. cubes, Base 10, Cuisenaire, bead strings





- Place objects in a line and on a number line.
- Estimate and check size of groups
- Rearrange, partition and recombine groups of objects and noticing what happens.

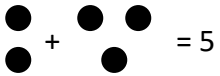


- Use Tens and ones to calculate money and show place value.

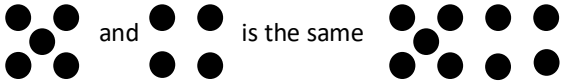
Towards Written Calculation

- Adults model abstract representations

2 + 3 = 5



- Adults model = as 'the same as'



- Counting on in tens and ones on a blank number line.
- Partitioning on a number line to bridge through a multiple of 10.

23+12=

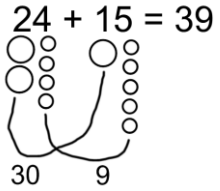
Expected Written Method

- Adults model horizontal recording of calculation and vocabulary

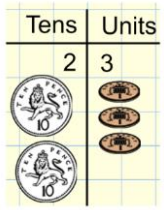
36 + 24 = 60

65+_= 93

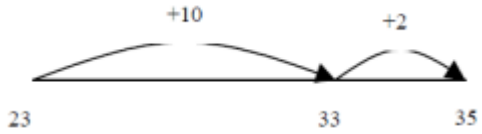
- Children add using pictorial representation of tens and units (Money or base ten)

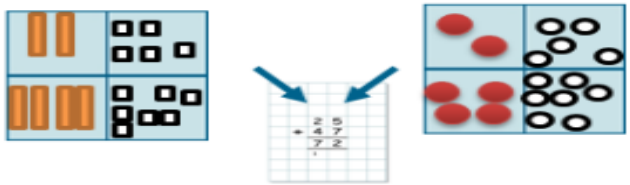


- Leading to children adding tens and ones mentally.
- Children begin to add two digit numbers vertically with apparatus



- Use place value cards to partition two digit numbers.





Addition Stage Three

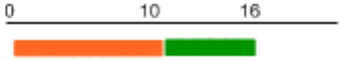
-add and subtract numbers mentally including:

- A three digit number and a single digit number
- A three digit number and multiples of ten
- A three digit number and multiples of 100

-add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction
-estimate the answer to a calculation and use inverse operations to check answers
-solve problems, including missing number problems, using number facts, place value and more complex addition and subtraction

Concrete

- Use Cuisenaire and Base Ten on a number line



- Use Money and Base Ten to represent two digit numbers. (See Stage 2.)



- Use £10 notes, £1, 10p and 1p coins to calculate money

Towards Written Calculation

- Use place value cards to partition two digit numbers.



- Represent Base Ten or money on paper

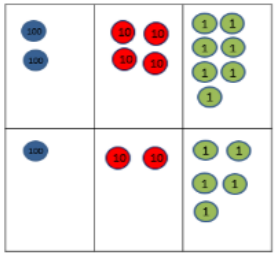
23+21=44



- Use a number line.

Expected Written Method

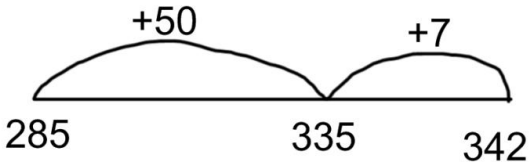
Introduce expanded Column addition modelled with money or base ten.

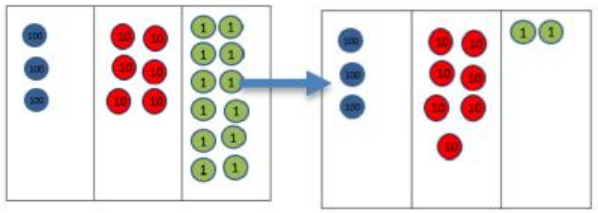


200+40+7
100+20+5
300+60+12= 372

Leading to children's understanding the exchange of tens and ones.

57+285=342





- Leading to Children recording calculations as column addition. (with or without apparatus)

Formal method:

$$\begin{array}{r} 36 \\ +25 \\ \hline 61 \\ \hline 1 \end{array}$$

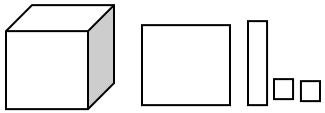
Addition Stage Four

-add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate
-estimate and use inverse operations to check answers to a calculation
-solve addition and subtraction two step problems in contexts, deciding which operations and methods to use and why

Concrete

- Use Money and Base Ten to represent three and four digit numbers.

1112



- Begin to introduce decimals and fractions using real objects

Towards Written Calculation

- Use place value cards to represent two and three digit numbers



- Represent Base Ten and money on paper.

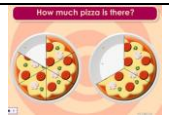


123

Expected Written Method

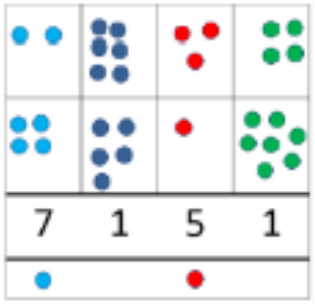
- Children use expanded and move on to compact column addition.

$$\begin{array}{r} 243 \\ +368 \\ \hline 611 \\ \hline 1\ 1 \end{array}$$



- Use £10 notes, £1, 10p and 1p coins to calculate money

- Expanded column addition with 4 digit numbers modelled with base ten or place value counters. (money)



2634
+4517
7151
1 1

200 + 40 + 7
100 + 20 + 5
300 + 60 +12 = 372

247
+125
12
60
300
372

2634
+4517
7151
1 1

Addition Stage Five

-add and subtract whole numbers with more than 4 digits, including using formal and written methods (columnar addition and subtraction)
-add and subtract numbers mentally with increasingly large numbers
-use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy
-solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

Concrete

- Use Base Ten and Place value counters to exchange once 10 is reached
- Use Cuisenaire and Base Ten to represent fractions and decimals to one decimal place



- Use coins and notes when calculating money totals

Towards Written Calculation

- Use place value cards to represent decimal numbers and money



- Use coins to represent money

Expected Written Method

- Children use expanded and compact column addition to add numbers with more than 4 digits.

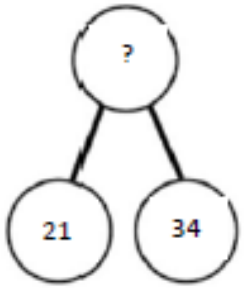
172.83
+ 54.68
227.51
1 1 1

Addition Stage Six

-perform mental calculations, including with mixed operations and large numbers
-use their knowledge of the order of operations to carry out calculations involving the four operations
-use their knowledge of the order of operations to carry out calculations involving the four operations
-solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
-solve problems involving addition, subtraction, multiplication and division
-use estimation to check answers to calculations and determine in the context of a problem, an appropriate degree of accuracy

Concrete	Towards Written Calculation	Expected Written Method
		○ Children are proficient in using vertical addition for whole numbers and decimals ○ As year 5, continuing to calculate with decimals, including those with a different number of decimal places. ○ Children should continue to apply their knowledge in a variety of contexts and problems.

Fluency variation, different ways to ask children to solve 21+34:





Sam saved £21 one week and £34 another. How much did he save in total?

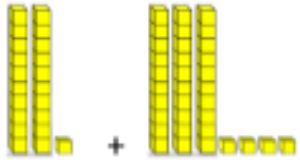
21+34=55. Prove it! (reasoning but the children need to be fluent in representing this)

21
+34
——

21 + 34 =

□ = 21 + 34

What's the sum of twenty one and thirty four?



Always use missing digit problems too:

Tens	Ones
●●	●
●●●	?
?	4

Subtraction stage 1

- Subtraction Stage One Read, write and interpret mathematical statements involving addition, subtraction and equals sign
- Represent and use number bonds and related subtraction facts to 20
- Add and subtract one digit and two digit numbers to 20, including zero

Solve one step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7= __ - 9

Concrete

- Manipulate a range of real objects.



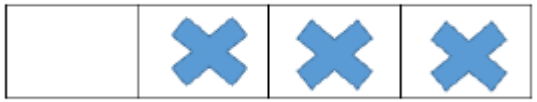

- Rearrange partition and recombine groups of real objects.
- Notice and compare size of groups.
- Use of number lines / tracks to count back. If appropriate progress from using number lines with every number shown to number lines with significant numbers shown.



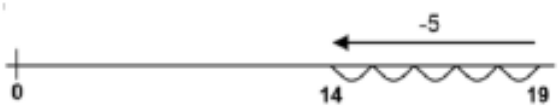

Towards Written Calculation

- Adults model representing ideas on paper
- Children's own jottings based on real objects
- Children's jottings to reflect abstract representations of objects e.g. tallies, spots

Use of the bar model:







Expected Written Method

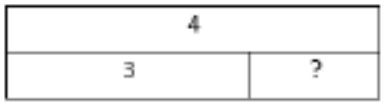
- Adults model conventional number representations

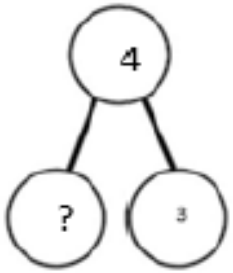
8 – 3 = 5

- Variety of maths symbols displayed in the environment.

4- 3 =

□ = 4 - 3





Subtraction Stage Two

-Solve problems with addition and subtraction

- Using concrete objects and pictorial representations, including those involving numbers, quantities and measures
- Applying their increasing knowledge of written and mental methods

-Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts to 100

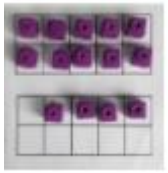
-Add and subtract numbers using concrete objects, pictorial representations and mentally including:

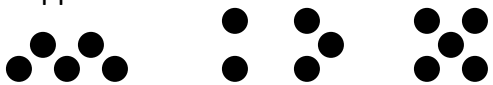
- A 2 digit number and ones
- A 2 digit number and tens
- 2 2 digit numbers
- Adding 3 1 digit numbers

-Show that addition of 2 numbers can be done in any order and subtraction from one number to another cannot

-Recognise and use the inverse operation between addition and subtraction and use this to check calculations and solve missing number problems

Concrete

- Manipulate apparatus that represent real objects e.g. cubes, Base 10, Cuisenaire, bead strings, 10 frames
- 
- Rearrange partition and recombine groups of objects and noticing what happens.

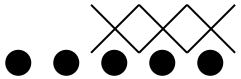


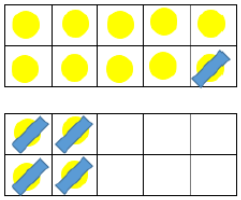
- Use pennies to calculate money
- Use place value counters or base ten to represent subtractions.

Towards Written Calculation

- Adults model abstract representations

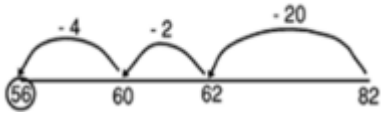
5 - 3 = 2





- Use a blank number line to count back.

82 – 20 – 2 - 4



- Represent subtraction pictorially.

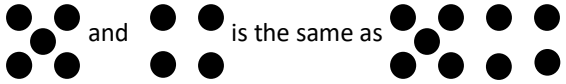
Expected Written Method

- Adults model horizontal recording of calculation and vocabulary

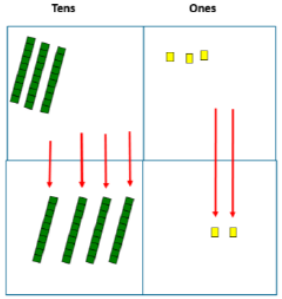
70-18 =

86- 81 =

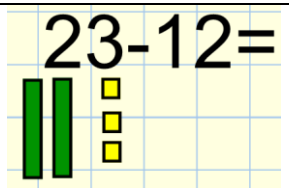
- Adults model = as 'the same as'



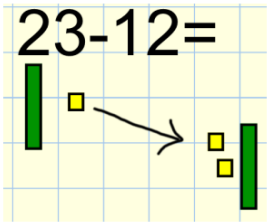
- Towards expanded Column subtraction

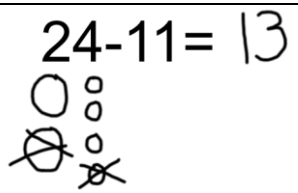


70 5
-40 2
30 3



Leading to





Subtraction Stage Three

-add and subtract numbers mentally including:

- A three digit number and a single digit number
- A three digit number and multiples of ten
- A three digit number and multiples of 100

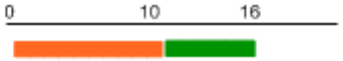
-add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction

-estimate the answer to a calculation and use inverse operations to check answers

-solve problems, including missing number problems, using number facts, place value and more complex addition and subtraction

Concrete

- Use Cuisenaire and Base Ten on a number line



- Use Cuisenaire and Base Ten to represent two digit numbers



Towards Written Calculation

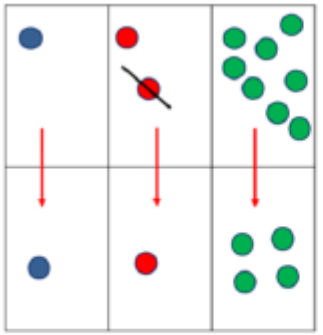
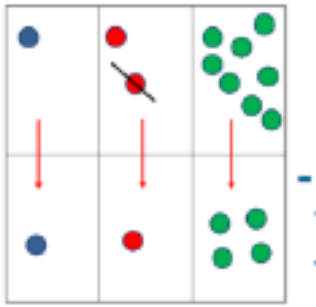
- Use place value cards to partition two digit numbers.



-
-
- Represent Base Ten and Cuisenaire on paper

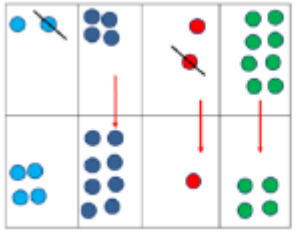
Expected Written Method

- Children subtract two digit numbers with apparatus including exchanging (decomposition) leading to expanded then column subtraction.

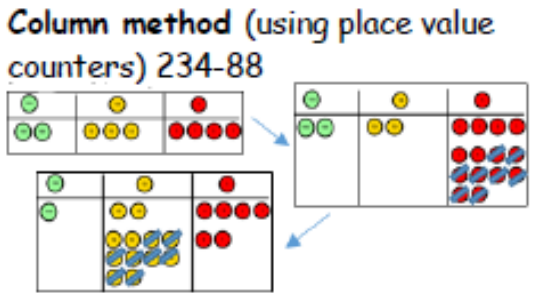
○ Use £10 notes, £1, 10p and 1p coins to calculate money	23 21  ○ Number lines may be used. See stage 2.	 200 30 2 -100 10 4 100 10 8  232 -114 118

Subtraction Stage Four

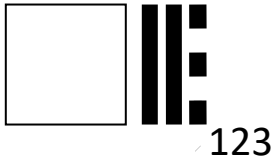
-add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate
-estimate and use inverse operations to check answers to a calculation
-solve addition and subtraction two step problems in contexts, deciding which operations and methods to use and why

Concrete	Towards Written Calculation	Expected Written Method
○ Use Cuisenaire and Base Ten to represent two and three digit numbers  ○ Begin to introduce the subtraction of decimals and fractions using real objects 	○ Use place value cards to represent two and three digit numbers  ○ Represent Base Ten and Cuisenaire on paper	○ When understanding of the expanded method (see stage 3) is secure move on to the formal method with decomposition with numbers with 4 digits.  6232 -4814 1418

- Use coins and notes to calculate money to calculate money.
-



-
-



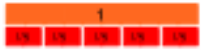
- Number lines may be used.
- Use apparatus to show expanded column subtraction. See stage 3.

Subtraction Stage Five

-add and subtract whole numbers with more than 4 digits, including using formal and written methods (columnar addition and subtraction)
-add and subtract numbers mentally with increasingly large numbers
-use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy
-solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

Concrete

- Use Base Ten and Cuisenaire to exchange once 10 is reached
- Use Cuisenaire and Base Ten to represent fractions and decimals to one decimal place



- Use coins and notes when calculating money totals

Towards Written Calculation

- Use place value cards to represent decimal numbers and money



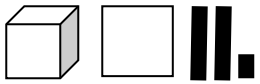
- Use coins to represent money

Expected Written Method

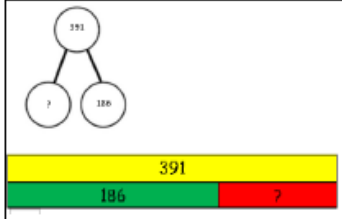
- Use of column method with more than 4 digit numbers. See stage 4.

Subtraction Stage Si

-perform mental calculations, including with mixed operations and large numbers
-use their knowledge of the order of operations to carry out calculations involving the four operations
-use their knowledge of the order of operations to carry out calculations involving the four operations
-solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
-solve problems involving addition, subtraction, multiplication and division
-use estimation to check answers to calculations and determine in the context of a problem, an appropriate degree of accuracy

Concrete	Towards Written Calculation	Expected Written Method
	○ Using place value cards to represent two and three digit numbers and money ○ Representing money as decimals ○ Representing Base Ten and Cuisenaire on paper  1121	○ Children proficient in using vertical subtraction for whole numbers and decimals 1 1 4 1 ~~22.53~~ - 19.28 03.25

Fluency variation, different ways to ask children to solve 391 - 186:



Raj spent £391, Timmy spent £186. How much more did Raj spend?

I had 391 metres to run. After 186 I stopped. How many metres do I have left to run?

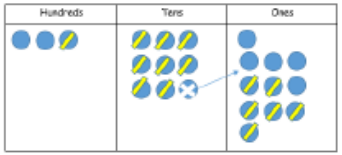
391 - 186

□ = 391 - 186

391
-186
———

Find the difference ebtween 391 and 186
Subtract 186 from 391.
What is 186 less than 391?

What's the calculation? What's the answer?



3 9 □
- □ □ 6
□ 0 5

Multiplication Stage One

Solve one and two step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher

Concrete

- Manipulate a range of real objects.

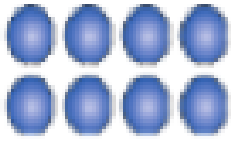



- Rearrange, partition and recombine groups of real objects.
- Sort and group sets of objects
-

Repeated grouping/repeated addition
(does not have to be restricted to cubes)
3 x 4 or 3 lots of 4



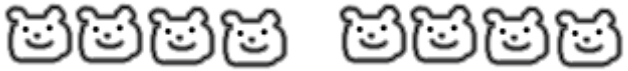
-
- Start to use arrays



$2 \times 4 = 8$

Towards Written Calculation

- Adults model representing ideas on paper
- Children's own jottings based on real objects



Children to represent the practical resources in a picture e.g.

XX XX XX
XX XX XX

Use of a bar model for a more structured method



Expected Written Method

- Adults model conventional number representations
- Variety of maths symbols displayed in the environment.

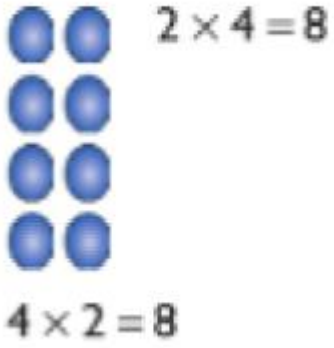
4+4+4

Multiplication Stage Two

- Recall and use multiplication and division facts for the 2,5 and 10 multiplication tables, including recognising odd and even numbers
- calculate mathematical statements for multiplication and division within the multiplication tables and write them using multiplication (x), division (÷) and equals (=) signs
-Show that multiplication of 2 numbers can be done in any order (commutative) whereas division of one number by another cannot be
-Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in context

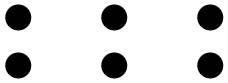
Concrete

- Introduce language and concepts of multiplication in real life contexts e.g. counting pairs of shoes, sweets in a bag, grouping objects.
- Place objects in groups of the same number and calculating how many altogether
- Count sets of coins e.g. 10 pence piece
- Use cubes to create arrays.

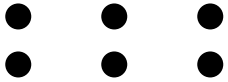


Towards Written Calculation

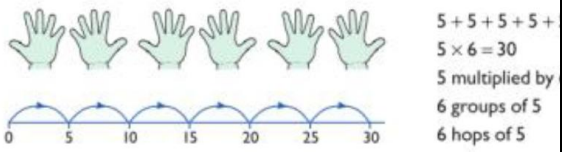
- Children count in multiples of 2, 5 and 10 and recognising why these patterns occur using Cuisenaire, 100 squares, number lines
- Children's jottings to reflect abstract representations of objects e.g. tallies, spots



- Adults model abstract representations



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



Expected Written Method

- Adults model horizontal recording of calculation and vocabulary related to repeated addition

3 + 3 + 3 + 3 + 3 = 15

- Adults model horizontal recording of calculation and vocabulary related to groups of and lots of

3 x 5 = 15

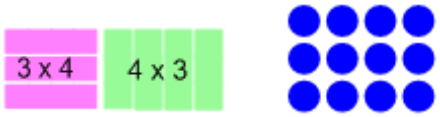
15 = 5 x 3

Multiplication Stage Three

-recall and use multiplication facts for the 3,4 and 8 times table
-write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two digit numbers times one digit numbers, using mental and progressing to formal written numbers
-solve problems involving missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects

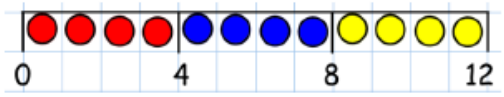
Concrete

- Make arrays with different pieces of equipment e.g. cubes, peg boards, Cuisenaire



- Use of number line to find multiplication facts

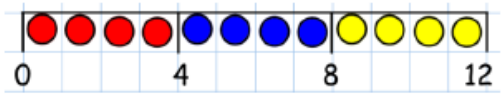
Represent this pictorially alongside a number line e.g:



Towards Written Calculation

- Children count in multiples of all numbers to 10 and recognising why these patterns occur using Cuisenaire, 100 squares, number lines
- Children begin to use abstract notation to answer problems e.g. drawing their own arrays.
- Children begin to recall multiplication facts (2s, 3s, 5s, 10s)

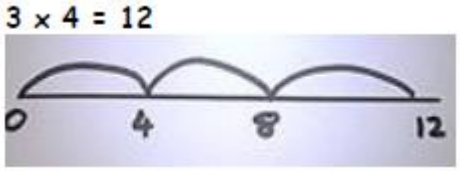
Represent this pictorially alongside a number line e.g:

- 

Expected Written Method

- Children record calculations horizontally and 'read' using correct vocabulary.

3 x 4 = 12
4 x 3 = 12



- Children understand that the operation is commutative
- Children partition two digit numbers in order to multiply

13 x 4 =
10 x 4 + 3 x 4 =
40 + 12 = 52

- Develop visual images (arrays) into the grid method.



Develop onto the grid method

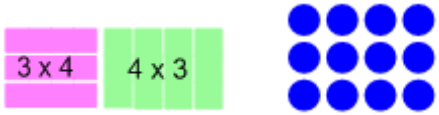
	10	8
3	30	24

Multiplication Stage Four

-recall multiplication and division facts for multiplication facts up to 12x12
-use place value, known and derived facts to multiply and divide mentally, including : multiplying by 0 and ; multiplying together 3 single digit numbers
-recognise and use factor pairs and commutativity in mental calculations
-multiply 2 and 3 digit numbers by a one digit number using a formal written layout
-solve problems involving multiplying and adding, including using the distributive law to multiply 2 digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects

Concrete

- Making arrays with different pieces of equipment in order to answer multiplication questions e.g. cubes, peg boards, Cuisenaire



- Use of number line to find multiplication fact

Towards Written Calculation

- Children proficient in recalling multiplication facts
- Children deepen understanding of the grid method continuing to relate it back to arrays.

Expected Written Method

- Use grid method for multiplying 1 digit by 2 digit numbers

14 x 4 = 56

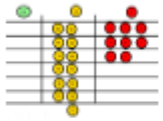
x	10	4
4	40	16

40 + 16 = 56

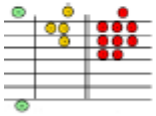
6 x 23



Step 1: get 6 lots of 23



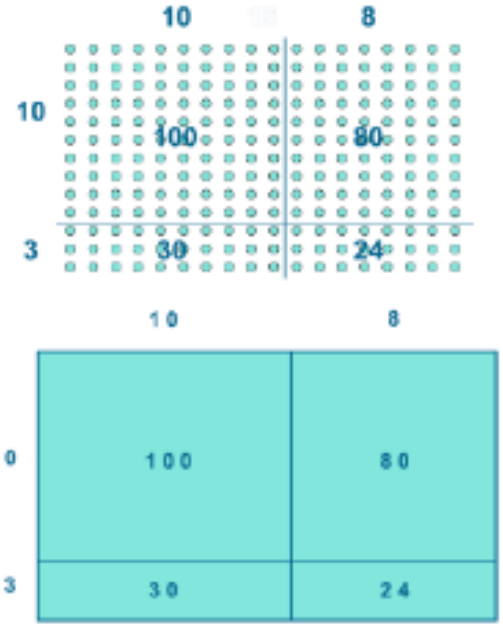
Step 2: 6 x 3 is 18. Can I make an exchange? Yes! Ten ones for one ten....



Step 3: 6 x 2 tens and my extra ten is 13 tens. Can I make an exchange? Yes! Ten tens for one hundred...



Step 4- what do I have I each column?



Moving towards formal written methods.

$$\begin{array}{r} 14 \\ \times\ 4 \\ \hline 56 \\ \hline 1 \end{array}$$

Multiplication Stage Five

-identify multiples and factors, including all factor pairs for a numbers, and common factors of two numbers
-know and use the vocabulary of prime numbers, prime factors and composite (non prime) numbers
-establish whether a number up to 100 is prime and recall prime numbers up to 19
-multiply numbers up to 4 digits by one a 1 or 2 digit number using a formal written method, including long multiplication for two digit numbers
-multiply and divide numbers mentally drawing upon known facts
-divide numbers up to 4 digits by a 1 digit number using the formal written method of short division interpreting remainders

Concrete

Towards Written Calculation

Children proficient in recalling multiplication facts to 12x12 200

$$\begin{array}{r} +100 \\ +\ 30 \\ +\ 15 \\ \hline 345 \end{array}$$

Expected Written Method

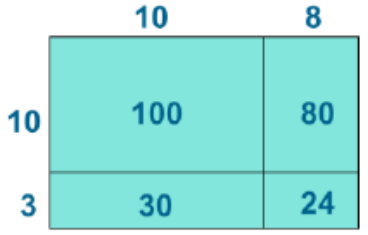
- Use grid method for multiplying 2 digit by 2 digit numbers

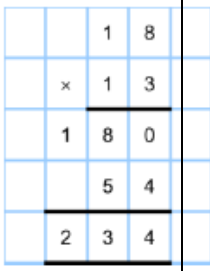
23 x 15 =

x	10	5
20	200	100
3	30	15

+100
+ 30
+ 15
345

- Explore how the grid method supports an understanding of long multiplication.





- Use short multiplication

$$\begin{array}{r} 30+8 \\ \times \quad 7 \\ \hline 210 \\ 56 \\ \hline 266 \end{array}$$

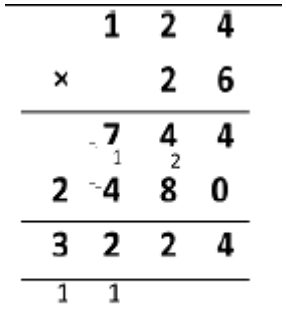
$30 \times 7 = 210$
$8 \times 7 = 56$

$$\begin{array}{r} 38 \\ \times \quad 7 \\ \hline 210 \\ 56 \\ \hline 266 \end{array}$$

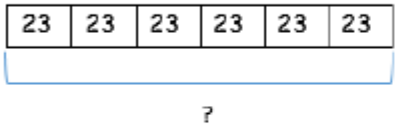
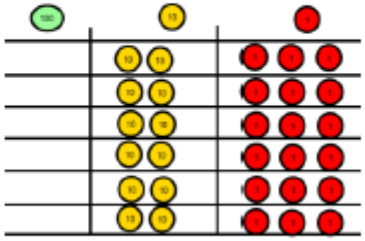
Multiplication Stage Six

-multiply multi-digit numbers up to 4 digits by a 2 digit whole number using the formal written method of long multiplication
-perform mental calculations, including with mixed operations and large numbers
-identify common factors, common multiples and prime numbers
-use their knowledge of the order of operations to carry out calculations involving the four operations
-solve problems involving addition, subtraction, multiplication and division
-use estimation to check answers to calculations and determine in the context of a problem, an appropriate degree of accuracy

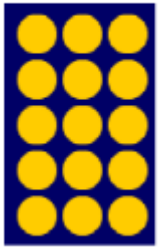
Concrete	Towards Written Calculation	Expected Written Method
		○ Children use and understand long multiplication ○



Fluency variation, different ways to ask children to solve 6 x 23:

 With the counters, prove that 6 x 23 = 138 Why is 6 x 23 = 32 x 6?	Mai had to swim 23 lengths, 6 times a week. How many lengths did she swim in one week? Tom saved 23p three days a week. How much did he save in 2 weeks?	Find the product of 6 and 23 6 x 23 = ☐ = 6 x 23 6 × 23 = ___ 23 × 6 = ___	What's the calculation? What's the answer? 

Division Stage One Solve one and two step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher		
<u>Concrete</u> ○ Manipulate a range of real objects.   ○ Rearrange, partition and recombine groups of real objects. ○ Sort and group sets of objects ○ Use of arrays. 15 divide by 3 is 5. There are 5 groups of 3.	<u>Towards Written Calculation</u> ○ Adults model representing ideas on paper ○ Children's own jottings based on real objects ○ 6 divide 3 = 	<u>Expected Written Method</u> ○ Adults model conventional number representations ○ Variety of maths symbols displayed in the environment.

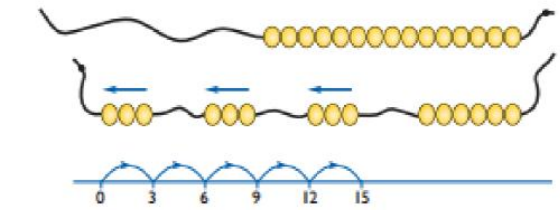
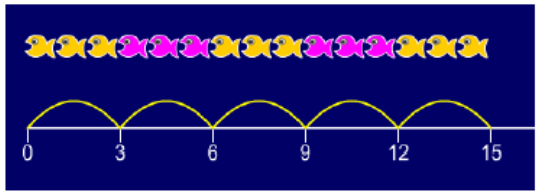


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Division Stage Two

- Recall and use multiplication and division facts for the 2,5 and 10 multiplication tables, including recognising odd and even numbers
- calculate mathematical statements for multiplication and division within the multiplication tables and write them using multiplication (x), division (÷) and equals (=) signs
-Show that multiplication of 2 numbers can be done in any order (commutative) whereas division of one number by another cannot be
-Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in context

Concrete	Towards Written Calculation	Expected Written Method
○ Introduce language and concepts of division in real life contexts e.g. pairing up socks, sharing sweets, grouping objects	○ Children count in multiples of 2, 3, 5 and 10 and recognise why these patterns in counting occur using Cuisenaire, 100 squares, number lines ○ Grouping on a blank number line	○ Adults model horizontal recording of calculation and vocabulary related to groups of and lots of 15 ÷ 5 = 3 15 ÷ 3 = 5

	15 ÷ 3 = 5   ○ Children's jottings to reflect abstract representations of objects e.g. tallies, spots ● ● ● ● ● ● ○ Adults model abstract representations showing links to arrays. ● ● ● ● ● ●	If ready begin to look at remainders

Division Stage Three

-recall and use multiplication facts for the 3,4 and 8 times table

-write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two digit numbers times one digit numbers, using mental and progressing to formal written numbers

-solve problems involving missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects

Concrete	Towards Written Calculation	Expected Written Method
○ Share and group using abstract apparatus	○ Children count in multiples of all numbers	○ Children record calculations horizontally

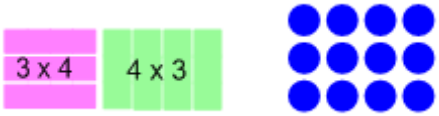
e.g. cubes, Cuisenaire, bead strings e.g. how many 3's are in 9?



How many equal groups can you put 12 cubes into?



- Make arrays with different pieces of equipment to show relationship between multiplication and division
  e.g. cubes, peg boards, Cuisenaire

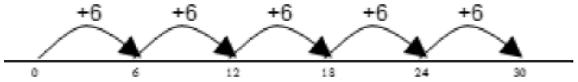


12 ÷ 4 = 3 12 ÷ 3 = 4

to 10 and recognise why these patterns occur using Cuisenaire, 100 squares, number lines

- Children begin to use their knowledge of multiplication facts to recall division facts to 12x12

Grouping
How many 6's are in 30?
30 ÷ 6 can be modelled as:



48 ÷ 4 = 12



Remainders

49 ÷ 4 = 12 r1



and 'read' using correct vocabulary for numbers that can be divided exactly.

15 ÷ 5 = 3
15 ÷ 3 = 5

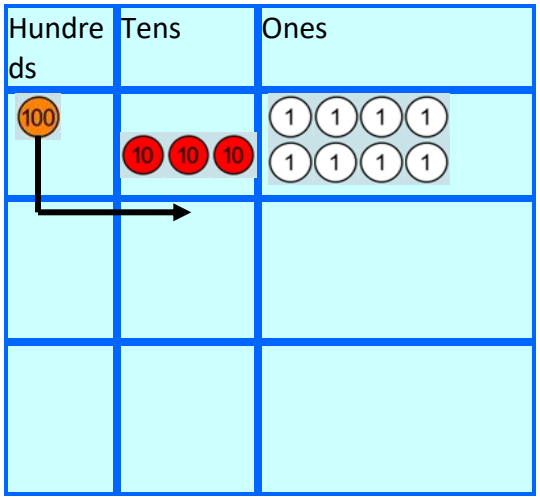
- Children record calculations horizontally and 'read' using correct vocabulary for division questions involving a remainder

16 ÷ 5 = 3 r1
16 ÷ 3 = 5 r1

Division Stage Four

-recall multiplication and division facts for multiplication facts up to 12x12
-use place value, known and derived facts to multiply and divide mentally, including : multiplying by 0 and ; multiplying together 3 single digit numbers
-recognise and use factor pairs and commutativity in mental calculations
-multiply 2 and 3 digit numbers by a one digit number using a formal written layout
-solve problems involving multiplying and adding, including using the distributive law to multiply 2 digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m

objects

Concrete	Towards Written Calculation	Expected Written Method
○ Children explore exchange of counters for division  	○ Children proficient in using their knowledge of multiplication facts to recall division facts ○ Children partition numbers to divide e.g. 84 ÷ 6 = 60 ÷ 6 + 24 ÷ 6 = 10 + 4 = 14	○ Adults model using the bus shelter method alongside the partitioning method **81 ÷ 3** **Partition 81 into 60 + 21** **60 ÷ 3 = 20** **21 ÷ 3 = 7** **20 + 7 = 27 so 81 ÷ 3 = 27** $3\overline{)8^{2}1}$ 27 ○ Children should interpret remainders in different ways according to the context, as fractions, decimals or by rounding **e.g. 98 ÷ 4 = 24 r 2 = 24 ½ = 24.5**

Division Stage Five

-identify multiples and factors, including all factor pairs for a numbers, and common factors of two numbers
-know and use the vocabulary of prime numbers, prime factors and composite (non prime) numbers
-establish whether a number up to 100 is prime and recall prime numbers up to 19
- -multiply and divide numbers mentally drawing upon known facts
-divide numbers up to 4 digits by a 1 digit number using the formal written method of short division interpreting remainders

Concrete	Towards Written Calculation	Expected Written Method
	○ Children proficient in recalling division facts	○ Children proficient in using the bus shelter method to divide whole numbers and numbers with up to 2 decimal places by a single digit ○ Children begin to divide whole numbers by a two-digit number

Division Stage Six

-solve problems involving addition, subtraction, multiplication and division
-use estimation to check answers to calculations and determine in the context of a problem, an appropriate degree of accuracy
-divide numbers up to 4 digits by a 2 digit whole number using the formal written method of long division, and interpret remainder and whole number remainders, fractions or by rounding, as appropriate for the context
-divide numbers up to 4 digits by a 2 digit number using the formal written method of short division where appropriate, interpreting remainders according to the context
-perform mental calculations, including with mixed operations and large numbers
-identify common factors, common multiples and prime numbers

Concrete	Towards Written Calculation	Expected Written Method
		○ Children proficient in using long division to solve problems

432 ÷ 15 becomes

```
      2  8  r 12
   ┌──────
1 5 │ 4  3  2
      3  0  0
   ──────────
      1  3  2
      1  2  0
   ──────────
         1  2
```

Fluency variation, different ways to ask children to solve 615 ÷ 5:

Using the part whole model below, how can you divide 615 by 5 without using the 'bus stop' method?



I have £615 and share it equally between 5 bank accounts. How much will be in each account?

615 pupils need to be put into 5 groups. How many will be in each group?

$5\overline{)615}$

615 ÷ 5 =

☐ = 615 ÷ 5

How many 5's go into 615?

What's the calculation? What's the answer?

