

Maths Calculation Policy

Concrete / Pictorial / Abstract



JUNIOR SCHOOL

Together we make a difference

Reviewed: July 2024

Date of next review: July 2027

This policy has been largely adapted from the White Rose Maths Hub Calculation Policy with further material added. It is a working document and will be revised and amended as necessary. Many variations have been included to provide teachers with a range of tools to support pupils in their grasp of number and calculation. To ensure consistency for pupils, it is important that the mathematical language used in maths lessons reflects the vocabulary used throughout this policy.

Recommended practice delivering a mastery approach

True mastery aims to develop all children's mathematical understanding at the same pace. As much as possible, children should be accessing the same learning. Differentiation should primarily be through support, scaffolding and deepening, not through task.

Evidence repeatedly shows that mixed ability seating increases less confident pupils' perception of mathematical capability, which impacts positively upon outcomes. While not a school policy, it is recommended to avoid ability groups. This presents a challenge in ensuring the more confident mathematicians are being extended. An extension task to deepen understanding is the most simplistic way around this. Concrete, pictorial, abstract (CPA) concepts should not be confused as differentiation for lower, middle, higher attaining children. CPA is an approach to be used with the whole class and teachers should promote each area as equally valid. Manipulatives in particular must not be presented as a resource to support the less confident or lower attaining pupils.

The abstract should run alongside the concrete and pictorial stage as this enables pupils to better understand mathematical statements and concepts.

Year 3

addition
add, more, and
make, sum, total
altogether
double
near double
half, halve
one more, two more ... ten more ... one hundred
more
how many more to make ...?
how many more is ... than ...?
how much more is ...?
subtract take away how many are left/left over?
how many have gone?
one less, two less, ten less ... one hundred less
how many fewer is ... than ...?
how much less is ...?
difference between
equals
is the same as
number bonds/pairs/facts
missing number
tens boundary, **hundreds boundary**

Addition and Subtraction Vocabulary

Year 4

addition
add, more, and
make, sum, total
altogether
double
near double
half, halve
one more, two more ... ten more ... one hundred
more
how many more to make ...?
how many more is ... than ...?
how much more is ...?
subtract take away how many are left/left over?
how many have gone?
one less, two less, ten less ... one hundred less
how many fewer is ... than ...?
how much less is ...?
difference between
equals
is the same as
number bonds/pairs/facts
missing number
tens boundary, hundreds boundary
inverse

Year 5

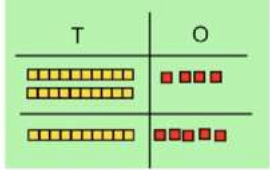
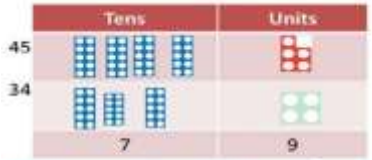
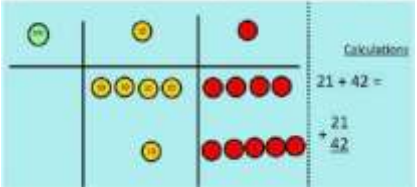
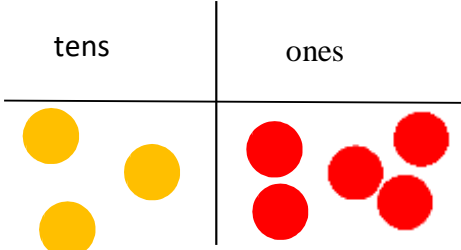
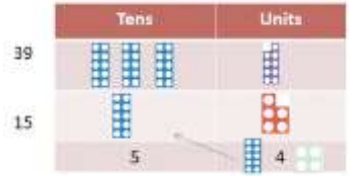
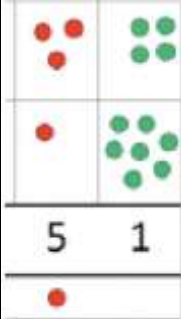
addition
add, more, and
make, sum, total
altogether
double
near double
half, halve
one more, two more ... ten more ... one hundred
more
how many more to make ...?
how many more is ... than ...?
how much more is ...?
subtract take away how many are left/left over?
how many have gone?
one less, two less, ten less ... one hundred less
how many fewer is ... than ...?
how much less is ...?
difference between
equals
is the same as
number bonds/pairs/facts
missing number
tens boundary, hundreds boundary, ones
boundary, tenths boundary

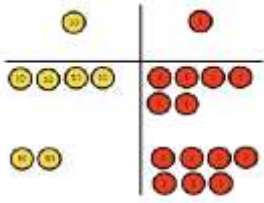


Addition and Subtraction Vocabulary

Year 6



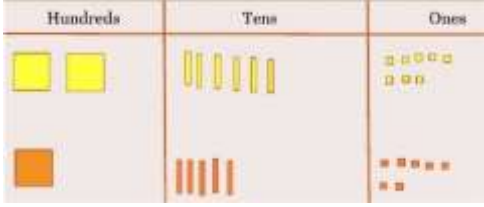
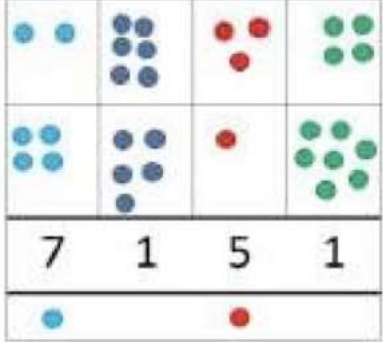
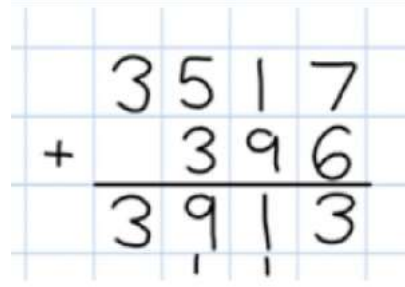

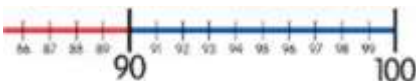
addition
add, more, and
make, sum, total
altogether
double
near double
half, halve
one more, two more ... ten more ... one hundred
more
how many more to make ...?
how many more is ... than ...?
how much more is ...?
subtract take away how many are left/left over?
how many have gone?
one less, two less, ten less ... one hundred less
how many fewer is ... than ...?
how much less is ...?
difference between
equals
is the same as
number bonds/pairs/facts
missing number
tens boundary, hundreds boundary, ones
boundary, tenths boundary

ADDITION

Objective/Strategy	Concrete	Pictorial	Abstract
<p>YEAR 3</p> <p>NC: Add numbers with up to 3 digits, using formal written methods of columnar addition</p> <p>Column addition – start off with no regrouping</p>	 <p>Dienes or numicon</p> <p>Add together the ones first, then the tens.</p>   <p>Moving to using place value counters</p>	<p>Children move to drawing the counters using a tens and one frame.</p> 	$\begin{array}{r} 223 \\ + 114 \\ \hline 337 \end{array}$ <p>Add the ones first, then the tens, then the hundreds.</p>
<p>Move onto column addition with regrouping</p>	 <p>Exchange ten ones for a ten. Model using numicon and place value counters.</p>	 <p>Children can draw a representation of the grid to further support their understanding, carrying the ten</p>	$\begin{array}{r} 20 + 5 \\ 40 + 8 \\ \hline 60 + 13 = 73 \end{array}$

	 <p style="text-align: center;">$46 + 27 = 73$</p>	<p style="text-align: center;"><u>underneath</u> the line.</p>	<p>Start by partitioning the numbers before formal column to show the exchange.</p> $\begin{array}{r} 536 \\ + 85 \\ \hline 621 \\ 11 \end{array}$
<p>Estimate the answers to questions and use inverse operations to check answers.</p>	 <p>Estimating $98 + 17 = ?$ $100 + 20 = 120$</p>	<p>Use number lines to illustrate estimation.</p> 	<p>Building up known facts and using them to illustrate the inverse and to check answers.</p> $98 + 18 = 116 \qquad 116 - 18 = 98$ $18 + 98 = 116 \qquad 116 - 98 = 18$

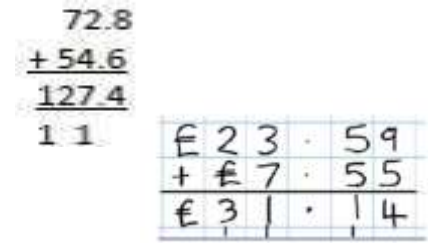
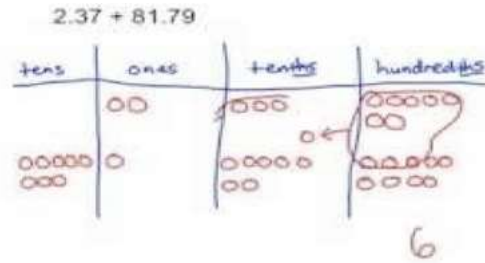
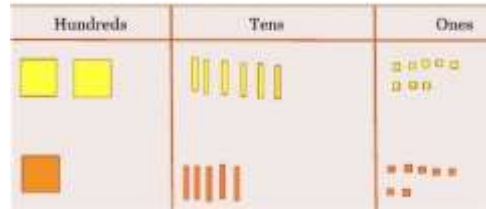
ADDITION

Objective/Strategy	Concrete	Pictorial	Abstract
<p style="background-color: #FF00FF; color: black; padding: 5px;">YEAR 4</p> <p>NC: Estimate and use inverse operations to check answers to a calculation.</p>	<p>As per Y3 Estimating $98 + 17 = ?$ $100 + 20 = 120$</p> 	<p>As per Y3 Use number lines to illustrate estimation.</p> 	<p>As per Y3 Building up known facts and using them to illustrate the inverse and to check answers.</p> <p>$98 + 18 = 116$ $116 - 18 = 98$</p> <p>$18 + 98 = 116$ $116 - 98 = 18$</p>
<p>NC: Add numbers with up to 4 digits using the formal written methods of columnar addition</p>	<p>Children continue to use dienes or place value counters to add, exchanging ten ones for a ten and ten tens for a hundred and ten hundreds for a thousand.</p> 	 <p>Draw representations using place value grid</p>	 <p>Continue from previous work to carry hundreds as well as ten. Relate to money and measures.</p>
<p style="background-color: #00FFFF; color: black; padding: 5px;">YEAR 5</p> <p>NC: Estimate and use inverse operations to check answers to a calculation.</p>	<p>As per Y3 Estimating $98 + 17 = ?$ $100 + 20 = 120$</p> 	<p>As per Y3 Use number lines to illustrate estimation.</p> 	<p>As per Y3 Building up known facts and using them to illustrate the inverse and to check answers.</p> <p>$98 + 18 = 116$ $116 - 18 = 98$</p> <p>$18 + 98 = 116$ $116 - 98 = 18$</p>

NC: Add whole numbers with more than 4 digits, including using formal written methods

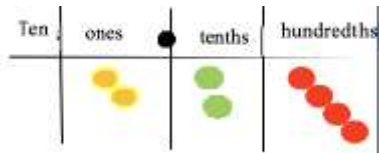
As year 4

Children continue to use dienes or place value counters to add, exchanging ten ones for a ten and ten tens for a hundred and ten hundreds for a thousand.



Add decimals with 2 decimal places, including money.

Introduce decimal place value counters and model exchange for addition.



YEAR 6

NC: Estimate and use inverse operations to check answers to a calculation.

As per Y3

Estimating $98 + 17 = ?$
 $100 + 20 = 120$



As per Y3

Use number lines to illustrate estimation.



As per Y3

Building up known facts and using them to illustrate the inverse and to check answers.

$98 + 18 = 116$

$116 - 18 = 98$

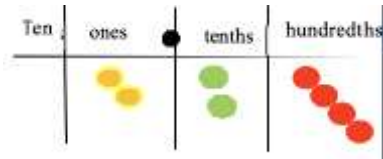
$18 + 98 = 116$

$116 - 98 = 18$

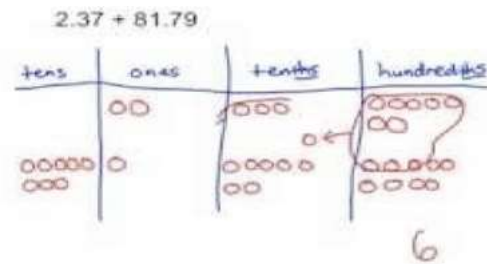
NC: Add several numbers of increasing complexity, including money, measure and decimals with different numbers of decimal places.

As per Y5

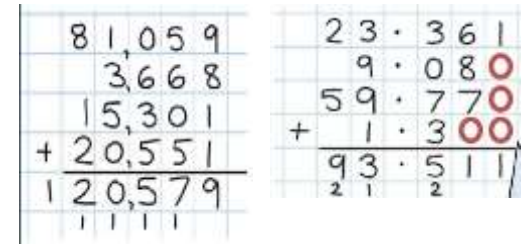
Introduce decimal place value counters and model exchange for addition.



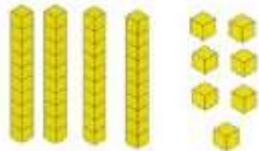






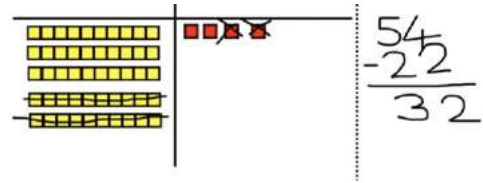
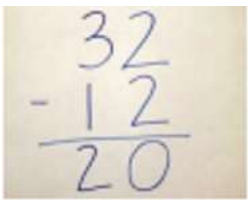



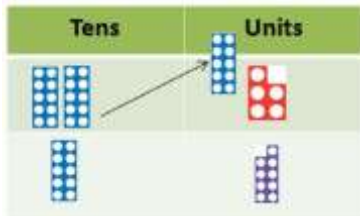
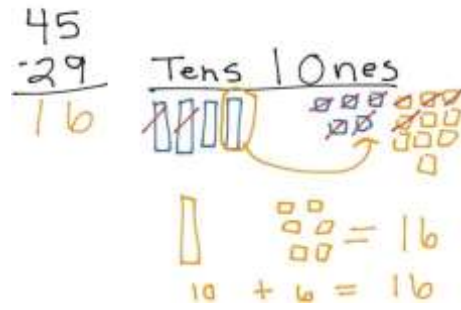
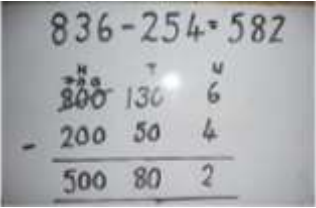

As per Y5



Insert zeros for place holders.



SUBTRACTION

Objective/Strategy	Concrete	Pictorial	Abstract						
<p style="background-color: #00ff00; padding: 5px; display: inline-block;">YEAR 3</p> <p>NC: Subtract numbers with up to 3 digits, using formal written methods of columnar subtraction</p> <p>Start with column subtraction without regrouping</p>	 <p>47 – 32</p> <p>Use base 10 or Numicon to model</p> <p>Mo uses Base 10 to subtract 142 from 373</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="background-color: #f4a460;">H</th> <th style="background-color: #f4a460;">T</th> <th style="background-color: #f4a460;">O</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">  </td> <td style="text-align: center;">  </td> <td style="text-align: center;">  </td> </tr> </tbody> </table>	H	T	O				 <p style="text-align: center;">Draw representations to support understanding</p>	<p>47 – 24 = 23</p> $\begin{array}{r} 40 + 7 \\ - 20 + 4 \\ \hline 20 + 3 \end{array}$  <p style="text-align: right;">Intermediate step may be needed to lead into clear subtraction understanding.</p>
H	T	O							
									
<p>Move onto column subtraction with regrouping</p>	 <p>Begin with base 10 or Numicon. Move to pv counters, modelling the exchange of a ten into ten ones.</p>	 <p style="text-align: center;">Children may draw base 10 or pv counters and cross off</p>	 <p style="text-align: right;">Begin by partitioning into place value columns</p>  <p style="text-align: right;">Then move onto formal method</p>						

SUBTRACTION

Objective/Strategy

YEAR 4

NC: Subtract numbers with up to 4 digits using the formal written methods of subtraction where appropriate

Start with no exchange.

Concrete

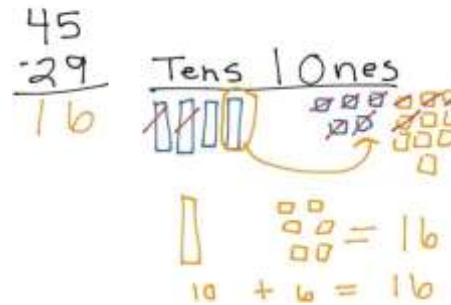
$$3453 - 1224 =$$



Pictorial

Children to draw pv counters cross off.

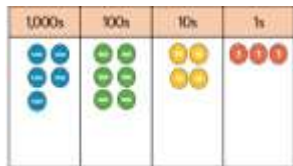
See Y3.



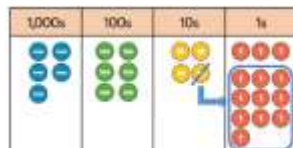
Abstract

	Th	H	T	O
	3	4	5	4
-	1	2	2	4
	2	2	3	0

As above but with one exchange. Then move onto more than one exchange.



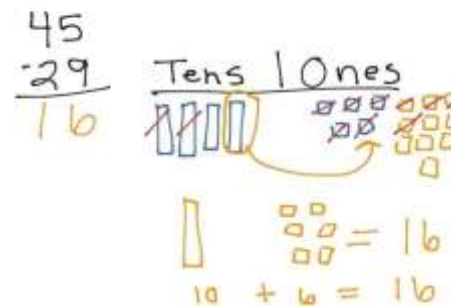
$$5643 - 4316 =$$



Model process of exchange using Numicon, base ten and then move to pv counters.



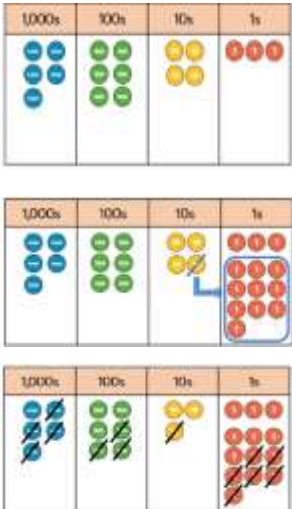
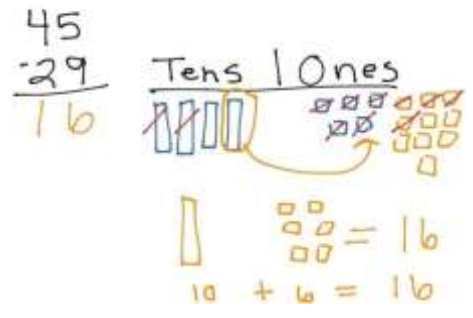
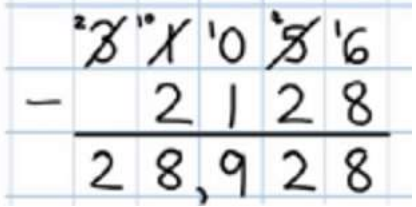
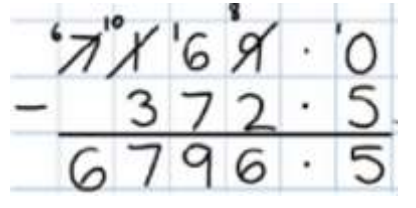
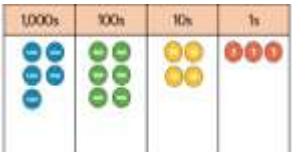
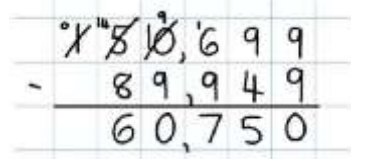
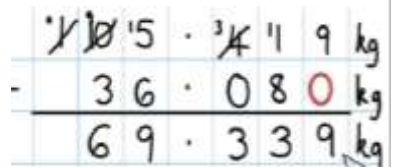
Children to draw pv counters and show their exchange. **See Y3.**

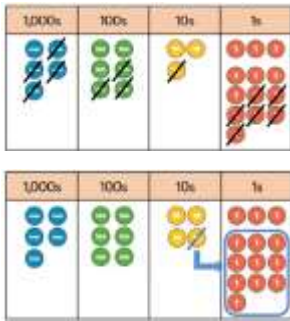


	Th	H	T	O
	5	6	4	3
-	4	3	1	6
	1	3	2	7

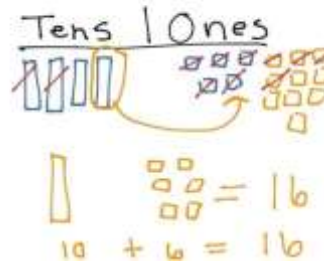
Use the phrase 'take and make' for exchange.

SUBTRACTION

Objective/Strategy	Concrete	Pictorial	Abstract
<p style="text-align: center;">YEAR 5</p> <p>NC: Subtract whole numbers with more than 4 digits, including using formal written methods (columnar subtraction)</p> <p style="text-align: center;">Subtract with decimal values, including mixtures of integers and decimals and aligning the decimal up to 3 decimal places</p>	<p style="text-align: center;">As year 4.</p> <p>5643-4316= Model process of exchange using Numicon, base ten and then move to pv counters</p> 	<p>Children to draw pv counters and show their exchange. See Y3. Especially when problem solving.</p> 	 <p style="text-align: center;">Use zeros for placeholders.</p> 
<p style="text-align: center;">YEAR 6</p> <p>NC: Subtract with increasingly large and more complex numbers and decimal values (up to 3 decimal places)</p>	<p style="text-align: center;">As year 4</p> <p>5643-4316= Model process of exchange using Numicon, base ten and then move to pv counters</p> 	<p>Children to draw pv counters and show their exchange. See Y3. Especially when problem solving.</p>	 



$$\begin{array}{r} 45 \\ -29 \\ \hline 16 \end{array}$$



Year 3

multiplication
multiply
multiplied by
multiple, **factor**
groups of
times
product
once, twice, three times ... ten times
repeated addition
division
dividing, divide, divided by, divided into
left, left over, **remainder**
grouping
sharing, share, share equally
one each, two each, three each ... ten each
group in pairs, threes ... tens
equal groups of
doubling
halving
array
row, column
number patterns
multiplication table
multiplication fact, division fact

Multiplication and Division Vocabulary

Year 4

multiplication
multiply
multiplied by
multiple, factor
groups of
times
product
once, twice, three times ... ten times
repeated addition
division
dividing, divide, divided by, divided into
left, left over, remainder
grouping
sharing, share, share equally
one each, two each, three each ... ten each
group in pairs, threes ... tens
equal groups of
doubling
halving
array
row, column
number patterns
multiplication table
multiplication fact, division fact

inverse
square, squared
cube, cubed

Year 5

multiplication
multiply
multiplied by
multiple, factor
groups of
times
product
once, twice, three times ... ten times
repeated addition
division
dividing, divide, divided by, divided into
left, left over, remainder
grouping
sharing, share, share equally
one each, two each, three each ... ten each
group in pairs, threes ... tens
equal groups of
doubling
halving
array
row, column
number patterns
multiplication table
multiplication fact, division fact

inverse
square, squared
cube, cubed

Multiplication and Division Vocabulary

Year 6

Multiplication
multiply
multiplied by
multiple, factor
groups of
times
product
once, twice, three times ... ten times
repeated addition
division
dividing, divide, divided by, divided into
left, left over, remainder
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sharing, share, share equally
one each, two each, three each ... ten each
group in pairs, threes ... tens
equal groups of
doubling
halving
array
row, column
number patterns
multiplication table
multiplication fact, division fact

inverse
square, squared
cube, cubed

MULTIPLICATION

Objective/Strategy

YEAR 3

NC: Multiply 2 digit numbers by 1 digit numbers

Start with repeated addition, then the grid method, progressing to the formal method

Concrete

Repeated addition. $22 \times 4 =$

Tens	Ones
● ●	● ●
● ●	● ●
● ●	● ●
● ●	● ●

Show link to multiplication.

$$\square + \square + \square + \square = \square$$

$$\square \times \square = \square$$

Show the links with arrays to first introduce. the grid method

x	10	3
4	●●●●●●●●●●	●●●

4 rows of 10
4 rows of 3

Move onto base ten to move towards a more compact method.

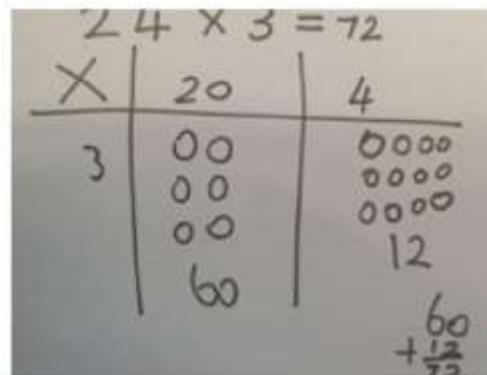
x	T	U
4	●●●●	●●●

4 rows of 13

Pictorial

Children can represent their work with place value counters in a way that they understand.

They can draw the counters using colours to show different amounts or just use the circles in the different columns to show their thinking as shown below.



Abstract

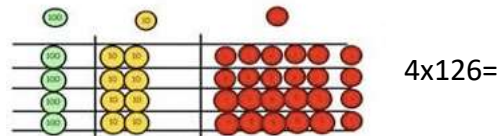
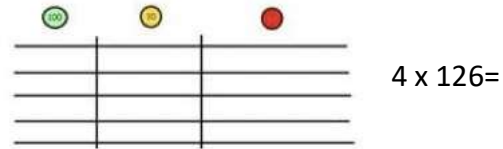
Start with multiplying by one digit numbers and showing the clear addition alongside the grid.

x	30	5
7	210	35

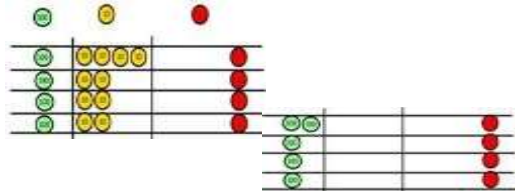
$$210 + 35 = 245$$

The outcome for Y3 is that they are proficient with the grid method.

Move on to place value counters to show how we are finding groups of numbers. We are multiplying by 4 so we need 4 rows.



Fill each row with 126.
Add up each column, starting with the ones and making any exchanges needed. Then you have your answer.



MULTIPLICATION

Objective/Strategy

Concrete

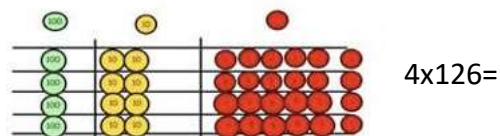
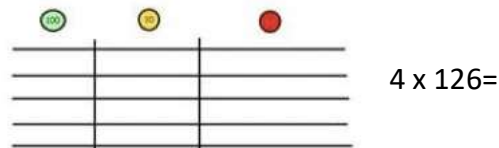
Pictorial

Abstract

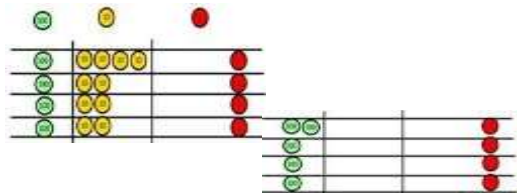
YEAR 4

Grid method recap from year 3 for 2 digits multiplied by 1 digit.

Use place value counters to show how we are finding groups of numbers. We are multiplying by 4 so we need 4 rows.

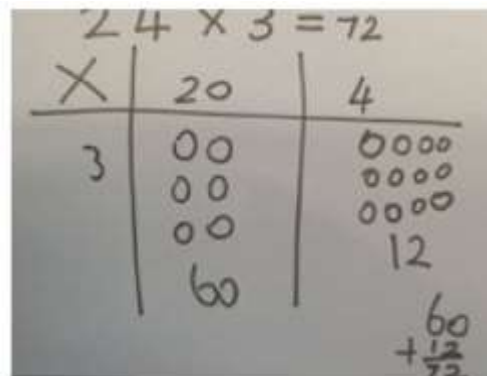


Fill each row with 126.
Add up each column, starting with the ones and making any exchanges needed. Then you have your answer.



Children can represent their work with place value counters in a way that they understand.

They can draw the counters using colours to show different amounts or just use the circles in the different columns to show their thinking as shown below.



Start with multiplying by one digit numbers and showing the clear addition alongside the grid.

x	30	5
7	210	35

$$210 + 35 = 245$$

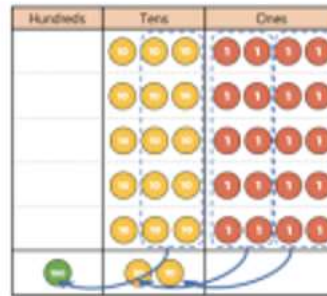
Move to the formal written method.

NC: Multiply 2 and 3 digit numbers by a one digit number using formal written layout.

Build on previous steps to represent a three-digit number multiplied by a one-digit number with concrete manipulatives
 $245 \times 4 =$



Children can represent their work with place value counters in a way that they understand. They use their knowledge of exchanging ten ones for one ten in addition and apply this to multiplication, including exchanging multiple groups of 10.



	H	T	O		
		3	4		
x			5		
<hr/>					
		2	0		(5 x 4)
+	1	5	0		(5 x 30)
<hr/>					
	1	7	0		

Move from expanded to compact method.



	H	T	O
		2	4
x			4
<hr/>			

The intent for Y4 is to become proficient at the standard written method for multiplication.

MULTIPLICATION

Objective/Strategy

YEAR 5

NC: Multiply numbers up to 4 digits by a one or two-digit number using a formal written method, including long multiplication for 2 digit numbers.

Concrete

Children build on previous steps to represent a 4-digit number multiplied by a 1-digit number using concrete manipulatives. Then move onto multiplication with exchange in one and then more than one column.

$$3023 \times 3 =$$

Thousands	Hundreds	Tens	Ones
●		● ●	● ● ●
●		● ●	● ● ●
●		● ●	● ● ●

It is important at this stage that they always multiply the ones first. Children can continue to be supported by place value counters at this stage of multiplication.

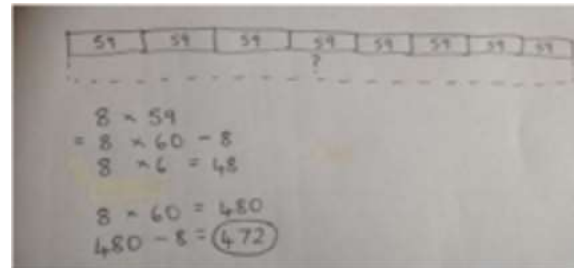
Pictorial

The grid method may be used to show how this relates to a formal written method.

x	300	20	7
4	1200	80	28



Bar modelling and number lines can support learners when solving problems with multiplication alongside the formal written methods.



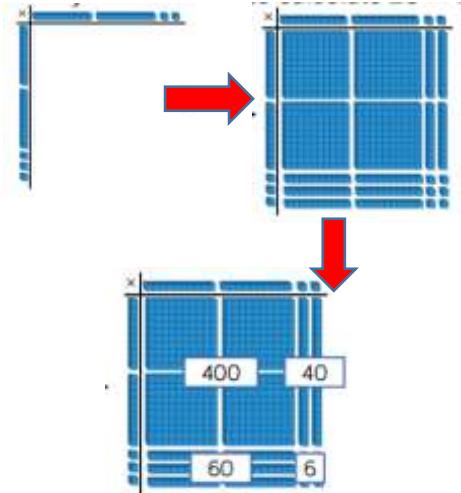
Abstract

	3	2	7
x			4
<hr/>			
1	3	0	8
	1	2	

NC: Multiply numbers up to 4 digits by a one or two-digit number using a formal written method, **including long multiplication for 2 digit numbers.**

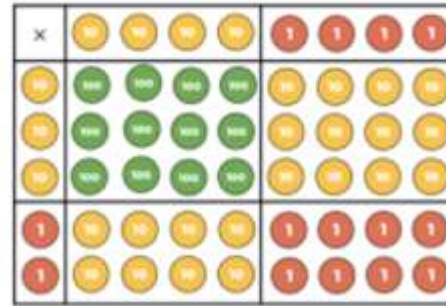
Children use Base 10 to represent the area model of multiplication which will enable them to see the size and scale linked to multiplication.

$$23 \times 22 =$$



They then move onto representing multiplication more abstractly with place value counters. These can also be drawn.

$$44 \times 32 =$$



And then with numbers.
 $44 \times 32 =$

x	40	4
30	1,200	120
2	80	8

Children will move on from the area model and work towards more formal methods. They will start by exploring the role of the zero in the column method and understanding its importance.



Children will extend their multiplication skills to multiplying 3-digit numbers by 2-digit numbers. Methods such as the 'area' model are still useful.

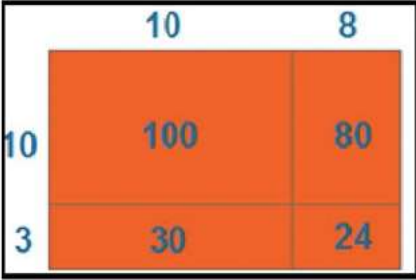
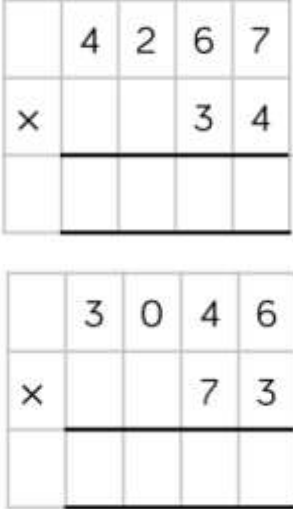
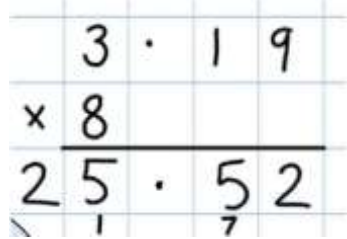
		1	3	2	
x			1	4	
		5	2	8	(132 × 4)
	1	3	2	0	(132 × 10)

Children will extend their multiplication skills to multiplying 4-digit numbers by 2-digit numbers. Methods such as the 'grid' model are still useful. It is important that children understand the steps taken when using this multiplication method.

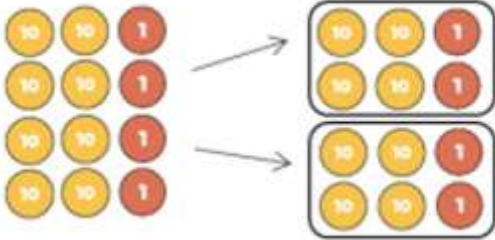
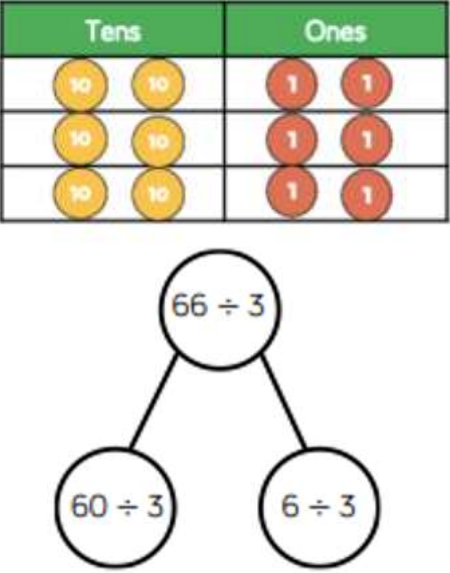

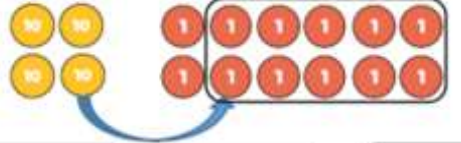

		3	2	5	0		
x				2	6		
		1	9	5	0	0	(3,250 × 6)
	6	5	0	0	0		(3,250 × 20)
	8	4	5	0	0		

The intent is that by the end of Y5, children are proficient in long multiplication.

MULTIPLICATION

Objective/Strategy	Concrete	Pictorial	Abstract
<p>YEAR 6</p> <p>NC: Multiply multi-digit numbers up to 4 digits by 2 digits using formal written method of long multiplication.</p>	<p>Children build on their knowledge of column multiplication. It may be useful to revise multiplication by a single digit first, then 2- and 3-digit numbers before moving on when ready to the largest calculations.</p> <p>Manipulatives may still be used with the corresponding long multiplication modelled alongside.</p> <p>See previous year groups.</p>	 <p>Continue to use bar models to support problem solving.</p> <p>See previous year groups.</p>	 <p>See previous year groups.</p>
<p>NC: Multiply one-digit numbers with up to two decimal places by whole numbers.</p>			<p>Remind children that the single digit belongs in the units column. Line up the decimal points in the question and the answer.</p> 

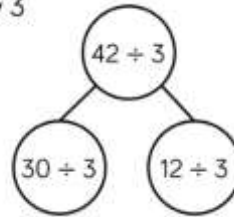
DIVISION

Objective/Strategy	Concrete	Pictorial	Abstract
<p style="background-color: #00ff00; color: black; padding: 5px; display: inline-block;">YEAR 3</p> <p>NC: Divide a 2-digit number by a 1 digit number.</p> <p>Start with dividing numbers that do not require an exchange or remainders.</p>	<p>Use place value counters to divide numbers. It is important that children divide the tens first and then the ones.</p> <p>$84 \div 2 =$</p> 	<p>Link the number of rows in their place value chart with the number they are dividing by.</p> 	<p>$69 \div 3 =$</p> <p>$96 \div 3 =$</p> <p>$86 \div 2 =$</p> 
<p>NC: Divide a 2-digit number by a 1 digit number.</p> <p>Move on to dividing numbers that require an exchange between the tens and ones but no remainders.</p>	<p>$42 \div 3 =$</p>  <p>Use place value counters to divide 42 into 3 equal groups. Share the tens first</p>	<p>$42 \div 3 =$</p> <p>Use a similar method with a place value chart. Sharing the tens first and exchanging the ten for ones.</p> 	<p>$96 \div 8 =$</p> <p>$96 \div 4 =$</p> <p>$97 \div 3 =$</p> <p>$94 \div 6 =$</p>

and exchange the remaining ten for ones. Then share the ones.



42 by 3

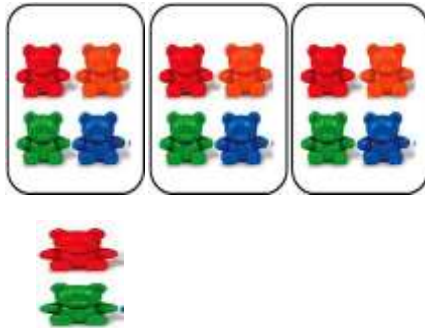


They progress to dividing two-digit by one-digit with remainders.

NC: Divide a 2-digit number by a 1 digit number with remainders.

Make links between division and repeated subtraction which is revision from Y2.

$14 \div 3 =$
Divide objects between groups and see how much is left over.



There are many different pictorial examples that may support children's understanding:

1. Jump forward in equal jumps on a number line then see how many more you need to jump to find a remainder. $13 \div 4 = 3 \text{ r } 1$



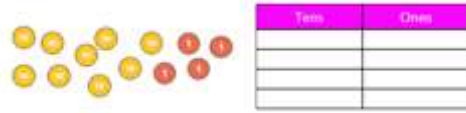
2. Draw dots and group them to divide an amount and clearly show a remainder.

Complete written divisions and show the remainder using r.

$$29 \div 8 = 3 \text{ REMAINDER } 5$$

\uparrow \uparrow \uparrow \uparrow
 dividend divisor quotient remainder

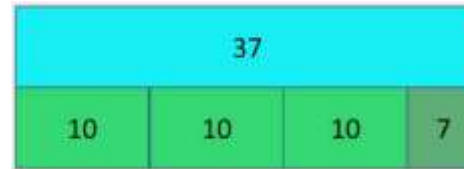
$94 \div 4 =$



Do you need to exchange any tens for ones? Is there a remainder?

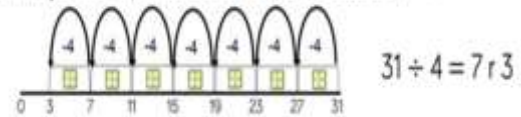


3. Use bar models to show division with remainders.

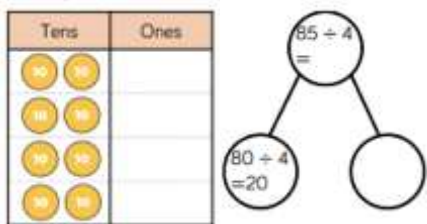
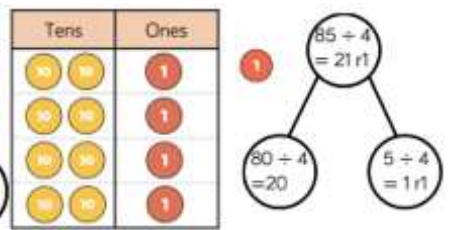
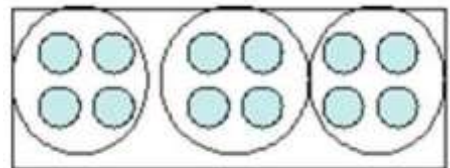


This notation is new to Year 3 and will need clear explanation.

Tommy uses repeated subtraction to solve $31 \div 4$



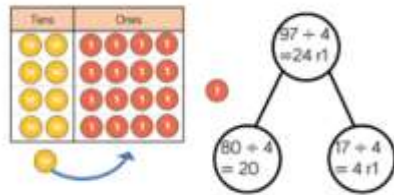
DIVISION

Objective/Strategy	Concrete	Pictorial	Abstract
<p style="text-align: center;">YEAR 4</p> <p>NC: Recall multiplication and division facts for multiplication tables up to 12×12.</p> <p>Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers</p> <p>NO REQUIREMENT IN Y4 NATIONAL CURRICULUM TO DIVIDE USING FORMAL METHODS</p> <p>Continue to use place value counters to divide in order to explore</p>	<p>Use place value counters to divide using the bus stop method alongside.</p> <p>$85 \div 4 =$</p> <p>Divide the tens first. We are sharing 80 into 4 groups. We can put two tens in each group.</p>  <p>Then divide the ones. We are sharing 5 ones into 4 groups. There is one left over.</p> 	<p>Students can continue to use drawn diagrams with dots or circles to help them divide numbers into equal groups.</p>  <p>Encourage them to move towards counting in multiples to divide more efficiently.</p>	<p>Non-statutory guidelines say that pupils practise to become fluent in the formal written method of short multiplication and short division with exact answers.</p> <div style="text-align: right;"> $\begin{array}{r} 218 \\ 4 \overline{) 872} \\ \underline{8} \\ 0 \\ \underline{0} \\ 0 \\ \underline{0} \\ 0 \end{array}$ </div> <div style="text-align: right;"> $\begin{array}{r} 86 \text{ r } 2 \\ 5 \overline{) 432} \\ \underline{4} \\ 0 \\ \underline{0} \\ 0 \end{array}$ </div>

where there are remainders.

Move onto questions which require an exchange. $97 \div 4 =$

Start with the biggest place value. We are sharing 90 into 4 groups. We can put 2 tens in each group and we have 1 ten left over.



We exchange this ten for ten ones and then share the ones equally among the groups.

We look how much is in 1 group so the answer is 24 remainder 1.

DIVISION

Objective/Strategy

Concrete

Pictorial

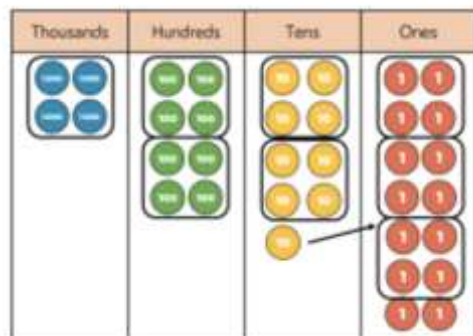
Abstract

YEAR 5

NC: Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context.

Continue to use place value counters to partition and then group their number to further develop their understanding of short division. Start to focus on understanding remainders in context.

$$4,894 \div 4 =$$



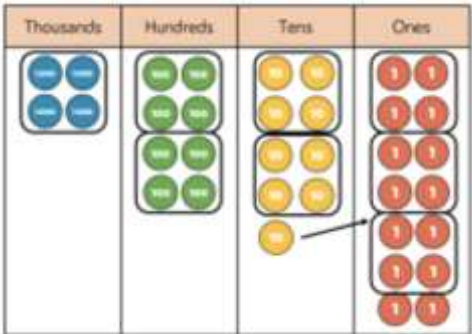

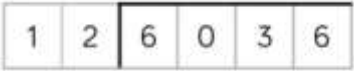
With this method, the children group the counters in the columns according to the divisor and exchange where necessary.

Children continue to use drawn diagrams with dots or circles to help them divide numbers.

Model the bus stop method alongside the concrete and pictorial so children can see the link.

	1	2	2	3			
4	4	8	9	¹ 4		r2	

DIVISION

Objective/Strategy	Concrete	Pictorial	Abstract
<p>YEAR 6</p> <p>Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context</p>	<p>Children build on their understanding of dividing up to 4 digits by 1 digit, by now dividing by up to two digits. Focus on the grouping structure of division.</p> <p>As per Year 5</p> <p>Continue to use place value counters to partition and then group their number to further develop their understanding of short division. Start to focus on understanding remainders in context.</p> <p>$4,894 \div 4 =$</p>  <p>With this method, the children group the counters in the columns according to the divisor and exchange where necessary.</p>	<p>Teachers may encourage children to list multiples of the divisor to help them solve the division more easily.</p>	 

NC: Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context

Children are introduced to long division as an alternative method of dividing by a two-digit number.

They divide three and four digits by two digits with and without remainders, starting with an expended method (with multiples shown) before progressing to the more formal long division method.

		0	3	6
1	2	4	3	2
	-	3	6	0
			7	2
	-		7	2
				0

↑
List multiples of the divisor.

- 12 × 1 = 12
- 12 × 2 = 24
- 12 × 3 = 36
- 12 × 4 = 48
- 12 × 5 = 60
- 12 × 6 = 72
- 12 × 7 = 84
- 12 × 8 = 96
- 12 × 9 = 108
- 12 × 10 = 120

		0	3	6
1	2	4	3	2
	-	3	6	↓
			7	2
	-		7	2
				0

Long division no remainder

	0	4	8	9	
15	7	3	3	5	
-	6	0	0	0	(×400)
	1	3	3	5	
-	1	2	0	0	(×80)
		1	3	5	
-		1	3	5	(×9)
				0	

		2	4	r	1	2	
1	5	3	7	2			
-	3	0	0				
		7	2				
-		6	0				
		1	2				

$1 \times 15 = 15$
 $2 \times 15 = 30$
 $3 \times 15 = 45$
 $4 \times 15 = 60$
 $5 \times 15 = 75$
 $10 \times 15 = 150$

			1	0	9	r	9		
1	3	1	4	2	6				
	-	1	3	0	0				(x100)
			1	2	6				
	-		1	1	7				(x9)
					9				