Bewdley Primary School

Calculation Policy Y1-6

October 2023

Review October 2026

This policy reflects the three key aims of the 2014 National Curriculum:

- Procedural Fluency
- Mathematical Reasoning
- Problem Solving

The policy allows consistency of approach and allows children to build on their understanding of place value to develop a deep, conceptual understanding of calculation and the processes used. The use of visual representations and concrete resources is key to allowing children to make the connections between ideas, enabling children to progress and develop as mathematicians.

This policy is divided into year groups and sets out a clear progression of the procedures and concepts that should be introduced. Once a calculation method has been taught, children will be given the opportunity to use it to support problem solving and reasoning which is key to the development and progression of all children, as stated in the 2014 National Curriculum:

Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.

Mathematics National Curriculum 2014

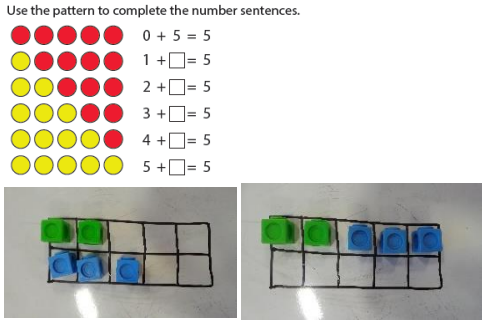
This policy has been updated to ensure it follows the scheme Maths No Problem which is used at BPS.

YEAR 1

Addition

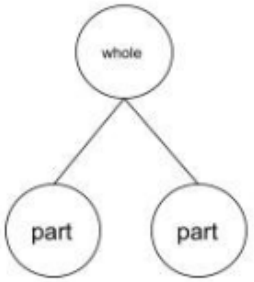
Y1 use numicon as well as other concrete resources to add.


They begin to learn number facts.



Tens frames are used to help the Y1s 'make 10' when they are adding. They give the children a strong 'sense of ten' which also supports their understanding of place value.

Y1 use the part part whole to help partition numbers in different ways to support their learning of key number facts.

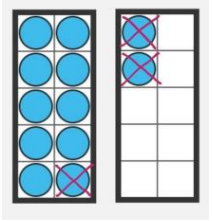


Year 1 use number line to add by counting on.

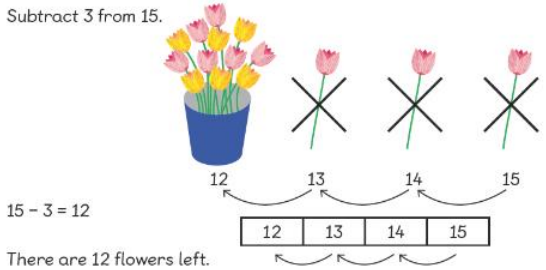
Subtraction

I can subtract 1-digit and 2-digit numbers to 20, including zero.

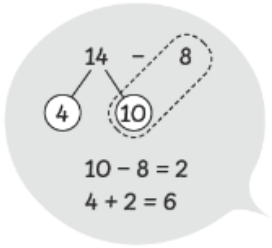
Subtract objects by taking away from a group and counting the remainder



Y1 use a number line to help them subtract by counting back.



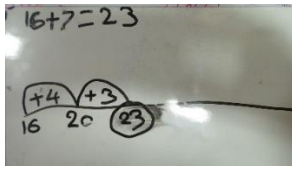
Children carry on using the part part whole diagram to help partition numbers in different ways as they learn key number facts. Y1 partition numbers and use the tens frame to help them 'subtract from the 10'.



YEAR 2

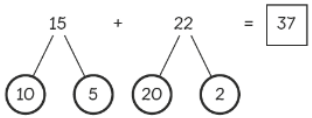
Addition

At the beginning of Y2, children build on the Y1 use of number lines to record addition in number sentences. They use number facts to count up to the next 10.



They begin to learn how to add 2 2-digit numbers. If it is a simple addition that needs no renaming, Y2 add the tens and the ones, drawing part part whole models to help.

15 and 22.

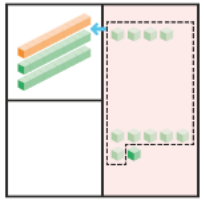


10 + 20 = 30

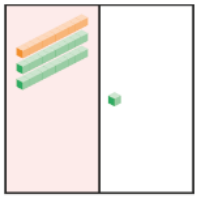
5 + 2 = 7

30 + 7 = 37

As the calculations move on to numbers that need renaming, Y2 use a more formal expanded version of the column method,. They use diennes to help them understand the value of the digits and to calculate.



	tens	ones
	2	4
+		7
	1	1

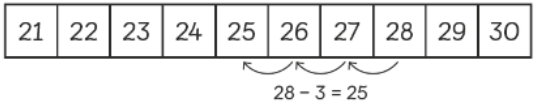


	tens	ones
	2	4
+		7
	1	1
+	2	0
	3	1

Subtraction

At the beginning of Y2, children start from where they were in Y1 and count back on a number line and partition to subtract.

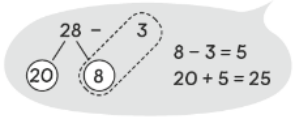
Method 1 Count back from 28.



28 − 3 = 25

Method 2 Subtract ones.

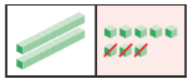
28 − 3 = 25



They quickly move on to using a standard column method.

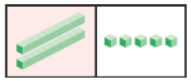
Step 1 Subtract the ones.

8 ones − 3 ones = 5 ones



	tens	ones
	2	8
−		3
		5

Step 2 Subtract the tens.



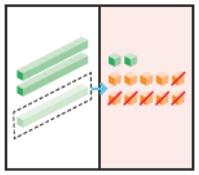
	tens	ones
	2	8
−		3
	2	5

28 − 3 = 25

Regroup 1 ten into 10 ones.

Subtract the ones.

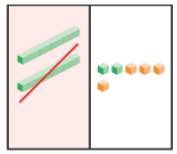
12 ones − 6 ones = 6 ones



	tens	ones
	2 ~~3~~	12 ~~2~~
−	1	6
		6

Step 2 Subtract the tens.

2 tens − 1 ten = 1 ten



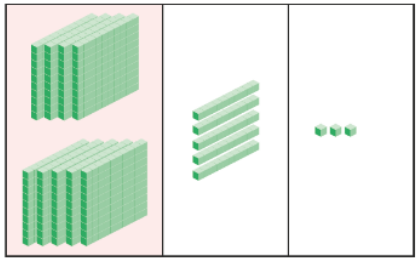
	tens	ones
	2 ~~3~~	12 ~~2~~
−	1	6
	1	6

32 − 16 = 16

YEAR 3

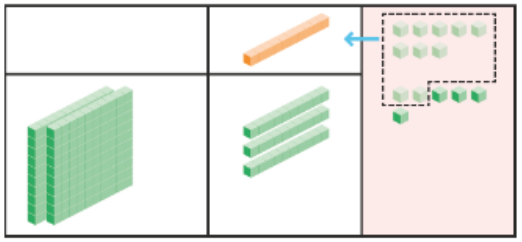
Addition

Y3 begin from this point. They use the standard column method for addition when there is no renaming needed.



	h	t	o
	4	3	2
+	5	2	1
	9	5	3

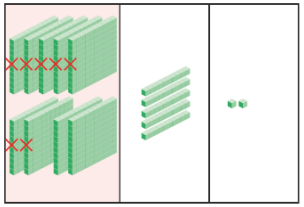
When Y3 look at calculations where renaming is needed, they go back to the expanded method to begin with to ensure they understand the value of the digits. When they are confident, they move to the standard column method and 'carry over' the digit that has been renamed.



	h	t	o
		1	
		3	8
+	2		6
	2	4	4

Subtraction

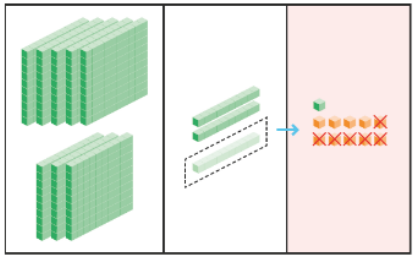
Y3 begin from this point, suing the standard column method for subtraction.



	h	t	o
	9	7	5
−	7	2	3
	2	5	2

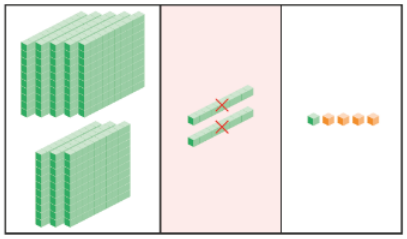
Y3 learn how to rename – or 'knock next door'

Step 1 Regroup 1 ten into 10 ones.
Subtract the ones.
11 ones − 6 ones = 5 ones



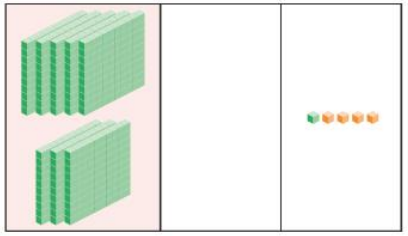
	h	t	o
	8	~~2~~ 3	~~11~~ 1
−		2	6
			5

Step 2 Subtract the tens.
2 tens − 2 tens = 0 tens



	h	t	o
	8	~~2~~ 3	~~11~~ 1
−		2	6
		0	5

Step 3 Subtract the hundreds.



	h	t	o
	8	~~2~~ 3	~~11~~ 1
−		2	6
	8	0	5

YEAR 4

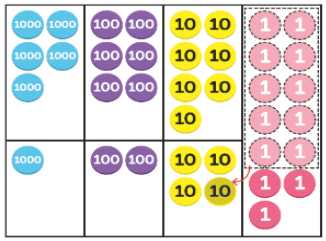
Addition

Subtraction

Y4 begin from this point, using the standard column methods for both addition and subtraction.

Step 1 Add the ones. 8 ones + 5 ones = 13 ones

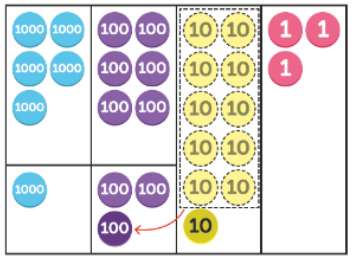
Rename the ones. 13 ones = 1 ten and 3 ones



$$\begin{array}{r} 5\ 6\ \overset{1}{7}\ 8 \\ +\ 1\ 2\ 3\ 5 \\ \hline \qquad\qquad 3 \end{array}$$

Step 2 Add the tens. 7 tens + 3 tens + 1 ten = 11 tens

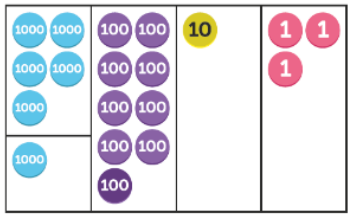
Rename the tens. 11 tens = 1 hundred and 1 ten



$$\begin{array}{r} 5\ \overset{1}{6}\ \overset{1}{7}\ 8 \\ +\ 1\ 2\ 3\ 5 \\ \hline \qquad\ 1\ 3 \end{array}$$

Step 3 Add the hundreds.

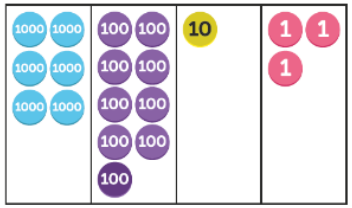
6 hundreds + 2 hundreds + 1 hundred = 9 hundreds



$$\begin{array}{r} 5\ \overset{1}{6}\ \overset{1}{7}\ 8 \\ +\ 1\ 2\ 3\ 5 \\ \hline \quad 9\ 1\ 3 \end{array}$$

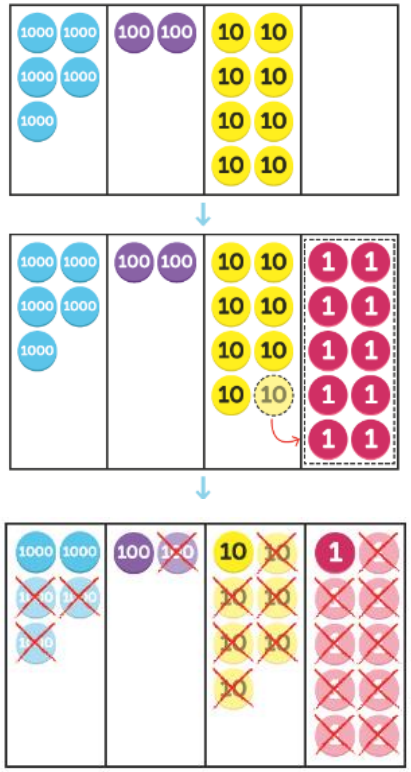
Step 4 Add the thousands.

5 thousands + 1 thousand = 6 thousands



$$\begin{array}{r} 5\ \overset{1}{6}\ \overset{1}{7}\ 8 \\ +\ 1\ 2\ 3\ 5 \\ \hline 6\ 9\ 1\ 3 \end{array}$$

5280 − 3169 = ☐



$$\begin{array}{r} 5\ 2\ \overset{7}{\cancel{8}}\ \overset{10}{\cancel{0}} \\ -\ 3\ 1\ 6\ 9 \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 5\ 2\ \overset{7}{\cancel{8}}\ \overset{10}{\cancel{0}} \\ -\ 3\ 1\ 6\ 9 \\ \hline 2\ 1\ 1\ 1 \end{array}$$

YEAR 5	
Addition	**Subtraction**
Year 5 continue to build of the standard column method. They use it to calculate money and measure, including decimals. They use 0 as a place holder.	Year 5 continue to build of the standard column method. They use it to calculate money and measure, including decimals. They use 0 as a place holder.

$$\begin{array}{rccccc} & \cancel{1} & & \cancel{1} & \\ & 5 & 7 & 5 & 2 & 8 \\ + & 3 & 3 & 6 & 3 & 9 \\ \hline & 9 & 1 & 1 & 6 & 7 \end{array}$$

$$\begin{array}{rccccc} & & & \cancel{1} & \\ & £ & 1 & . & 2 & 3 \\ + & £ & 1 & . & 4 & 7 \\ \hline & £ & 2 & . & 7 & 0 \end{array}$$

$$\begin{array}{rccccc} & 1 & 9 & . & 0 & 1 \\ & & 3 & . & 6 & 5 \\ + & & 0 & . & 7 & \mathbf{0} \\ \hline & 2 & 3 & . & 3 & 6 \end{array}$$

$$\begin{array}{rccccc} & \cancel{5}6 & & {}^{1}3 & & 4 & & \cancel{4}5 & & {}^{1}6 \\ - & 2 & & 5 & & 1 & & 4 & & 7 \\ \hline & 3 & & 8 & & 3 & & 0 & & 9 \end{array}$$

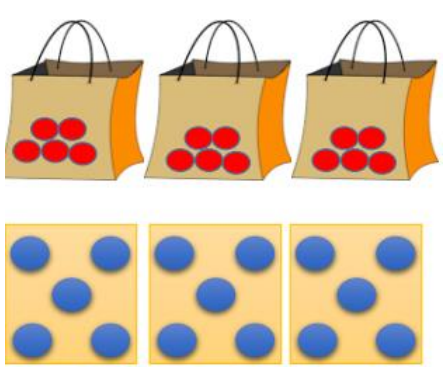
$$\begin{array}{rccccc} & £ & 2 & . & \cancel{2}3 & {}^{1}3 \\ - & £ & 1 & . & 1 & 9 \\ \hline & £ & 1 & . & 1 & 4 \end{array}$$

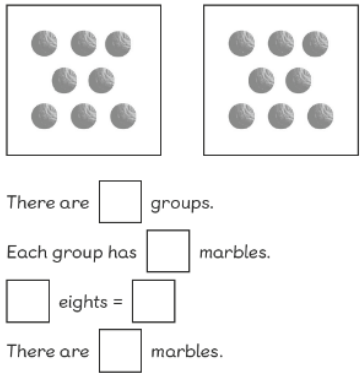
YEAR 6	
Addition	**Subtraction**
In Y6 we continue with the Y5 methods of addition.	In Y6, we continue with the Y5 methods of addition.

YEAR 1

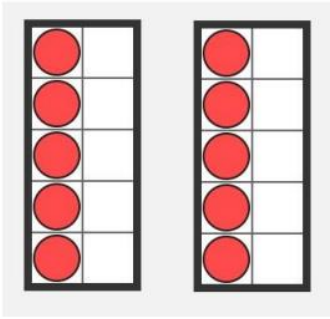
Multiplication

In Year 1, the children learn about multiplication as equal groups as well as repeated addition. They count in 2s, 5s and 10s to find the answer.





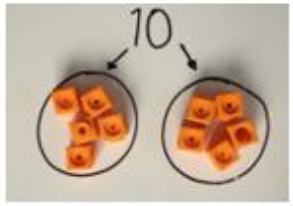
Year 1 learn double facts and what this means.



Double 5 = 10

Division

In Year 1, children learn about division as sharing equally and grouping equally using lots of concrete equipment,



I have 10 cubes, can you share them equally in 2 groups?

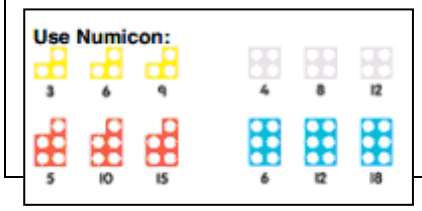
5 children share 10 sweets equally.
How many sweets does each child get?

Each child gets sweets.

YEAR 2

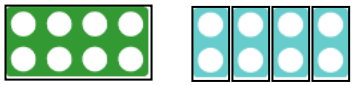
Multiplication

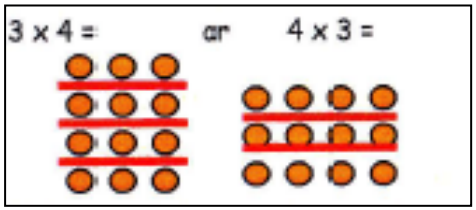
Year 2 build on multiplication of equal groups to learn their times table facts. They look at multiplication and counting in equal groups using lots of concrete and pictorial resources.

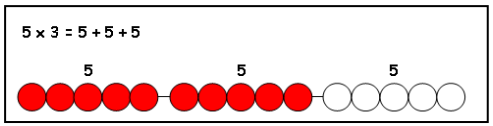


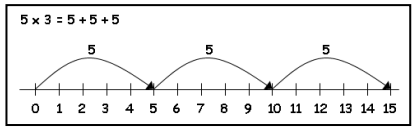
Division

Year 2 children learn to divide by 2,5 and 20. They use concrete equipment, including numicon, and pictures, over time they begin to use times table facts to help them. They count up in groups of a number on a number line as a written method.

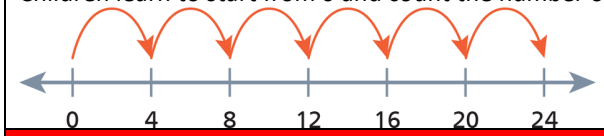


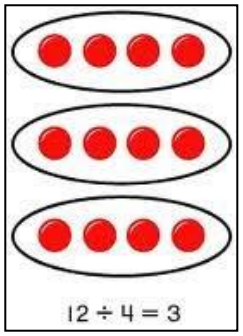


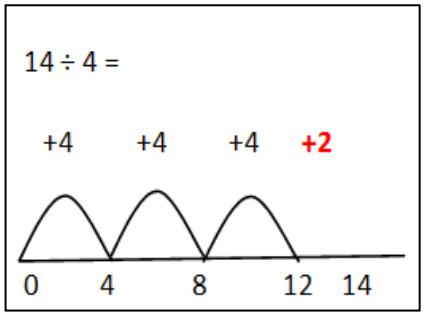




As a written method, Y2 use a number line to count on in groups of the divisor: 24÷ 4 = 6
Children learn to start from 0 and count the number of jumps of 4 to find the answer.



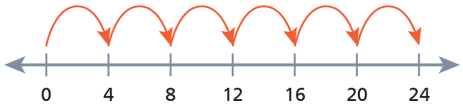




YEAR 3

Multiplication

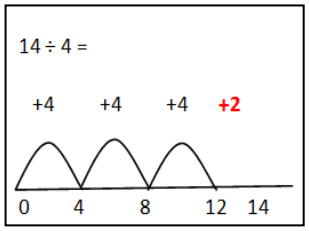
Year 3 children start with the idea of counting 'in groups of' to help them learn the multiplication facts and using a number line to record these. Counting on in groups of the divisor : 24÷ 4 = 6 Children learn to start from 0 and count the number of jumps of 4 to find the answer.



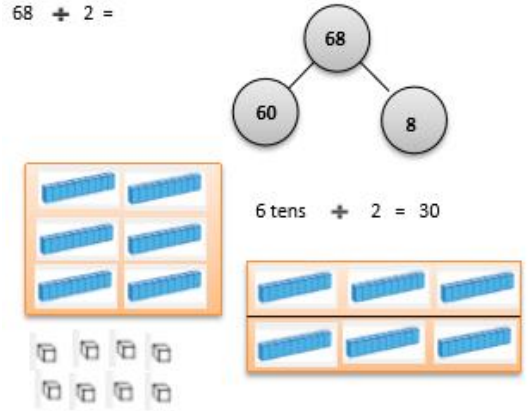
They then move on to multiplying a 2-digit number by a 1-digit number using the part part whole diagram to help them partition.

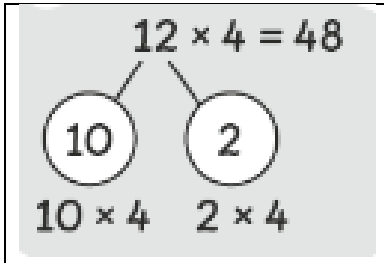
Division

Like with multipkluication, the Y3 children start by counting up 'in groups of' to see how many groups of a divisor are in a dividend. The can record this on a number line.

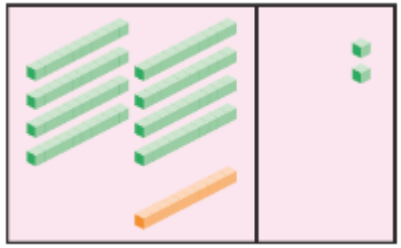


They then move on to dividing a 2-digit number by a 1-digit number using the part part whole diagram to help them partition. They use multiplication facts know to divide.



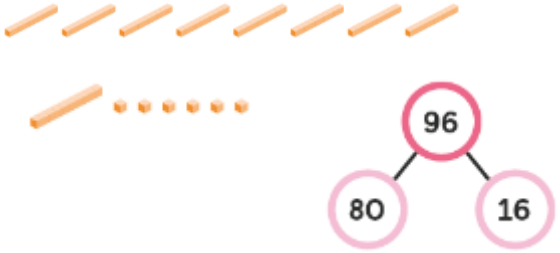


Y3 then move on to a multiplication column method when the calculation requires renaming. Diennes are used to support understanding.



	t	o
	2	3
×		4
	1	2
+	8	0
	9	2

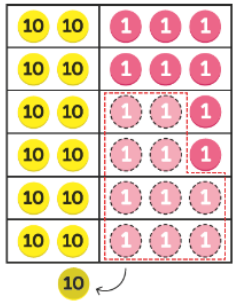
The idea of formal division or ' the bus stop' method is introduced but the focus is still on using the multiplication facts they know.



		1	2
8	)	9	6
	−	8	0
		1	6
	−	1	6
			0

YEAR 4

MULTIPLICATION



		1	
	2	3	
×		6	
1	3	8	

		2	3
×			6
		1	8
+	1	2	0
	1	3	8

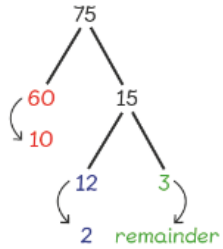
In Y4, the children move onto the standard column method for multiplication, using the expanded version to support understanding as necessary e.g when they move on to multiplying 3-digit number.

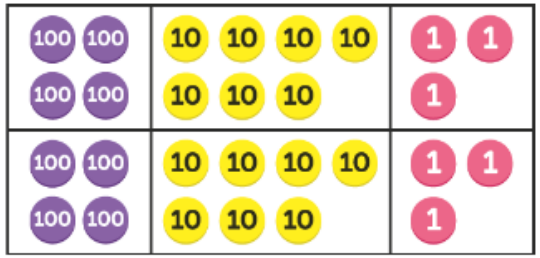
	4	2	3
×			4
		1	2
		8	0
+	1	6	0	0
	1	6	9	2

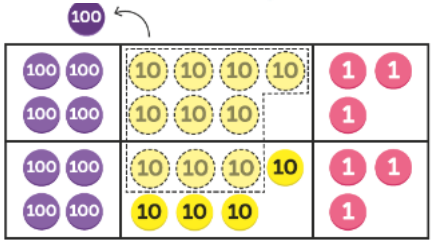
DIVISION

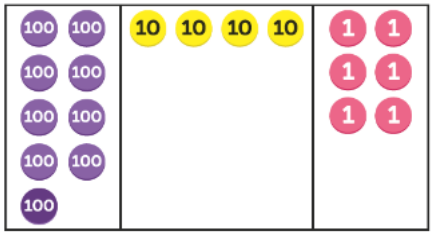
Year 4 continue with the idea of partitioning the dividend into multiples of the divisor that they know. They use place value counters to support their understanding of place value and partitioning.

75 ÷ 6 = ☐



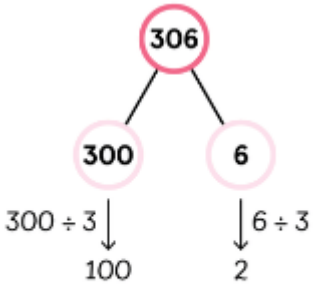






Multiply the hundreds.
Add the 1 hundred.

$$\begin{array}{r} {\scriptstyle 1}\,4\;\;7\;\;3 \\ \times\qquad\;\;2 \\ \hline 9\;\;4\;\;6 \end{array}$$



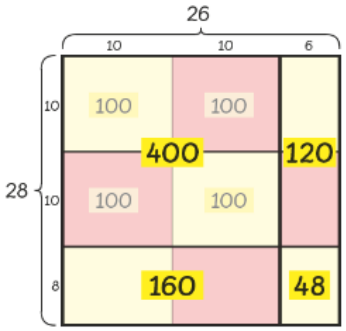
$306 \div 3 = 100 + 2$
$= 102$

Year 4 carry on with the idea of formal division or ' the bus stop' method using their multiplication facts as a stepping stone into short division in Y5.

$$\begin{array}{r} 1\;0\;2 \\ 3\overline{)\;3\;0\;6} \\ -\;3\;0\;0 \\ \hline \qquad 6 \\ -\qquad 6 \\ \hline \qquad 0 \end{array}$$

YEAR 5	
Multiplication	**Division**
In Y5, the children consolidate multiplying by a one digit number before learning to multiply a 2-digit number by a 2-digit number. They use the expanded method initially to ensure understanding of the value of the digits. The grid method is show as a pictorial representation.	Y5 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. The focus is still on using kown facts and understanding the place value but the children quickly move to the short, condensed 'bus stop' method.

$$\begin{array}{r} {\scriptstyle 1\ \ \ }\\ {\scriptstyle 4\ \ \ }\\ 2\ 8\\ \times\ \ 2\ 6\\ \hline 1\ 6\ 8 \\ +\ 5\ 6 \\ \hline 7\ 2\ 8 \end{array} \begin{array}{l} \\ \\ \\ \longrightarrow 28 \times 6 \\ \longrightarrow 28 \times 20 \\ \\ \\ \end{array}$$



$231 \times 13 =$ ☐

$$\begin{array}{r} 2\ 3\ 1 \\ \times\ \ \ 1\ 3 \\ \hline 6\ 9\ 3 \\ +\ 2\ 3\ 1\ 0 \\ \hline 3\ 0\ 0\ 3 \end{array} \begin{array}{l} \\ \longrightarrow 231 \times 3 = 693 \\ \longrightarrow 231 \times 10 = 2310 \\ \\ \end{array}$$

There are 3003 stamps in the donation.

$$8\overline{)\ 2\ 5\ 2\ 8}$$

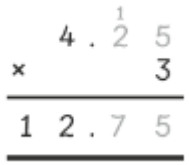
$$\begin{array}{r} 3\ 1\ 6 \\ 8\overline{)\ 2\ 5\ 2\ 8} \\ -\ 2\ 4\ 0\ 0 \\ \hline 1\ 2\ 8 \\ -\ \ \ 8\ 0 \\ \hline 4\ 8 \\ -\ 4\ 8 \\ \hline 0 \end{array}$$

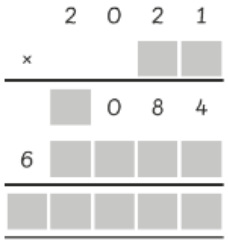
$$7\overline{)\ 6\ 5\ 9}$$

$$\begin{array}{r} 9\ 4 \text{ remainder } 1 \\ 7\overline{)\ 6\ 5\ {\scriptstyle 2}\ 9} \end{array}$$

YEAR 6	
Multiplication	Division

This is then extended on in Y6 when the children learn to multiply 3 and 4 digit numbers by 2-dogot numbers. They also multiply decimals.





124 × 26 becomes

	1	2	4
×		2	6
	7	4	4
2	4	8	0
3	2	2	4

Year 6 continue to use the formal written method of short division, interpreting remainders according to the context. They begin to divide numbers by 2-digit numbers using the long division method.

581 ÷ 18 = ☐

```
    3 2   remainder 5
18 ) 5 8 1
   - 5 4   → 3 tens × 18 = 54 tens
     4 1
   -   3 6 → 2 ones × 18 = 36 ones
       5
```

581 ÷ 18 = 32 remainder 5

```
      3 2 8
6 ) 1 9 6 8
  - 1 8 0 0
      1 6 8
  -   1 2 0
        4 8
  -     4 8
        0
```