

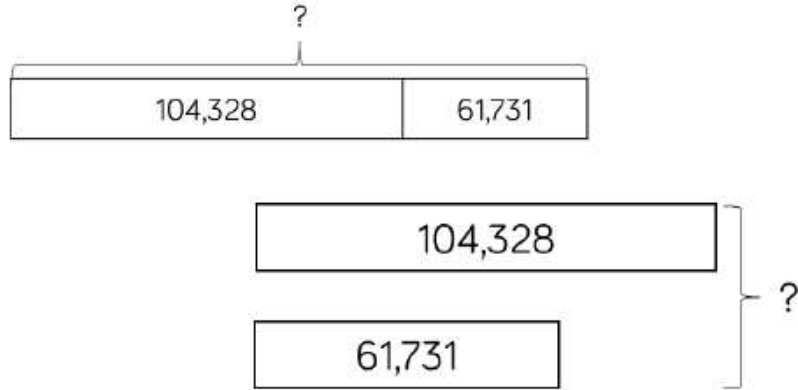
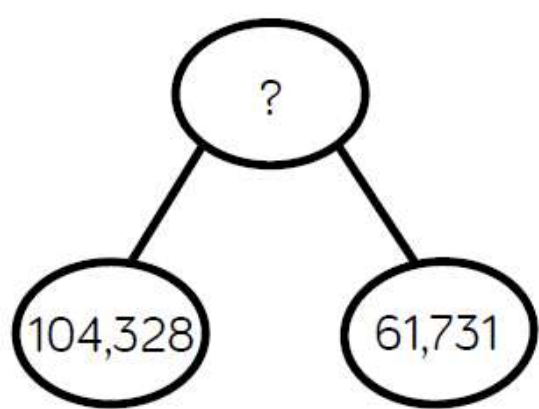
# SCPS Calculation Guide

## Year 5

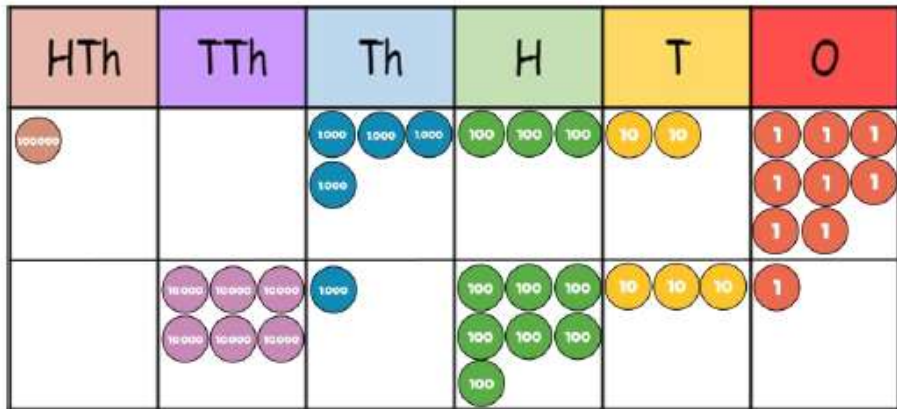
This guide shows illustrations and examples of the methods used to teach addition, subtraction, multiplication and division



**Year 5 Addition** Add with more than 4 digits



$$104,328 + 61,731 = 166,059$$



1	0	4	3	2	8
+	6	1	7	3	1
1	6	6	0	5	9

1

**Models and Representations**

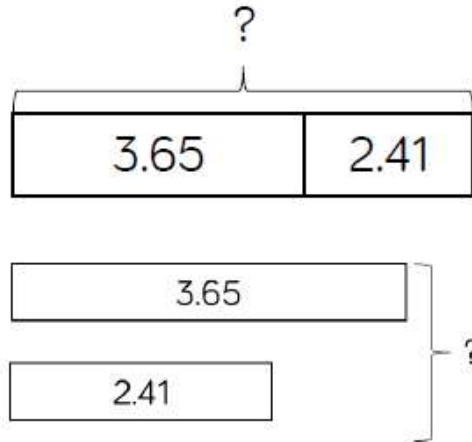
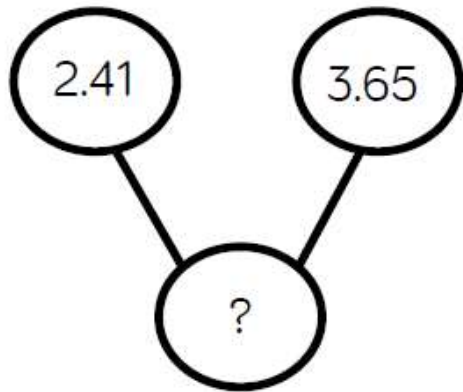
Bar model  
Part-whole model  
Place Value Counters

**Column Addition**

Place value counters or plain counters on a place value grid are the most effective concrete resources when adding numbers with more than 4 digits.

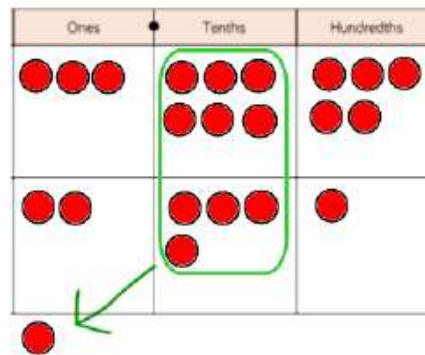
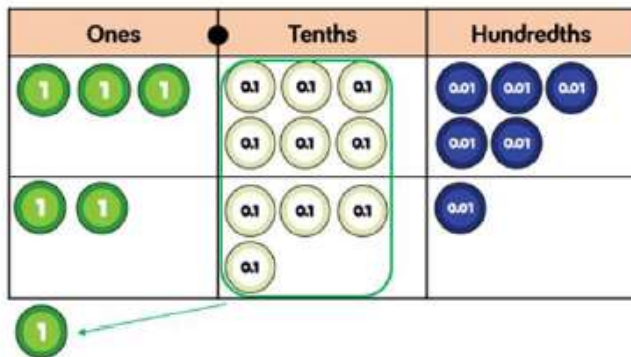
At this stage, children should be encouraged to work in the abstract, using the column method to add larger numbers efficiently.

**Year 5 Addition** Add up to three decimal places



$$\begin{array}{r}
 3.65 \\
 + 2.41 \\
 \hline
 6.06 \\
 1
 \end{array}$$

$$3.65 + 2.41 = 6.06$$



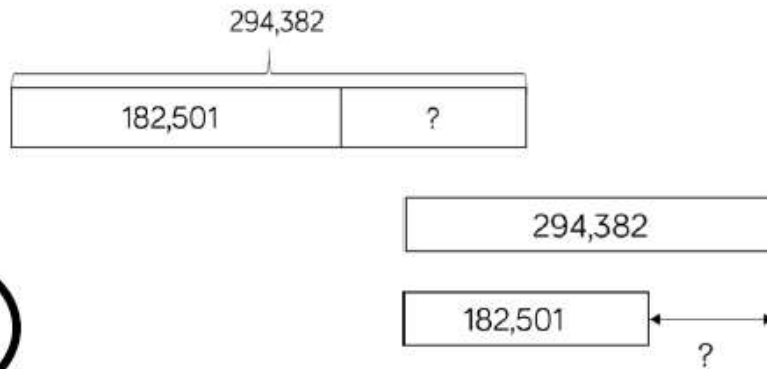
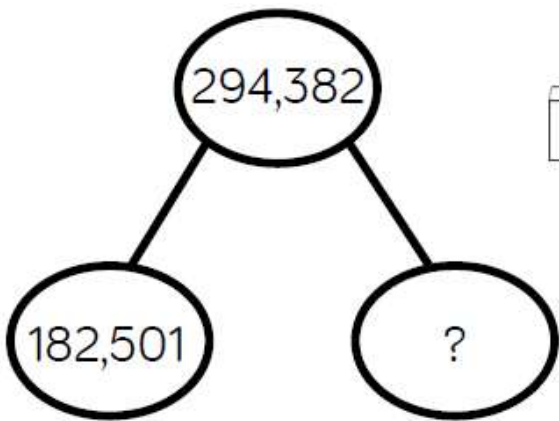
Models and Representations
Bar model Part-whole model Place Value Counters
<b>Column Addition</b>

Place value counters and plain counters on a place value grid are the most effective manipulatives when adding decimals with 1, 2 and then 3 decimal places.

Ensure children have experience of adding decimals with a variety of decimal places.

This includes putting this into context when adding money and other measures.

**Year 5 Subtraction** Subtract numbers with more than 4 digits



$$294,382 - 182,501 = 111,881$$

**Models and Representations**

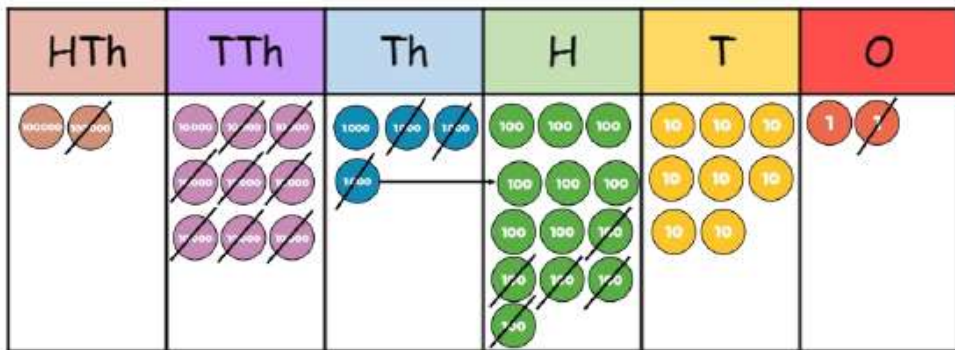
- Bar model
- Part-whole model
- Place Value Counters

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**Column Subtraction**

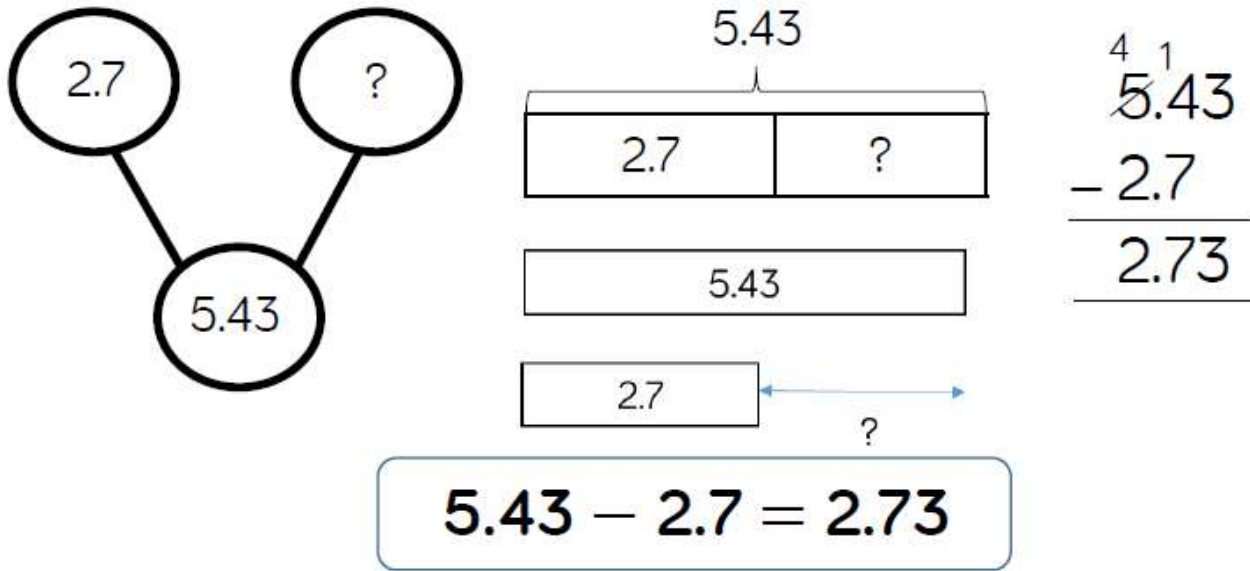
Place value counters or plain counters on a place value grid are the most effective concrete resource when subtracting numbers with more than 4 digits.

At this stage, children should be encouraged to work in the abstract, using column method to subtract larger numbers efficiently.

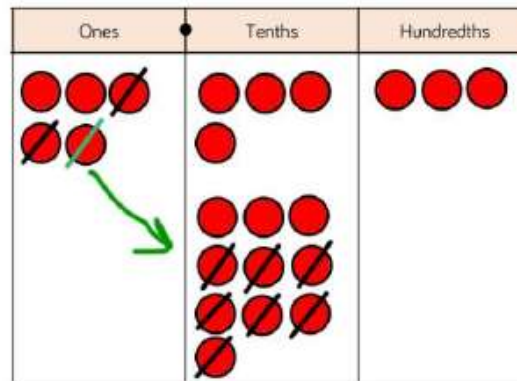
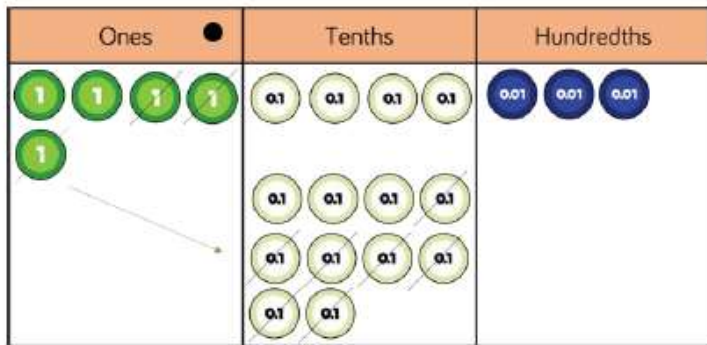


	2	9	<del>3</del>	13	8	2
-	1	8	2	5	0	1
	1	1	1	8	8	1

**Year 5** **Subtraction** Subtract with up to three decimal places



Models and Representations
Bar model Part-whole model Place Value Counters
<b>Column Subtraction</b>



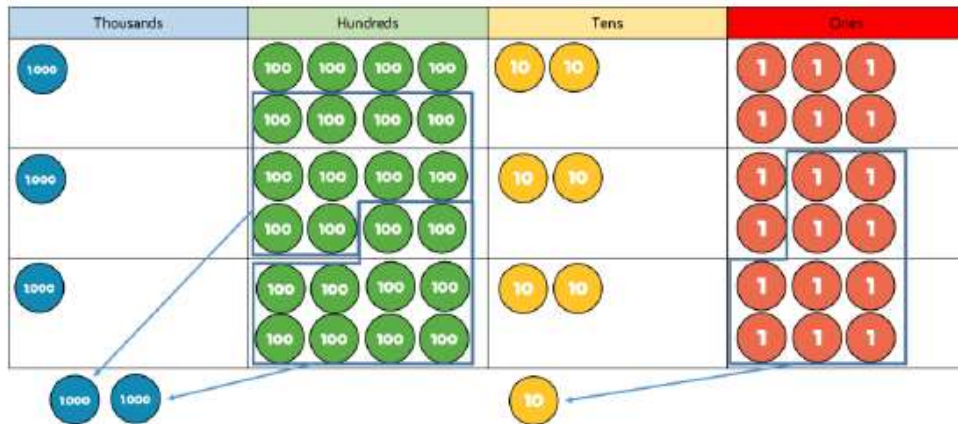
Place value counters and plain counters on a place value grid are the most effective manipulative when subtracting decimals with 1, 2 and then 3 decimal places.

Ensure children have experience of subtracting decimals with a variety of decimal places.

This includes putting this into context when subtracting money and other measures.

## Year 5 Multiplication

Multiply 4-digit by 1-digit numbers



$$1,826 \times 3 = 5,478$$

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

### Models and Representations

Place Value counters

**Short Multiplication**

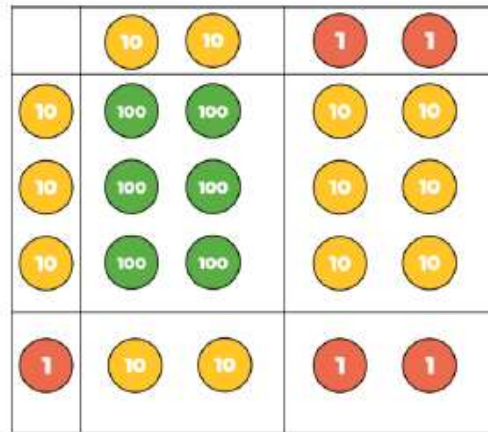
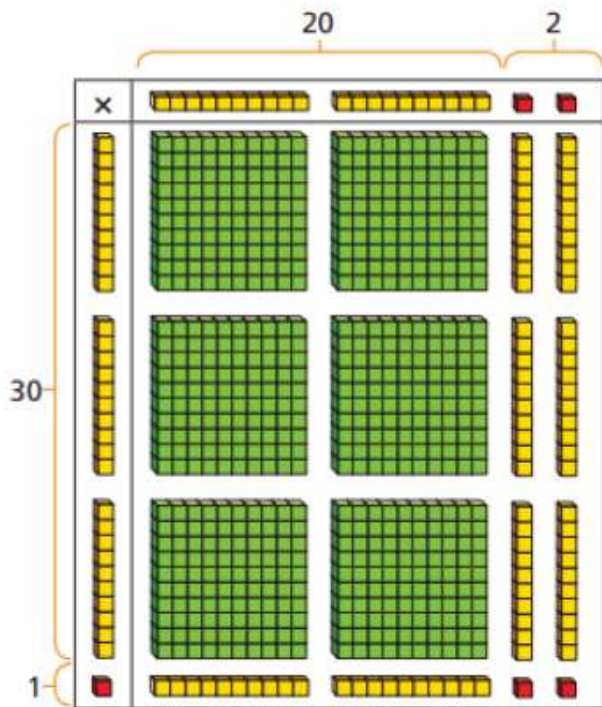
When multiplying 4-digit numbers, place value counters are the best manipulative to use to support children in their understanding of the formal written method.

If children are multiplying larger numbers and struggling with their times tables, encourage the use of multiplication grids so children can focus on the use of the written method.



## Year 5 Multiplication

Multiply 2-digit numbers by 2-digit numbers



×	20	2
30	600	60
1	20	2

	H	T	O
		2	2
×		3	1
		2	2
	6	6	0
	6	8	2

$$22 \times 31 = 682$$

### Models and Representations

Place Value counters  
Grid Method

**Short Multiplication**

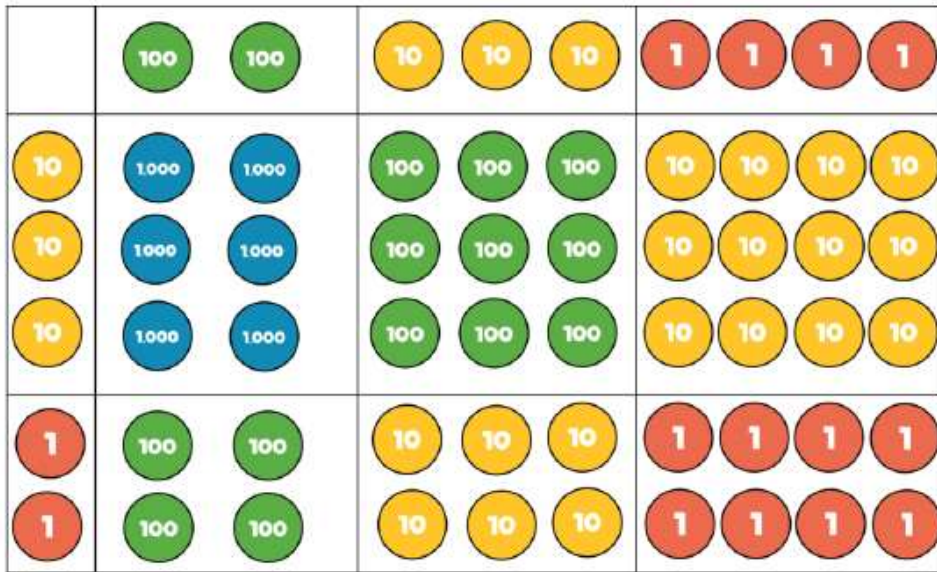
When multiplying a multi-digit number by 2-digits, use the area model to help children understand the size of the numbers they are using.

This links to finding the area of a rectangle by finding the space covered by the Base 10.

The grid method matches the area model as an initial written method before moving on to the formal written multiplication method.

## Year 5 Multiplication

Multiply 3-digit numbers by 2-digit numbers



	Th	H	T	O
		2	3	4
x			3	2
		4	6	8
17	10	2	0	
7	4	8	8	

x	200	30	4
30	6,000	900	120
2	400	60	8

$$234 \times 32 = 7,488$$

### Models and Representations

Place Value counters  
Grid Method

**Short Multiplication**

Children can continue to use the area model when multiplying 3- digits by 2- digits.

Place value counters become more efficient to use but Base 10 can be used to highlight the size of numbers.

Children should now move towards the formal written method, seeing the links with the grid method.



## Year 5 Multiplication

Multiply 4-digit numbers by 2-digit numbers

TTh	Th	H	T	O
	2	7	3	9
×			2	8
2	1	9	1	2
<sub>2</sub>	<sub>5</sub>	<sub>3</sub>	<sub>7</sub>	
5	4	7	8	0
<sub>1</sub>		<sub>1</sub>		
7	6	6	9	2

1

$$2,739 \times 28 = 76,692$$

### Models and Representations

#### Short Multiplication

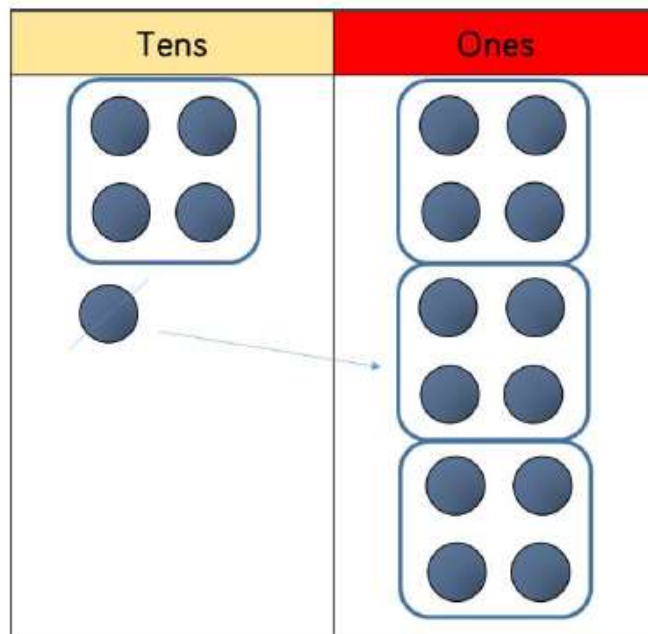
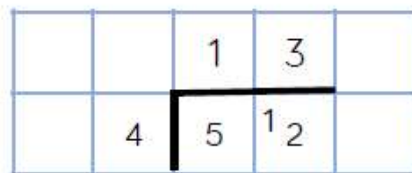
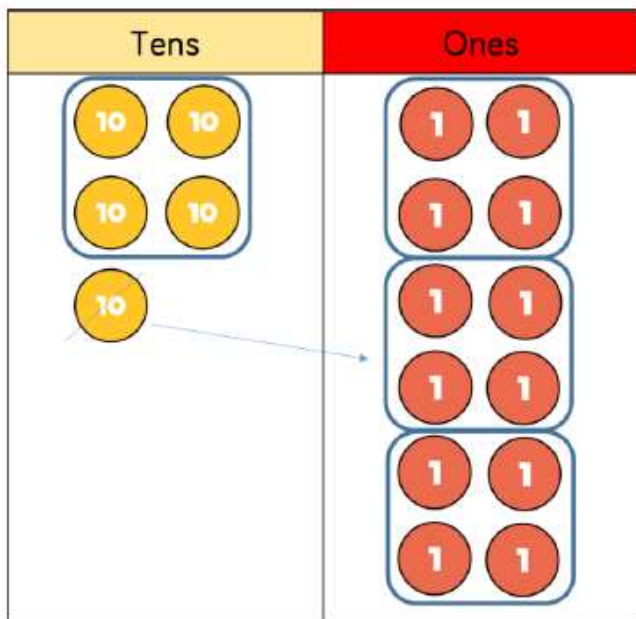
When multiplying 4- digits by 2-digits, children should be confident in using the formal written method.

If they are still struggling with times tables, provide multiplication grids to support when they are focusing on the use of the method.

Consider where exchanged digits are placed and make sure this is consistent.

## Year 5 Division

Divide 2-digits by 1-digit (grouping)



$$52 \div 4 = 13$$

### Models and Representations

Place Value Counters  
Counters

Place Value Grid  
**Written short division**

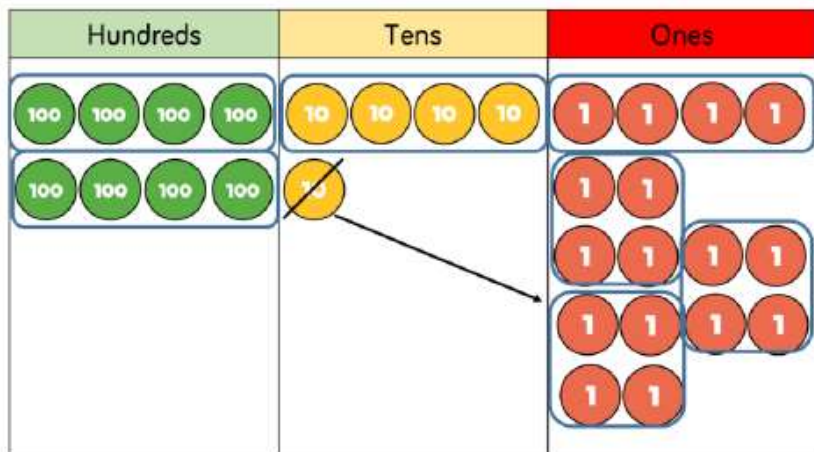
When using the short division method, children use grouping. Starting with the largest place value, they group by the divisor.

Language is important here. Children should consider 'How many groups of 4 tens can we make?' and 'How many groups of 4 ones can we make?'

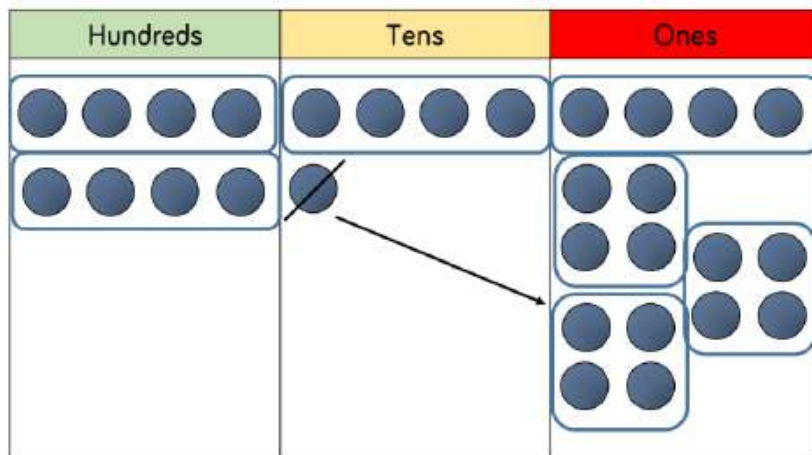
Remainders can also be seen as they are left ungrouped.

## Year 5 Division

Divide 3-digits by 1-digit (grouping)



		2	1	4
	4	8	5	16



$$856 \div 4 = 214$$

### Models and Representations

Place Value counters  
Place Value Grid

Base 10

**Written Division**

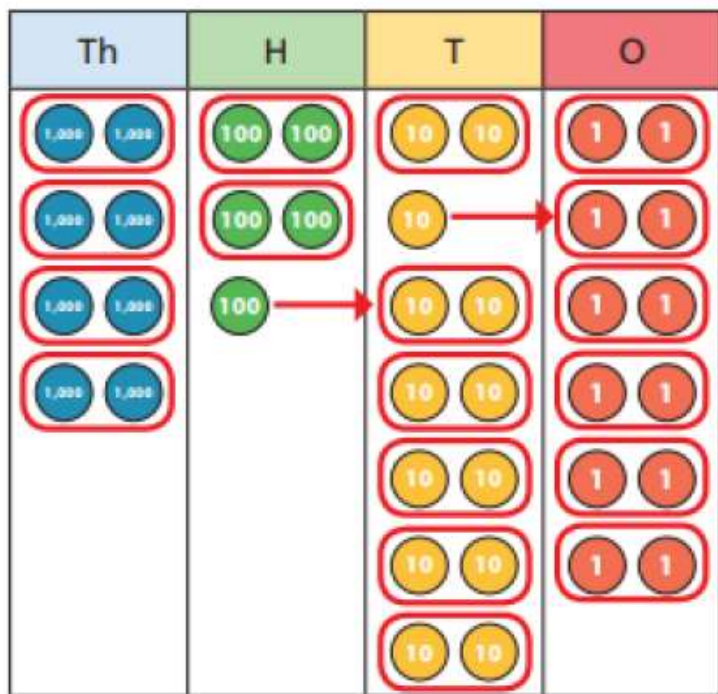
Children can continue to use grouping to support their understanding of short division when dividing a 3-digit number by a 1-digit number.

Place value counters or plain counters can be used on a place value grid to support this understanding.

Children can also draw their own counters and group them through a more pictorial method.

## Year 5 Division

Divide 4-digits by 1-digit (grouping)



	4	2	6	6
2	8	5	13	12

$$8,532 \div 2 = 4,266$$

### Models and Representations

Place Value counters  
Place Value Grid

Counters

**Written Division**

Place value counters or plain counters can be used on a place value grid to support children to divide 4-digits by 1-digit.

Children can also draw their own counters and group them through a more pictorial method.

Children should be encouraged to move away from the concrete and pictorial when dividing numbers with multiple exchanges.