



Roecliffe CE Primary School

Calculations Policy



At Roecliffe CE Primary School, the aim of our calculation policy is to ensure all children receive high quality maths education. Calculation procedures are taught according to this document so they can be seamlessly built upon year after year, as the child moves through school.

The policy has been taken and adapted from White Rose Maths. The policy, and teaching and learning at school, follows a concrete, pictorial, abstract approach.

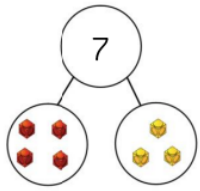
The policy goes through:

- Glossary and Key Vocabulary (page 2)
- Addition (page 5)
- Subtraction (page 12)
- Multiplication (page 18)
- Division (page 25)

Each operation is broken down into skills for the year group and shows recommended models and visuals to support the teaching of the corresponding concepts.

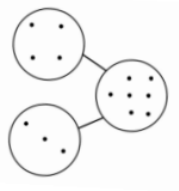


Glossary



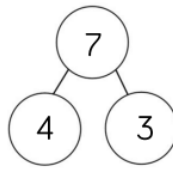
$$7 = 4 + 3$$

$$7 = 3 + 4$$

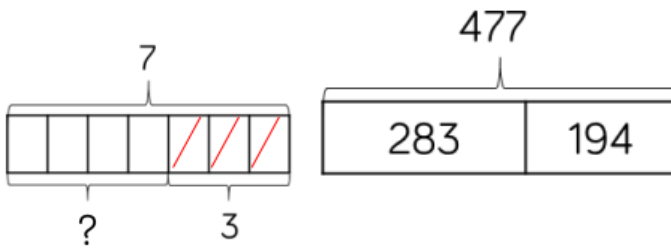


$$7 - 3 = 4$$

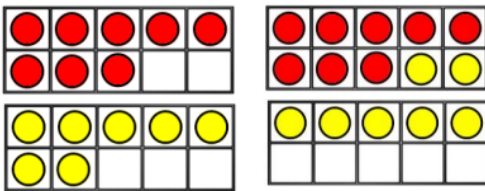
$$7 - 4 = 3$$



Part-part-whole model

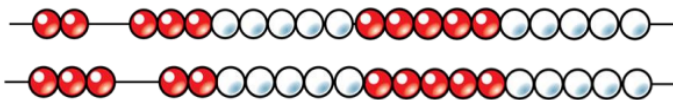


Bar model



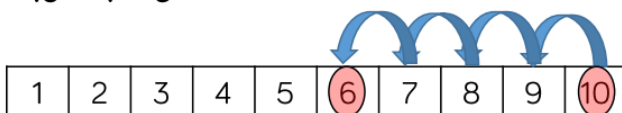
$$8 + 7 = 15$$

Ten frames (within 20)

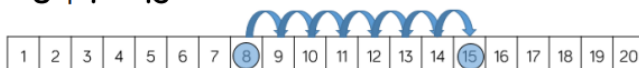


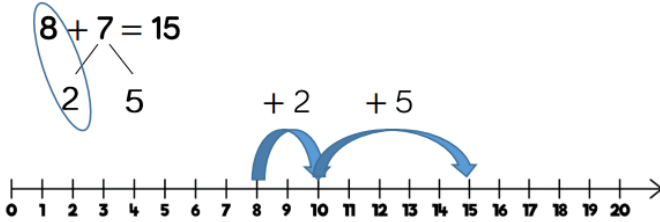
Bead strings

$$10 - 4 = 6$$



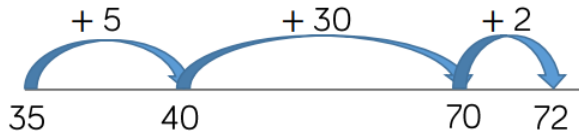
$$8 + 7 = 15$$





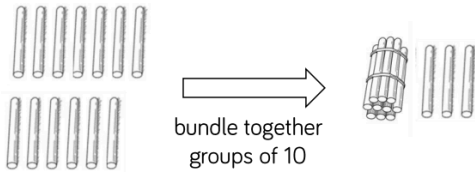
Number line
(labelled)

$35 + 37 = 72$



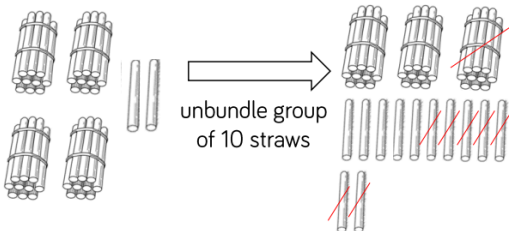
Number line (blank)

$7 + 6 = 13$



Straws

$42 - 17 = 25$



Hundreds	Tens	Ones

→

$$\begin{array}{r} 265 \\ + 164 \\ \hline 429 \\ 1 \end{array}$$

Base 10

Place value
counters

Thousands	Hundreds	Tens	Ones

$$\begin{array}{r} 3 \quad 1 \\ 4357 \\ - 2735 \\ \hline 1622 \end{array}$$

Addition and Subtraction Vocabulary:

Addend - A number to be added to another.

Aggregation - combining two or more quantities or measures to find a total.

Augmentation - increasing a quantity or measure by another quantity.

Commutative - numbers can be added in any order.

Complement - in addition, a number and its complement make a total e.g. 300 is the complement to 700 to make 1,000

Difference - the numerical difference between two numbers is found by comparing the quantity in each group.

Exchange - Change a number or expression for another of an equal value.

Minuend - A quantity or number from which another is subtracted.

Partitioning - Splitting a number into its component parts.

Reduction - Subtraction as take away.

Subitise - Instantly recognise the number of objects in a small group without needing to count.

Subtrahend - A number to be subtracted from another.

Sum - The result of an addition.

Total - The aggregate or the sum found by addition.

Multiplication and Division Vocabulary:

Array - An ordered collection of counters, cubes or other item in rows and columns.

Commutative - Numbers can be multiplied in any order.

Dividend - In division, the number that is divided.

Divisor - In division, the number by which another is divided.

Exchange - Change a number or expression for another of an equal value.

Factor - A number that multiplies with another to make a product.

Multiplicand - In multiplication, a number to be multiplied by another.

Partitioning - Splitting a number into its component parts.

Product - The result of multiplying one number by another.

Quotient - The result of a division

Remainder - The amount left over after a division when the divisor is not a factor of the dividend.

Scaling - Enlarging or reducing a number by a given amount, called the scale factor

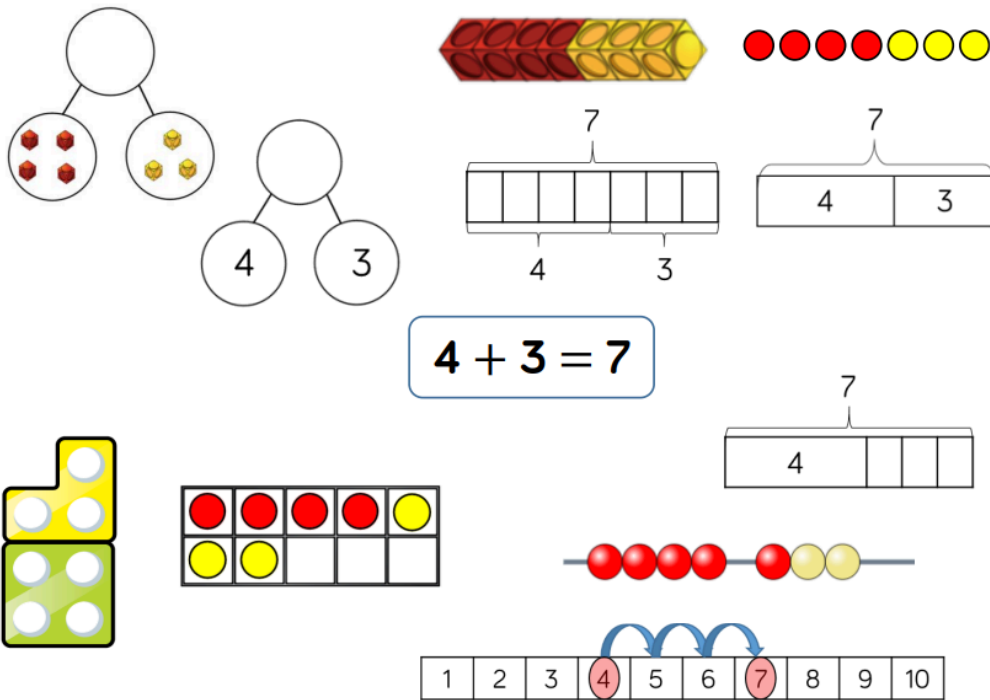
Addition

Skill	Year Groups	Representations and models
Add two 1-digit numbers to 10	1	Part-whole model Bar model Number shapes Ten frames (within 10) Bead strings (10) Number tracks
Add 1 and 2-digit numbers to 20	1	Part-whole model Bar model Number shapes Ten frames (within 20) Bead strings (20) Number tracks Number lines (labelled) Straws
Add three 1-digit numbers	2	Part-whole model Bar model Ten frames (within 20) Number shapes
Add 1 and 2-digit numbers to 100	2	Part-whole model Bar model Number lines (labelled) Number lines (blank) Straws Hundred square
Add two 2-digit numbers	2	Part-whole model Bar model Number lines (blank) Straws Base 10 P lace value counters
Add with up to 3-digits	3	Part-whole model Bar model Base 10 Place value counters Column addition
Add with up to 4-digits	4	Part-whole model

		Bar model Base 10 Place value counters Column addition
Add with more than 4 digits	5	Part-whole model Bar model Place value counters Column addition
Add with up to 3 decimal places	5	Part-whole model Bar model Place value counters Column addition

Skill: Add 1-digit numbers within 10

Year: 1



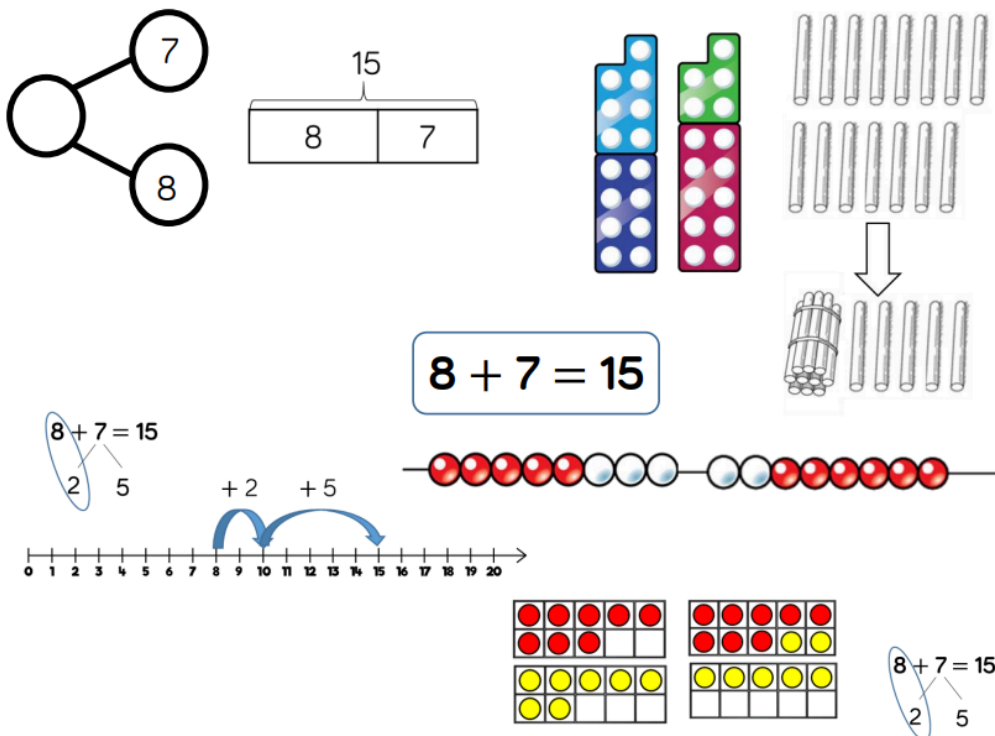
When adding numbers to 10, children can explore both aggregation and augmentation.

The part-whole model, discrete and continuous bar model, number shapes and ten frame support aggregation.

The combination bar model, ten frame, bead string and number track all support augmentation.

Skill: Add 1 and 2-digit numbers to 20

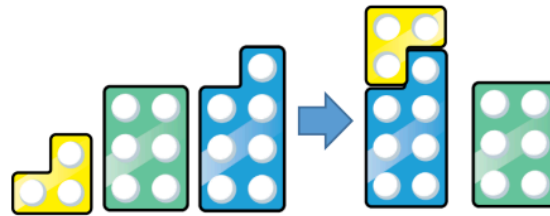
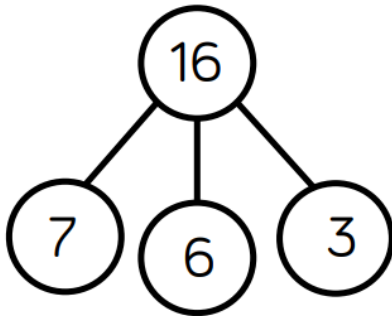
Year: 1/2



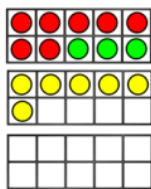
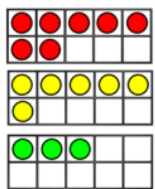
When adding one-digit numbers that cross 10, it is important to highlight the importance of ten ones equalling one ten. In Year 1, this is only done just by counting on. From Year 2, use different manipulatives can be used to represent this exchange alongside number lines to support children in understanding how to partition their jumps.

Skill: Add three 1-digit numbers

Year: 2

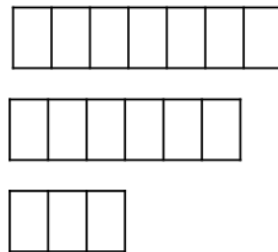


$$7 + 6 + 3 = 16$$



$$7 + 6 + 3 = 16$$

10



16

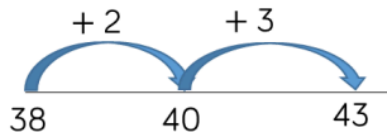
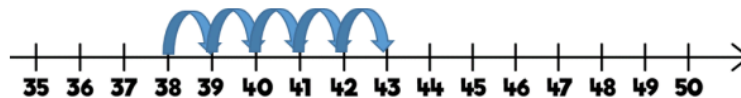
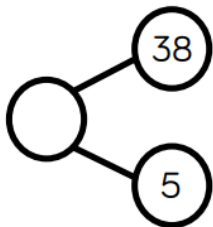
When adding three 1-digit numbers, children should be encouraged to look for number bonds to 10 or doubles to add the numbers more efficiently.

This supports children in their understanding of commutativity.

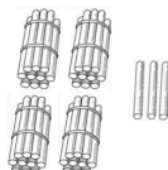
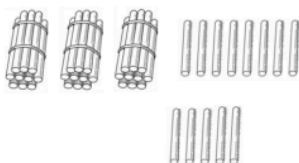
Manipulatives that highlight number bonds to 10 are effective when adding three 1-digit numbers.

Skill: Add 1-digit and 2-digit numbers to 100

Year: 2/3



$$38 + 5 = 43$$



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

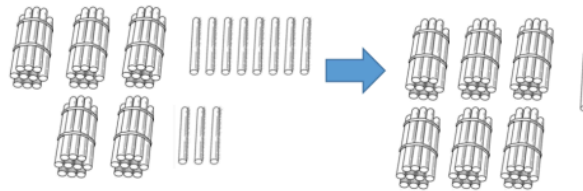
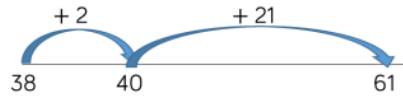
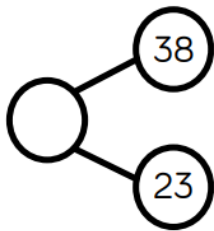
When adding single digits to a two-digit number, children should be encouraged to count on from the larger number.

They should also apply their knowledge of number bonds to add more efficiently e.g. $8 + 5 = 13$ so $38 + 5 = 43$.

Hundred squares and straws can support children to find the number bond to 10.

Skill: Add two 2-digit numbers to 100

Year: 2/3



38	23
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$$38 + 23 = 61$$

Tens	Ones

$$\begin{array}{r} 38 \\ + 23 \\ \hline 61 \\ 1 \end{array}$$

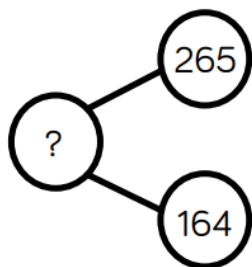
Tens	Ones

Children can use a blank number line and other representations to count on to find the total. Encourage them to jump to multiples of 10 to become more efficient.

encourage children to use the formal column method when calculating alongside straws, base 10 or place value counters. As numbers become larger, straws become less efficient.

Skill: Add numbers with up to 3 digits

Year: 3



?
265
164

265
164

$$265 + 164 = 429$$

Hundreds	Tens	Ones

$$\begin{array}{r} 265 \\ + 164 \\ \hline 429 \\ 1 \end{array}$$

Hundreds	Tens	Ones

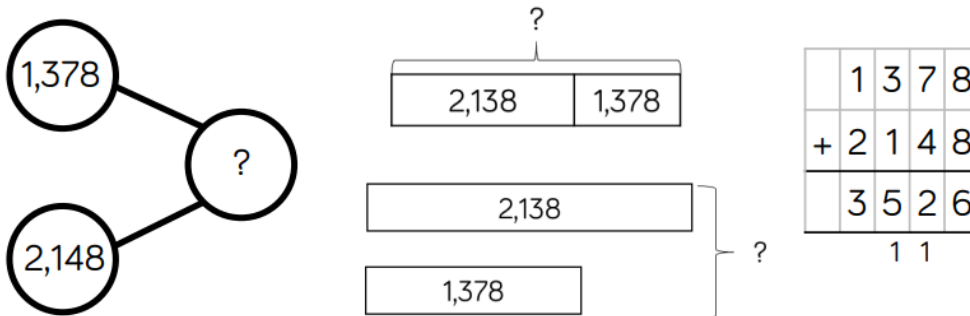
Base 10 and place value counters are the most effective manipulatives when adding numbers with up to 3 digits.

Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method.

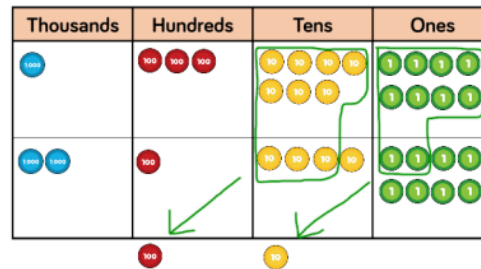
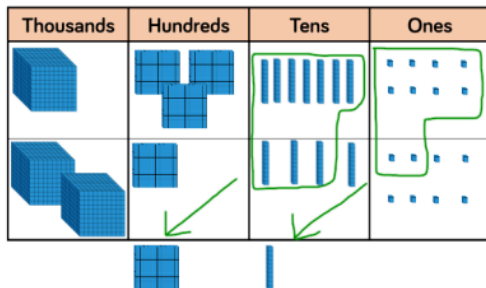
Plain counters on a place value grid can also be used to support learning.

Skill: Add numbers with up to 4 digits

Year: 4



$$1,378 + 2,148 = 3,526$$



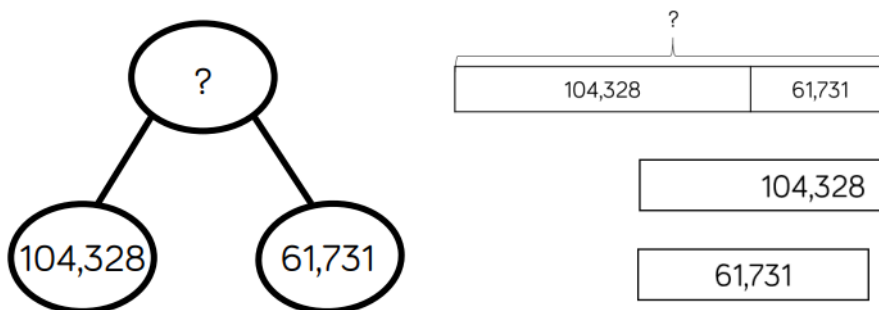
Base 10 and place value counters are the most effective manipulatives when adding numbers with up to 4 digits.

Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method.

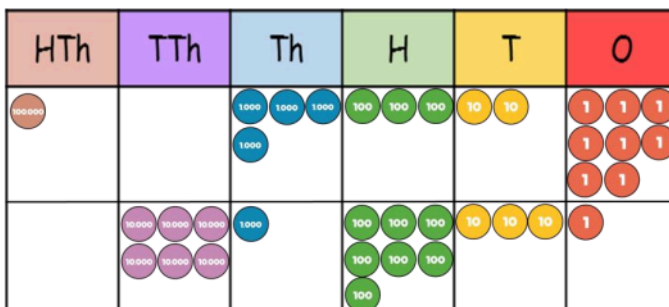
Plain counters on a place value grid can also be used to support learning.

Skill: Add numbers with more than 4 digits

Year: 5/6



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



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

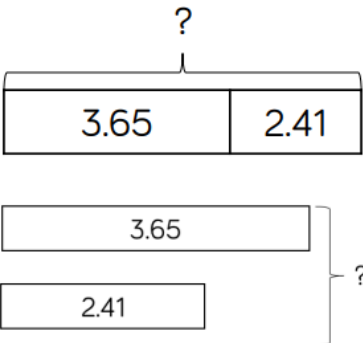
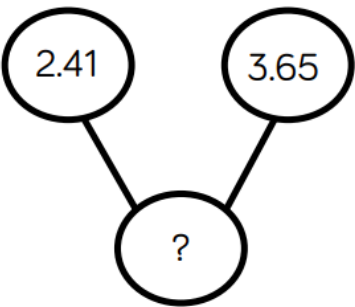
Place value counters or plain counters on a place value grid are the most effective concrete resources when adding numbers with more than 4 digits.

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



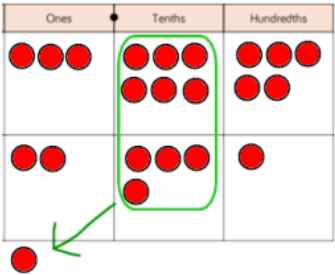
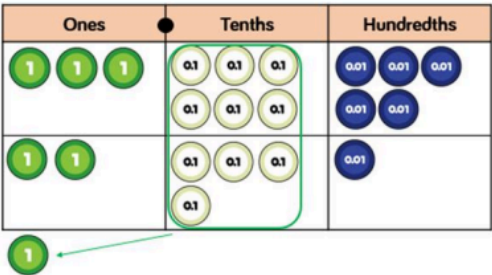
Skill: Add with up to 3 decimal places

Year: 5



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

$3.65 + 2.41 = 6.06$



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.

Subtraction

Skill	Year Groups	Representations and models
Subtract two 1-digit numbers to 10	1	Part-whole model Bar model Number shapes Ten frames (within 10) Bead strings (10) Number tracks
Subtract 1 and 2-digit numbers to 20	1	Part-whole model Bar model Number shapes Ten frames (within 20) Bead string (20) Number tracks Number lines (labelled) Straws
Subtract 1 and 2-digit numbers to 100	2	Part-whole model Bar model Number lines (labelled) Number lines (blank) Straws Hundred square
Subtract two 2-digit numbers	2	Part-whole model Bar model Number lines (blank) Straws Base 10 Place value counters
Subtract with up to 3-digits	3	Part-whole model Bar model Base 10 Place value counters Column subtraction
Subtract with up to 4-digits	4	Part-whole model Bar model Base 10 Place value counters Column subtraction



Subtract with more than 4 digits	5	Part-whole model Bar model Place value counters Column subtraction
Subtract with up to 3 decimal places	5	Part-whole model Bar model Place value counters Column subtraction

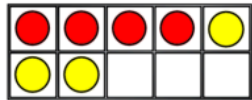
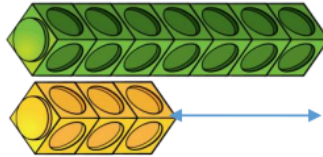
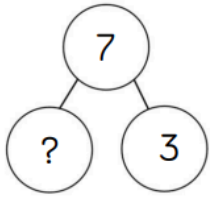
Skill: Subtract 1-digit numbers within 10

Year: 1

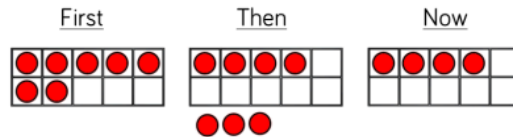
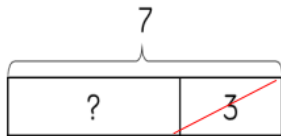
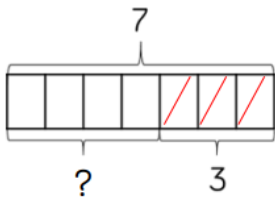
Part-whole models, bar models, ten frames and number shapes support partitioning.

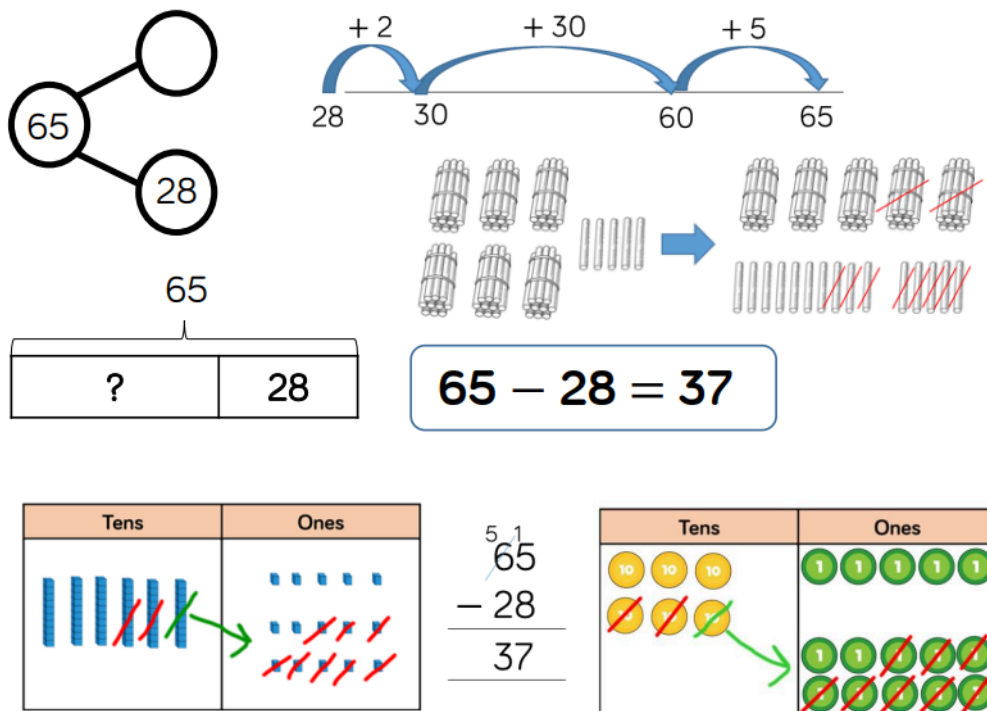
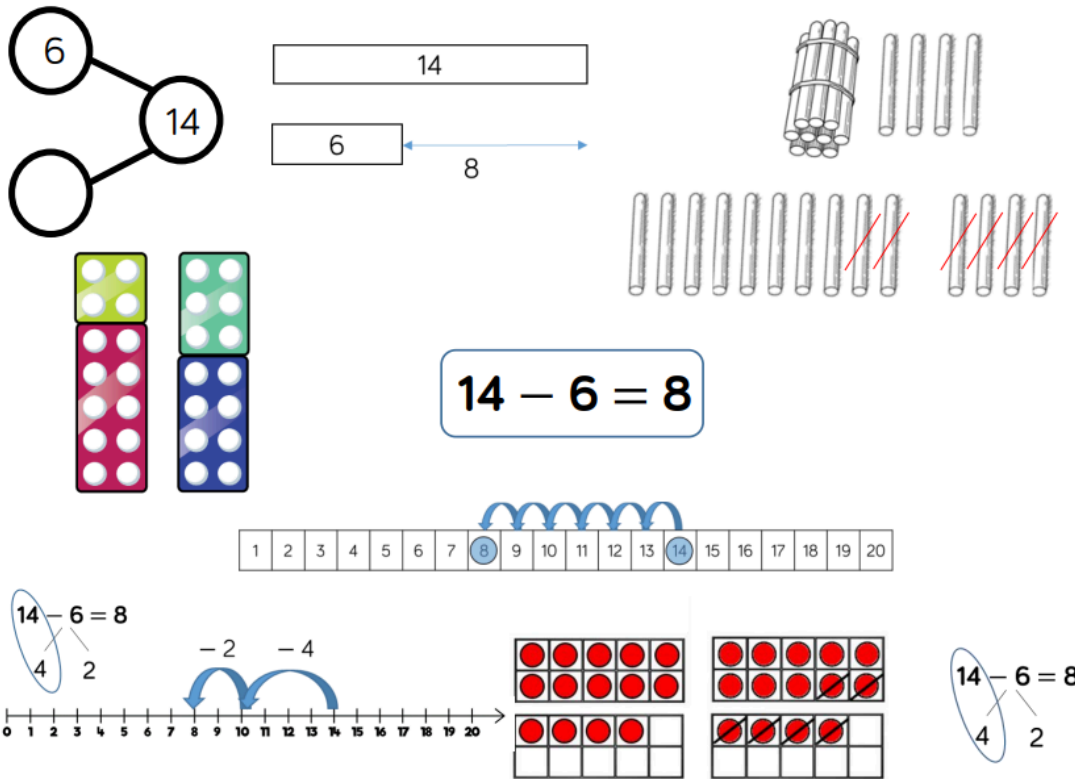
Ten frames, number tracks, single bar models and bead strings support reduction.

Cubes and bar models with two bars can support finding the difference.



$$7 - 3 = 4$$





Children can also use a blank number line to count back to find the difference.

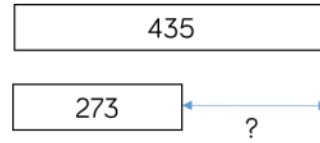
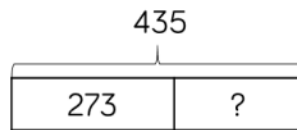
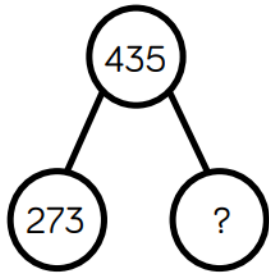
Encourage them to jump to multiples of 10 to become more efficient.

From Year 3, encourage children to use the formal column method when calculating alongside straws, base 10 or place value counters.

As numbers become larger, straws become less efficient.

Skill: Subtract numbers with up to 3 digits

Year: 3



$$435 - 273 = 162$$

Hundreds	Tens	Ones

$$\begin{array}{r} 435 \\ - 273 \\ \hline 162 \end{array}$$

Hundreds	Tens	Ones

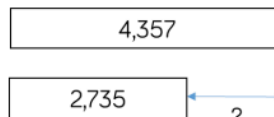
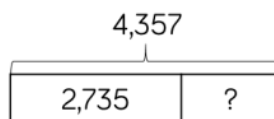
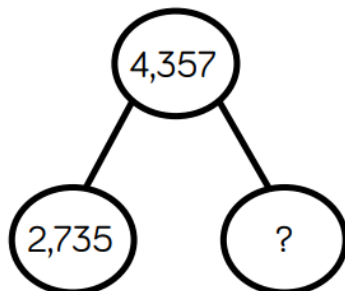
Base 10 and place value counters are the most effective manipulative when subtracting numbers with up to 3 digits.

Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method.

Plain counters on a place value grid can also be used to support learning.

Skill: Subtract numbers with up to 4 digits

Year: 4



$$\begin{array}{r} 4357 \\ - 2735 \\ \hline 1622 \end{array}$$

$$4,357 - 2,735 = 1,622$$

Thousands	Hundreds	Tens	Ones

Thousands	Hundreds	Tens	Ones

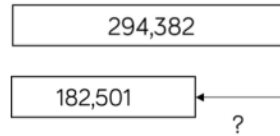
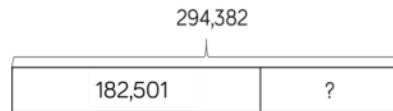
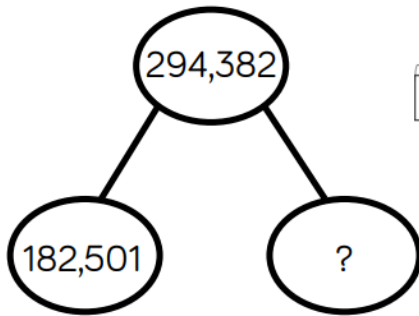
Base 10 and place value counters are the most effective manipulatives when subtracting numbers with up to 4 digits.

Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method.


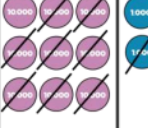




Plain counters on a place value grid can also be used to support learning.

Skill: Subtract numbers with more than 4 digits

Year: 5/6



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

HTh	TTh	Th	H	T	O
					

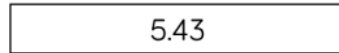
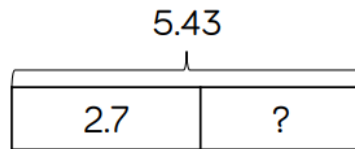
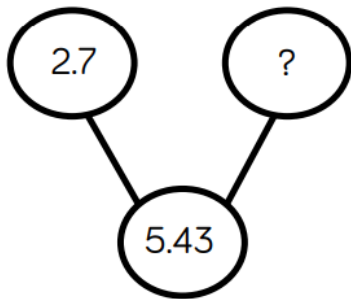
	2	9	3	1	8	2
-	1	8	2	5	0	1
	1	1	1	8	8	1

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.

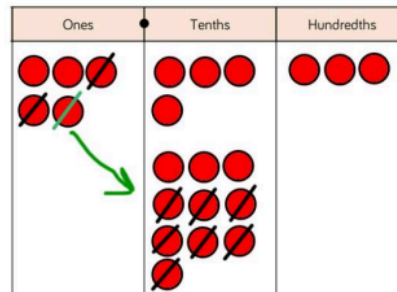
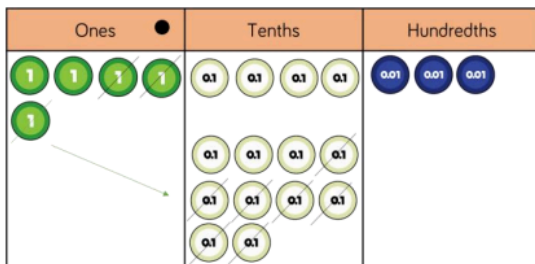
Skill: Subtract with up to 3 decimal places

Year: 5/6



$$\begin{array}{r} 4 \quad 1 \\ 5.43 \\ - 2.7 \\ \hline 2.73 \end{array}$$

$$5.43 - 2.7 = 2.73$$



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.



Multiplication

At Roecliffe CE Primary School, we follow the Clare Christie approach to practising multiplication tables. The concept of multiplication is taught as a unit in maths lessons, and the fluency of learning times tables is practised for 10 minutes every day in Year 2, 3, 4 and 5. During the Summer Term, the children in Year 4 sit the Multiplication Tables Check in line with the Government's assessment framework.

Alongside this, we also use Times Tables Rockstars for children in Year 2 to Year 6, through which children can practise their times tables fluency at home too!

Year 2/3

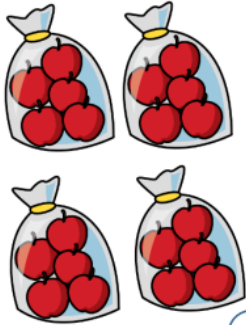
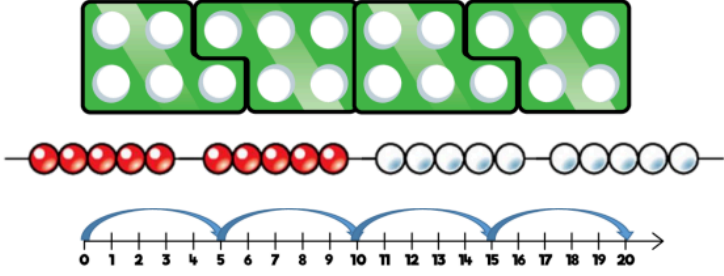
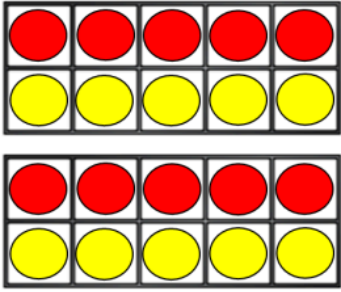
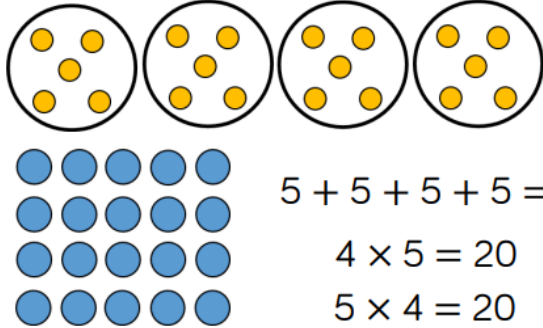
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
Autumn 1	Consolidate add/sub facts		Double 1-5, & double 10	Add in double 6	Add in double 7	Add in double 8	Add in double 9
Autumn 2	(half week)	Double 1-double 10	2 times table (multiplier first)	2 times table (multiplier first or second)	2 times table (division facts added in)	2 times table	2 times table
Spring 1	2 times table	2 times table	5 times table (2x5 to 6x5)	5 times table (2x5 to 6x5)	5 times table (7x5 to 9x5)	5 times table (7x5 to 9x5)	5 times table (all)
Spring 2	5 times table (all)	5 times table and 2 times table	5 times table and 2 times table	5 times table and 2 times table	5 times table and 2 times table	Squares (1x1 to 6x6)	Squares (7x7 to 10x10)
Summer 1	Squares all	Squares all	Squares all, 5 times table and 2 times table	Squares all, 5 times table and 2 times table	Squares all, 5 times table and 2 times table	Squares all, 5 times table and 2 times table	Squares all, 5 times table and 2 times table
Summer 2	Consolidation of all facts learnt so far						



Year 4

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
Autumn 1	Recap			3 times table (5 new facts)			3 times table plus previously learnt
Autumn 2	3 times table plus previously learnt		4 times table (4 new facts) (30 facts learnt, 6 to go)			4 times table plus previous	
Spring 1	4 times table plus previous	6 times table (3 new facts) (33 facts learnt, 3 to go)		6 times table plus previously learnt		7 times table (2 new facts) (32 facts learnt, 1 to go)	
Spring 2	7 times table plus previously learnt		8 and 9 times tables (all facts now learnt)		All facts to 9x9		
Summer 1	Practise all times tables ready for MTC						
Summer 2	Practise all tables to 9x9						

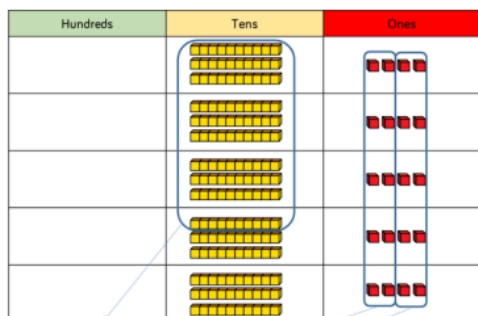
Skill	Year Groups	Representations and models
Solve one-step problems with multiplication	1/2	Bar model Number shapes Counters Ten frames Bead strings Number lines
Multiply 2-digit by 1- digit numbers	3/4	Place value counters Base 10 Expanded written method Short written method
Multiply 3-digit by 1- digit numbers	4	Place value counters Base 10 Short written method
Multiply 4-digit by 1- digit numbers	5	Place value counters Short written method
Multiply 2-digit by 2- digit numbers	5	Place value counters Base 10 Short written method Grid method
Multiply 2-digit by 3- digit numbers	5	Place value counters Short written method Grid method
Multiply 2-digit by 4- digit numbers	5/6	Formal written method

Skill: Solve 1-step problems using multiplication	Year: 1/2
<div data-bbox="126 457 370 779">  </div> <div data-bbox="423 464 1143 737">  </div> <div data-bbox="354 768 972 898"> <p>One bag holds 5 apples. How many apples do 4 bags hold?</p> </div> <div data-bbox="131 930 469 1220">  </div> <div data-bbox="553 915 1092 1241">  </div> <div data-bbox="829 1083 1154 1241"> <p> $5 + 5 + 5 + 5 = 20$ $4 \times 5 = 20$ $5 \times 4 = 20$ </p> </div>	<p>Children represent multiplication as repeated addition in many different ways.</p> <p>In Year 1, children use concrete and pictorial representations to solve problems. They are not expected to record multiplication formally.</p> <p>In Year 2, children are introduced to the multiplication symbol.</p>



Skill: Multiply 2-digit numbers by 1-digit numbers

Year: 3/4



	H	T	O	
		3	4	
x			5	
		2	0	(5 x 4)
+	1	5	0	(5 x 30)
	1	7	0	

$$34 \times 5 = 170$$

	H	T	O
		3	4
x			5
	1	7	0
	1	2	

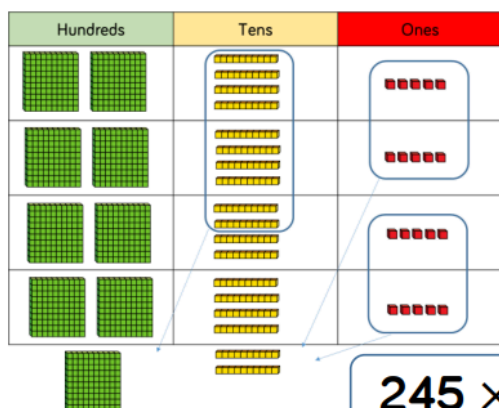


Informal methods and the expanded method are used in Year 3 before moving on to the short multiplication method in Year 4.

Place value counters should be used to support the understanding of the method rather than supporting the multiplication, as children should use times table knowledge.

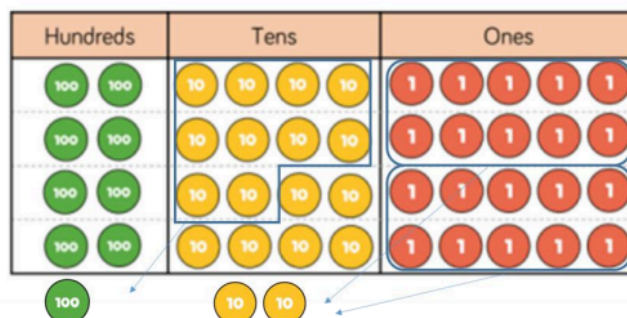
Skill: Multiply 3-digit numbers by 1-digit numbers

Year: 4



	H	T	O
	2	4	5
x			4
	9	8	0
	1	2	

$$245 \times 4 = 980$$

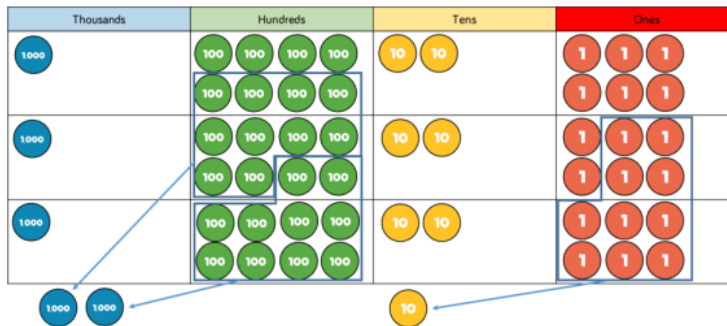


When moving to 3-digit by 1-digit multiplication, encourage children to move towards the short, formal written method.

Base 10 and place value counters continue to support the understanding of the written method. Limit the number of exchanges needed in the questions and move children away from resources when multiplying larger numbers.

Skill: Multiply 4-digit numbers by 1-digit numbers

Year: 5



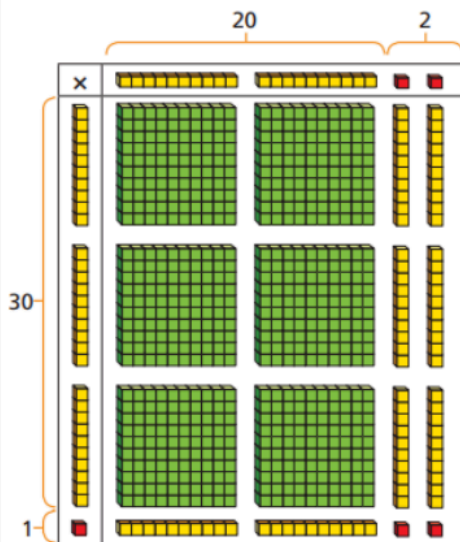
$$1,826 \times 3 = 5,478$$

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

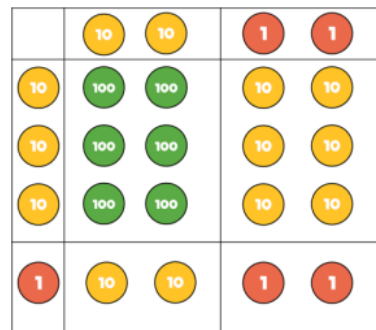
When multiplying 4-digit numbers, place value counters are the best manipulative to use to support children in their understanding of the formal written method. If children are multiplying larger numbers and struggling with their times tables, encourage the use of multiplication grids so children can focus on the use of the written method.

Skill: Multiply 2-digit numbers by 2-digit numbers

Year: 5



$$22 \times 31 = 682$$



x	20	2
30	600	60
1	20	2

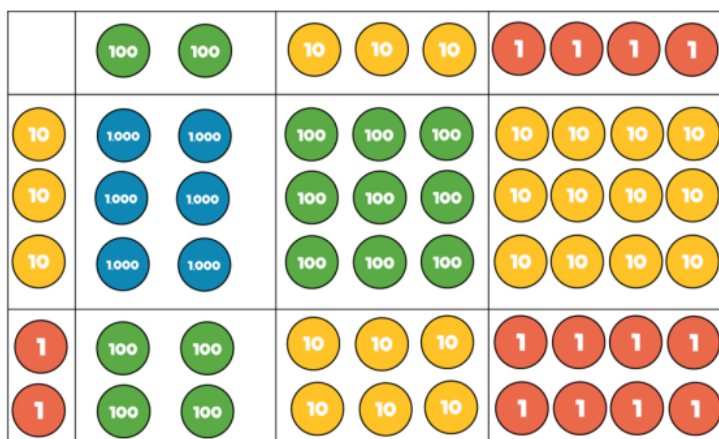
	H	T	O
		2	2
x		3	1
		2	2
	6	6	0
	6	8	2

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.



Skill: Multiply 3-digit numbers by 2-digit numbers

Year: 5



Th	H	T	O
	2	3	4
x		3	2
	4	6	8
1 7	1 0	2	0
7	4	8	8

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.

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

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

Skill: Multiply 4-digit numbers by 2-digit numbers

Year: 5/6

TTh	Th	H	T	O
	2	7	3	9
x			2	8
2	1	9	1	2
5	4	7	8	0
7	6	6	9	2

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.

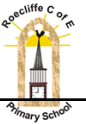
Consider where exchanged digits are placed and make sure this is consistent.

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



Division

Skill	Year Groups	Representations and models
Solve one-step problems with division (sharing)	1/2	Bar model Real life objects Arrays Counters
Solve one-step problems with division (grouping)	1/2	Real life objects Number shapes Bead strings Ten frames Number lines Arrays Counters
Divide 2-digits by 1- digit (no exchange sharing)	3	Straws Base 10 Bar model Place value counters Part-whole model



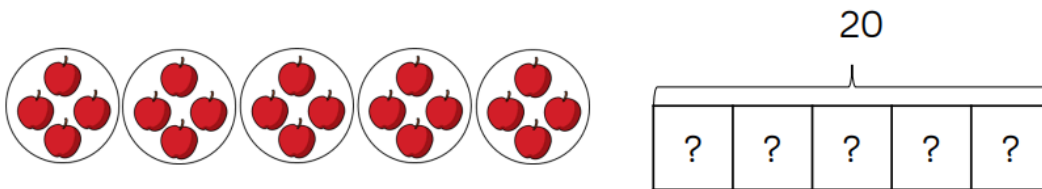
Divide 2-digits by 1- digit (sharing with exchange)	3	Straws Base 10 Bar model Place value counters Part-whole model
Divide 2-digits by 1- digit (sharing with remainders)	3/4	Straws Base 10 Bar model Place value counters Part-whole model
Divide 2-digits by 1- digit (grouping)	4/5	Place value counters Counters Place value grid Written short division
Divide 3-digits by 1- digit (sharing with exchange)	4	Base 10 Bar model Place value counters Part-whole model
Divide 3-digits by 1- digit (grouping)	4/5	Place value counters Counters Place value grid Written short division
Divide 4-digits by 1- digit (grouping)	5	Place value counters Counters Place value grid Written short division
Divide multi-digits by 2-digits (short division)	6	Written short division List of multiples
Divide multi-digits by 2-digits (long division)	6	Written long division List of multiples



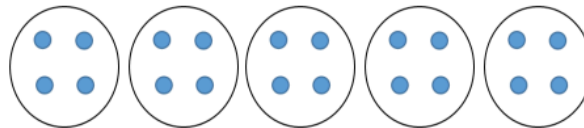
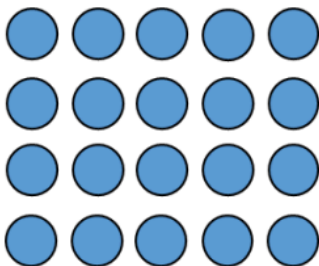


Skill: Solve 1-step problems using multiplication (sharing)

Year: 1/2



There are 20 apples altogether.
They are shared equally between 5 bags.
How many apples are in each bag?



$$20 \div 5 = 4$$

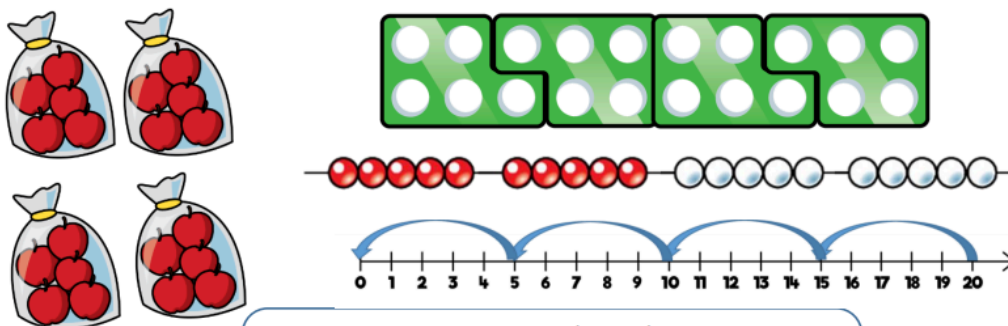
Children solve problems by sharing amounts into equal groups.

In Year 1, children use concrete and pictorial representations to solve problems. They are not expected to record division formally.

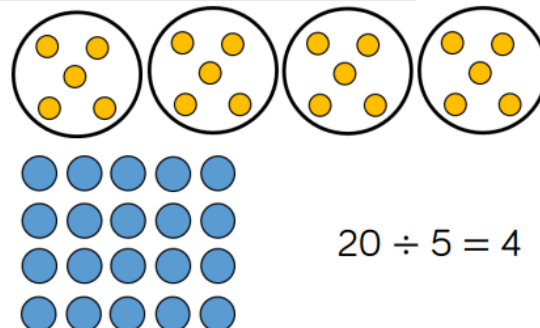
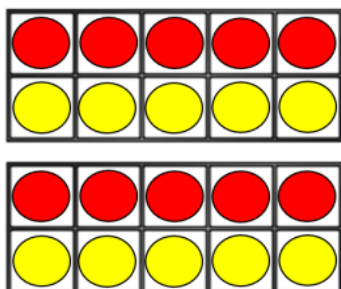
In Year 2, children are introduced to the division symbol.

Skill: Solve 1-step problems using division (grouping)

Year: 1/2



There are 20 apples altogether.
They are put in bags of 5.
How many bags are there?



$$20 \div 5 = 4$$

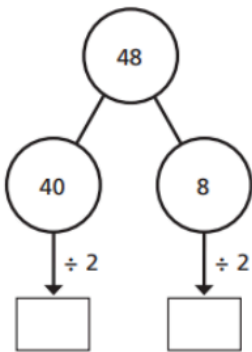
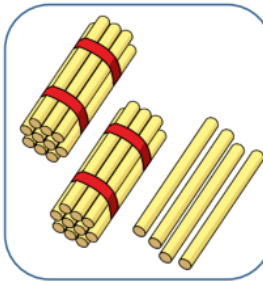
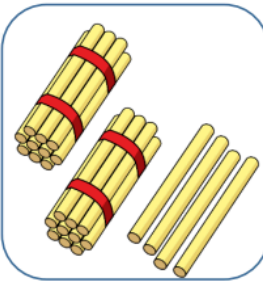
Children solve problems by grouping and counting the number of groups. Grouping encourages children to count in multiples and links to repeated subtraction on a number line. They can use concrete representations in fixed groups such as number shapes which helps to show the link between multiplication and division.



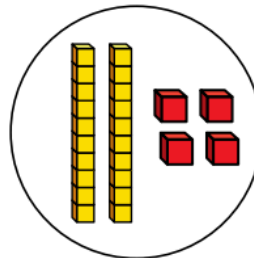
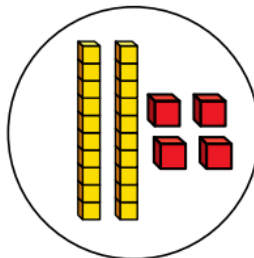
Skill: Divide 2-digits by 1-digit (sharing with no exchange)

Year: 3

Tens	Ones
10 10	1 1 1 1
10 10	1 1 1 1



$$48 \div 2 = 24$$



When dividing larger numbers, children can use manipulatives that allow them to partition into tens and ones.

Straws, Base 10 and place value counters can all be used to share numbers into equal groups.

Part-whole models can provide children with a clear written method that matches the concrete representation.

Skill: Divide 2-digits by 1-digit (sharing with exchange)

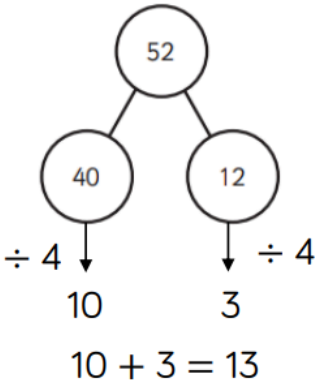
Year: 3/4



Tens	Ones
10	1 1 1
10	1 1 1
10	1 1 1
10	1 1 1

52

?	?	?	?
---	---	---	---



$$52 \div 4 = 13$$

10 10 10

1 1 1 1 1 1

Tens	Ones
10	1 1 1
10	1 1 1
10	1 1 1
10	1 1 1

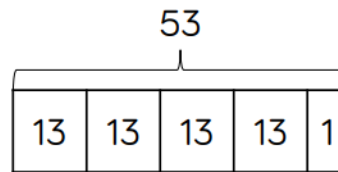
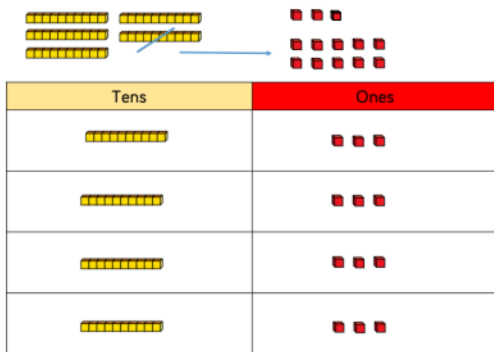
When dividing numbers involving an exchange, children can use Base 10 and place value counters to exchange one ten for ten ones.

Children should start with the equipment outside the place value grid before sharing the tens and ones equally between the rows.

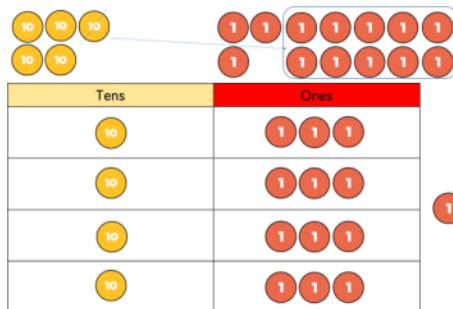
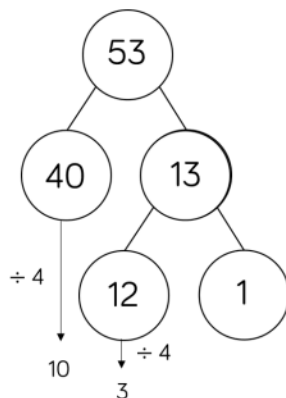
Flexible partitioning in a part-whole model supports this method.

Skill: Divide 2-digits by 1-digit (sharing with remainders)

Year: 3/4



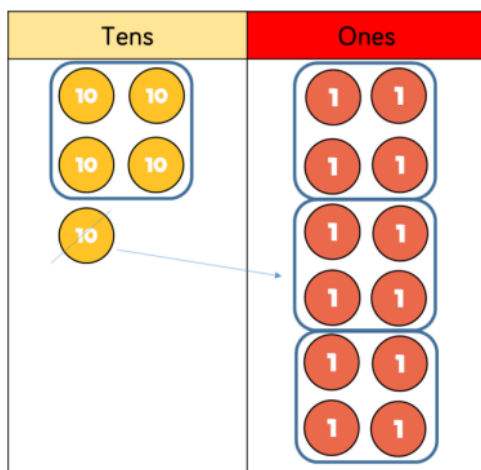
$$53 \div 4 = 13 \text{ r}1$$



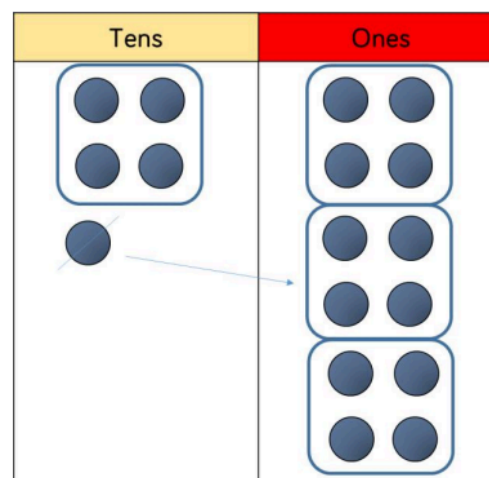
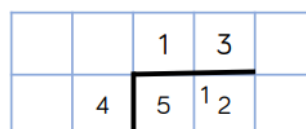
When dividing numbers with remainders, children can use Base 10 and place value counters to exchange one ten for ten ones. Starting with the equipment outside the place value grid will highlight remainders, as they will be left outside the grid once the equal groups have been made. Flexible partitioning in a part-whole model supports this method.

Skill: Divide 2-digits by 1-digit (grouping)

Year: 5



$$52 \div 4 = 13$$



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?'

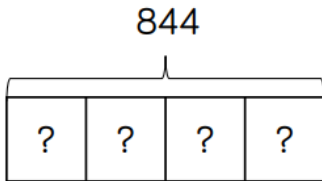
Remainders can also be seen as they are left ungrouped.



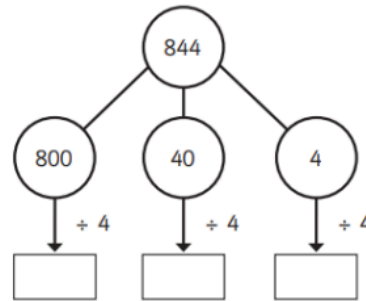
Skill: Divide 3-digits by 1-digit (sharing)

Year: 4

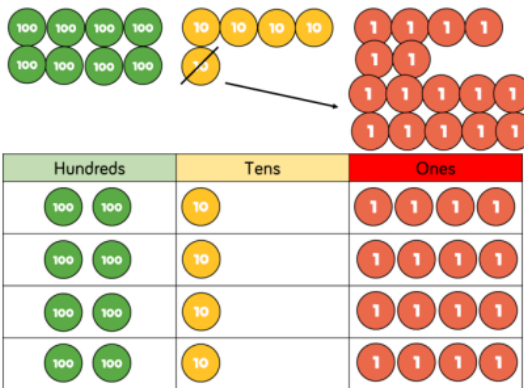
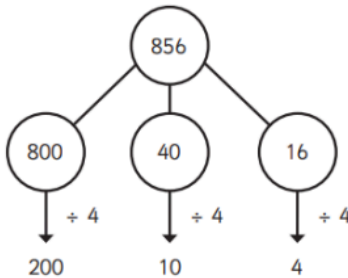
$$844 \div 4 = 211$$



H	T	O
100 100	10	1
100 100	10	1
100 100	10	1
100 100	10	1



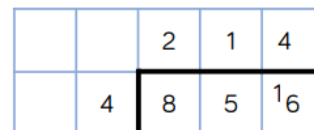
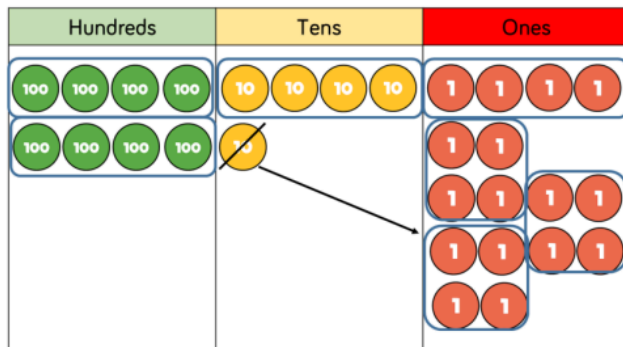
$$856 \div 4 = 214$$



Children can continue to use place value counters to share 3-digit numbers into equal groups. Children should start with the equipment outside the place value grid before sharing the hundreds, tens and ones equally between the rows. This method can also help to highlight remainders. Flexible partitioning in a part-whole model supports this method.

Skill: Divide 3-digits by 1-digit (grouping)

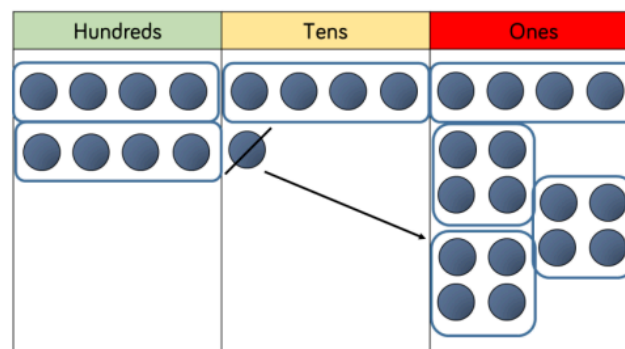
Year: 5



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.

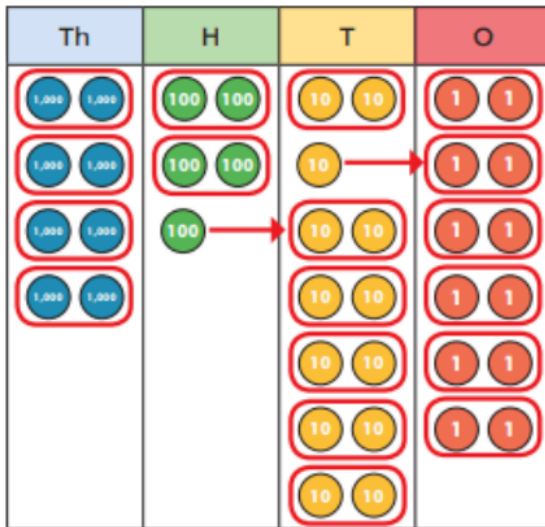
$$856 \div 4 = 214$$





Skill: Divide 4-digits by 1-digit (grouping)

Year: 5



	4	2	6	6
2	8	5	13	12

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

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.

Skill: Divide multi digits by 2-digits (short division)

Year: 6

		0	3	6
	12	4	43	72

$$432 \div 12 = 36$$

$$7,335 \div 15 = 489$$

	0	4	8	9
15	7	73	133	135

15	30	45	60	75	90	105	120	135	150
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When children begin to divide up to 4-digits by 2-digits, written methods become the most accurate as concrete and pictorial representations become less effective. Children can write out multiples to support their calculations with larger remainders. Children will also solve problems with remainders where the quotient can be rounded as appropriate.



Skill: Divide multi-digits by 2-digits (long division)

Year: 6

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

- (x30)
- $12 \times 1 = 12$
 $12 \times 2 = 24$
 $12 \times 3 = 36$
 $12 \times 4 = 48$
 $12 \times 5 = 60$
- (x6)
- $12 \times 6 = 72$
 $12 \times 7 = 84$
 $12 \times 8 = 96$
 $12 \times 9 = 108$
 $12 \times 10 = 120$

$432 \div 12 = 36$

Children can also divide by 2-digit numbers using long division.

Children can write out multiples to support their calculations with larger remainders.

Children will also solve problems with remainders where the quotient can be rounded as appropriate.

$7,335 \div 15 = 489$

	0	4	8	9
15	7	3	3	5
-	6	0	0	0
	1	3	3	5
-	1	2	0	0
		1	3	5
-		1	3	5
				0

- (x400)
- $1 \times 15 = 15$
 $2 \times 15 = 30$
 $3 \times 15 = 45$
 $4 \times 15 = 60$
 $5 \times 15 = 75$
 $10 \times 15 = 150$
- (x80)
- (x9)

Skill: Divide multi digits by 2-digits (long division)

Year: 6

$372 \div 15 = 24 \text{ r}12$

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

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

When a remainder is left at the end of a calculation, children can either leave it as a remainder or convert it to a fraction. This will depend on the context of the question.

Children can also answer questions where the quotient needs to be rounded according to the context.

			2	4	$\frac{4}{5}$
1	5	3	7	2	
	-	3	0	0	
			7	2	
	-		6	0	
			1	2	

$372 \div 15 = 24 \frac{4}{5}$